

ADDENDUM NO. 01 To Drawings and Specifications dated 10/09/23

Date: OCTOBER 9, 2023

PROJECT:	Schmitt ES HVAC Upgrade & Modernization Westminster School District
PROJECT LOCATION:	7200 Trask Ave Westminster, CA 92683
PROJECT ARCHITECT	PBK Architects 2400 E. Katella Ave #950

Anaheim, CA 92806

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.

GENERAL ITEMS:

Item No. 1-01:	BIDDING DOCUMENTS
	 Revised "SUPPLEMENTARY GENERAL CONDITIONS Clarification of School name for schedule on pages "192
Item No. 1-02:	MANDATORY JOB WALK AGENDA
	 Revised Project's Preliminary Cost Estimate for "FINLEY & WEBBER."
Item No. 1-03:	PRE-QUALIFY SUB CONTRACTORS LIST
	1. Add "PQBids Approved Sub Contractors."
Item No. 1-04:	PRE-BID RFI LOG
	1. Add "Pre-Bid RFI Responses."

SPECIFICATIONS:



Item No. 1-05:	08 80 00 GLAZING
	1. Replaced the section entirely.
Item No. 1-06:	10 28 13 TOILET ACCESSORIES
	1. Replaced the section entirely.
Item No. 1-07:	23 00 00 GENERAL MECHANICAL PROVISIONS
	1. Replaced the section entirely.
Item No. 1-08:	23 00 01 HEATING VENTILATING AND AIR CONDITIONING
	1. Replaced the section entirely.
DRAWINGS:	
Item No. 1-09:	G1 SHEET INDEX, DRAWING CONVENTIONS, AND LOCATION MAP
	1. Revised "SCOPE OF WORK."
Item No. 1-10:	D1.1 DEMO FLOOR PLANS ADMIN/KINDER, BLDG A, B & C
	 Revised "30 – DEMO FLOOR PLAN – ADMIN / KINDERGARTEN." a. Added demolition to (E) restroom.
Item No. 1-11:	D2.1 DEMO REFLECTED CEILING PLAN ADMIN/KINDER, BLDG A, B & C
	 Revised "30 – DEMO RCP – ADMIN KINDERGARTEN." a. Added demolition to ceiling in (E) restroom.
Item No. 1-12:	A1.01 FLOOR PLANS ADMIN/KINDER, BLDG A, B & C
	 Added "ASSISTIVE LISTENING SYSTEMS AND SIGNAGE 11B- 219."
	 Added "ALTERNATIVE ALS SYSTEM REQUIREMENTS." Revised "4 – FLOOR PLAN – BUILDING B – CLASSROOM."
	 a. Removed ALS notes. 4. Revised "5 – FLOOR PLAN – BUILDING C –
	a. Removed ALS notes.



	 Revised "17 – FLOOR PLAN BUILDING A – CLASSROOM." a. Removed ALS notes. Revised "29 – FLOOR PLAN – ADMIN / KINDERGARTEN." a. Added (N) restrooms layout for kindergarten. b. Removed ALS notes.
Item No. 1-13:	A2.01 REFLECTED CEILING PLANS ADMIN/KINDER, BLDG A, B & C
	 Revised "29 – RCP – ADMIN KINDERGARTEN." a. Revised ceiling for (N) restroom layout.
Item No. 1-14:	A3.01 OVERALL ROOF PLAN AND DETAIL
	 Revised detail "1 – GENERAL LEGEND." Added additional legend for roof. Removed detail "2 – (N) PREFABRICATED CURB." Revised detail "7 – SCOPE OF WORK." Removed note 1, 4 & 5. Removed detail "8 – (N) PLUMBING VENT THRU ROOF." Removed detail "14 – (N) PARAPET BASE & CAP." Removed detail "19 – NEW NOMENCLATURE." Revised detail "20 – TYP. COVERED WALKWAY DETAIL." Revised detail "21 – (E) SKYLIGHT INFILL DETAIL B." Revised detail "25 – TYP. EAVE DETAIL." Revised detail to "Patch & Repair." Revised detail to "Patch & Repair." Revised detail "26 – TYP. GABLE END DETAIL." Revised detail to "Patch & Repair."
Item No. 1-15:	A3.02 ROOF PLAN
	 Revised "1 - GENERAL LEGEND." Added additional legend. Revised "6 – ENLARGED ROOF PLAN." Added note for (E) Sky Light to remain. Added note "NOT USED" for "27 & 21/A3.01"
Item No. 1-16:	A3.03 ROOF DETAILS – MOD. BIT.
	 Removed detail "1 – ROOF EDGE." Removed detail "2 – GUTTER JOINT." Removed detail "3 – ROOF EDGE." Removed detail "4 – COVER PLATE." Removed detail "5 – ROOF HIGH/LOW." Removed detail "6 – PICTURE FRAME DETAIL."



- 7. Removed detail "7 AREA DIVIDER."
- 8. Removed detail "8 EQUIPMENT SUPPORT CURB."
- 9. Removed detail "9 EQUIP. SUPPORT CURB."
- 10. Removed detail "19 DOWN SPOUT."

Item No. 1-17: A4.01 BUILDING SECTIONS

- 1. Revised "2 BLDG KINDER SECTION A."
 - a. Revised background to new restroom layout.
 - b. Revised roof keynote to "(E) Roof Structure to Remain."
- 2. Revised "6 BLDG ADMIN / KINDER SECTION B."
 - a. Revised background to new restroom layout.
 - b. Revised roof keynote to "(E) Roof Structure to Remain."
- 3. Revised "8 BLDG ADMIN SECTION A."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
- 4. Revised "14 BLDG A SECTION A."
- a. Revised roof keynote to "(E) Roof Structure to Remain."
 5. Revised "18 BLDG A SECTION B."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
- 6. Revised "20 BLDG B SECTION A."
- a. Revised roof keynote to "(E) Roof Structure to Remain." 7. Revised "24 - BLDG B – SECTION B."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
- 8. Revised "26 BLDG C SECTION A."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
- 9. Revised "30 BLDG C SECTION B."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."

Item No. 1-18: A5.01 ENLARGED RESTROOM PLANS & INTERIOR ELEVATIONS

- 1. Added "RESTROOM ACCESSORY SCHEDULE."
- 2. Revised "2 PLAN B-1 GIRLS RR (AGES 5-8)."
 - a. Revised keynote for (N) Restroom Accessory Schedule.
- Revised "6 ELEVATIONS B-1 GIRLS RR (AGES 5-8)."
 a. Revised keynote for (N) Restroom Accessory Schedule.
- 4. Revised "8 PLAN B-2 BOYS RR (AGES 5-8)."
 a. Revised keynote for (N) Restroom Accessory Schedule.
- 5. Revised "12 ELEVATIONS B-2 BOYS RR (AGES 5-8)."
 - a. Revised keynote for (N) Restroom Accessory Schedule.
- Revised "14 PLAN K-4A STAFF TOILET (ADULT)."
 a. Revised keynote for (N) Restroom Accessory Schedule.
- 7. Revised "18 ELEVATIONS K-4A STAFF TOILET (ADULT)."
- a. Revised keynote for (N) Restroom Accessory Schedule.
 8. Revised "20 PLAN K-6A NURSE TOILET (AGES 5-8)."
- a. Revised keynote for (N) Restroom Accessory Schedule.
- Revised "24 ELEVATIONS K-6A NURSE TOILET (AGES 5-8)."
 a. Revised keynote for (N) Restroom Accessory Schedule.
- 10. Revised "26 PLAN KINDER TOILET (AGES 5-8)."



a. Revised enlarged plan to (N) restroom layout.

- 11. Revised "30 ELEVATIONS KINDERGARTEN TOILET (5-8)."
 - a. Revised elevations for (N) restroom layout.

Item No. 1-19: A6.01 EXTERIOR ELEVATIONS

- 1. Revised "4 BLDG ADMIN / KINDERGARTEN NORTH ELEVATION."
 - a. Revised roof note to "(E) Roof Structure to Remain."
 - b. Revised note to "For Roof Related Items."
- 2. Revised "6 BLDG ADMIN EAST ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised roof keynote to "(E) Covered Walkway to Remain."
 - c. Revised note to "For Roof Related Items."
- 3. Revised "10 BLDG ADMIN / KINDERGARTEN SOUTH ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised roof keynote to "(E) Covered Walkway to Remain."
 - c. Revised note to "For Roof Related Items."
- 4. Revised "12 BLDG ADMIN WEST ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised note to "For Roof Related Items."
- 5. Revised "16 BLDG A NORTH ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised note to "For Roof Related Items."
- 6. Revised "18 BLDG A EAST ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised note to "For Roof Related Items."
- 7. Revised "22 BLDG A SOUTH ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised note to "For Roof Related Items."

Item No. 1-20:

A6.02 EXTERIOR ELEVATIONS

- 1. Revised "4 BLDG B NORTH ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised note to "For Roof Related Items."
- 2. Revised "6 BLDG B EAST ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised roof keynote to "(E) Covered Walkway to Remain."
 - c. Revised note to "For Roof Related Items."
- 3. Revised "10 BLDG B SOUTH ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised roof keynote to "(E) Covered Walkway to Remain."
 - c. Revised note to "For Roof Related Items."
- 4. Revised "12 BLDG B WEST ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised note to "For Roof Related Items."



- 5. Revised "15 BLDG C NORTH ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised note to "For Roof Related Items."
- 6. Revised "18 BLDG C EAST ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised roof keynote to "(E) Covered Walkway to Remain."
 - c. Revised note to "For Roof Related Items."
- 7. Revised "21 BLDG C SOUTH ELEVATION."
 - a. Revised roof keynote to "(E) Roof Structure to Remain."
 - b. Revised roof keynote to "(E) Covered Walkway to Remain."
 - c. Revised note to "For Roof Related Items."

Item No. 1-21: A7.01 INTERIOR ELEVATIONS

- 1. Revised "6 KINDERGARTEN K1&K2 TYP. INTERIOR ELEVATIONS."
 - a. Revised "6B K1 EAST INTERIOR ELEVATION" to (N) restroom layout.

Item No. 1-22: A9.01 DOORS SCHEDULE & WINDOWS FRAMING ELEVATION

- 1. Revised "DOOR SCHEDULE"
 - a. Add doors for (N) restrooms layout in ADMIN / KINDERGARTEN.
- 2. Revised "DOOR TYPE."
- 3. Added "18 WINDOW FRAMING ELEVATION W10."

Item No. 1-23: A10.01 FINISH PLANS & SCHEDULE

- 1. Revised "16 FINISH FLOOR PLAN ADMIN / KINDERGARTEN."
 - a. Added (N) floor finish to building.
 - b. Revised background to (N) restroom layout.
- Revised "18 FINISH FLOOR PLAN BUILDING C LIBRARY / CLASSROOM."
 - a. Revised floor finish for COMP LAB [22].
- 3. Revised "FINISH SCHEDULE."
 - a. Revised floor finish for "ADMIN / KINDERGARTEN."

Item No. 1-24: S2 FLOOR/ROOF PLANS – BLDG ADMIN

Revised "2 – FLOOR PLAN – ADMIN. KINDERGARTEN."
 a. Revised plan for (N) restroom layout.

Item No. 1-25: M2.1 MECHANICAL FLOOR PLANS – ADMIN & KINDERGARTEN, BLDG A, B & C



Revised "4 – FLOOR PLANS – ADMIN/KINDERGARTEN."
 a. Revised plans for (N) restroom layout.

Item No. 1-26: E1.0 ELECTRICAL SITE PLAN

- 1. Revised "KEYNOTES."
- 2. Revised "GENERAL NOTES."
- 3. Revised "1 SITE PLAN."
- 4. Added "2 ENLARGED ELECTRICAL RM."

Item No. 1-27: E2.1 ELECTRICAL POWER PLANS – ADMIN & KINDERGARTEN, BLDG A, B & C

Revised "4 – POWER PLAN – ADMIN/KINDERGARTEN."
 a. Revised plans for (N) restroom layout.

Item No. 1-28: E4.1 ELECTRICAL ROOF PLANS

1. Revised "2 – ROOF PLAN – ADMIN/KINDERGARTEN."

Item No. 1-29: E5.1 ELECTRICAL SINGLE LINE DIAGRAM

- 1. Revised "1 ELECTRICAL ONE-LINE DIAGRAM EXISTING."
- 2. Revised "2 ELECTRICAL ONE-LINE DIAGRAM NEW."

Item No. 1-30: E5.2 ELECTRICAL PANEL SCHEDULES

- 1. Revised "ELECTRICAL PANEL SCHEDULES."
- Item No. 1-31: E6.1 ELECTRICAL DETAILS
 - 1. Added "11 TYPICAL MULTI-CONDUIT PLACEMENT DETAIL."

Item No. 1-32: PD2.1 PLUMBING DEMOLITION PLANS – ADMIN & KINDERGARTEN, BLDG A, B & C

- 1. Revised "4 DEMOLITION FLOOR PLANS ADMIN/KINDERGARTEN."
 - a. Revised plan for (N) restroom layout.



P2.1 PLUMBING FLOOR PLANS – ADMIN & KINDERGARTEN, BLDG A, B & C

- Revised "4 FLOOR PLANS ADMIN/KINDERGARTEN."
 a. Revised plan for (N) restroom layout.
- Item No. 1-34: FA1.00 FIRE ALARM SITE PLAN
 - 1. Revised "FIRE ALARM SHEET NOTES."
- Item No. 1-35: FA1.01 FIRE ALARM FLOOR PLAN: ADMINISTRATION & BLDG. "A"
 - Revised "1 FIRE ALARM FLOOR PLAN: ADMINISTRATION/KINDERGARTEN BUILDING."
 a. Revised plan for (N) restroom layout.

END OF ADDENDUM 01

SUPPLEMENTARY GENERAL CONDITIONS

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

ARTICLE 8 – TIME

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

Finley Elementary School*

Phase 1 Dec 2023 – Feb 2024 Phase 2 Feb 2024 – Apr 2024 Phase 3 May 2024 – July 2024** Phase 4 July 2024 – Sep 2024	
Schmitt Elementary School*	
Phase 1 Dec 2023 – Mar 2024 Phase 2 Mar 2024 – Jun 2024 Phase 3 Jun 2024 – Aug 2024** Phase 4 Aug 2024 – Sep 2024 Webber Elementary School*	Addendum 1_ Clarification of School name for schedule.
Phase 1 Dec 2023 – Feb 2024 Phase 2 Feb 2024 – Apr 2024 Phase 3 May 2024 – Jun 2024 Phase 4 Jun 2024 – Aug 2024**	

*Further information on each sites phasing the see the attached Master Phasing plans page 210-212

** Summer scope of work must include the Fire Alarm Control Panel instillation.

See attached for further Supplementary General Condition on TELACU Construction Management Letterhead items A through S. These items are to be included into the contract documents.



Mandatory Job Walk Agenda Westminster Interim Housing Project - Finley ES, Schmitt ES, Webber ES

Job Walk Date: September 20th at 2:00 P.M. at the Westminster District Office 14121 Cedarwood Avenue Westminster, CA 92683

Owner: Architect (AOR): Construction Manager (CM): Inspector of Record (IOR): Westminster School District PBK Architects TELACU Construction Management TBD

General Project Information:

Deadline for Submitting Proposals: 2:00 p.m. on October 17, 2023

Location to Submit Proposals:

District Board Room Attn: TELACU Construction Management 14121 Cedarwood Avenue Westminster, CA 92683

Project Contact: Joe Hodgson Project Manager TELACU Construction Management 714-293-2632 jhodgson@TELACU.com

Prequalification Procedures: Prequalification's are by 10:00 a.m. on Monday October2, 2023 PQBids at https://pqbids.com/westminster/.

Bid Documents: Project Documents are available free on the Districts Website: www.wsdk8.us

Project Bid Documents consist of

Plans Set Finley Elementary School Plans Set Schmitt Elementary School Plans Set Webber Elementary School Geological Survey Prequalification Form – PQ Bids Hazmat Survey Finley Hazmat Survey Schmitt Hazmat Survey Webber General Conditions Special Conditions Phasing Site Maps



Construction Information:

Licensing Requirements: Class B

Project's Preliminary Cost Esti	mate: Project total es	stimate is	$\sim\sim\sim$	\dots	
Schmitt \$5,800,000, Finley	\$9,700,000, Webbe \$ 7,250,000	er \$ 9,500,000, Project Tc \$ 7,500,000	otal \$ 25,00 \$ 20),550,000	
Scope of Work: Art Gonzale	zPBK		uu	uuud	
<u>Finley ES</u> -					
<u>Schmitt ES</u> -				Addendum 1_ Projec Cost clarifiaction	t

Webber ES-

Project Duration:

Finley ES, Schmitt ES, and Webber ES: 11/15/2023 – 8/20/2024 (285 calendar days)

Schedule: The major project milestones are as follows:

Advertisement	DATE September 15, 2023 September 18, 2023	<u>TIME</u> N/A
Documents Available	September 15, 2023	N/A
Pre-Bid Conference	September 20, 2023	2 PM
Clarification Request Deadline	October 2, 2023	2 PM
Deadline for Response to Questions	October 10, 2022	5 PM
Bid Opening	October 17, 2023	2 PM
Board Approval	November 9, 2023	N/A
Contract Executed by	November 10, 2023	N/A
Notice to Proceed Issued	November 13, 2023	N/A

Prevailing Wage: This project will use the Prevailing wage rates with Certified Payroll Submitted to DIR

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Contractor Work Hours: All construction and delivery activities shall be restricted to the hours of 7:00 a.m. to 5:00 p.m. Monday through Saturday and from 8:00 A.M. to 5:00 P.M (Saturday work requires written request approved by TELACU Construction Management 48 hours prior any Saturday work). No work shall take place on Sundays or Federal Holidays.

Staging: Contractor must coordinate with TELACU Construction Management for staging of materials and deliveries.

Clarification Request: Email the Prebid Clarification form (Bid documents pg. 14) to the persons noted and copy Joe Hodgson at jhodgson@TELACU.com no later than 2:00pm on October 2, 2023. Include your Company letterhead and contact information. If the RFI is deemed to be valid, a formal response shall be issued as an addendum to ALL Plan holders in Procore. Addendum will be issued on or before October 2, 2023.

Site General Comments: No smoking or substance use, Professional construction attire, No interaction with staff & students. All correspondence and communicating to be directed to TELACU Construction Management. Bidders shall not contact the District or design team directly for information related to the project.



WESTMINSTER SCHOOL DISTRICT - APPLICATIONS BY STATUS - FULLY APPROVED

Firm name	Email	Name	Contractor type	Ownership	License no	Lic Clas	Dir Reg	Expiry date	Pe arr
CTG Construction, Inc.	lily@ctgconstruction.net	CTG Construction, Inc.	General Contractor	SBA	635916	B, C-33	1000005770	2024- 04-13	\$1!
Intercom Clock & Signal Service	j.abbasi@icsservice.net	jennifer abbasi	Other	Women owned & Operated Other	711012	C-7, C- 10	1000007581	2024- 03-14	\$ 1
Fricke Electric	frickeelectric@yahoo.com	Joshua Fricke	Electrical contractor	SBA	805503	C-10	1000011942	2024- 10-03 10:04:57	\$4(
SKC Company	info@skccompany.com	Melina Corona	General Contractor	SBA	992118	В	1000012108	2024- 08-04 10:39:56	\$5,
Dalke & Sons Construction, Inc.	barry@dalkeandsons.com	Barry Dalke	General Contractor	Other	612500	B, C-10	1000003081	2024- 04-03	\$1(
MBC Enterprises Inc.	bidding@mbcenterprises.net	RUDY SULTAN	General Contractor	Minority Owned	1050671	B, A	1000064318	2023- 10-20	\$2,
Core Contracting, Inc.	estimating@corecontractinginc.com	Core Contracting, Inc.	General Contractor	Other	905751	В	1000012197	2024- 05-19	\$2!
Piana Construction & Painting	pianaconstruction@sbcglobal.net	Piana Construction & Painting	Other	SBA	731555	B, C-33	1000002822	2024- 07-28 15:36:57	\$5,
Integrated Demolition and Remediation Inc.	info@idrdemo.com	Nick Vora	General Contractor	Minority Owned	1003504	A, B, C- 21, C-22, HAZ	1000023608	2024- 02-07	\$1(
Erickson-Hall Construction Co.	rgonzalez@ericksonhall.com	Rachael Gonzalez	General Contractor	Other	751343	a, b, Haz	1000000191	2024- 04-26	\$1!
Neff Construction, Inc.	karen@neffcon.com	Karen Anderson	General Contractor	Other	790576	В	100000197	2024- 07-28 15:40:23	\$1(
Saifco Construction Company	oisaifan@gmail.com	Osama I Saifan	General Contractor	Other	906460	А, В	100042317	2024- 08-04 10:08:21	\$28
P A Thompson Company, Inc	bids@thompsone.com	P A Thompson Company, Inc	Electrical contractor	SBA	665844	C-7, C- 10	1000002048	2023- 11-02	\$3,
Valley Pipeline Services, Inc	steve@valleypipeline.com	STEVE VATTER	Other	Other	988742	A, C-34, C-36	1000011810	2024- 02-22	\$6,
Sandalwood Construction	joseph@sandalwoodconstruct.com	Sandalwood Construction	General Contractor	Other	680715	В	1000005773	2024- 05-05	\$ 1
Crosby Plumbing Inc	admin@crosbyplumbing.net	Anthony Tatikian	Plumbing Contractor	SBA	994490	A, C-36, B, C-34	1000004513	2024- 08-22 10:02:30	\$1,

Firm name	Email	Name	Contractor type	Ownership	License no	Lic Clas	Dir Reg	Expiry date	Pe arr
MPI - Miller Plumbing Inc.	estimating@mpiplumbing.com	Chris Miller	Plumbing Contractor	Other	720581	C-36, C- 34	1000001568	2023- 12-13	\$5,
Kerns Inc. A California Corporation	office@kernscon.com	RICHARD KERNS	Plumbing Contractor	Other	986739	A, B, C- 36, C-34	1000006137	2023- 12-23	\$6,
All Star Air Systems, Inc.	accounting@allstarairsystemsinc.com	All Star Air Systems, Inc.	Mechanical contractor	Other	747924	C-20, B	1000001207	2024- 05-15	\$2(
Apex Fire Protection, Inc.	apexfireinc@yahoo.com	Zare Babayan	Other	Other	954286	C-16	1000006088	2024- 03-16	\$3,
J B Bostick Company, Inc.	greg@jbbostick.com	James Bostick	Other	Other	341573	C-12, C- 8	100000734	2024- 09-06 09:00:21	\$5,
Empyrean Plumbing, Inc.	dave@empyreanplumbing.com	Dave Koralewski	Plumbing Contractor	SBA	879157	C-36, C- 34, C-2, B	1000001538	2024- 10-14 16:57:03	\$1(
Champion Electric Inc.	estimating@championelec.com	Patrick Howard	Electrical contractor	Other	744374	C-10, B	1000001571	2024- 03-28	\$1!
Daniel's Electrical Construction Co., Inc.	dustin@danielselectric.com	DUSTIN ISPAS	Electrical contractor	Other	467288	C-10	1000000290	2023- 12-12	\$2(
Flint Design Build LLC dba FLINT	rtognetti@flintbuilders.com	Ryan Tognetti	General Contractor	Other	1085096	A, B, C- 17	100000005	2023- 10-24	\$1!
US National Corp	maryg@usnationalcorp.com	Fred Jimenez	Other	SBA	813354	С-33, В	1000001988	2023- 10-17	\$1,
Simco Mechanical, Inc.	pq@simcomechanical.com	Alexander Harbachian	Mechanical contractor	SBA	974288	C-20	1000005424	2024- 01-02	\$3,
VSC, Inc. dba Vulcan Steel Company	dhopper@vulcansteelco.com	Vulcan Steel Company	Other	Other	663436	C-51	1000003292	2024- 01-31	\$7,
Color New Co.	colornewco@yahoo.com	Color New Co.	Other	Other	818650	С-33, В	1000001623	2023- 12-21	\$7,
JAM Corporation	larry.erbe@jamcorporation.com	Larry Erbe	Electrical contractor	SBA	791060	B, C-10, C-16, C- 7	1000005174	2024- 03-09	\$1
AVSAR Construction Development Inc.	baris@avsarcd.com	BARIS AVSAR	General Contractor	SBA	1035467	В, С-27, А	1000058080	2024- 03-21	\$2,
Russell Sigler Inc.	jmyers@siglers.com	Jeffrey Myers	Mechanical contractor	Other	960159	C-20	1000005440	2023- 12-16	\$5,
C.W. Driver	jvasquez@cwdriver.com	Jennifer Vasquez	General Contractor	Other	1009002	В	1000003790	2024- 04-24	\$2!
Econo Fence Inc.	ajohnson@econofenceinc.com	Amanda Johnson	Other	SBA	337734	С-13, В	1000001395	2025- 08-18 10:37:26	\$4,
Ironclad General Engineering Inc	accounting@ironcladgei.com	jamie chandler	General Contractor	Other	954859	A	1000001508	2024- 07-28 15:33:42	\$1

Firm name	Email	Name	Contractor type	Ownership	License no	Lic Clas	Dir Reg	Expiry date	Pe arr
Mel Smith Electric, Inc.	estimating@melsmithelectric.com	Mel Smith	General Contractor	SBA	394741	A, B, C-7, C-10, C- 12, C-21, HAZ	1000001784	2024- 03-09	\$5(
Builtall	tom@builtall.com	Tom Madrigal	General Contractor	SBA	785095	B, C-27, C-33, D- 03	1000027843	2024- 03-15	\$2,
Best Contracting Services, Inc.	estimating@bestcontracting.com	Myris Ignacio Guballa	General Contractor	Other	456263	A, B, C- 17, C-39, C-43	100000563	2024- 01-31	\$5(
Air Design Solutions	jackie@airdesign1.com	Air Design Solutions	Mechanical contractor	SBA	953818	C-20	1000004802	2024- 05-19	\$1,
AMG & Associates, Inc.	estimating@amgassociatesinc.com	Albert Giacomazzi	General Contractor	Other	881824	A, B, ASB, HAZ	1000000413	2024- 05-22	\$7!
Kemcorp Construction, Inc.	melissa@kemcorp.net	Jason Bollinger	General Contractor	Other	934522	А, В	1000002295	2024- 01-12	\$1!
Ferandell Tennis Courts	assistant@ferandelltenniscourts.com	Paul Ferandell	General Contractor	Other	603945	А, В	1000004786	2023- 11-28	\$3,
K F Y United Mechanical Contractors, Inc. dba United Mechanical Contractors	jeremy@umcontractors.com	JEREMY YABLAN	General Contractor	SBA	759496	B, C-20	1000004362	2023- 10-25	\$2(
New Dimension General Construction	kdahlberg@newdimension.biz	Kent Dahlberg	General Contractor	SBA	865303	B, C-10, C-33	1000776287	2023- 11-07	\$1,
Platinum Construction, Inc.	nwalker@platconinc.com	Natalie Walker	Other	Other	870864	B, C-9, C- 35, C-36	1000006755	2024- 02-13	\$5,
Progressive Surface Solutions LLC	info@progressivesurfacesolutions.com	Craig Maurer	Other	SBA	929883	C-15, D- 12, C-54, D-03, D- 06, D-34, D-50	1000042517	2024- 04-11	\$2!
Bravo Concrete Construction Services, Inc.	kathy@bravoconcreteshop.com	STEVE DEGENNARO	Other	Other	856049	A, B, C-8	1000001509	2024- 02-24	\$2(
Michael W. Crowder, Inc dba C & H Construction	candhconstr@aol.com	KARI CROWDER	General Contractor	Other	300253	В	1000005028	2024- 01-12	\$2,
KYA Services LLC	shane.collins@thekyagroup.com	Shane Collins	General Contractor	Other	984827	B, C-15, A, C-61, D-12	1000003379	2024- 02-07	\$2!
EIDIM Group Inc. dba EIDIM AV Technology	estimate@eidim.com	Andrew Bang	Other	SBA	824410	B, C-7, C- 10, C-33	1000010711	2024- 02-16	\$2,
Preferred Ceilings, Inc.	megan@preferredceilings.com	Rick Risser	Other	SBA	705630	A, B, C-2, C-10, D- 50	1000001964	2024- 03-22	\$1!

Firm name	Email	Name	Contractor type	Ownership	License no	Lic Clas	Dir Reg	Expiry date	Pe arr
Dulux Painting Inc	duluxpaintinginc@gmail.com	John Mantikas	Other	Other	780020	C-33	1000010729	2024- 11-14 10:37:49	\$1,
RAN Enterprises, Inc.	thierry@ranent.com	Thierry Abinader	Mechanical contractor	Other	818754	B, C-20	1000007881	2024- 02-08	\$6,
Westland Mechanical	travis@westlandmechanical.net	travis lee	Mechanical contractor	SBA	894940	C-20	1000062056	2024- 02-16	\$2(
Painting & Decor, Inc.	bidding@paintinganddecor.com	Nyle Buchner	General Contractor	Other	276640	B, C-33	1000002852	2023- 11-30	\$3,
VLA Construction Inc	vlainc@hotmail.com	Veronique Loizu	General Contractor	SBA	1040399	С-33, В	1000060242	2023- 12-01	\$2,
Maranatha Sheet Metal, Inc.	kelly@maranathasheetmetal.com	Kelly Melendes	Other	Other	915024	C-43	1000030456	2023- 12-27	\$5,
Chapman Coast Roof Co., Inc.	carmen@chapmancoastroof.com	Carmen Martinez	Other	Other	927543	C-39	1000002150	2023- 12-22	\$4,
Serenity Fire Protection	ROBERT@SERENITYFIREPROTECTION.COM	Robert Black	Other	SBA	902927	C-16	1000055751	2024- 02-17	\$1,
Scorpio Enterprises dba AireMasters Air Conditioning	shaney@airemasters-ac.com	Charles Thompson	General Contractor	Other	315631	В, С-20	1000001582	2023- 12-05	\$2
RT Contractor Corp.	rtcontractor1@gmail.com	RICHIE TRAN	General Contractor	DVBE	755720	B, C-10, C-20, C- 36, A	1000003314	2023- 12-07	\$1!
Ohno Construction Company	mail@ohnoconstruction.com	Ohno Construction Company	General Contractor	Other	833470	A, B, C- 12, C-27, D-12	1000000584	2024- 01-05	\$2!
Pro-Craft Construction, Inc.	estimating@procraftci.com	Timothy McFayden	Plumbing Contractor	Other	467234	C-36, C- 34, B, A, C-42, C- 2, C-16	1000001106	2024- 03-10	\$4(
Urban Habitat	Brett@MyUrbanHabitat.com	Brett Brennan	Other	Other	963744	A, C-27	1000003890	2024- 02-02	\$1(
RDM Electric Co., Inc.	m.deleon@rdmcompanies.com	RDM Electric Co., Inc.	Electrical contractor	Other	539194	C-10	100000776	2024- 09-07 08:26:23	\$2!
Exclusive Metal Inc	liz@exclusivemetalinc.com	Alberto Jauregui	Other	Minority Owned	1055390	C-39, C- 43	1000537179	2024- 02-09	\$2,
Advanced Cable Solutions, Inc.	bids@acsdbi.com	Jennifer Wieman	Electrical contractor	Other	930210	C-7, C- 10	1000001812	2024- 04-03	\$2(
TELENET VoIP, INC.	diane@telenetvoip.com	Diane Goodman	General Contractor	Other	647808	C-7, C- 10, C-16, D-56	1000003189	2023- 12-27	\$1(
Universal Asphalt Co. Inc.	tomhouck@universalasphalt.com	Thomas Houck	Other	Other	256383	A, C-12, C-32	1000001866	2023- 12-13	\$5,
Danny Ryan Precision Contracting, Inc. dba ADEP	dcarrillo@precision-ca.com	Debbie Carrillo	General Contractor	Minority Owned	701357	B, C-21, C-22	1000018129	2023- 12-19	\$5,

Firm name	Email	Name	Contractor type	Ownership	License no	Lic Clas	Dir Reg	Expiry date	Pei arr
Precision Contracting									
Couts Heating & Cooling, Inc.	aparamo@couts.com	Amy Wilson	Mechanical contractor	Other	375584	C-20, C- 4, C-36, C-43, B	1000001611	2024- 03-20	\$2(
TELACU Construction Management	dclem@telacu.com	TELACU Construction Management	General Contractor	Other	741851	В	1000012893	2023- 12-16	\$3(
Ryan Electric, Inc.	ryanelectricinc@verizon.net	Ryan Electric, Inc.	Electrical contractor	Other	790924	C-10	1000000794	2023- 12-28	\$ 5
2H Construction, Inc.	sean@2hconstruction.com	Sean R. Hitchcock	General Contractor	Other	741856	А, В	1000003938	2024- 05-15	\$4
ACCO Engineered Systems, Inc.	cadler@accoes.com	Cindi Adler	Mechanical contractor	Other	120696	C-20, A, B, C-4, C- 10, C-16, C-36, C- 38, C-42	100000546	2024- 06-21 11:14:43	\$1!
M. Wilson Co. Contractors, Inc.	mdarino@uia.net	M. Wilson Co. Contractors, Inc.	Electrical contractor	SBA	757834	A, B, C- 10	1000003912	2024- 05-19	\$9,
Red Hawk Services, Inc.	scott@redhawkfence.com	SCOTT MOORE	General Contractor	SBA	971584	A, B, C- 13, C-61, D-28	10000405318	2024- 01-25	\$3,
Avidex Industries, LLC	biddesk@avidex.com	Ron Ponce	Electrical contractor	Other	981651	C-7, C- 10	1000004292	2024- 02-17	\$2(
Giant Services Inc.	brian@giantpowercomm.com	Giant Services Inc.	Electrical contractor	DVBE	920295	C-10	1000004953	2024- 05-15	\$7,
NKS Mechanical Contracting, Inc.	finni@nksmechanical.com	Namir Shmara	General Contractor	Other	865725	B, C-20	1000003330	2024- 03-03	\$1;
Tri-Power Electrical Contractors, Inc	ray@tripowerelectric.com	Ray Blanchard	Electrical contractor	Other	1050901	C-10	1000064500	2024- 02-17	\$3,
Kazoni, Inc. (dba Kazoni Construction	info@kazoni-inc.com	April Kulpinski	General Contractor	Women owned & Operated Other	974982	В, А	1000002212	2024- 07-11 10:20:09	\$1!
Next Level HVAC Energy Management System	jb@nextlevelems.com	JACOB BURROLA	Other	SBA	1050564	C-20	1000366416	2024- 01-05	\$5,
Interpipe Contracting, Inc.	info@interpipecontracting.com	Interpipe Contracting, Inc.	Plumbing Contractor	SBA	578888	C-34, C- 36	1000003586	2024- 03-03	\$8,
G A Abell Inc. dba Precision Electric Company	estimating@precisionelectricco.com	Greg Abell	Electrical contractor	Other	534116	A, B, C-7, C-10, C- 46	100002037	2023- 12-22	\$8
Pathway Communications LTD	beckyt@pcomus.com	Becky Thurmon	Electrical contractor	Other	868539	C-7	1000001958	2024- 03-10	\$2
West Coast Air Conditioning Co.,	khaislip@wcac.com	West Coast Air Conditioning Co., Inc.	General Contractor	Other	262349	A, B, C-4, C-10, C- 20, C-36.	100000067	2024- 04-13	\$5(

Firm name	Email	Name	Contractor type	Ownership	License no	Lic Clas	Dir Reg	Expiry date	Pe
						C-43, C- 51, ASB			
Terra Pave, Inc.	estimating@terrapave.com	Aaron Terry	General Contractor	SBA	456836	A, C-12	100000807	2024- 04-18	\$1.
R. Jensen Co., Inc	ELLYRJC@GMAIL.COM	R. Jensen Co., Inc	General Contractor	SBA	353856	A, B, C- 10	100000522	2024- 03-20	\$4,
Audio Associates	pspencer@audioassociates.com	Pete Spencer	Electrical contractor	DVBE	728789	C-7	1000002509	2024- 03-07	\$3,
Franklin Mechanical Systems, Inc	seth@fmshvac.net	Franklin Mechanical Systems, Inc	Mechanical contractor	SBA	761887	C-20	1000002063	2024- 03-14	\$1!
Paul C Miller Construction Co., Inc.	andrea@millercon.com	Todd Miller	General Contractor	Other	933449	В	1000002747	2024- 03-30	\$ 5
Rancho Pacific Electric Construction, Inc.	avasquez@rpeinc.net	Adriana Vasquez	Electrical contractor	Other	1047107	B, C-10	1000062492	2024- 03-20	\$2(
PLYCO CORP	plyco@plycocorp.com	PLYCO CORP	General Contractor	Other	824958	B, C-8, A	1000006424	2024- 04-18	\$2!
PCN3,INC.	babghari@pcn3.com	Brian Abghari	General Contractor	Other	786518	A, B, C- 10, C-51	1000007827	2024- 02-09	\$2!
Golden Gate Steel Inc. DBA Golden Gate Construction	information.goldengate@gmail.com	Yohann Chang	General Contractor	Minority Owned	776708	B, C-8, C- 23, C-51, C-61, D- 28, D-39, C-27	1000016071	2024- 10-03 10:07:06	\$3,
Verne's Plumbing, Inc.	ceci@vernesplumbing.com	Verne's Plumbing, Inc.	Plumbing Contractor	SBA	674077	B, C-34, C-36	1000000572	2024- 01-19	\$5,
Liberty Climate Control, Inc.	sylvia@libertyclimate.com	Sylvia Duarte	Mechanical contractor	SBA	327683	B, C-20	1000003471	2024- 03-03	\$1!
ACC Contractors, Inc.	ruben@acccontractors.com	EILEEN AJAMIAN	General Contractor	Other	468940	A, B, C- 20, C-10, C-36	1000003255	2024- 04-28	\$1(
ACH Mechanical Contractors, Inc.	amandas@achmechanical.com	Amanda Sanchez	Mechanical contractor	Minority Owned	780560	C-20	1000003396	2024- 02-02	\$2(
Bowen Engineering and Environmental	office@bowendemo.com	Arline Parfitt	General Contractor	SBA	816496	A, B, C- 10, C-21, C-22, C- 50, ASB, HAZ, C- 33, C-39, D-38	100003520	2024- 04-03	\$1(
Woodcliff Corporation	christina@woodcliff.net	Woodcliff Corporation	General Contractor	Other	719883	В, А	1000003832	2024- 05-30	\$4(
Danny Letner Inc. dba Letner Roofing Company	kolson@letner.com	Kevin Fleming	Other	Other	689961	B, C-39, C-43	100002763	2024- 04-07	\$ 2
Baker Electric & Renewables LLC	prequal@baker-electric.com	Baker Electric & Renewables LLC	Electrical contractor	Other	161756	C-10, C- 46, Β, C- 7 Δ	1000000466	2024- 03-02	\$1(

Firm name	Email	Name	Contractor type	Ownership	License no	Lic Clas	Dir Reg	Expiry date	Pei arr
PMK Professional Inc.	bids@pmkpro.com	Maziyar Farhadi	Electrical contractor	SBA	959668	C-7, C- 10, B	1000004512	2024- 02-09	\$1,
JPI Development Group, Inc	estimating@jpidevelopment.com	Brad Janikowski	Plumbing Contractor	Other	778930	A, B, C-2, C-8, C- 16, C-34, C-36	100000801	2024- 05-02	\$1(
SOLPAC Construction Inc. dba Soltek Pacific Construction Company	marketing@soltekpacific.com	Kevin Cammall	General Contractor	Other	886641	А, В	100000370	2024- 03-28	\$1;
H J Mechanical	hjmechanical@yahoo.com	Houssam Jafaklou	Mechanical contractor	SBA	947208	С-20, В	1000011159	2023- 11-09	\$1,
Rivera Equipment dba Valley Industrial Mechanical	cortney@revim.co	Raymond Rivera	Plumbing Contractor	Other	1051483	C-36	1000365455	2024- 02-23	\$5,
Premier Culinary									
Solutions Inc dba Premier Prefabricated	scott@premierculinarysolutions.com	Scott Roczey	Other	SBA	1057430	D-34	1000456875	2024- 05-04	\$5,
Equipment									
Los Angeles Engineering, Inc.	joseph@laeng.net	Joseph Haygood	General Contractor	Other	591176	A, B, C- 10, C-27, D-12, HAZ	1000002848	2024- 04-13	\$3(
Century Paving Inc.	lori@paveit.com	Lori Ochoa	General Contractor	Minority Owned	311456	A, C-12, C-32, D- 12	1000002297	2024- 05-19	\$5,
Construct 1 One, Corp.	samr@construct1.com	Sam Reed	General Contractor	Other	698241	В	1000003144	2024- 05-10	\$5(
S.J. Amoroso Construction Co., LLC	marketing@sjamoroso.com	Allison Grozdanov	General Contractor	Other	331024	А, В	100000202	2024- 09-14 14:10:53	\$2(
Able Heating & Air Conditioning, Inc.	snunn@ableac.net	Able Heating & Air Conditioning, Inc.	Mechanical contractor	Minority Owned	466861	C-20, C- 43, B	1000004337	2024- 05-02	\$2(
						C-34, C-			
Continental Plumbing, Inc.	grace.monreal@continentalplumbing.com	Grace Monreal	Plumbing Contractor	Other	399073	36, HAZ, C-16, C- 4	1000000624	2024- 05-19	\$5,
								2024	
West-Tech Mechanical Inc	bids@westtechmech.com	West-Tech Mechanical Inc	Mechanical contractor	Other	597398	C-20	1000002683	2024- 08-31 09:46:59	\$1;
Risher Sutherland, Inc. dba United Contractors	jan@united-contractors.us	Risher Sutherland, Inc. dba United Contractors	Other	SBA	416125	C-43, C- 39, C-51	1000001724	2024- 08-10 10:06:20	\$4,
RND Contractors Inc	nsauter@rndcontractorsinc.com	RND Contractors Inc	Other	Women owned & Operated Other	898471	A, C-51	1000001732	2024- 07-25 11:33:30	\$1;

Firm name	Email	Name	Contractor type	Ownership	License no	Lic Clas	Dir Reg	Expiry date	Pel arr
Commercial Roofing Systems, Inc.	crs@comroofsys.com	Glenn Hiller	General Contractor	Other	591222	C-39, C- 43	1000000838	2023- 10-19	\$5,
David M. Bertino Manufacturing, Inc.	cindy@davidmbertinomanufacturing.com	Cindy Hutton	Other	Other	520857	C-6	1000006947	2024- 08-01 16:07:15	\$2,
AP Construction Group Inc. dba Air Plus	info@apconstructiongroup.com	Navid Djouzaie	General Contractor	Other	573122	B, C-20, C-4, C- 36	1000003176	2024- 09-26 09:14:52	\$2!
Archico Design Build Inc	bids@archico.com	Alan Alavi	General Contractor	Other	987122	А, В	100049561	2024- 10-31 13:43:39	\$2!
Swinerton Builders	pchoi@swinerton.com	Pauline Choi	General Contractor	Other	92	A, B, C-2	100000296	2024- 03-30	\$7!
Borbon, Inc.	arisbet@borbon.net	Arisbet Picazo	Other	Minority Owned	351557	C-33	1000002552	2023- 11-14	\$1(
Red Wave Communications & Electrical Systems, Inc.	amy@redwavecomm.com	PAUL LUKIANOV	Electrical contractor	SBA	500378	A, B, C-7, C-10	1000001102	2024- 01-04	\$5,
EKC Enterprises, Inc	greg@ekccorp.com	EKC Enterprises, Inc	Electrical contractor	Other	916095	C-10, C- 7	1000000219	2024- 11-03 13:16:30	\$1!
Tony Painting	tonyspaintingsb@yahoo.com	Ante Marijanovic	General Contractor	Other	320164	C-33, D- 38	1000001496	2023- 11-28	\$1,
SJD&B, Inc.	info@sjdandb.com	Simon Jeon	General Contractor	SBA	1001950	A, B, C- 12, C-39	1000030237	2023- 11-28	\$1(
Pacific Contractors Group, Inc.	pacificcontractorsinc@gmail.com	Setmir Qose	General Contractor	SBA	927973	B, C-33, C-35	1000002862	2023- 11-30	\$3,
Tovey/Shultz Construction, Inc.	BidDiscovery@ToveyShultz.com	BidDiscovery@toveyshultz.com	General Contractor	Other	549838	В	1000004783	2024- 06-07	\$1(
Rite-Way Roof Corporation	lisa@ritewayroofing.com	Lisa Mora	General Contractor	SBA	661941	C-39, B, C-10, C- 43	1000001946	2023- 11-23	\$3,
Apple Valley Communications Inc.	jlovato@avcsystems.com	Jay Lovato	Other	Other	542642	C-10, C- 7	1000002294	2024- 05-25	\$8
Los Angeles Air Conditioning Inc.	jasmin@laair.net	Los Angeles Air Conditioning Inc.	Mechanical contractor	Other	208872	C-20, C- 4, B	100000594	2024- 03-06	\$1!
Laser Electric, Inc.	kevinhartnett@laserelectric.com	Laser Electric, Inc.	Electrical contractor	Women owned & Operated Other	513888	C-7, C- 10	100000032	2024- 08-03 13:21:31	\$2(
Prestige Paving & Striping Company	Brian@PrestigeCompany.net	Brian Beckner	General Contractor	Other	827632	C-32, C- 12, A, B, C-8	1000015267	2024- 04-20	\$5,
Precision Air Balance Co., Inc.	kfox@precisionairbalance.com	Karen Fox	Mechanical contractor	Women owned &	633805	D-62, C- 20	100000337	2024- 04-18	\$5,

Firm name	Email	Name	Contractor type	Ownership	License no	Lic Clas	Dir Reg	Expíry date	Pei arr
				Operated Other	1			1	- preservation
Anderson Air Conditioning LP	mhaynam@amsofusa.com	Mitch Haynam	Mechanical contractor	Other	1075333	C-20, C- 10, C-38, B	1000765095	2024- 04-13	\$1(
Fischer, Inc.	beth@fischerinc.us	MIKE Fischer	Plumbing Contractor	Other	853357	A, C-36, C-16, B	100000857	2024- 04-21	\$5,
JG Tate Fire Protection Systems, Inc.	tinaellis@jgtate.com	James Tate	Plumbing Contractor	Other	800609	C-16, C- 10	1000005084	2024- 05-11	\$3,
Spec Construction Co., Inc.	info@specconstructionco.com	Chaz DeLaFosse	General Contractor	Other	419626	B, C-15, C-36, C- 10, A, C- 39, C-33, C-4, C- 20, C-17, C-8, C-9, C-35	1000007706	2024- 03-10	\$1;
Enpowered Solutions	cscamihorn@veregy.com	Cory Scamihorn	General Contractor	Other	1023083	В	1000053722	2024- 07-13 15:01:15	\$1(
Time and Alarm Systems	ProjectAdmin- TAS@sciensbuildingsolutions.com	Keith Senn	Other	Other	393251	C-7, C- 10, C-16	100000832	2024- 05-23	\$5,
K.E. Rodgers Inc.	dawnpeer@gmail.com	K.E. Rodgers Inc.	Plumbing Contractor	SBA	1000195	C-36	1000033832	2024- 08-31 11:32:16	\$4(
ABNY General Engineering Inc	samwahba@abnyinc.com	Sam Wahba	General Contractor	Other	979357	А, В	1000002354	2023- 11-04	\$5,
R.E. Schultz Construction, Inc.	nicole@reschultzconstruction.com	Nicole Roth	General Contractor	Other	1007195	A, D-34, B, D-12	1000033385	2024- 01-11	\$3,
Checkpoint Communications, Inc	bids@ccomwire.com	James Shoaff	Electrical contractor	Other	545063	C-7, C- 10	1000001532	2024- 02-14	\$ 1
Edwards Construction Group, Inc.	estimatingSD@edwardscongroup.com	Maranda Maliska	General Contractor	Other	1057451	В, А	1000459456	2024- 02-08	\$8(
MLC Constructors, Inc.	estimating@mlcconstructors.com	Karina Chavez	General Contractor	SBA	1068632	A, B, C- 10, C-20, C-36, C- 51	1000667976	2024- 02-23	\$3,
MOBILE MODULAR CONSTRUCTION INC	mobmodco@gmail.com	MITCH MARINESCU	General Contractor	Other	680893	В	1000001293	2024- 03-08	\$2,
Mac Dad Builders, Inc	team@wearemdb.com	Courtney Statham	General Contractor	Other	1054408	A	1000399000	2024- 04-14	\$5,
Asphalt, Fabric & Engineering, Inc.	lsandoval@afesports.com	Doug Coulter	General Contractor	Other	747934	A, B, D- 12, HAZ	1000004130	2024- 07-20 16:34:32	\$1(
Westco Service Company	sara@westcoservice.com	Sara Barberio Coleman	Mechanical contractor	Women owned &	670542	B, C-20, C-36	100000840	2024- 03-24	\$3,

Firm name	Email	Name	Contractor type	Ownership	License no	Lic Clas	Dir Reg	Expiry date	Pei arr
				Operated Other					20000000
Harik Construction, Inc.	lilah@harikconstruction.com	Harik Construction, Inc.	General Contractor	Other	598592	В	1000002780	2024- 03-30	\$1!
Western States Roofing, Inc.	lynne@westernstatesroofing.com	Western States Roofing, Inc.	Other	Other	993251	C-39	1000006180	2024- 04-13	\$1,
Newman Midland Corporation	estimating@newmanmidland.com	Newman Midland Corporation	General Contractor	Other	757755	В	1000004166	2024- 04-28	\$14
Class Leasing, LLC	tim@classleasing.net	Tim Nicholas	General Contractor	Other	1001535	В	1000012018	2024- 05-05	\$2!
Climatec, LLC	socalbiddesk@climatec.com	Climatec, LLC	General Contractor	Other	991066	B, C-10, C-20	1000001265	2024- 05-10	\$1(
D.F. Perez Construction, Inc.	tiffany@dfperez.com	David Perez	General Contractor	Minority Owned	387778	B, C-8	1000051924	2024- 05-10	\$1(
Norse Corporation	bmills@norseca.com	Norse Corporation	General Contractor	SBA	747555	В	1000005444	2024- 05-15	\$3,
Bogh Engineering LLC	lisa@bogh.biz	Lisa Venable	General Contractor	Other	788915	A, B, C-8, C-29, C- 50	1001091513	2024- 05-16	\$4(
Radonich Corp DBA Cal Coast Telecom	contracts@cctcom.net	Marie Pernick	Other	Other	732886	C-7	1000000317	2024- 05-19	\$8,
AM Painting Inc	amcontractorslb@gmail.com	Ante Marijanovic	General Contractor	DVBE	959118	B, C-33, D-34, D- 38	1000716047	2024- 05-31	\$5(
ExhibitOne Corporation	crowley@exhibitone.com	Chad Rowley	Other	Other	834123	C-7	1000003232	2024- 06-01	\$9,
Interior Demolition Earthwise Demo JV	MARIA@INTERIORDEMOLITION.NET	MARIA MOLINA	General Contractor	Minority Owned	1025275	B, C-12, C-21	1000047924	2024- 06-30 11:08:11	\$5,
Continental Marble and Tile Company	john@cmtc.us	John McGee	Other	SBA	394	C-54	1000002594	2024- 09-06 09:02:54	\$8,
D. Burke Mechanical Corporation	janet@dburkepipe.com	Janet Gordon	General Contractor	Women owned & Operated Other	658944	B, C-4, C- 20, C-36		2024- 09-15 09:18:46	\$1(
Allison Mechanical, Inc.	office@allison1.net	Don Allison	Mechanical contractor	SBA	679866	C-20, B, C-36, HAZ	1000002213	2024- 09-19 10:09:21	\$1!
Pacific West Industries Inc.	teresa.m@pacwestac.com	Teresa Moulton	Mechanical contractor	SBA	792079	C-10, C- 20, C-36, C-38	1000002299	2024- 10-03 10:26:14	\$1,
Stallworth construction and management Corp	tom@stallworthsafety.com	Sholandric Stallworth	General Contractor	Minority Owned	1086776	В	1000816692	2024- 10-04 10:29:54	\$1,



ARCHITECT'S PROJECT NO:

PROJECT NAME: Finley, Schmitt & Webber ES HVAC

CONTRACTOR:

DSA File No:

DSA App No:

RFI #	SCHOOL	DATE RECEIVED	QUESTION	CONTRACTOR/SUBCONTRACTOR TRADE	RESPO
1	all	9/21/23	Can the owner provide the current list of existing prequalified firms, so we know which firms to engage in the project?	2H Construction	See forthcoming Addendum 1
2	all	9/21/23	Bid Form section 3. refers to Hayden and Meairs ES. Please confirm is this an error.	2H Construction	Confirmed. See forthcoming Adde
3	all	9/21/23	Addendum #1 is marked as DRAFT. Is Addendum #1_DRAFT a bid document?	2H Construction	See forthcoming Addendum 1 for o
4	all	9/27/23	Please provide specification to HVAC Controls	2H Construction	See forthcoming Addendum 1
5	Webber	9/27/23	Specification 23 00 00 and 23 00 01 for Webber Elementary School are noted as Victoria Elementary School Mountain View School District. Please confirm there specification sections are for Webber Elementary	2H Construction	See forthcoming Addendum 1 for r
6	Schmitt	9/27/23	Please provide SCE plans for Schmitt Elementary	2H Construction	Contractor to Coordinate with Distr
7	Webber	10/3/23	 There is only (1) detail, and it is on 3/E6.01 of the Webber Plans. It shows no concrete encasement with a depth coverage of 24" for both Power and FA. The specs for all (3) schools call for concrete encasement with 36" of coverage. 1. Is concrete encasement required for ALL new UG Conduits. (Both Power and FA) 2. Please provide depth coverage for both Power and FA Conduits. 3. Please provide UGPB sizes/specs for Power. FA is already provided. 	2H Construction	 Yes, per specifications all under encasement. See snippet for depth requireme 17"x30"xDepth req'd in-ground H-20 traffic rated pullbox. Contract size meets NEC requirements due limited to any routing deviations fro
8	all	10/3/23	G-1 it calls out lo-e tinted tempered glass, but it does not mention which low-e we need to use.	2H Construction	Confirmed Solarban 70
9	all	10/4/23	Can you specify which low-e glazing we need to use?	Rainbow Glazing	Confirmed Solarban 70
10	Finley	10/4/23	There are two different W5 in Finley drawing on 17,23/A6.02 & 12/A9.01		CHANGE WINDOW FRAMING EL 12/A9.01 CHANGE W5 TO W6 IN 2/A1.01 - CHANGE W5 TO W6 IN BLDG CH ADD WINDOW FRAMING ELEVA Addendum 1 revised sheet A9.01
11	Schmitt	10/4/23	Door #K2A-1 indicates the door is single, but the frame is double (Type D)	Rainbow Glazing	THERE IS NO K2A-1. K2-1 IS SIN K2-2 IS A PAIR TYPE D PER DOO
12	Schmitt	10/4/23	We've found W10 on 4/A6.01, but W10 is missing on window schedule @ schmitt A9.01	Rainbow Glazing	Added window elevation W10. See A9.01
13	Webber	10/4/23	The glazing specs state that G2 is 1/4" tinted tempered glass, but the drawing (webber 3 & 13/A9.01) shows G-2 as 1" insulated frosted glass.	Rainbow Glazing	See revised spec section in Adder





LEVATION W5 TO W6 IN

- FLOOR PLAN BLDG CK K EAST ELEVATION 11/A6.01 ATION - W5 IN A9.01. See
- NGLE TYPE A OR SCHEDULE
- ee Addendum 1 revised sheet
- ndum 1.

RFI #	SCHOOL	DATE RECEIVED	QUESTION	CONTRACTOR/SUBCONTRACTOR TRADE	RESPC
14	Schmitt	10/5/23	The Roof drawings for Schmitt indicate to provide 1'C 3#10 + 1#10 for the A/C units. If you go to the panel schedules drawing several of the schedule indicates some of the units should have #8 wire to them. Also, the roof drawing indicates 30-amp disconnects yet, the panel schedules indicate some of the units to be fed from a 40-amp circuit breaker.	2H Construction	30A - 1"C-3#10 + 1#10 GRD. 40A - 1"C-3#8 + 1#8 GRD. 15A & 20A - 1"C-3#12 + 1#12 GRI Updated plans with keynote tags a
15	Finley	10/5/23	The Roof drawings for Finley indicate to provide 1'C 3#10 + 1#10 for the A/C units. If you go to the panel schedules drawing several of the schedule indicates some of the units should have #8 wire to them. Also, the roof drawing indicates 30-amp disconnects yet, the panel schedules indicate some of the units to be fed from a 40-amp circuit breaker.	2H Construction	30A - 1"C-3#10 + 1#10 GRD. 40A - 1"C-3#8 + 1#8 GRD. 15A & 20A - 1"C-3#12 + 1#12 GRI Updated plans with keynote tags a
16	Finley	10/5/23	All the electrical panels on Finley are shown on the exterior of the buildings. However, the single line and panel schedules do not indicate the panels are Nema3r.	2H Construction	All panels will need to Nema 3R, S note for Nema 3R on all new panel all changes.
17	Finley	10/5/23	Finley Drawing E1.01 indicates new Panel MC1 on the exterior of the Administration Building. This panel is not shown on the single line diagram, there is no panel schedule provided and the site drawing does not show a feeder for this panel.	2H Construction	Panelboards were mislabeled on S the SLD to match the site plan. Se
18	Schmitt	10/5/23	Schmitt Drawing E5.1 indicates to re-feed the existing 400-amp distribution boards. There is no location shown for these existing distribution boards.	2H Construction	Existing 400A switchboards are loo MPR. Updated plans with locations are fo
19	Schmitt	10/5/23	Schmitt Drawing E5.1 , the feeder for Panels MA1 and MB1 are not spcified. What are we to figure?	2H Construction	Panels MA1 and MB1 are feed-through the second seco
20	Schmitt	10/5/23	Schmitt Drawing E1.0 indicates feeder routing for the new panel boards. Drawing E2.1 indicates Panel MA and MB to be located in the electrical room in the middle of building. The site drawing indicates the panels to be located on the corners.	2H Construction	Panels are located in the electrical Background textwas not showing t the building. Provide pullbox direct building. Refer to Addendum #1 for and approx_locations
21	Schmitt/Finley	10/5/23	The Power Drawings for Finley and Schmitt do not show circuiting for the ceiling exhuast fans.	2H Construction	Exhaust fans shall require 120V cil addendum #1 for exact circuit/s.
22	Finley	10/3/23	Sheet FA1.0 shows (2) locations for "future connections". Please confirm we are to install UG infrastructure ONLY at these (2) locations	2H Construction	Confirmed. Only at those indicated
23	Schmitt	10/3/23	Sheet FA1.00 Note 8 calls for (n) UG conduit system but does not specify conduit size and quantity, Please provide.	2H Construction	Revise Note #8 to read NEW UND SYSTEM. ROUTE ALL NEW FIRI UNDERGROUND CONDUIT SYS ⁻ BUILDING. PROVIDE ONE (1) 2" UNDERGROUND CONDUIT (FIRE SCHEDULE 40 AT 24" BELOW G

D.

re found on Addendum #1.

D.

re found on Addendum #1.

SLD has been updated with a elboards. See addendum #1 for

SLD. Tags have been updated on ee addendum #1 for all changes.

cated in the electrical room in the

ound on Addendum #1.

ru. Match upstream wire sizing. nd on Addendum #1.

I room, middle of the building. the stub up toward the center of tly outside from the center of the or sizing

rcuit per note. Refer to

l locations.

DERGROUND CONDUIT RE ALARM WIRING IN NEW RTEM FROM BUILDING TO

RE ALARM DEDICATED), PVC

SECTION 08 80 00

GLAZING

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. Tempered glass.
 - 2. Reflective glass.
 - 3. Glazing sealants.
 - 4. Fire rated glass and sealants
 - 5. Accessories necessary for a complete installation.

B. Related Sections:

- 1. Section 08 11 13, Hollow Metal Doors and Frames.
- 2. Section 08 14 16, Flush Wood Doors.
- 3. Section 08 51 00, Aluminum Windows.
- 4. Section 08 41 13, Aluminum-Framed Entrances and Storefronts.

1.2 **DEFINITIONS**

- A. Glass Thickness: Indicated by thickness designations in millimeters according to ASTM C 1036.
- B. Interspace: Space between lites of an insulating lass unit.

1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design glass panels including comprehensive engineering analysis by a qualified professional engineer lawfully licensed in the State of California, using performance requirements and design criteria indicated.
- B. Installed Glazing: Design glazing systems to withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- C. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the CBC and ASTM E 1300.
 - 1. Design Wind Pressures: Indicated on Drawings.
 - 2. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.
 - a. Wind Design Data: As indicated on Drawings.
 - b. Basic Wind Speed: 110 mph (49 m/s). Or as indicated on structural drawings.

- c. Importance Factor: 1.0.
- 3. Exposure Category: C.
- 4. Design Snow Loads: Indicated on Drawings.
- 5. Thickness of Patterned Glass: Base design of patterned glass on thickness at thinnest part of the glass.
- Probability of Breakage for Sloped Glazing: For glass surfaces sloped more than 15 degrees from vertical, design glass for a probability of breakage not greater than 0.001.
- 7. Maximum Lateral Deflection: For glass supported on all four edges, the center of glass deflection limit at design wind pressure shall be not more than 1/50 times the short side length or 1 inch (25 mm), whichever is less.
- D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
 - 1. For monolithic glass lites, properties are based on units with lites 6 mm thick.
 - 2. For laminated glass lites, properties are based on products of construction indicated.
 - 3. For insulating glass units, properties are based on units of thickness indicated for overall unit and for each lite.
 - 4. U-Factors: Center of glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg. F (W/sq. m x K).
 - 5. Solar Heat Gain Coefficient and Visible Transmittance: Center of glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
 - 6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

1.4 SUBMITTALS

- A. Product Data: Technical data for each type of product including recommended installation and cleaning procedures.
- B. Glass Samples: For each type of glass required. Prepare samples from same material to be used for Work.
- C. Glazing Schedule: List glass types and thickness for each size opening and location. Use same designations indicated here-in and on Drawings.
- D. Delegated Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- E. Product Certificates: Submit glass product certificates required by Code.
 - 1. Glass Manufacturer Certificate: The glass manufacturer shall submit a letter certifying it has reviewed the glazing details proposed for the project, including the use of gaskets and sealants, and that each product furnished is recommended for the application shown and compliance with the Code.
- F. Thermal Stress and Wind Load Analyses: Submit the following from the glass manufacturer:
 - 1. Thermal stress analysis for each exterior glass unit type, each building elevation. The analysis shall clearly indicate the expected service temperature ranges and the effects of partial and full shading on the glass.
 - a. Attach to the thermal stress analysis a statement from the glass manufacturer that based upon this analysis that the resulting thermal stresses will not reduce the

specified statistical probability of breakage.

- 2. Wind load analysis for each glass unit type, each building elevation. The analysis shall indicate the statistical probability of breakage at the design wind pressure does not exceed the specified statistical probability of breakage.
- G. Product Test Reports: Submit test reports for insulating glass and glazing sealants, for tests performed by a qualified testing agency.
 - 1. Glazing Sealants: Provide test reports based on testing current sealant formulations within previous 36 month period.
 - 2. Glazing Sealants: Preconstruction adhesion and compatibility test report.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Building Code: Comply with applicable requirements for glazing in CBC 2019 California Building Code (CCR Title 24, Part 2, as adopted and amended by DSA).
 - 2. Energy Code: Comply with applicable requirements of glazing in the 2019 California Green Building Standards Code California Code of Regulations, Title 24, Part 11.
 - 3. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
 - a. As a minimum provide Category II materials complying with testing requirements in 16 CFR 1201 (Consumer Product Safety Commission *Safety Standard for Architectural Glazing Materials*, published in the Code of Federal Regulations) and ANSI Z97.1.
 - b. Permanently mark safety glass with certification label of Safety Glazing Certification Council.
 - 4. Insulating Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
 - 5. Glazing Publications: Comply with published recommendations of glass product organizations.
 - a. GANA: Glazing Manual.
 - b. IGMA: SIGMA TM-3000 Vertical Glazing Guidelines.
 - c. GANA: Laminated Glazing Reference Manual.
 - d. AAMA: AAMA GDSG-1 Glass Design for Sloped Glazing.
 - e. AAMA: TIR A7 Sloped Glazing Guidelines.
 - f. IGMA for Sloped Glazing: IGMA TB-3001 Guidelines for Sloped Glazing.
 - g. IGMA for Insulating Glass: SIGMA TM-3000 North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use.
 - 6. Fire Rated Door Assemblies: Assemblies complying with NFPA 80 listed and labeled by UL for fire ratings indicated, based on testing according to NFPA 252.
 - 7. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.
 - a. Minimum Glass Thickness for Exterior Lites: 1/4 inch (6 mm).
 - b. Thickness of Tinted Glass: Provide same thickness for each tint color indicated.
 - 8. Strength: Where annealed float glass is indicated, provide annealed float glass, heat strengthened float glass, or fully tempered float glass necessary to comply with performance requirements.
 - a. Where heat strengthened float glass is indicated, provide heat strengthened float glass or fully tempered float glass necessary to comply with performance requirements.
 - b. Where fully tempered float glass is indicated, provide fully tempered float glass.
- B. Installer Qualifications, Glazer: Experience entity having minimum 5 years documented experience and who employs glass installers certified under the National Glass

Association's Certified Glass Installer Program.

- C. Installer Qualifications, Decorative Film: Experience entity having minimum 5 years documented experience in the installation of glass films.
- D. Source Limitations for Glass and Glass Accessories: Obtain each type of glass and glass accessories from a single source.
- E. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
- F. Pre-installation Conference: Conduct conference at site.
- G. Fire Protective Rated Glass: Each lite shall bear permanent, non-removable label of UL certifying it for use in tested and rated fire protective assemblies.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by manufacturer.
- D. Exercise exceptional care to prevent edge damage to glass, and damage/deterioration to coating on glass.
- E. Comply with insulating glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 - 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 degrees F (4.4 degrees C).
- B. Field Measurements: Verify actual dimensions of openings and construction contiguous with decorative glass by field measurements before fabrication.

1.8 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.9 WARRANTY

A. Coated Glass Products: Written warranty signed by manufacturer in which glass manufacturer agrees to replace coated glass units that deteriorate within specified warranty

period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

- 1. Warranty Period: Ten (10) years from date of Substantial Completion.
- B. Insulating Glass: Written warranty signed by manufacturer in which manufacturer agrees to replace insulating glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
 - 1. Warranty Period: Ten (10) years from date of Substantial Completion.
- C. Glass Film: Written warranty signed by glass film manufacturer and installer in which manufacturer and installer agree to replace glass film that crack, peel, delaminate, discolor, change appearance, or failure to meet solar criteria within specified warranty period.
 1. Warranty Period: Five (5) years from date of Substantial Completion.
- PART 2 PRODUCTS

2.1 MATERIALS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Glass:
 - a. Cardinal Glass Industries.
 - b. AGC Glass Company North America, Inc.
 - c. Cardinal Glass Industries.
 - d. Guardian Industries Corp.; SunGuard.
 - e. Oldcastle Building Envelope.
 - f. Pilkington North America.
 - g. Vitro Architectural Glass.
 - h. Vetrotech Saint-Gobain.
 - 2. Glass Film:
 - a. 3M Construction Markets Division. http://www.3m.com
 - b. Bekaert Specialty Films. http://www.solargard.com
 - c. Madico. http://www.madico.com
- B. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-Q3.
- C. Ultra-clear Float Glass: ASTM C 1036, Type I, Class I (clear), Quality-Q3; and with visible light transmission of not less than 91 percent and solar heat gain coefficient of not less than 0.87.
- D. Tinted Annealed Float Glass: ASTM C 1036, Type I, Class 2 (tinted), Quality-Q3.
- E. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
 - 1. Fabrication Process: By horizontal (roller hearth) process with roll wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- F. Laminated Float Glass: ASTM 1036 / ASTM C1172 / ASTM C1376, Kind LT (fully tempered and bonded by an interlayer), Condition A (uncoated) unless otherwise indicated, Class 1

(clear) and/or Class 2 (tinted) as indicated, Quality-Q3.

- 1. Fabrication Process: By horizontal (roller hearth) process with roll wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- G. Pyrolytic Coated, Low Maintenance Glass: Clear float glass with a coating on first surface having both photocatalytic and hydrophilic properties that act to loosen dirt and to cause water to sheet evenly over the glass instead of beading.
- H. Ceramic Coated Vision Glass: ASTM C 1048, Condition C, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3; and complying with Specification No. 95-1-31 in GANA *Engineering Standards Manual.*
- I. Reflective Coated Vision Glass: ASTM C 1376.
- J. Ceramic Coating Color: Selected by Architect from manufacturer's full range.
- K. Adhered Backing: Adhered scrim backing to ceramic coated surface; provide backed units identical to materials which, while possibly developing cracks and fissures, show no shear nor develop any openings large enough for the unobstructed penetration of 3 inch diameter sphere when tested by approved independent testing laboratory:
 - 1. Mount test specimens consisting of 3 glass assemblies, 34" x 76" (plus zero or minus 3/16 inch), for testing as specified in ANSI Z-97.1.
 - 2. Expose specimens to 100 cycles of the following conditions:
 - a. 1 hour at 0 degrees F, ambient humidity.
 - b. 3 hours increase from 0 degrees F to 140 degrees F, 95 to 100 percent relative humidity.
 - c. 1 hour at 140 degrees F, 95 to 100 percent relative humidity.
 - d. 3 hours decrease from 140 degrees F to 0 degrees F, ambient humidity.
 - 3. Break glass by spring-loaded prick punch at midpoint of either vertical edge.
 - 4. After breaking glass, subject it to pressure of 4 lbs. per sq. ft. for 5 minutes to simulate wind load.
 - 5. Inorganic Opacifier: Provide polyethylene opacifier where no insulation and other backing material is applied directly to spandrel glass. Use polyester where direct attachment does occur.
 - 6. Fallout Resistance: Provide spandrel units identical to those passing fallout resistance test for spandrel glass specified in ASTM C 1048.

2.2 FIRE RATED GLAZING

- A. Manufacturer: FireLite® as manufactured by Nippon Electric Glass Company, Ltd., and distributed by Technical Glass Products, 8107 Bracken Place SE, Snoqualmie, WA 98065 phone (800.426.0279) fax (425.396.8300) e-mail <u>sales@fireglass.com</u>, web site <u>http://www.fireglass.com</u>
- B. Passes positive pressure test standards UL 10C.
- C. Labeling: Permanently label each piece of FireLite® with the FireLite® logo, UL logo and fire rating in sizes up to 3,325 sq. in., and with the FireLite® label only for sizes that exceed the listing (as approved by the local authority having jurisdiction).
- D. Fire Rating: Fire rating classified and labeled by UL for fire rating scheduled at opening locations on drawings, when tested in accordance with ASTM E2010-01, NFPA 257, UL 9 and UL 10B.

E. Substitutions: No substitutions permitted.

2.3 INSULATING GLASS

- A. Insulating Glass Units: Factory assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.
- B. Sealing System: Dual seal, with polyisobutylene and silicone primary and secondary sealants.
 - 1. Spacer: Aluminum with black, color anodic finish. Thermally broken aluminum.
 - a. Manufacturers: Subject to compliance with requirements, provide products by Technoform Glass Insulation NA, Inc.
 - b. Desiccant: Molecular sieve or silica gel, or a blend of both.
- C. Performance Properties:
 - 1. Basis of Design Product: SOLARBAN 70 BRONZE.
 - 2. Overall Unit Thickness: 1 inch (25 mm).
 - 3. Minimum Thickness of Each Glass Lite: 1/4 inch (6 mm).
 - 4. Outdoor Lite: Fully tempered float glass.
 - 5. Interspace Content: Air.
 - 6. Indoor Lite: Fully tempered float glass.
 - 7. Safety glazing required.

2.4 GLASS FILM

- A. Performance Requirements:
 - 1. Scratch resistant coating that, after fully cured, facilitates cleaning without damaging or scratching film.
 - 2. Optical Distortion: When viewed from a distance of 10 feet at angles up to 45 degrees from either side of the glass, there is no discernable distortion.
 - 3. Edges: Seal edges except when the film is applied with a lacquer that prevents moisture or free water from penetrating between the film and the glass.
- B. Coating: Provide coating with uniform finish, without noticeable pin holes, streaks, thin spots, scratches, or banding.
 - 1. Light Transmission:
 - a. Maximum Variation across Width and Length: Not to exceed 1 percent.
 - b. Variation in Transmission across Width and Length: Not to exceed 2 percent.
- C. Rate of Change of Total Transmission across Width and Length: Not to exceed 1 percent in 4 inches.

2.5 GLAZING ACCESSORIES

- A. Compatibility: Provide glazing sealants compatible with one another and with other materials in contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of service and application, demonstrated by sealant manufacturer based on testing and field experience.
- B. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
- C. Colors of Exposed Glazing Sealants: Selected by Architect.

- D. Glazing Sealant: Neutral curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Dow Corning Corporation.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.
 - c. May National Associates, Inc.; a subsidiary of Sika Corporation.
 - d. Pecora Corporation.
 - e. Sika Corporation.
- E. Back Bedding Mastic Glazing Tapes: Preformed, butyl based, 100 percent solids elastomeric tape; non-staining and non-migrating in contact with nonporous surfaces; with or without spacer rod recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
 - 1. AAMA 804.3 tape, where indicated.
 - 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 - 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- F. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
 - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
 - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.
- G. Miscellaneous Glazing Accessories: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with proven record of compatibility with surfaces contacted in installation.
 - 1. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
 - 2. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
 - 3. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
 - 4. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
 - 5. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.
 - 6. Perimeter Insulation for Fire Resistive Glazing: Product approved by testing agency listed and labeled fire resistant glazing product with which it is used for application and fire protection rating indicated.

2.6 GLAZING COMPOUND FOR FIRE-RATED GLAZING MATERIALS (G5.1)

- A. Glazing Tape: Closed cell polyvinyl chloride (PVC) foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent. Glass panels that exceed 1,393 sq. inches for 90-minute ratings must be glazed with fire-rated glazing tape supplied by manufacturer.
- B. Glazing Compound: DAP 33 putty.

- C. [Silicone Sealant: One-part neutral curing silicone, medium modulus sealant, Type S; Grade NS; Class 25 with additional movement capability of 50 percent in both extension and compression (total 100 percent); Use (Exposure) NT; Uses (Substrates) G, A, and O as applicable. Available Products:
 - 1. Dow Corning 795 Dow Corning Corp.
 - 2. Silglaze-II 2800 General Electric Co.
 - 3. Spectrem 2 Tremco Inc.
- D. Setting Blocks: Neoprene, EPDM, or silicone; tested for compatibility with glazing compound; of 70 to 90 Shore A hardness.

2.7 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
 - 1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
 - a. Temperature Change: 120 degrees F (67 degrees C), ambient; 180 degrees F (100 degrees C), material surfaces.
 - 2. Edge and Surface Conditions: Comply with the recommendations of AAMA *Structural Properties of Glass* for clean cut edges, except comply with manufacturer's recommendations.
 - 3. Exposed Glass Edges and Surface Condition: Finish edges flat with an arrissed edge profile (small bevel of uniform width not exceeding 1.5 mm at an angle of approximately 45 degrees to the surface of the glass) with polished (surface is reflective in appearance similar to the major surface of the glass) surface.
- B. Cutting: Wheel cut or sawed edges and seamed at manufacturer's option. For site cut glass, provide glass 2 inches (50.8 mm) larger than required in both dimensions to facilitate cutting of clean cut edges without the necessity of seaming or nipping. Do not cut, seam, nip or abrade heat treated glass.
- C. Butt Glazing: Clean cut or flat grind vertical edges of butt glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
 - 1. Edges: Grind smooth and polish exposed glass edges and corners.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep systems.
 - 3. Minimum required face and edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation after correcting unsatisfactory conditions.

3.2 PREPARATION

A. Clean glazing channels and framing members receiving glass immediately before glazing.

Remove coatings not firmly bonded to substrates.

- 1. Comply with manufacturer instructions for wiping of surfaces immediately before application of primers.
- 2. Wipe metal surfaces with IPA (isopropyl alcohol) unless otherwise required by compatibility and adhesion testing results.
- B. Inspect each piece of glass immediately before installation. Do not install pieces improperly sized or with damaged edges, scratches, abrasion, or evidence damage. Remove labels from glass immediately after installation.
- C. Examine glazing units to locate exterior and interior surfaces. Label or mark units so exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.
- D. Seal vent (breather or capillary) tubes in insulating glass units in accordance with insulating glass manufacturer written recommendations.
- E. Glass Film Preparation:
 - 1. Remove particulate matter on the glass surface using a scraping blade.
 - 2. Place an absorbent towel on window sill or sash to absorb moisture generated by the film application.

3.3 GLAZING

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8 inch (3 mm) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- J. Where wedge shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
 - 1. Square cut wedge shaped gaskets at corners and install gaskets as recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.
- K. Tape Glazing: Position tapes on fixed stops so that, when compressed by glass, the exposed edges are flush with or protrude slightly above sightline of stops.
 - 1. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make tapes fit opening.
 - 2. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
 - 3. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
 - 4. Do not remove release paper from tape until right before each glazing unit is installed.
 - 5. Apply heel bead of elastomeric sealant.
 - 6. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
 - 7. Apply cap bead of elastomeric sealant over exposed edge of tape.
- L. Gasket Glazing (Dry): Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
 - 1. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
 - 2. Installation with Drive in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
 - 3. Installation with Pressure Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
 - 4. Install gaskets to protrude past face of glazing stops.
- M. Sealant Glazing (Wet): Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
 - 1. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
 - 2. Tool exposed surfaces of sealants to provide a substantial wash away from glass.
- N. Erection Tolerances:
 - 1. Maximum Deviation from Vertical: 1/8 inch in any story and 1/4 inch in any 45 foot run.

- 2. Maximum Deviation from Horizontal: 1/8 inch in any 30 foot run.
- 3. Maximum Deviation from True Alignment: 1/32 inch for any two (2) abutting units. Allow no edge projections.
- 4. Maximum Joint Gap: 1/32 inch.

3.4 CLEANING AND PROTECTION

- A. Immediately after installation remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If contaminating substances come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

PART 4 SCHEDULE

4.1 GLAZING SCHEDULE

- A. **G-1 Insulated Glass:** 1 inch Glass Unit: 1/4" Bronze Tempered, 1/2" Black Spacer, 1/4" Solarban 70 #3 Surface Tempered.
- B. **G-2 Tinted Tempered Glass:** 1 inch Glass Unit: Solarban 70 on Solarbronze 6mm (2), Air 1/2" (12.7mm), 100% Pavia Acid Etch on 6mm clear.
- C. G-3 Clear Tempered Glass: 1/4 inch (6 mm) clear tempered float glass.
- D. G-4 Annealed Float Glass: *Not Used.*
- E. G-5 20 min. Fire Rated Glass: *Not Used*
- F. G-5.1 90 min. Fire Rated Glass: 3/16" inch (5 mm) ceramic, premium clear fire rated glass; 90 minute UL labeled No. R13377. All test performed in accordance with UL 9, UL 10C, NFPA 80, NFPA 257.
- G. G-6 Acoustic Glazing: Not Used
- H. G-7 Laminated Glass: Not Used
- I. G-10 Insulated Spandrel Glass: Not Used

END OF SECTION 08 80 00
SECTION 10 28 13 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes: Requirements including but not limited to:
 - 1. Public use washroom accessories.
 - 2. Public use shower room accessories.
 - 3. Private use bathroom accessories.
 - 4. Electric hand dryers.
 - 5. Under-lavatory guards.
 - 6. Custodial accessories.
 - 7. Accessories necessary for a complete installation.

1.3 SUBMITTALS

- A. Product Data: Technical Data including construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 1. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
 - 2. Include electrical characteristics.
- B. Samples: Full size, for each exposed product and for each finish specified.
 - 1. Approved full size Samples will be returned and may be used in the Work.
- C. Product Schedule: Show types, quantities, sizes, and installation locations by room of each accessory required. Identify locations using room designations indicated.
- D. Maintenance Data: Submit for inclusion in maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Accessibility Requirements: Comply with applicable requirements.
 - 1. Americans with Disabilities Act of 1990, as amended.
 - a) ADA Title II Regulations & the 2010 ADA Standards for Accessible Design.
 - 2. CBC 2019 California Building Code (CCR Title 24, Part 2, as adopted and amended by DSA).
 - a) CBC Chapter 11B, Access to Public Buildings, Public Accommodations, Commercial Buildings and Public Housing.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Source Limitations: Obtain products from single source from single manufacturer.

1.5 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.6 WARRANTY

- A. Mirrors: Written warranty signed by manufacturer in which manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, visible silver spoilage defects.
 - 2. Warranty Period: 15 years from date of Substantial Completion.
- B. Electric Hand Dryers: Written warranty signed by manufacturer in which manufacturer agrees to repair or replace hand dryers that fail within specified warranty period.
 - 1. Failures include, motors and/or sensors which fail to activate when properly energized.
 - 2. Warranty Period: 5 years from date of substantial completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Manufacturers: Toilet accessories schedule is based on Bobrick Washroom Equipment. Subject to compliance with requirements, provide products by one of the following:
 - 1. Bobrick Washroom Equipment, Inc.
 - 2. Bradley Corporation.
 - 3. Or approved equal.
- B. Stainless Steel: ASTM A 666, Type 304, 0.031-inch (0.8-mm) minimum nominal thickness unless otherwise indicated.
- C. Brass: ASTM B 19, flat products; ASTM B 16/B 16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.
- D. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.036-inch (0.9mm) minimum nominal thickness.
- E. Galvanized Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) hot dip zinc coating.
- F. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot dip galvanized after fabrication.
- G. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- H. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear glass mirrors, nominal 6.0 mm thick.

2.2 COMPONENTS

- A. Under-lavatory Guard: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with piping and/or burns from piping; allow service access without removing coverings.
 1. Product: Truebro LavShield Protective Lavatory Enclosure
 - TOILET ACCESSORIES 10 28 13 - 2

- 2. Material and Finish: Antimicrobial, molded plastic, white.
- 3. Provide at all lavatories
- B. Accessible Toilet Compartments:
 - Wheelchair accessible compartment shall comply with CBC Section 11B-604.8.1.
 - Toe clearance for at least one side partition of a wheelchair accessible compartment shall comply with CBC Section and Figure 11B-604.8.1.4. Toe clearance shall be 9" high minimum above the floor and 6" deep minimum beyond the compartment side face of the partition, exclusive of partition support members, It shall be 12" high minimum above the finish floor for children's use. Partition components at toe clearances shall be smooth without sharp edges or abrasive surfaces. Toe clearance at the side partition is not required in a compartment greater than 66" wide.
 - Ambulatory accessible compartments shall be provided where there are six or more toilet compartments, or where the combination of urinals and water closets total six or more fixtures. Such compartments shall be provided in the same quantity as wheelchair accessible compartments per CBC Section 11B-213.3.1 and shall comply with CBC Section 11B-213.3.1 and shall comply with CBC Section 11B-604.8.2.
 - Door and door hardware for accessible compartments shall be self-closing and shall comply with CBC Section 11B-404 except that if the approach is to the latch side of an ambulatory compartment door, clearance between the door side of the compartment and any obstruction shall be 44" minimum. CBC Figure 11B-604.8.2.
 - A door pull complying with CBC Section 11B-404.2.7 shall be placed on both sides of the accessible compartment door near the latch.
 - Ambulatory Accessible Toilet Compartment doors shall not swing into the clear floor space or clearance required for any fixture or into the minimum required compartment area. CBC Section 11B-604.8.2.2.
 - Elements of Sanitary facilities shall be mounted at locations in compliance with CBC Sections 11B-602 through 11B-612.
 - Grab bars in toilet facilities and bathing facilities shall comply with CBC Section 11B-609. Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges. The space around the grab bars shall be as follow:
 - \circ 1-1/2" between the grab bar and the wall.
 - 1-1/2" minimum between the grab bar and projecting objects below and at the ends.
 - 12" minimum between the grab bar and projecting objects above.

2.3 FABRICATION

A. Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items. Remove temporary labels and protective coatings. Clean and polish exposed surfaces according to manufacturer's written recommendations.

PART 4 - SCHEDULE

4.1 ACCESSORY SCHEDULE (IDENTIFIED IN KEYNOTES, SEE ENLARGED PLAN, WHERE USED)

- A. TA-1 Soap Dispensers (OFCI):
 - 1. Mounting: Surface.
 - 2. Model No.: DEB ProLine #98123.
 - 3. Locations: Refer to drawings.
- B. TA-2 Mirrors:
 - 1. Mounting: Surface.
 - 2. Model No.: B-290 at staff toilet rooms; B-1556 at student toilet rooms.
 - 3. Size: 24 inches by 36 inches (600 mm by 900 mm), unless shown otherwise.
 - 4. Locations: Refer to drawings.
- C. TA-3 Toilet Paper Dispensers (At Typical Non-accessible Toilet Stalls) (OFCI):
 - 1. Mounting: Surface.
 - 2. Manufacturer: GP Pro.
 - 3. Model No.: SofPull 56501.
 - 4. Locations: Non-accessible water closets and toilet stalls.
- D. TA-4 Paper Towel Dispensers: (Low Profile)
 - 1. Mounting: Surface (Less than 4" projection)
 - 2. Model No.: B-262.
 - 3. Locations: Staff toilet rooms.
- E. TA-5 Grab Bars: At typical accessible toilet stalls
 - 1. Size/Finish: 36" & 42" x 1-1/2 inch diameter satin stainless steel
 - 2. Clearance: 1-1/2 inch between rail and wall.
 - 3. Model No.: B-6806-42 & B-6806-36
 - 4. Mounting: Attach with concealed mounting kit. Mount parallel to floor.
 - 5. Location: Semi-ambulatory toilet stalls.

Ι.

- TA-6 Sanitary Napkin Dispensers: F.
 - Mounting: Semi-Recessed. 1.
 - Model No.: B-3706. 2.
 - 3. Operation: Single coin / Double coin - (25/50 cents).
 - Capacity: 20 Napkins/ 30 Tampons. 4.
 - Locations: Indicated on Drawings. 5.
- G. TA-7 - Sanitary Napkin Disposal:
 - 1. Mounting: Surface.
 - 2. Model No.: Waxie #820750.
 - 3. Locations: Women's non-accessible toilet stalls.
- Η. TA-8 Mop and Broom Holder:
 - 1. Mounting: Surface.
 - 2. Model No.: B-239 x 34.
 - Capacity: Four hooks, three mop holders. 3.
 - 4. Locations: Mop sink at each custodial rooms.
 - TA-9 Grab Bars: (At Accessible Shower)
 - 1. Mounting: Surface.
 - 2. Model: B-6861 modified (24 x 16).
 - 3. Locations: Accessible shower stalls.
- J. TA-10 - Folding Benches: Adult Height:
 - 1. Mounting: Surface, reversible.
 - 2. Models: B-5181.
 - Locations: Accessible shower stalls. 3.
- Κ. TA-11 - Clothes Hook:
 - 1. Mounting: Surface.
 - 2. Model No.: B-6717.
 - 3. Locations: All shower locations.
 - 4. Toilet and Shower Partitions: If toilet and shower partitions are utilized, hooks are to be provided by the partition manufacturer(s) as part of their hardware package.
- L. TA-12 - Shower Curtains, Rods and Hooks:
 - 1. Rods: B-047 (36 inches or as indicated).
 - Curtains: B-204-2 (42 inches x 72 inches or as required). 2.
 - Hooks: B-204-1. 3.
 - 4. Mounting/Locations: Accessible shower stalls.
- Μ. TA-13 - Electric Hand Drvers:

 - Mounting: Semi-recessed, maximum 3-9/16 inch recess.
 Model No.: World Dryer, Slim Dri #L-974 (Optional: XLER) Model No.: World Dryer, Slim Dri #L-974 (Optional: XLERATOReco Hand Dryer).
 - 3. Voltage: 120 volt, single phase.
 - 4. Set "Heating Control" to "Off".
 - 5. Location: Refer to drawings.

- N. TA-14 Recessed Paper Towel Dispenser and Waste Receptacle
 - 1. Size/Finish: 28" x 14" x 3-15/16" (recess)
 - 2. Model No.: B-369
 - 3. Mounting: Provide framed rough wall opening 12-5/8" wide x 26-5/8" high.
 - 4. Minimum recessed depth required to finish face of wall is 4"
 - 5. Location: Refer to drawings.
- O. TA-15 Grab Bars: (At Typical Semi-ambulatory Toilet Stalls)
 - 1. Size/Finish: 42" x 1-1/2 inch diameter satin stainless steel
 - 2. Clearance: 1-1/2 inch between rail and wall.
 - 3. Model No.: B-6806-42.
 - 4. Mounting: Attach with concealed mounting kit. Mount parallel to floor.
 - 5. Location: Semi-ambulatory toilet stalls.
- P. TA-16 Changing station
- Q. TA-17 Trash Receptacle
 - 1. Mounting: Recessed
 - 2. Model No.: B3644.
 - 3. Locations: Refer to drawings.
- R. TA-18 Toilet Paper Dispensers:
 - 1. Mounting: Semi-recessed (Less than 4" projection).
 - 2. Model No.: B-3888.
 - 3. Location: Accessible water closets and toilet stalls.
- S. TA-19 Seat Cover Dispenser:
 - 1. Mounting: Surface.
 - 2. Model No.: B-221
 - 3. Location: All water closets and toilet stalls.
- T. TA-20 Sanitary Napkin Disposal:
 - 1. Mounting: Recessed.
 - 2. Model No.: Waxie #820750.
 - 3. Locations: Women's accessible toilet stalls.

END OF SECTION 10 28 13

SECTION 23 00 00 - GENERAL MECHANICAL PROVISIONS

PART 1 - GENERAL

- 1.01 **GENERAL CONDITIONS:**
 - A. The foregoing General and Special Conditions shall form a part of this Division with the same force and effect as though repeated herein. The provisions of this Section shall apply to all the Sections of Division 23.

1.02 CODES AND REGULATIONS:

- A. All work and materials shall be in full accordance with current rules and regulations of applicable codes. Nothing in these drawings or specifications is to be construed to permit work not conforming to these codes. Should the drawings or specifications call for material or methods of construction of a higher quality or standard than required by these codes, the specifications shall govern. Applicable codes and regulations are:
 - 1. California Code of Regulations - CCR:
 - a. Title 8. Industrial Relations.
 - Title 24, Building Standards. b.
 - California Building Code CBC.
 - 2. California Mechanical Code - CMC. 3.
 - California Plumbing Code CPC. 4.
 - California Green Building Code. 5.
 - Air Diffusion Council ADC. 6.
 - American Gas Association AGA. 7.
 - Air Moving and Conditioning Association AMCA. 8.
 - 9. American National Standards Institute – ANSI.
 - 10. Air Conditioning and Refrigeration Institute ARI.
 - 11. American Society of Heating, Refrigerating and Air Conditioning Engineers ASHRAE.
 - 12. American Society of Mechanical Engineers ASME.
 - 13. American Society for Testing and Materials ASTM.
 - 14. American Water Works Association AWWA.
 - 15. California Electrical Code CEC.
 - 16. National Electrical Manufacturers Association NEMA.
 - 17. National Fire Protection Association NFPA.
 - 18. Sheet Metal and Air Conditioning Contractors National Association SMACNA.
 - 19. Underwriters' Laboratory UL.
 - 20. Occupational Safety and Health Act OSHA.

1.03 PERMITS AND FEES:

The Contractor shall take out all permits and arrange for all tests in connection with his work as A. required by local ordinances. All charges are to be included in the work. Permits for equipment connected to a particular system are to be considered as a part of the work included under each system; for example, permits for electric motor connection are part of electrical work, permits for domestic water or gas connections are part of plumbing work. All charges for service connections, meters, etc. by utility companies or districts shall be included in the work.

1.04 COORDINATION OF WORK:

A. Layout of materials, equipment and systems is generally diagrammatic unless specifically dimensioned. The actual locations of all materials, piping, ductwork, equipment, supports, etc. shall be carefully planned, prior to installation of any work, to avoid all interference's with each other, or with structural, electrical or architectural elements. Verify the proper voltage and phase of all equipment with the electrical plans. All conflicts shall be called to the attention of the Engineer prior to the installation of any work or the ordering of any equipment.

- 1.05 GUARANTEE:
 - A. Guarantee shall be in accordance with the General Conditions. These specifications may extend the period of the guarantee for certain items. Where such extensions are called for, or where items are normally provided with guarantee periods in excess of that called for in the General Conditions, the Certificate of Guarantee shall be furnished to the Owner through the Engineer.
- 1.06 EXAMINATION OF SITE:
 - A. The Contractor shall examine the site, compare it with plans and specifications, and shall have satisfied himself as to the conditions under which the work is to be performed. No allowance shall subsequently be made in his behalf for any extra expense to which he may be put due to failure or neglect on his part to make such an examination.
- 1.07 SUBMITTALS:
 - A. Submit shop drawings in accordance with Division 01.
 - B. Shop Drawings: Within 30 days of contract award, the Contractor shall submit six copies of shop drawings for all materials, equipment, etc. proposed for use on this project. Material and equipment shall not be ordered or installed until written review is processed by the Engineer. Any item omitted from the submittal shall be provided as specified without substitution. All shop drawings must comply with the following:
 - 1. Shop drawings are required for all material and equipment items and shall include manufacturer's name and catalog numbers, dimensions, capacities, performance curves, and all other characteristics and accessories as listed in the specifications or on the drawings. Descriptive literature shall be current factory brochures and submittal sheets. Capacities shall be certified by the factory.
 - 2. All shop drawings shall be submitted at one time in a neat and orderly fashion in a suitable binder with title sheet including Project, Engineer, and Contractor; Table of Contents; and indexed tabs dividing each group of materials or item of equipment. All items shall be marked with the specification paragraph number for which they are proposed. All equipment shall also be identified by the mark number as indicated on the drawings.
 - 3. All capacities, characteristics, and accessories called for in the specifications or on the drawings shall be highlighted, circled or underlined on the shop drawings. Calculations and other detailed data indicating how the item was selected shall be included for items that are not scheduled. Data must be complete enough to permit detailed comparison of every significant characteristic which is specified, scheduled, or detailed.
 - C. Substitutions: Manufacturers and model numbers listed in the specifications or on the drawings represent the standard of quality and the features desired. Unless otherwise noted, alternate manufacturers may be submitted for review by the Engineer. Calculations and other detailed data indicating how the item was selected shall be included. The Contractor shall assume full responsibility that substituted items or procedures will meet the specifications and job requirements and shall be responsible for the cost of redesign and modifications to the work caused by these items.
 - D. Review: Submittals will be reviewed for general conformance with the design concept, but this review does not guarantee quantity shown, nor does it supersede the responsibility of the Contractor to provide all materials, equipment and installation in accordance with the drawings and specifications. The Contractor shall agree that shop drawing submittals processed by the Engineer are not Change Orders; that the purpose of shop drawing submittals by the Contractor

is to demonstrate to the Engineer that the Contractor understands the design concept; that he demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation methods he intends to use. The Contractor shall agree that if deviations, discrepancies or conflicts between shop drawings and design drawings and specifications are discovered either prior to or after shop drawing submittals are processed by the Engineer, the design drawings and specifications shall control and shall be followed.

1.08 OPERATION AND MAINTENANCE INSTRUCTIONS:

- A. Submit one electronic pdf copy for review and after approved submit three hard copies of the Operation and Maintenance Instructions and Wiring Diagrams for all equipment and parts lists for all equipment, etc. shall be submitted to the Engineer. All instructions shall be clearly identified by marking them with the same designation as the equipment item to which they apply (e.g. AC-1). All wiring diagrams shall agree with revised shop drawings and indicate the exact field installation. All instructions shall be submitted at the same time and shall be bound in a suitable binder with tabs dividing each type of equipment (e.g. Fans, Motors, etc.). Each binder shall be labeled indicating "Operating and Maintenance Instructions, Project Title, Contractor, Date" and shall have a Table of Contents listing all items included. (These submittals shall be submitted with regular submittals at start of job so Commissioning Contractor can start on the commissioning check list for LEED Certification or Title 24 Requirements)
- B. Verbal: The Contractor shall verbally instruct the Owner's maintenance staff in the operation and maintenance of all equipment and systems. The controls contractor shall present that portion of the instruction that applies to the control system. The Engineer's office shall be notified 96 hours prior to this meeting.
- C. Posted: The Contractor shall prepare operation instructions for all systems which shall be typewritten, reviewed by the Engineer, and mounted under glass adjacent to the appropriate temperature control panel. These instructions shall include applicable temperature control diagrams.
- D. Acknowledgment: The Contractor shall prepare a letter indicating that all operation and maintenance instructions (printed, verbal and posted) have been given to the Owner, to the Owner's satisfaction. This letter shall be acknowledged (signed) by the Owner and submitted to the Engineer.

1.09 RECORD DRAWINGS:

A. The Contractor shall maintain a set of prints for the project as a record of all construction changes made. As the Work progresses, the Contractor shall maintain a record of all deviations in the Work from that indicated on the drawings. Final location of all underground work shall be recorded by depth from finished grade and by offset distance from permanent surface structures, i.e. buildings, curbs and walks. In addition, the water, gas, under-floor ducts, etc. within the building shall be recorded by offset distances from building walls. The original drawings will be made available to the Contractor from which he shall have a set of reproducible drawings made. The Contractor shall then transfer the changes, notations, etc. from the marked-up prints to the reproducible drawings. The record drawings (marked-up prints and reproducibles) shall be submitted to the Engineer for review (as an alternative, the marked-up prints may be photocopied full size on reproducible stock).

PART 2 - PRODUCTS

- 2.01 PROTECTIVE COATING FOR UNDERGROUND PIPING:
 - A. All ferrous pipe below grade (except cast iron) shall have a factory applied protective coating of extruded high density polyethylene, 35 to 70 mils total thickness, X-Tru Coat, Scotchkote. All fittings and areas of damaged coating shall be covered with two layer double wrap of 10 mil polyvinyl tape to total thickness of 40 mils. Manville Corporation. Protective coating shall be extended 6" above surrounding grade.
- 2.02 CONCRETE ANCHORS:
 - A. Concrete Anchors shall comply with CBC 1901A.3. Steel stud with expansion anchor requiring a drilled hole; powder driven anchors are not acceptable. Minimum concrete embedment shall be 4-1/2 diameters. Minimum spacing shall be 10 diameters center-to-center and 5 diameters from center to edge of concrete. Maximum allowable stresses for tension and shear shall be 80% of the test report values "with special inspection". Anchors shall be Hilti, Philips or Approved equal.

2.03 SEISMIC RESTRAINTS:

A. All mechanical systems (all equipment, piping, etc.) shall be provided with seismic restraints in accordance with "Guidelines for Seismic Restraint of Mechanical Systems" dated 2006 by SMACNA.

2.04 SYSTEM IDENTIFICATION:

- A. Above Grade Piping: Provide markers on piping which is either exposed or concealed in accessible spaces. For piping systems, other than drain and vent lines, indicate the fluid conveyed or its abbreviation, either by preprinted markers or stenciled marking, and include arrows to show the direction of flow. Comply with ANSI A13.1 for colors. Locate markers at ends of lines, near major branches and other interruptions including equipment in the line, where lines pass through floor, walls or ceilings or otherwise pass into inaccessible spaces, and at 50' maximum intervals along exposed portion of lines. Marking of short branches and repetitive branches for equipment connections is not required.
- B. Equipment: All equipment shall be identified with a plastic laminated, engraved nameplate which bears the unit mark number as indicated on the drawings (e.g. AC-1). Provide 1/2" high lettering, white on black background. Nameplates shall be permanently secured to the unit.
- C. Valves: Provide valve tags on all valves of each piping system, excluding check valves, valves within equipment, shut-off valves at equipment and other repetitive terminal units. Provide brass tags or plastic laminate tags. Prepare and submit a tagged valve schedule, listing each valve by tag number, location and piping service. Mount in glazed frame where directed.
- D. Controls: Label all panels, thermostats and by-pass timers with plastic laminated, engraved nameplate which bears the unit mark number as indicated on the drawings (e.g. AC-1). Provide 1/4" high lettering, white on black background. Nameplates shall be permanently secured to the unit.

2.05 EQUIPMENT SUPPORT FRAMES:

A. Unless specifically noted otherwise, it shall be the responsibility of Mechanical Contractor to furnish and install all support frames for its equipment.

PART 3 - EXECUTION

- 3.01 SCHEDULING OF WORK:
 - A. All work shall be scheduled subject to the approval of the Engineer and Owner. No work shall interfere with the operation of the existing facilities on or adjacent to the site.
- 3.02 CONDUCT OF WORK:
 - A. The Contractor shall have at all times, as conditions permit, a sufficient force of workmen and quantity of materials to install the work contracted for as rapidly as possible consistent with good work, and shall cause no delay to other Divisions engaged upon this project or to the Owner.
 - B. Mechanical Contractor shall arrange for all cutting necessary for the proper installation of its work, providing all sleeves and chases necessary. Cutting shall not be done in such a manner to impair the strength of the structure. Any damage resulting from work shall be repaired by the Contractor at his expense to the satisfaction of the Engineer.
 - C. Progressively, daily at the completion of each day's work, and at completion of the job, the Contractor shall thoroughly clean all of his work, removing all debris, stain and marks resulting from his work.
 - D. IAQ Management plan will be in effect for LEED Certification, including the sealing of duct ends before and during rough-in, specific requirements for the use of HVAC equipment during construction (if used at all), building flush-out, etc. Adhesives and mastic must comply with low VOC requirements and documentation (MSDS, etc.) shall be provided with submittals.
- 3.03 EXCAVATION AND BACKFILL:
 - A. Excavation: Trenches are to be excavated to grade and depth established by drawings. Unless otherwise noted, minimum earth cover above top of pipe shall be 24", not including base and paving in paved areas. Width of trenches at top of pipe shall be a minimum of 16" plus the outside diameter of the pipe. Provide all shoring required by site conditions. Barrel of pipe shall have uniform support on trench bottom, hand excavate additional depth at bells, hubs and fittings. Where over-excavation occurs, provide compacted selected backfill to pipe bottom. Where ground water is encountered, remove to keep excavation dry, using well points and pumps as required.
 - B. Backfill:
 - Around Pipe and to One Foot Above Pipe: Material shall be river run sand or native granular free flowing material, free of clay lumps, silt or vegetable matter and shall have 100% passing through the No. 4 sieve and a maximum of 3% passing through the No. 200 sieve. Place carefully around and on top of pipe, taking care not to disturb piping. Consolidate with vibrator.
 - 2. One Foot Above Pipe to Grade: Material to be sandy or silty loam, free of lumps, laid in 6" layers, uniformly mixed, to proper moisture and compacted to required density. If backfill is determined to be suitable and required compaction is demonstrated by laboratory test, water compaction in 6" layers may be used, subject to approval by the Engineer.
 - 3. Remove all water sensitive settlement from trench backfill regardless of location and compaction requirements.
 - C. Compaction: Compact to a density of 95% within building and 90% outside building. Demonstrate proper compaction by testing at one-half of the trench depth. Perform three tests per 100' of trench.

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3.04 OPENINGS, CUTTING AND PATCHING:

A. The locations and dimensions for openings through walls, floors, ceilings, foundations, footings, etc. required to accomplish the work under this Specification Division shall be provided under this Division. The actual openings and the required cutting and patching shall be provided. Coring through existing concrete or masonry walls, floors, ceilings, foundations, footings, etc., and saw cutting of concrete floors or asphaltic concrete required to accomplish the work under this Specification Division shall be provided under this Division. Patching of these surfaces shall also be provided. Cutting and coring shall not impair the strength of the structure. Any damage resulting from this work shall be repaired at the Contractor's expense to the satisfaction of the Engineer.

3.05 MANUFACTURER'S RECOMMENDATIONS:

- A. All material, equipment, devices, etc., shall be installed in accordance with the recommendations of the manufacturer of a particular item. The Contractor shall be responsible for all installations contrary to the manufacturer's recommendations. The Contractor shall make all necessary changes and revisions to achieve such compliance. Manufacturer's installation instructions shall be delivered to and maintained at the job site through the construction of the project.
- 3.06 QUIETNESS:
 - A. Piping, ductwork and equipment shall be arranged and supported so that vibration is a minimum and is not carried to the building structure or spaces.
- 3.07 DAMAGES BY LEAKS:
 - A. The Contractor shall be responsible for damages to other work caused by leaks in the temporary or permanent piping systems prior to completion of work and during the period of the guarantee, and for damages to other work caused by disconnected pipes or fittings, and the overflow of equipment prior to completion of the work.
- 3.08 CLEANING:
 - A. Progressively and at completion of the job, the Contractor shall thoroughly clean all of his work, removing all debris, stain and marks resulting from his work.

END OF SECTION 23 00 00

SECTION 23 00 01- HEATING, VENTILATING AND AIR CONDITIONING

PART 1 - GENERAL

- 1.01 GENERAL CONDITIONS:
 - A. The foregoing Section 23 00 00, General Mechanical Provisions shall form a part of this specification.

1.02 SCOPE:

- A. Included: Perform all work necessary and required to complete construction as indicated. Such work includes the furnishings of all labor, materials and services necessary for a complete, lawful and operating air conditioning, heating, ventilating system with all equipment as shown or noted on the drawings or as specified herein. The work includes, but is not necessarily limited to, the following:
 - 1. Heating, ventilating and air conditioning equipment.
 - 2. Air distribution system (Ductwork, Air Terminals, etc.).
 - 3. System insulation.
 - 4. Controls and control wiring and conduit for control wiring.
- B. Work Specified Elsewhere:
 - 1. Line voltage power wiring (60 volts or greater), motor starters in motor control centers, and disconnect switches are included in the electrical section.
 - 2. Connection of gas and condensate drains to equipment.
 - 3. Access doors.

PART 2 - MATERIALS

- 2.01 DUCTWORK MATERIALS:
 - A. General: All ductwork materials shall have fire and smoke hazard ratings as tested under ASTM E-84 and UL-181 not exceeding a flame spread of 25 and smoke developed of 50. All ductwork shall be per Chapter 6 of the CMC.
 - B. Low Velocity Metal Ductwork: Metal ductwork shall be minimum 26 gauge galvanized sheet steel, ASTM A527.
 - C. Low Velocity Flexible Ductwork: Insulated flexible ductwork. Continuous internal liner bonded to galvanized steel wire helix. One pound per cubic foot glass fiber insulation, R-8. Thermal conductivity shall not exceed 0.13 Btu/hr sq. ft.- degrees F at a mean temperature of 75°F. Seamless vapor barrier jacket. Each length shall have a factory installed metal sleeve at each end. Duct shall be capable of continuous operation at 1.5" of water static pressure and 4000 ft./ min. air velocity. Maximum length 5 ft., single piece at runouts to air terminals. Genflex, Lamborn or equal.
 - D. Spiral Duct: Ductwork shall be galvanized steel with uni-seal spiral seamlock and uni-seal fittings, ASTM A653. United McGill Corp or equal. All exposed spiral duct shall be painted, color selected by Owner.
 - E. Round Duct on Roof: Ductwork shall be double wall insulated galvanized steel with solid welded seam longitudinal seam-K27. United McGill Corp or equal.
 - F. Bonding Adhesive: Durodyne WBG, Scotchgrip Adhesive 4230 or equal.

- G. Duct Mastic: Minnesota Mining and Manufacturing Duct Sealer 800, Tuff-Bond No. 12, Glencoat Seal-Flex or equal.
- H. Duct Joints:
 - 1. As an option to joints and seams designated by SMACNA or shown on Drawings, the following systems may be used:
 - a. Ducts with sides 24 inches to 48 inches, transverse duct joint system by Ductmate Jr., Nexus or equal (SMACNA "E" Type connection).
 - b. Ducts 48 inches and larger, Ductmate Regular, Nexus (SMACNA "J" Type connection) or equal.
- I. Fiber Tape: Mineral impregnated fiber tape and plastic activator-adhesive. Hardcast Inc., United McGill Uni-Cast or equal.

2.02 AIR TERMINALS AND DUCT FITTINGS:

- A. Grilles: (Grilles, Registers and Diffusers)
 - Information on Drawings: Refer to the Air Distribution Schedule on the drawings for the list of grilles. Manufacturer's model numbers are listed to complete the description. Equivalent models of T & B, Krueger, Anemostat, Price, Titus or equal. Refer to the floor plans for neck size, CFM, air diffusion pattern, and fire damper, if required.
 - 2. Performance: 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 re-selected by the Contractor for the proper diffusion, spread, drop and throw.
 - 3. Frame and Accessories: All supply, return, and exhaust grilles shall be provided with cushion heads and attachments to structure, 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 drawing, coordinate prior to ordering.
 - 4. Finish: All ceilings and wall grilles shall have a paintable white finish unless otherwise noted. Interior components shall be flat black.
- B. Turning Vanes: Double wall, hollow metal, air-foil shape. Spacing in accordance with manufacturer's recommendations. Aero Dyne, HEP or equal.
- C. Flexible Connection: UL listed neoprene coated 30-ounce fiberglass cloth. 3" metal, 6" fabric, 3" metal. Ventglas or equal.
- D. 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, ½" 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).
- E. Fire/ Smoke Damper: Multi-blade construction in accordance with CBC & CMC. UL 555 and UL 555S labels. Blades shall have metal-to-metal seals and not rely on actuator torque to maintain leakage rating. Prefco, Air Balance, Ruskin, Greenheck 5020-1 with 5800MB2 power open/spring close operator, or equal.
- F. Fire Damper: Dynamic rated fire dampers, U.L. 555 label. Prefco, Air Balance, Ruskin, Greenheck or equal.

- G. Louvers: Refer to the Air Distribution Schedule on the drawings. Manufacturer's model numbers are listed to complete the description. Equivalent models of Ruskin, Greenheck, Dayton or approved equal. Contractor shall fabricate and provide 16 GA. galvanized perforated panel (50% Free Area) over exterior of all louvers and have field painted to match exterior wall. Refer to the floor plans for all sizes.
- 2.03 DUCTWORK INSULATION MATERIALS:
 - A. General: All ductwork insulation materials shall have fire and smoke hazard ratings as tested under ASTM E-84 and UL-181 not exceeding a flame spread of 25 and smoke developed of 50.
 - B. Acoustic Lining: Glass fiber. One side coated to prevent fiber erosion up to 6000 ft./ min. Average noise reduction coefficient of 0.90. 0.13 Btu/ hr – sq. ft. – degrees F conductivity at a mean temperature of 75 degrees F, R-8. CSG Insulation Corp., Schuller, Owens-Corning, Knauf or equal. Duct dimensions shown on drawings for lined duct are clear (net) opening inside of lining.
 - C. Fiber Glass Blanket: Foil faced, 0.13 Btu/ hr sq. ft. degrees F conductivity at a mean temperature of 75 degrees F, R-8. CSG Insulation Corp., Schuller, Owens-Corning, Knauf or equal.
 - D. Bonding Adhesive: Benjamin Foster 85-15 or equal.
- 2.04 PIPING MATERIALS:
 - A. Flue Piping:
 - 1. Gas Flue Piping: Flue pipe shall be type as recommended by equipment manufacturer for which the pipe is connected to. UL listed. Metalbestos, Amerivent or equal.
 - 2. Flue Cap: Designed to properly ventilate flue regardless of wind direction. Storm proof, bird proof. Metalbestos, Amerivent or equal.
 - B. Flue/ Combustion Air Piping:
 - 1. Gas Flue Piping: Schedule 40 PVC pipe with solvent weld fittings.
 - 2. Flue Cap: Designed to properly ventilate flue regardless of wind direction. Storm proof, bird proof. Factory concentric vent/ combustion air termination kit.
 - C. Refrigerant Piping:
 - Type L hard temper seamless copper, ASTM B88. Wrought copper fittings ANSI B16.22. 50/ 50 lead-tin solder joints above grade, 95/ 5 tin-silver brazed joints below grade. Provide schedule 40 PVC sleeve pipe for all below grade refrigerant piping. All piping shall be sized per equipment manufacturer requirements.
 - 2. Valves and Specialties:
 - a. Line Valves: Bronze body, ball type, TFE locked in seals. Back seated valve stem. Contromatics C-11.
 - b. Filter-Drier: Replaceable core. Capacity in accordance with ARI Standard 710. Sporlan "Catch-All".
 - c. Moisture Indicator-Sight Glass: Double port. Henry, Sporlan.
 - d. Vibration Isolating Connection: Seamless flexible bronze tubing, braid covered. Suitable for system pressure. American, Flexonics.
 - D. Refrigerant Piping (Ductless Split System):
 - 1. Type ACR soft temper seamless copper, ASTM B280. Cast copper alloy fittings for flared copper tubes, ASME B16.26. Follow the Society of Automotive Engineers SAE J533

Standard-Flares for tubing. All piping shall be sized per equipment manufacturer requirements.

- 2. Valves and Specialties:
 - a. Line Valves: Bronze body, ball type, TFE locked in seals. Back seated valve stem. Contromatics C-11.
 - b. Filter-Drier: Replaceable core. Capacity in accordance with ARI Standard 710. Sporlan "Catch-All".
 - c. Moisture Indicator-Sight Glass: Double port. Henry, Sporlan.
 - d. Vibration Isolating Connection: Seamless flexible bronze tubing, braid covered. Suitable for system pressure. American, Flexonics.
- E. Miscellaneous Piping Items:
 - 1. Pipe Support:
 - a. Pipe Hanger: Adjustable split ring, swivel hanger and rod. Black malleable iron. Size and maximum loads per manufacturer's recommendation. Felt Lined, Kin-Line 450 F.
 - b. Construction Channel: 12 gage 1-5/8" x 1-5/8" steel channel. Single or multiple sections. Self-locking nuts and fittings. Kin-Line, Unistrut.
 - 2. Pipe Sleeves: 24 gage galvanized steel. Adjus-to-Crete #10 with #99 thimble for floors. #100 for walls.
 - 3. Flashing: Flashing for piping through roof shall be prefabricated 24 gage galvanized steel roof jacks with 8" square flange around pipe. Seal with weatherproofing mastic.
- F. Flashing: Flashing for piping through roof shall be prefabricated 24 gage galvanized steel roof jacks with 8" square flange around pipe. Seal with weatherproofing mastic.
- 2.05 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. Pre-Molded Fiberglass: Heavy density sectional pre-molded fiberglass with vapor barrier laminated all-service jacket and pressure sealing vapor barrier lap. Thermal conductivity shall not exceed 0.25 Btu-in/hr-sq. ft-degrees F. at a mean temperature of 50°F. Perm rating 0.02, ASTM E96. Puncture rating 50 Beach units, ASTM D781. Provide 3" (min.) wide tape of same material as lap for butt joints. For chilled and hot water piping, thickness shall be 1" for pipe sizes less than 2", 1-1/2" thickness for pipe sizes 2" and larger. CSG Insulation Corp., Manville, and Owens-Corning.
 - C. Fiber Glass Blanket: Unfaced. Thermal conductivity shall not exceed 0.25 Btu-in/hr sq. ftdegrees F. at a mean temperature of 50°F. 1-1/2" thickness. Manville, Owens-Corning.
 - D. PVC Jacket (for fittings and valves): Pre-molded polyvinyl chloride (PVC) jackets. Size to match application. Provide PVC vapor barrier, pressure-sealing tape by same manufacturer. Zeston.
 - E. Aluminum Jacketing: Aluminum pipe and fitting jacketing, 0.016" thickness for straight pipe, 0.024" thickness for fittings. Integral moisture barrier. Provide pre-fabricated aluminum strapping and seals by same manufacturer. Childers, Pabco.
 - F. Refrigerant Piping: Rubber based elastomeric preformed pipe insulation. Thermal conductivity shall not exceed 0.25 Btu-in/hr-SF-degree F at mean temperature of 75 degrees F., 3/4" thick. Provide aluminum pipe and fitting jacketing. 0.016" thickness for straight pipe, 0.024" thickness for fittings with integral moisture barrier, pre-fabricated strapping and seals for piping exposed to weather, Childers, Pabco or equal.
 - 1. Insulation shall be provided on both refrigerant lines for ductless split systems.

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 recommend external wiring.
 - 6. Fan Selection:
 - a. Fan Curves: Performance curves shall be submitted for all units of 3000 CFM or greater. Operating point for forward curved fans shall be from point of maximum efficiency towards increased CFM limited by horsepower scheduled. Operating point

for backward inclined fans shall be selected near point of maximum efficiency. Curves shall plot CFM verses static pressure with constant brake horsepower, RPM and efficiency lines.

- b. 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 in completed and prior to acceptance. Provide pressure differential gage across all filter banks.
 - b. Filter Media: 2" pleated media. MERV-13. Clean filter resistance 0.25" water at 500 fpm. Throw-away frame. Class 2. Camfil Farr AP-Eleven.
 - c. Pressure Differential Gage: Diaphragm actuated. 4" dial. Zero adjustment. Accuracy +/ 2% of full scale. Range as required. Provide static pressure sensors, tubing and mounting brackets. Dwyer Series 2000. Mark gage to indicate filter replacement pressure, coordinate point with filter and equipment manufacturers.
- 8. 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.
- 9. Sound Ratings: Shall be in accordance with ASHRAE 36-72. Sound ratings shall not exceed scheduled values.
- 10. 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 (thru 15 tons):
 - General: Self-contained heating/cooling unit designed for outdoor installation. Factory assembled and tested. Provide all starters and relays required for operation. 24 volt control circuit from integral transformer. Weatherproof cabinet, galvanized steel with enamel finish. Drain pan. Multivane, centrifugal supply fan. ARI certified. Gas equipment AGA certified. Carrier, York, Trane, or approved equal.
 - 2. Refrigeration: Sealed Hermetic compressor with heater, high/ low pressure switch, recycling timer. Air-cooled condenser with propeller fan. Non-ferrous finned coil. Low ambient control to 45 degrees F, unless otherwise noted.
 - 3. Heat: Gas fired. Aluminized or ceramic-coated welded steel heat exchanger. Electric ignition. Automatic gas valve, 100% safety shutoff.
 - 4. Automatic Shutoff: For units or zones providing air in excess of 2000 cfm, provide smoke detectors in supply air stream to automatically shut off all power to air moving equipment and alert fire alarm system when smoke is detected in accordance with CMC Section 608.
 - 5. Economizer with Power Exhaust (where shown on drawings): Economizer shall be a modulating power exhaust type where the unit will exhaust at the minimum outside air setpoint and exhaust 100% during economizer mode. Economizer with power exhaust is shipped separately and shall be field installed and wired under this section.

- a. Provide plastic air sampling tube to sense pressure in room for control of power exhaust. Tube shall be placed thru ceiling with escutcheon plate in room that unit serves.
- b. Modulating Economizer Sequence of Operation:

The economizer system initially responds to a signal from the cooling thermostat and functions as a true first stage for cooling, while providing maximum fuel economy. The economizer is automatically locked out during the heating mode and holds the outdoor air damper at the minimum position settings.

During the occupied period, the discharge sensor provides a signal to the actuator during free cooling or economizer mode. The signal opens the economizer damper until the discharge temperature drops below 50 degrees F. At this time the signal causes the motor to drive the damper back to minimum position. As the discharge temperature climbs to 60 degrees F the motor will drive back open. During the occupied period, the actuator will not close past the minimum position. (The setpoints maybe changed by Commissioning Contractor to optimize controls for LEED Certification or Title 24 Requirements.)

If the fully open actuator cannot satisfy the space demand, mechanical cooling is sequenced on.

During the unoccupied period, the actuator will override minimum position setting and drive fully closed. On a loss of power, the actuator will spring return fully closed.

When in heating operation, or when outdoor air temperature or enthalpy conditions are high, economizer operation is locked out, and actuator is held at minimum position.

The staging relay is used when the first stage compressors must provide mechanical cooling when assisting the economizer.

The staging relay can be omitted when the second stage compressors can be used to assist the economizer with mechanical cooling.

c. CO2 Sensor Economizer Integration:

When a CO2 sensor is used in conjunction with an economizer, the minimum position jumper between P and P1 on the logic is removed, and the sensor connected. When the Co2 sensor gets a reading higher than the setpoint, the sensor will signal the logic to modulate the o/a dampers open. The HVAC unit functions as if there is no economizer during the CO2 call for fresh air.

When the CO2 level falls below the setpoint, the damper modulates back to the minimum position.

d. Modulating Power Exhaust Sequence of Operation:

When the outside air damper on an economizer starts to open, extra air is introduced the system. As this happens, a mercury switch mounted on the economizer closes. This causes a switch to close on the variable speed controller, allowing high voltage power to be sent to an exhaust motor and blower.

The mercury switch is adjusted to close at the 1% outside air damper position.

The power exhaust is a centrifugal blower power exhaust. The power exhaust uses an adjustable transducer (0-10 VDC) to accurately compare the space pressure to atmospheric pressure, and adjust the amount of exhaust air accordingly. The exhaust volume adjustment is accomplished using a variable frequency drive with a built-in PID control to maintain a field adjustable pressure set point.

6. Guarantee: Provide 5 year extended parts warranty on the condenser coil and compressor.

- D. Heat Pump, Split System:
 - 1. Outdoor Unit:
 - a. General: Self-contained unit designed for outdoor installation. Factory assembled and tested. Provide all starters and relays required for operation. 24 volt control circuit from integral transformer. Weatherproof cabinet, galvanized steel with enamel finish. Drain pan. ARI certified. BDP, Carrier, Trane, York, and Lennox.
 - b. Refrigeration: Sealed Hermetic compressor with internal vibration isolating mount. Reversing valve, hard start components crankcase heater, high/low pressure switch, anti-recycle timer. Air-cooled condenser with propeller fan. Non-ferrous finned coil. Low ambient control to 25 degrees, unless otherwise noted. Provide base mounting rails.
 - d. Guarantee: provide 5 year extended warranty on the condenser coil and compressor.
 - 2. Fan Coil:
 - a. General: Multi-speed direct drive blower on vibration mountings, filters, capacity as scheduled on plans. Casing shall be galvanized steel finished with baked enamel, and shall be insulated. Direct expansion evaporation coils complete with distribution piping, expansion valve, drain pan, and drain connection. Supplemental electric heater. Carrier, Trane, York, Lennox.
 - b. Thermostat: Thermostats shall comply with Title 24 Energy Conservation Standards. Thermostat shall provide automatic changeover from heating to cooling with continuous fan operation. Provide 2 stage heating and "OFF-HEAT-AUTO-COOL' and "AUTO-ON" switches.
- E. Variable Refrigerant Flow (VRF) Air Conditioning Specification Heat Pump:
 - 1. System Description:
 - a. The variable capacity, heat pump air conditioning system shall be a Carrier, Mitsubishi, LG, Daikin or approved equal Variable Refrigerant Flow Series (heat/cool model) split system. The system shall consist of multiple evaporators using PID control, and condensing unit. The outdoor units shall be a nominal 3 ton, 4 ton, or 5 ton direct expansion (DX), air-cooled heat pump air-conditioning system, inverter driven variable speed compressor, multi-zone split system, using R-410A refrigerant. The outdoor unit may connect an indoor evaporator capacity up to 130% to that of the outdoor condensing unit capacity. All indoor units are each capable of operating separately with individual temperature control.
 - b. The outdoor unit shall be interconnected to indoor unit and shall range in capacity from 7,500 Btu/h to 54,000 Btu/h in accordance with manufacturer's engineering data book detailing each available indoor unit. The indoor units shall be connected to the condensing unit utilizing manufacturer's specified piping joints and headers to ensure correct refrigerant flow and balancing. T style joints are not acceptable.
 - c. Operation of the system shall permit either cooling or heating of all of the indoor units. Each indoor unit or group of indoor units shall be able to provide set temperature independently via a local remote controller, an Intelligent Touch Controller (ITC), an Intelligent Touch Manager (ITM) or a BMS interface.
 - 2. VRF Features and Benefits:
 - a. Voltage Platform: Heat pump condensing units shall be available in 208-230V/1/60 configurations.
 - b. Advanced Zoning: A single system shall provide for up to 10 zones.
 - c. Independent Control: Each indoor unit shall use a dedicated electronic expansion valve for independent control.
 - d. VFD Inverter Control: Each condensing unit shall use a high efficiency, variable speed "inverter" compressor coupled with inverter fan motors for superior part load performance.

- e. Compressor capacity shall be modulated automatically to maintain a constant suction pressure, while varying the refrigerant volume for the needs of the cooling or heating loads.
- f. Indoor units shall use PID control to control superheat to deliver a comfortable room temperature condition.
- g. Variable Refrigerant Temperature (VRT) Control: Each condensing unit shall utilize an algorithm to automatically adjust the refrigerant suction and condensing temperatures in response to the heating and cooling loads, and in response to the current weather conditions. The VRT control shall be capable of being customized in the following modes and sub-modes:
 - i. Automatic (factory preset): The Automatic VRT mode shall allow the target evaporator temperature (Te) and target condensing temperature (Tc) to float based on outdoor ambient temperature conditions, and shall incorporate the following submodes: Powerful, Quick, and Mild (factory preset).
 - ii. High Sensible: The High Sensible mode shall allow the system Te and Tc values to be programmed to series of fixed Te and Tc values. The High Sensible mode shall also be capable of incorporating the following sub-mode: Eco.
 - iii. Basic: The Basic mode shall disable the VRT control of the outdoor unit and allow the system to operate with constant Te and Tc values.
- h. Flexible Design:
 - i. Linear piping distance between the condensing unit and furthest located indoor unit shall be per manufacturer's recommendations.
 - ii. Total "one-way" piping distance in the piping network shall be per manufacture's recommendations.
 - iii. Vertical (height) separation between the condensing unit and the indoor unit units shall be per manufacturer's recommendations.
 - iv. The outdoor unit shall connect an indoor evaporator capacity up to 130% of the outdoor condensing unit capacity.
- i. Simple Wiring: Systems shall use 2 wire, multi-stranded, non-shielded and non-polarized daisy chain control wiring.
- j. Advanced Diagnostics: Systems shall include a self diagnostic, auto-check function to detect a malfunction and display the type and location.
- k. Advanced Controls: Each system shall have at least one remote controller capable of controlling up to 16 indoor unit units.
- 3. Quality Assurance:
 - The units shall be tested by a Nationally Recognized Testing Laboratory (NRTL), in accordance with ANSI/UL 1995 – Heating and Cooling Equipment and bear the Listed Mark.
 - b. All wiring shall be in accordance with the National Electric Code (NEC).
 - c. Each combination shall be rated in accordance with Air Conditioning, Heating and Refrigeration Institute's (AHRI) Standard 210/240 and bear the AHRI label.
 - d. The system will be produced in an ISO 9001 and ISO 14001 facility, which are standards set by the International Standard Organization (ISO). The system shall be factory tested for safety and function.
 - e. The outdoor unit will be factory charged with R-410A.
- 4. Delivery, Storage and Handling:
 - a. Unit shall be stored and handled according to the manufacturer's recommendations.
- 5. Standard Limited Warranty:
 - a. Manufacturer shall warrants original owner of the non-residential building, multifamily residence or residence in which the Daikin products are installed that under normal use and maintenance for comfort cooling and conditioning applications such products (the "Products") will be free from defects in material and workmanship. This warranty applies to compressor and all parts and is limited in duration to ten (10) years starting from the "installation date" which is one of the two dates below:
 - i. The installation date is the date that the unit is originally commissioned, but no later than 18 months after the manufacture date noted on the unit's rating plate.

- ii. If the date the unit is originally commissioned cannot be verified, the installation date is three months after the manufacture date.
- 6. Outdoor Unit:
 - a. General: The outdoor unit is designed specifically for use with VRF series components.
 - i. The outdoor unit shall be factory assembled and pre-wired with all necessary electronic and refrigerant controls. The refrigeration circuit of the condensing unit shall consist of a Daikin swing compressor, motors, fans, condenser coil, electronic expansion valves, solenoid valves, 4-way valve, distribution headers, capillaries, filters, shut off valves, oil separator, service ports and suction line accumulator. Liquid and suction lines must be individually insulated between the outdoor and indoor units.
 - ii. The outdoor unit can be wired and piped with outdoor unit access from the left, right, rear or bottom.
 - iii. The connection ratio of indoor units to outdoor unit shall be permitted up to 130%.
 - iv. The outdoor system shall be able to support the connection of up to 10 indoor unit's dependant on the model of the outdoor unit.
 - v. The sound pressure level standard shall be that value as listed in the engineering manual for the specified models at 3 feet from the front of the unit. The outdoor unit shall be capable of operating automatically at further reduced noise during night time.
 - vi. The system will automatically restart operation after a power failure and will not cause any settings to be lost, thus eliminating the need for reprogramming.
 - vii. The outdoor unit shall allow for side-by-side installation with minimum spacing.
 - viii. The following safety devices shall be included on the condensing unit; high pressure switch, low pressure sensor, control circuit fuses, crankcase heaters, fusible plug, overload relay, inverter overload protector, thermal protectors for compressor and fan motors, over current protection for the inverter and anti-recycling timers.

ix. To ensure the liquid refrigerant does not flash when supplying to the various indoor unit units, the circuit shall be provided with a sub-cooling feature.

- x. Oil recovery cycle shall be automatic occurring 2 hours after start of operation and then every 8 hours of operation.
- xi. The outdoor unit shall be capable of heating operation at 0°F dry bulb ambient temperature without additional low ambient controls.
- b. Unit Cabinet:

i. The outdoor unit shall be completely weatherproof and corrosion resistant. The unit shall be constructed from rust-proofed mild steel panels coated with a baked enamel finish.

- c. Fan:
 - i. The condensing unit fan(s) shall consist of propeller type, direct-drive fan motors that have multiple speed operation via a DC (digitally commutating) inverter.
 - ii. The fan shall be a horizontal discharge configuration with a nominal airflow maximum range of 3,740 CFM.
 - iii. The fan motor shall have inherent protection and permanently lubricated bearings and be mounted.
 - iv. The fan motor shall be provided with a fan guard to prevent contact with moving parts.
- d. Condenser Coil:
 - i. The condenser coil shall be manufactured from copper tubes expanded into aluminum fins to form a mechanical bond.
 - ii. The heat exchanger coil shall be of a waffle louver fin and rifled bore tube design to ensure high efficiency performance.
 - iii. The heat exchanger on the condensing units shall be manufactured from Hi-X seamless copper tube.
 - iv. The fins are to be covered with an anti-corrosion acrylic resin and hydrophilic film type E1.
- e. Compressor:
 - i. The compressor shall be variable speed controlled which is capable of changing the

speed to follow the variations in total cooling and heating load as determined by the suction gas pressure as measured in the condensing unit. In addition, samplings of evaporator and condenser temperatures shall be made so that the high/low pressures detected are read every 20 seconds and calculated. With each reading, the compressor capacity shall be controlled to eliminate deviation from target value.

- ii. The inverter driven compressor in each condensing unit shall be of highly efficient reluctance DC (digitally commutating), hermetically sealed swing type.
- iii. Neodymium magnets shall be adopted in the rotor construction to yield a higher torque and efficiency in the compressor instead of the normal ferrite magnet type. At complete stop of the compressor, the neodymium magnets will position the rotor into the optimum position for a low torque start.
- iv. The capacity control range shall be 14% to 100%.
- v. The compressor shall be equipped with a crankcase heater, high pressure safety switch, and internal thermal overload protector.
- vi. Oil separators shall be standard with the equipment together with an intelligent oil management system.
- vii. The compressor shall be spring mounted to avoid the transmission of vibration.
- f. Electrical:
 - i. The power supply to the outdoor unit shall be 208/230 volts, 1 phase, 60 hertz +/-10%.
 - ii. The control voltage between the indoor and outdoor unit shall be 18VDC nonshielded, stranded 2 conductor cable.
 - iii. The control wiring shall be a two-wire multiplex transmission system, making it possible to connect multiple indoor units to one outdoor unit with one 2-cable wire, thus simplifying the wiring operation.
- 7. Concealed Ceiling Ducted Unit:
 - a. General: The indoor unit shall be a built-in ceiling concealed fan coil unit, operable with refrigerant R-410A, equipped with an electronic expansion valve, for installation into the ceiling cavity. It is constructed of a galvanized steel casing. It shall be available in capacities from 72,000 Btu/h to 96,000 Btu/h. Indoor unit to be connected to outdoor unit heat pump. It shall be a horizontal discharge air with horizontal return air configuration. All models feature a low height cabinet making them applicable to ceiling pockets that tend to be shallow. Computerized PID control shall be used to control superheat to deliver a comfortable room temperature condition. The unit shall be equipped with a programmed drying mechanism that dehumidifies while limiting changes in room temperature when used with remote control. The indoor units sound pressure shall be 48 dB(A) at low speed measured 5 feet below the ducted unit.
 - b. Performance: Each unit's performance is based on nominal operating conditions.
 - c. Indoor Unit:
 - i. The indoor unit shall be completely factory assembled and tested. Included in the unit is factory wiring, piping, electronic proportional expansion valve, control circuit board, fan motor thermal protector, flare connections, self-diagnostics, auto-restart function, 3-minute fused time delay, and test run switch. The unit shall have an adjustable external static pressure switch.
 - ii. Indoor unit and refrigerant pipes will be charged with dehydrated air prior to shipment from the factory.
 - iii. Both refrigerant lines shall be insulated from the outdoor unit.
 - iv. The indoor units shall be equipped with a return air thermistor.
 - v. The indoor unit will be separately powered with 208~230V/1-phase/60Hz.
 - vi. The voltage range will be 253 volts maximum and 187 volts minimum.
 - d. Unit Cabinet:
 - i. The cabinet shall be located into the ceiling and ducted to the supply and return openings.
 - ii. The cabinet shall be constructed with sound absorbing foamed polystyrene and polyethylene insulation.
 - e. Fan:

- i. The fan shall be direct-drive Sirocco type fan, statically and dynamically balanced impeller with high and low fan speeds available.
- ii. The fan motor shall operate on 208/230 volts, 1 phase, 60 hertz, with a motor output of 0.51 HP.
- iii. The airflow rate shall be available in high and low settings.
- iv. The fan motor shall be thermally protected.
- v. The fan motor shall be equipped as standard with adjustable external static pressure (ESP) settings.
- f. Coil:
 - i. Coils shall be of the direct expansion type constructed from copper tubes expanded into aluminum fins to form a mechanical bond.
 - ii. The coil shall be of a waffle louver fin and high heat exchange, rifled bore tube design to ensure highly efficient performance.
 - iii. The coil shall be a 3 row cross fin copper evaporator coil with 13 fpi design completely factory tested.
 - iv. The refrigerant connections shall be flare connections and the condensate will be 1-5/16 inch outside diameter PVC.
 - v. A thermistor will be located on the liquid and gas line.
- g. Electrical:
 - i. A separate power supply will be required of 208/230 volts, 1 phase, 60 hertz. The acceptable voltage range shall be 187 to 253 volts.
 - ii. Transmission (control) wiring between the indoor and outdoor unit shall be per manufacturer's recommendations.
 - iii. Transmission (control) wiring between the indoor unit and remote controller shall be per manufacturer's recommendations.
- h. Control:
 - i. The unit shall have controls provided to perform input functions necessary to operate the system.
 - ii. The unit shall be compatible with interfacing with a BMS system via optional LonWorks or BACnet gateways.
 - iii. The unit shall be compatible with a Daikin Intelligent Touch Manager advanced multi-zone controller.
- E. Exhaust/Supply Fans:
 - 1. General: All exhaust fans shall be tested and rated in accordance with AMCA Standard 210. Fans exposed to the weather shall have ventilated weatherproof housing over motor and drive assembly.
 - 2. Ceiling Fan: Ceiling mounted direct drive centrifugal exhaust fan with exhaust grille. Motor mounted on rubber-in-shear isolators. Motor and fan removable through grille. Acoustically lined housing. Backdraft damper. UL listed. Penn, Cook, ACME, Greenheck or equal.
 - 3. Kitchen Hood Fan: Multivane centrifugal fan. Ball bearings. Vibration isolation mount. All aluminum construction with steel or aluminum wheel, and aluminum curb base. Weatherproof disconnect switch. Upblast type UL listed for removal of smoke and grease laden vapors (YZHW, 762), for kitchen hood service. Cook, Greenheck, Penn, ACME or equal.
 - 4. Roof Fan: Multivane centrifugal fan. Ball bearings. Vibration isolation mount. All aluminum curb base. Weatherproof disconnect switch. Down blast type UL listed. Cook, Greenheck, Penn, ACME or equal.

2.07 INTERNET PROGRAMMABLE THERMOSTAT (IPT):

A Internet Programmable Thermostat shall be a wireless communicating commercial programmable thermostat for networking communication and a wiring terminal block for controlling a single zone HVAC unit.

- 1. Contractor shall be responsible for providing a fully functional user webinterface inclusive of initial programming based on set points provided by owner, all requisite infrastructure, coordination with owner IT department, and all work associated with a functioning system.
- B. The IPT shall provide a keypad for setting:
 - 1. Temperature Set Points.
 - 2. System Mode (Heat, Cool, Auto, Off).
 - 3. Fan Mode (Auto, On).
 - 4. Light Button.
- C. The IPT shall include a wiring terminal for controlling a single zone HVAC unit. The wiring terminal must be able to be removed from the IPT for installations where only 3- wires exist or are available between where the IPT will be placed and its connection with the HVAC unit it will be controlling. Over these 3-wires the thermostat must still be able to control the HVAC unit based on these specifications.
- D. The IPT must be configurable using a Web Based App. No thermostat configuration, other than setting the IPT to Conventional, Heat Pump O, or Heat Pump -B, shall be done at the thermostat. Web based Configuration Setting options shall include:
 - 1. Naming the thermostat.
 - 2. Grouping multiple thermostats.
 - 3. Heat Pump or Conventional system setting.
 - 4. If Heat Pump; reversing valve O or B setting.
 - 5. Cycles Per Hour (1 6).
 - 6. Anticipation Degrees (0°F 0.5°F)
 - 7. Calibration Degrees (2.0°F -2.0°F)
 - 8. Heat Stages (0 2)
 - 9. If Heat Pump; Aux Heat (Disabled and/or Enabled Option)
 - 10. Cool Stages (0 2)
 - 11. Fan Stages (1 2)
 - 12. Fan Circulation Minutes Per Hour.
 - 13. Temperature Display (Fahrenheit or Celsius)
 - 14. Heat Range Temperature Setting Limitation
 - 15. Cool Range Temperature Setting Limitation
 - 16. Ability to disable and enable Keypad Control through schedule.
 - 17. Heat consumption (kw, btu, ton, or watt)
 - 18. Cool consumption (kw, btu, ton, orwatt)
 - 19. Notification Sensitivity (High, Medium, Low)
 - 20. Alarm of exceeding temperature based on a Safe Range
 - 21. Schedule set times (2, 3, 4, or Variable).
- E. IPT settings and control through the Web Base App shall be in real-time and include:
 - 1. Space Temperature

- 2. System Mode (Heat, Cool, Auto, Off).
- 3. Fan Mode (Auto, On).
- 4. Current set point.
- 5. Relay status (Heat/Cool and Fan).
- 6. Historical Trend Graphs.
- 7. Scheduling
- 8. Lock and Unlock Entire Thermostat's Keypad
- 9. Lock and Unlock the Thermostat's Fan Mode setting Only
- F. The IPT shall be provided with the following :
 - 1. Wireless Gatway (WG) capable of providing communication between a dedicated cloud server and the on-site Internet Programmable Thermostat (IPT).
 - 2. Web Based Graphical User Interface (WBA) able to run on any Internet Accessible Smartphone and/or Tablet that has a Web Browser compatible with HTML5.
 - 3. Wired Remote Temperature Sensors and Digital Alarm Input
 - 4. Wireless Proximity Sensors.

PART 3 – EXECUTION

- 3.01 DUCTWORK INSTALLATION:
 - A. General:
 - 1. Standards: Unless otherwise noted, all ductwork shall be constructed and installed in accordance with current SMACNA "HVAC Duct Construction Standards". Ductwork and accessories shall be installed in a manner to prevent vibration and rattling.
 - 2. Seismic bracing: All ducts shall be braced and supported per SMACNA Guidelines for "Seismic Restraints Manual for Mechanical Systems" dated 1998, including Appendix E.
 - 3. Duct Access Doors: Provide access doors as required to adjust equipment and dampers.
 - 4. Flexible Connections: Connections of ductwork to all equipment shall be with 6" (min.) flexible connection. Install with ample slack and uniform gap after deflection of vibration isolators. There shall be no metal to metal contact across flexible connection. Protect outdoor connections with weatherproof metal shroud on top and sides, no metal-to-metal contact. Provide at all seismic joints.
 - 5. Ducted Returns: All air handling that is not directly located in the space that it serves shall have ducted returns.
 - 6. Open ends of ductwork shall be covered during construction to keep inside clean.
 - B. Low Velocity-Low Pressure (up to 2000 ft/ min; 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 shall be straight tap-in with extractor or 45 degree takeoff, as shown on drawings.
 - c. Duct Joints: Seal duct joints airtight with fiber tape and adhesive per manufacturer's printed instruction. Ducts in weather shall be sealed air and water tight with duct mastic before closing and taping.
 - i. Where Ductmate type joints are used, the manufacturer's designated procedure shall be followed. Ductmate joints on roof shall have continuous cleat on top duct flange to prevent water from collecting on gasket.
 - d. Dampers: Install volume control damper and damper regulator in all branch ducts.

- e. Duct dimensions shown on drawings for lined ducts, are clear net openings inside of lining.
- f. Top of ducts exposed to weather shall be cross broken and sloped slightly to each side to allow rain water to run off. Ducts that do not drain off top will be rejected and need to be replaced at contractors' expense.
- 2. Flexible Glass Fiber Ductwork: Hangers shall be 2" wide metal straps spaced to prevent sagging, 3 feet spacing maximum. Insert 6" wide fiberglass pad between duct and hanging strap. All joints and fittings shall be sheet metal and shall be installed with metal bands or 3 (min) self-tapping screws and fiber tape. Maximum length of flexible duct shall be 5 ft. Single piece minimum length shall be 3 ft. Minimum turn radius shall be in accordance with SMACNA Standards (turn radius to duct centerline not less than 1.5 times the duct diameter).
- 3.02 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 "HVAC Duct Construction Standards", details on drawings and manufacturers instructions. Terminals and fittings shall be installed in a manner to prevent vibration and rattling.
 - B. Fire Smoke Damper: Fire smoke dampers shall be installed in accordance with their State Fire Marshal approval and the manufacturer's recommendations.

3.03 DUCTWORK INSULATION INSTALLATION:

- A. General: All supply and return sheet metal ductwork shall be insulated.
- B. Concealed Ductwork: Wrap ductwork with fiberglass blanket lapped 2" minimum. Secure with foil tape at all joints for a complete vapor barrier.
- C. Acoustic Lining: All ductwork in equipment rooms, where exposed to weather, and elsewhere as indicated on drawings, shall have acoustic lining. 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.

3.04 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. Expansion joints and/or flexible connectors shall be installed as required. Vertical lines shall be installed to allow for building settlement without damage to piping. Lines shall be adequately braced against vertical and lateral movement.
 - 2. 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. Actual spacing requirements will depend on structural system. Refer to drawings for additional

requirements and attachment to structure. Vertical piping shall be supported at floor and ceiling. Support pipe within 12" of all changes in direction. No perforated straphanger shall be used in any work.

- b. Refrigerant Piping: Pipe shall be cut square. Joint surfaces shall be thoroughly cleaned, fitted and erected before brazing. Install specified accessories. After installation, evacuate to 29 inches of mercury, ambient temperature during evacuation shall not be less than 70 degrees 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.
- c. Flue Piping: Flue piping shall be installed in accordance with its UL listing and manufacturer's instructions. All welders shall be certified in accordance with AWS Standard D9.1, Specifications for welding sheet metal.
- d. PVC Piping: Shall be cut square and assembled prior to solvent weld. Apply primer per manufacturer's recommendations. Coat male joint fully with solvent, make joint before solvent dries and wipe exterior clean.

3.05 PIPING INSULATION INSTALLATION:

A. Refrigerant Piping: Cover suction piping with foamed plastic insulation. Longitudinal and end seams shall be thoroughly cemented with adhesive in accordance with manufacturer's recommendation. Cover all fittings, unions, valves, and connections. Piping exposed to weather shall be covered with aluminum jacketing, seal all joints and seams with grey outdoor mastic or silver silicone sealant. Piping exposed in room shall be covered with piping chase painted to match wall.

3.06 EQUIPMENT INSTALLATION:

- A. General: It shall be the responsibility of the contractor to insure that no work done under other specification sections shall in any way block, or otherwise hinder access panels or diminish the effectiveness of equipment vibration isolation.
- B. Connections to Equipment: Where size reductions are required for connections to equipment, they shall be made immediately adjacent to the equipment and, if possible, inside the equipment cabinet. Connections made to equipment mounted on vibration isolators shall be with flexible connectors, installed adjacent to equipment.
- C. Start Up: Engage manufacturer or factory-authorized service representative to perform start up supervision. Manufacturer shall provide on-site start up and commissioning assistance through job completion. Complete installation and start up checks according to manufacturer's written instructions.

3.07 TEMPERATURE CONTROL SYSTEM:

A. Thermostats shall have the capability of terminating all heating at a temperature of no more than 70 degrees F, or terminating all cooling at a temperature of no less than 78 degrees F, and to provide a temperature range of up to 10 degrees F between full heating and full cooling. Thermostats shall be 7 day programmable, Carrier, Venstar or equal with sub-base capable of battery back up or capacitor to retain program in the event of a power outage. All control wiring, regardless of voltage, shall be installed in conduit.

3.08 SYSTEM AIR BALANCE:

- A. Scope: Provide the services of a qualified independent test and balance agency certified by the Associated Air Balance Council (AABC) or The National Environmental Balancing Bureau (NEBB) to test, adjust and balance, retest, and record performance of the system to obtain design quantities as specified. Balancing contractor must also be TABB certified and have a C-20 license.
- B. Qualifications: Prior to commencing work, the agency shall be approved by the Owner's Representative.
- C. Instruments: All instruments shall be accurately calibrated; calibration histories shall be available for examination. Application of instrumentation shall be in accordance with AABC standards.
- D. Procedure: General: Balanced quantities shall be plus 5%, minus 5% of design quantities. All name-plate data, manufacturer, model, and serial numbers shall be recorded for each item tested.
- E. 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 Owner's Representative 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 Owner's Representative in making any tests he may require during this period of time.
- F. 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 downward 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, dampers or the addition of dampers cleaning of insect screens and replacement of filters 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.
- G. Water Balance Procedure:
 - 1. Set valves for maximum coil flow.
 - 2. Remove and clean all strainers.
 - 3. Examine water in system and determine if water has been treated and cleaned.
 - 4. Check expansion tanks to determine that they are properly charged and that the system is completely full of water. Bleed air from system.
 - 5. Adjust water flow through boilers, to design flow.
 - 6. Record leaving and return water temperatures at boiler. Reset to correct design temperature.
 - 7. Record the following at each coil:
 - a. Inlet water temperatures.
 - b. Leaving water temperatures.
 - c. Pressure drop across coil.
 - d. Pressure drop across bypass valve.
 - 8. Record pump suction and discharge pressures at operating condition and also with pump discharge valve completely closed.
 - 9. Record running amperage of pump motor at operation condition and also with pump discharge valve completely closed.
 - 10. Record water metering device readings.
- H. Test, adjust and retest water bleed rates from evaporative coolers. Record all data.
- I. Acoustic Performance Testing: Provide acoustic performance testing in accordance with the requirements of EQ3.0 of the "California Criteria for High Performance Schools, Best Practices Manual, 2009 Edition".
 - 1. Maximum Background Noise Level: Unoccupied classrooms must have a maximum background noise level of no more than 45 dBA LAeq. The standard anticipates two primary noise sources, steady HVAC equipment noise and the usually unsteady exterior environmental noise. Where the measured ambient noises due to sources other than HVAC are within 5 dB of the measured overall noise (HVAC and exterior intrusive noise) a measurement of at least ½ hour duration shall be made in at least two classrooms in each building in the worse case (noisiest) locations on the school site during normal school days and hours.
 - a. To evaluate the significance of intrusive exterior noise, a 30-minute Equivalent Sound Level (LAeq30, in general conformance with ANSI S12.60-2002, Annex E3) measurement shall be made in the classroom that is subjectively assessed to represent the worse case exposure to exterior noise, with the HVAC system not in operation. This Leq30 measurement shall be repeated with the HVAC in operation. If the second "HVAC-on" sound level is more than 5 dB greater than the initial "HVAC-off" measurement, exterior noise intrusion shall be deemed "not significant".
 - b. Where intrusive exterior noise has been deemed "not significant" short-term (15 second) A-weighted sound level measurements shall be made in each classroom with the HVAC systems in operation. Where exterior intrusive noise has been deemed "significant" (per the evaluation method noted above), LAeq30 sound level measurements shall be made in each classroom with the HVAC system in operation. In either case, where classrooms are served by variable-air-volume systems, the systems shall be operated at maximum nominal flow (typically by means of varying the thermostat set point).
 - c. Where exposure to exterior noise varies significantly between groups of classrooms (e.g. one side of a classroom wing adjacent to a street, the other side facing away), separate

evaluations of exterior noise significance can be conducted to limit the need for LAeq30 measurements.

2. Maximum Reverberation: Classrooms less than 10,000 cubic feet must have a 0.6-second maximum (unoccupied) reverberation time and classrooms with volumes between 10,000 cubic feet and 20,000 cubic feet must have a 0.7-second maximum (unoccupied, furnished, and fitted-out) reverberation time. (ANSI Standard S12.60-2002). The reverberation times shall be measured in each classroom in three octave bands with center frequencies of 500, 1000, and 2000 Hz. The arithmetic average of the three measured values shall be compared to the standard.

END OF SECTION 23 00 01

₋ 0"

⊤1"

STATEMENT OF G	ABBREVIATIONS					_ _ _ _ _	
	MECHANICAL, ELECTRICAL, PLUMBING	MEP	М	AREA DRAIN AMERICANS WITH DISABILITIES	A.D. A.D.A.	A A	
Staten	MECHANICAL, ELECTRICAL, PLUMBING, TECHNOLOGY	MEPI	М	ACT 2010 ADA STANDARDS FOR	A.D.A.	A	
FOR ARCHITEC	MEZZANINE MANUFACTURE (R)	MEZZ. MFR. /	M	ACCESSIBLE DESIGN AMERICANS WITH DISABILITIES	A.D.A.A.G.	A	
INCLUDING BUT NOT LIMITED TO DESIGN PROF	MANHOLE	MANUF. MH.	М				
(Application No. 04	MINIMUM MISCELLANEOUS	MIN. MISC.	M M	ABOVE FINISH FLOOR ABOVE FINISH GRADE	A.F.F. A.F.G.	A A	
	MODULAR METAL	MOD MTL	M M	ATHORITY HAVING JURISDICTION	A.H.J.	Ą	
X The drawings or sheets This drawing, page of s	METAL TOILET PARTITION	MTP.	М	AIR CONDITIONING ACCESSIBLE, ACCESSIBILITY	A/C ACC.	•	
have been prepared by othe	NAPKIN DISPOSAL	N.D.	N	ACOUSTICAL PANEL ACOUSTICAL TILE	ACP. ACT.		
authorized to prepare such o	NOT TO SCALE	N.T.S.	N		ADJ.	1	
	NAPKIN VENDOR NUMBER	N.V. NO.	N N	ALUMINUM	ALUM.	```	
1) design intent and appear Code of Regulations a	NOMINAL	NOM.	N	ANGLE	A3F11. ∠	4	
2) coordination with my play	ON CENTER (S) ON CENTER EACH WAY	0.C. 0.C.E.W.	0 0	BOTTOM OF DECK	B.O.D.	3	
the construction of thi	OUTSIDE DIAMETER OWNER FURNISHED,	0.D. 0.F.C.I.	0 0	BUILT-UP ROOF BOARD	B.U.R. BD.	3 3	
The Statement of General C	CONTRACTOR INSTALLED OPPOSITE HAND	O.H.	0	BUILDING BLOCK	BLDG. BLK.	3 3	
duties, and responsibilities u Sections 4-336, 4-341 and 4	OPENING OPPOSITE	opng. Opp.	0 0	BEAM	BM.	3	
		ΡΙΔΜ /	P	CHANNEL CONTROL JOINT	C C.J.	С С	
	PRECAST	PLAM	, D	CONCRETE MASONRY UNIT	C.M.U.	2	
I find that: The drawings or s	PAPER HOLDER	P.H.	P		CAB, CABT	, , ,	
This drawings or s	PROPERTY LINE POWER POLE	P.L. P.P.	P	FRAMING		, ,	
	PREFINISHED WALL BOARD	P.W.B. PL.	Р Р	CENTERLINE	oror CL	, , ,	
is/are in general conformance with the project intent. and	PLUMBING PLYWOOD	PLUMB. PLYWD.	P P	CEILING CLEAR	ULG. CLR	;	
X has/have been coordinated with the project pl	POLISHED PAIR	POL. PR.	P P	COLUMN COMPRESSIBLE	COL. COMP.	;	
specifications.	PRE-FINISHED PRESSURF-TREATED	PREFIN. PT	P P	CONCRETE CONDITION	CONC. COND.		
06/19/22		РТ. РТ.	P	CONTINUOUS CORRIDOR	CONT. CORR		
Signature Date		U.	۲	CARPET (ED)	CPT.		
Architect or Engineer designated to be in general	QUAKRY IILE	Q.T.	Q	COUNTER SINK	CTSK.		
responsible charge	RADIUS REFLECTED CEILING PLAN	R / RAD RCP	R R	DRYER	D		
YONG YOO	ROOF DRAIN REFER TO / REFERENCE / SEE	RD RE., REF.	R R	DRINKING FOUNTAIN DAMPPROOFING	D.F. D.P.		
Print Name	RECEPTACLE REINFORCE (D) (ING)	RECP.	R	DOWN SPOUT DIAMETER	D.S. DIA.		
C-3116210/31/2023License NumberExpiration Data	REQUIRED RESILIENT	REQ'D.	R	DIMENSION DETAIL	DIM. DTL.		
	REVISION (S), REVISED	REV.	R	DRAWING	DWG.		
		RDC	ĸ	EXPANSION JOINT	E.J.		
		RSS	к р		EA.		
			1	ELECTRIC DRINKING FOUNTAIN ELEVATION (HEIGHT)	EDF EL.		
PARTIAL LIST OF APPLICABLE CODES	SOAP DISPENSER	S.D.	S S	ELECTRICAL	ELEC. ELECT.		
2022 Building Standards Administrative Code 2019 California Building Code (CBC)	SANTTARY NAPKIN DISPOSAL	S.IN.D. SCHED	S S	ELEVATION (DRAWING) EQUIPMENT	elev Equip		
(2018 International Building Code with 2019 California Ammendment 2019 California Electrical Code (CEC)	SOLID CORE PLASTIC	SCPL	S	EXISTING EXPANSION	EXIST EXP		
(2017 National Electrical Code and 2019 California Amendments) 2019 California Mechanical Code (CMC)	SECTION SHEET	SECT SHT	S S	EXTERIOR	EXT		
(2018 IAMPO Uniform Mechanical Code and 2019 California Amend 2019 California Plumbing Code (CPC)	SIMILAR SPECIAL COATING SYSTEM	SIM SPC	S S	FIRE EXTINGUISHER FIRE EXTINGUISHER CABINET	F.E. F.E.C.		
(2016 AMPC UNITOR Plumbing Code and 2019 California Amendme 2019 California Energy Code (CEC)	SPECIFICATION (S) SQUARE	SPEC SQ.	S S	FIRE HOSE CABINET	F.H.C.		
(2018 International Fire Code and 2019 California Amendments) 2019 California Existing Building Code (CFBC)	STAINLESS STEEL	SS / SS. STL.	S		FD.		
(2018 International Existing Building Code and 2019 California Amen 2019 California Green Building Standards Code	STEEL STRUCTURAL	STL STRUC /	S S	FIXTURE	FIXT.		
2019 California Referenced Standards Code Regulations of the State Fire Marshall	SUSPENDED	STRUCT SUSP	S	FLOOK (ING) FLASHING	FLK. FLSHG.		
2016 ASME A17.1/CSA B44-16 Safety Code for Elevators and Escalators		SVDF SVF	S	FLUORESCENT FIBER REINFORCED PLASTIC	fluor Frp		
For a complete list of all applicable NEPA standards refer to 2010 CPC (SEM)		ТЛС	ъ т	GRAB BAR	G.B.	j	
See California Building Code, Chapter 35, for State of California ammendmen	STANDARDS (2012)	т. <mark>А.</mark> Э.	। न	GALVANIZED IRON GAUGE	G.I. GA.		
		т. <u>р</u> . T.D.R.	т Т	GALVANIZED	GALV.		
		T.O.	T -	UNIT GENERAI	GEN		
DRAWING	TOP OF (WOOD) BLOCKING TOP OF MASONRY	т.О.В. Т.О.М.	T T		GEN.		
	TOP OF PARAPET TOP OF STEEL	T.O.P. T.O.S.	T T	GLASS / GLAZING GLASS	GL. GL.		
	TOILET TISSUE DISPENSER TELEPHONE	T.T.D. TEL	T T	GRADE GLAZED TILE PAVER	GR. GTP.		
	TERRAZZO THICK (NESS)	TERR THK	T T	GYPSUM DRYWALL	GYP.		
	TYPICAL	TYP	T	HOT WATER HOLLOW METAL FRAME	H.W. HM		
NORTH		U.N.O.	U	HORIZONTAL HEIGHT	HORIZ. HT.		
			U		 חו		
	VENT VINYL COMPOSITION TILE	V V.C.T.	V V	IRON PIPE SIZE	I.P.S.		
	VERIFY IN FIELD VENTILATING, VENTILATED	V.I.F. VENT.	V V	INSULATE (ED), (ION) INTERIOR	INSUL INT.		
(O) column line	VERIFY VERTICAL	VER. VERT.	V V	JOINT	JT.		
	(PREFINISHED) VINYL CLAD GYPSUM BOARD	VGB	V	LIGHT POLE	L.P.		
	VINYL WALL COVERING	VWC	V	LAMINATE (D) LAVATORY	LAM. LAV.		
		W W P	W	LIGHT LIGHTWFIGHT	LT. LT. WT		
	WEATHERSTRIP	W.F. W.S.	W				
	WATER WELL WELDED WIRE FABRIC	w.w.F.	W		MAS.]	
A101 SECTION CALLOUT SY	WOVEN WIRE MESH	W.W.M. W/	W W	MATERIAL (S) MAXIMUM	MALL.	1	
	WATER CLOSET WOOD	WC WD	W W	MARKER BOARD MECHANICAL	MB. MECH.		
(A1.01) 12 EXTERIOR ELEVATION	WINDOW WEIGHT	WDW WT	W W	MEMBRANE MEMBRANE WATERPROOFING	MEM MEM. WP.		
3 A1.01 1 INTERIOR ELEVATION							
4							
	1						

N 39 N 4 PATH: 4 23

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INT OF GENI	ERAL CON	FORMANCE	GENERAL NOTES
Statement of G	eneral Conformance	NS,	 CONSTRUCTION DOCUMENTS DESCRIBE THE PRODUCTS, SYSTEMS, QUANTITIES, CONFIGURATION AND PERFORMANCE SPECIFICATIONS THAT DELIVER THE OVERALL DESIGN INTENT OF THE PROJECT. THE CONSTRUCTION DOCUMENT DRAWINGS AND SPECIFICATIONS ARE COMPLIMENTARY AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY BOTH. PERFORMANCE BY THE CONSTRUCTION TEAM SHALL BE CONSISTENT WITH THE
G BUT NOT LIMITED TO SHOP DESIGN PROFESSION	DRAWINGS, PREPARED B ALS AND/OR CONSULTAN	BY OTHER LICENSED	 CONSTRUCTION DRAWINGS AND SPECIFICATIONS AS NECESSARY TO DELIVER THE INDICATED RESULTS OF THE DESIGN INTENT. 4. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ALL GOVERNING CODES,
(Application No. 04-121817	File No. <u>30-4</u> 3	3)	ORDINANCES, REGULATIONS AND LAWS. 5. THE DESIGN ADEQUACY AND SAFETY OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS AND SCAFFOLDING IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
X The drawings or sheets listed on This drawing, page of specificatio	the cover or index sheet (see aste ns/calculations	erisk *)	 WHERE ANY CONFLICT OCCURS BETWEEN THE REQUIREMENTS OF LAWS, CODES, ORDINANCES, RULES AND REGULATIONS, THE MOST STRINGENT SHALL GOVERN. ENACT ALL MEASURES TO PROTECT AND SAFEGUARD ALL EXISTING ELEMENTS TO REMA FROM BEING DAMAGED. REPLACE OR REPAIR EXISTING ELEMENTS DAMAGED BY THE
have been prepared by other design pr authorized to prepare such drawings in	ofessionals or consultants who ar this state. It has been examined	re licensed and/or by me for:	 EXECUTION OF THIS CONTRACT TO EQUAL OR BETTER CONDITION. 8. CUTTING, BORING, SAWCUTTING OR DRILLING THROUGH THE EXISTING OR NEW STRUCTURAL ELEMENTS SHALL NOT BE STARTED UNTIL THE DETAILS HAVE BEEN REVIEWED AND APPROVED BY THE ARCHITECT, AND STRUCTURAL ENGINEER OF RECOR 9. VERIFY DIMENSIONS AND EXISTING CONDITIONS BEFORE COMMENCING WORK. REPORT
1) design intent and appears to meet t Code of Regulations and the pro	he appropriate requirements of Ti ject specifications prepared by mo	itle 24, California e, and	DISCREPANCIES TO THE ARCHITECT PRIOR TO PROCEEDING WITH AFFECTED WORK. 10. REFLECTED CEILING PLAN DIMENSIONS ARE REFERENCED FROM FINISHED SURFACES UNLESS NOTED OTHERWISE. CEILING HEIGHTS ARE DIMENSIONED FROM FLOOR TO FINISHED CEILING HEIGHT.
 coordination with my plans and spe the construction of this project. 	cifications and is acceptable for in	ncorporation into	11. DIMENSIONS NOTED AS "FIELD VERIFY" SHALL BE CHECKED AT THE SITE BY THE CONTRACTOR AND REVIEWED WITH THE ARCHITECT BEFORE INCORPORATING INTO THE WORK.
The Statement of General Conformanc duties, and responsibilities under Secti Sections 4-336, 4-341 and 4-344" of Ti	e "shall not be construed as reliev ons 17302 and 81138 of the Educ tle 24, Part 1. <i>(Title 24, Part 1, Se</i>	ving me of my rights, cation Code and <i>ection 4-317 (b))</i>	 12. DO NOT SCALE DRAWING. WRITTEN DIMENSIONS TAKE PRECEDENCE. IF CLARIFICATION REQUIRED IN ORDER TO DETERMINE THE INTENT OF THE CONTRACT DOCUMENTS, CONTACT THE ARCHITECT. 13. NOTES OR DIMENSIONS LABELED "TYPICAL" SHALL APPLY TO SITUATIONS THAT ARE THE SAME OR SIMILAR. 14. ALL DIMENSIONS ARE TO FACE OF STUD, UNLESS NOTED OTHERWISE. 15. ALL SPACES WITH FLOOR DRAINS TO HAVE FINISHED FLOORS SLOPED TO DRAIN NOT TO EXCEED ONE IN FIFTY. 16. ALL EL OORS FINISH CHANGES SHALL OCCUR AT THE CENTERLINE OF DOORS UNLESS
at: X The drawings or sheets liste This drawing or page	d on the cover or index sheet		 NOTED OTHERWISE. ALL FLOOR FINISH CHANGES SHALL HAVE THRESHOLDS OR REDUCE STRIPS. 17. COORDINATE HOUSEKEEPING PAD DIMENSIONS AND LOCATIONS WITH EQUIPMENT TO B INSTALLED. 18. ALL DOORS IN INTERIOR GYP. BD STUD WALLS SHALL BE SET 4" OFF THE PERP. ADJ. WAL ON THE HINGE SIDE OF THE DOOR UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL
conformance with the project design	is/are in general conformation intent, and	ance with the project design	CONTACT THE ARCHITECT IF ANY CONFLICTS OCCUR. 19. ALUM. THRESHOLDS TO BE SET IN FULL BED OF SEALANT AT ALL EXT. DOORS. 20. UNLESS OTHERWISE NOTED. ALL ELECTRICAL AND MECHANICAL OPERABLE DEVICES
pordinated with the project plans and	have been coordinated w specifications.	vith the project plans and	SHALL BE MOUNTED WITH THE HIGHEST OPERABLE CONTROL AT MAX. OF 42" AFF. 21. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE DSA APPROVED DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CALIFORN CODE OF REGULATIONS, A CONSTRUCTION CHANGE DOCUMENT, OR A SEPARATE SET OF
06/19/22			PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED REPAIR WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE REPA
Date	Signature	Date	WORK, PER CAC, 2013, 4-317(c)
designated to be in general	Architect or Engineer deliga responsibility for this portio	nted on of the work	
	Print Name		
10/31/2023			
Expiration Date	License Number	Expiration Date	

CODES & STANDARDS

n 2019 California Ammendments) 2019 California Amendments) Code and 2019 California Amendments) de and 2019 California Amendments) 019 California Amendments) Code and 2019 California Amendments)

(Part 1, Title 24, CCR) (Part 2, Title 24, CCR) (Part 3, Title 24, CCR) (Part 4, Title 24, CCR) (Part 5, Title 24, CCR) (Part 6, Title 24, CCR) (Part 9, Title 24, CCR) (Part 10, Title 24, CCR) (Part 11, Title 24, CCR) (Part 12, Title 24, CCR)

PARTIAL LIST OF FIRE LIFE SAFETY APPLICABLE STANDARDS NFPA 13 Automatic Fire Sprinkler Systems... NFPA 14 Standpipe and Hose Systems..... NFPA 17 Dry Chemical Extinguishing Systems.. NFPA 17A Wet Chemical Extinguishing Systems.. NFPA 20 Stationary Pumps for Fire Protection ... NFPA 22 Standard for the Installation of Private Fire Service Mains and Their Appurtenances..... NFPA 24 Private Fire Mains & their Appurtenances... NFPA 72 National Fire Alarm & Signaling Code....

NFPA 80 Fire Doors and Other Opening Protectives.. NFPA 2001 Clean Agent Fire Extinguishing Systems.... UL 300 Standard Fire Extinguishing Systems For Protection of Commercial Cooking Equipment..... UL 464 Audible Signal Appliances... UL 521 Standard for Heat Detectors for Fire Protective Signaling Systems.... UL 1971 Standard for Signaling Devices for the Hearing Impared..... ICC 300 Standard for Bleachers, Folding and Telescopic Seating, and Grandstands...

(2016 Edition, CA Amended) (2017 Edition) (2017 Edition) (2016 Edition) (2013 Edition) (2016 Edition, CA Amended) (2016 Edition, CA Amended) (2016 Edition) (2015 Edition) (2005, R2010) (2018 Edition) (1999 Edition) (2002, R2012) (2017 Edition)

ndards refer to 2019 CBC (SFM) Chapter 35 and California Fire Code (CFC) Chapter 80. State of California ammendments to the NFPA Standards

(Title 19, CCR)

(per 2019 CBC Part 2 Ch 35)

DRAWING CONVENTIONS

D	RAWING CO	NVENTIONS	DSA NOTES		
_	PROPERTY LINE	PLAN OR DETAIL ENLARGED	1. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY A CONSTRUCTION CHANGE DOCUMENT (CCD) APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4-338, PART L TITLE 24 CCR		
	AREA DRAIN	DETAIL SECTIONS AND VERTICAL SECTIONS	 A PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR; CLASS 3 		
ORTH	NORTH SYMBOL		 A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT. 		
		6'-0" 4'-0" DIMENSIONS	4. ALL WORK SHALL CONFORM TO 2019 EDITION TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).		
	COLUMN LINE	NOTE: all dimensions to face of wall unless otherwise poted	5. THE SCOPE OF WORK - CLEARLY INDICATE THE SCOPE OF WORK ON THE COVER SHEET OR GENERAL NOTE SHEET OF THE DRAWINGS.		
	FLOOR LINE	SPOT ELEVATION	6. FABRICATION AND INSTALLATION OF DEFERRED SUBMITTAL ITEMS SHALL NOT BE STARTED UNTIL CONTRACTOR'S DRAWINGS, SPECIFICATIONS, AND ENGINEERING CALCULATIONS FOR THE ACTUAL SYSTEMS TO BE INSTALLED HAVE BEEN ACCEPTED AND SIGNED BY THE ARCHITECT OR STRUCTURAL ENGINEER AND APPROVED BY DSA. LIST DEFERRED SUBMITTAL ITEMS FOR THIS PROJECT.		
1 101	SECTION CALLOUT SYMBOL	MATCH LINE SEE XX/X-XXX SHEET NUMBER ON WHICH CONTINUATION	7. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERNATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CCR,. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR, A		
	EXTERIOR ELEVATION SYMBOL	IS FOUND	CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4-317(c), PART 1, TITLE 24, CCR).		
	INTERIOR ELEVATION SYMBOL		8. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.		
=	DOOR DESIGNATION	BREAK LINE			
	WINDOW DESIGNATION	Room name			
	PARTITION TYPE	101ROOM NAME AND NUMBER150 SF			
	EXISTING PARTITION	FIRE HOSE CABINET FHC FHC (RECESSED AND SURFACE MOUNTED)			
	NEW PARTITION	FIRE EXTINGUISHER CABINET (RECESSED AND SURFACE MOUNTED)			
	REVISION NUMBER	FEC FEC			
		TA1 TOILET ACCESSORY SYMBOL			
	DETAIL ENLARGED	F.D. FLOOR DRAIN			

OTES	DRAWING INDEX					
SYSTEMS, QUANTITIES,		GENERAL	MECHANICAL *			
	G0	COVER SHEET	M0.0			
CATIONS ARE COMPLIMENTARY, IF REQUIRED BY BOTH.	G1	SHEET INDEX, DRAWING CONVENTIONS, AND	M0.1	MECHANICAL TITLE 24		
ONSISTENT WITH THE		LOCATION MAP	M0.2	MECHANICAL TITLE 24		
	G2	ACCESSIBILITY SITE PLAN	M0.3	MECHANICAL TITLE 24		
ALL GOVERNING CODES,	G2.1	ENLARGED SITE PLAN	M1.0	MECHANICAL SITE PLAN		
NG, SHORING, TEMPORARY IY OF THE CONTRACTOR. ENTS OF LAWS, CODES,	G3 G4	FIRE ACCESS SITE PLAN SITE DETAILS	MD2.1	MECHANICAL DEMO FLOOR PLANS - ADMIN & KINDERGARTEN BLDG A,B&C		
IGENT SHALL GOVERN. EXISTING ELEMENTS TO REMAIN EMENTS DAMAGED BY THE			M2.1	MECHANICAL FLOOR PLANS - ADMIN & KINDERGARTEN, BLDG A,B&C		
NDITION. HE EXISTING OR NEW		CIVIL	M4.1	MECHANICAL ROOF PLANS		
HE DETAILS HAVE BEEN	C1.00	DEMOLITION PLAN	M5.1	MECHANICAL SCHEDULES		
CTURAL ENGINEER OF RECORD.	C2.00	GRADING PLAN	M5.2	MECHANICAL SCHEDULES		
IG WITH AFFECTED WORK.	C3.00	DETAIL SHEET	M6.1	MECHANICAL DETAILS		
SIONED FROM FLOOR TO			M6.2	MECHANICAL DETAILS		
D AT THE SITE BY THE		DEMOLITION				
RE INCORPORATING INTO THE	D0.1	SITE DEMOLITION PLAN				
ECEDENCE. IF CLARIFICATION IS	D0.2	SITE DEMOLITION PLANS		ELECIRICAL *		
CONTRACT DOCUMENTS,	D1.1	DEMO FLOOR PLANS ADMIN/KINDER, BLDG A B&C	E0.0	ELECTRICAL SHEET INDEX, LEGEND, AND NOTES		
TO SITUATIONS THAT ARE THE	D2.1	DEMO REFLECTED CEILING PLAN ADMIN/KINDER.	E0.1	ELECTRICAL TITLE 24		
OTHERWISE.		BLDG A,B&C	E1.0	ELECTRICAL SITE PLAN		
TERLINE OF DOORS UNLESS			E2.1	ELECTRICAL POWER PLANS - ADMIN & KINDERGARTEN, BLDG A,B&C		
AVE THRESHOLDS OR REDUCER	A1 01	ARCHITECTURAL	E2.2	ELECTRICAL LIGHTING PLANS - ADMIN & KINDERGARTEN, BLDG A,B&C		
ET 4" OFE THE PERP AD I WALL	Δ2 01	REFLECTED CEILING PLANS ADMIN/KINDER BLDG	E4.1	ELECTRICAL ROOF PLANS		
DTED. THE CONTRACTOR SHALL		A,B&C	E5.1	ELECTRICAL SCHEDULES		
AT ALL EXT. DOORS.	A3.01	OVERALL ROOF PLAN AND DETAIL	E5.2	ELECTRICAL PANEL SCHEDULES		
NICAL OPERABLE DEVICES	A3.02	ROOF PLAN	E6.1	ELECTRICAL DETAILS		
TION OR NON-COMPLYING	A3.03	ROOF DETAILS - MOD. BIT.				
BY THE DSA APPROVED MPLY WITH TITLE 24, CALIFORNIA	A4.01	BUILDING SECTIONS				
IMENT, OR A SEPARATE SET OF THE REQUIRED REPAIR WORK PROCEEDING WITH THE REPAIR	A5.01	ENLARGED RESTROOM PLANS & INTERIOR ELEVATIONS		PLUMBING *		
	A6.01	EXTERIOR ELEVATIONS	P0.0	PLUMBING SHEET INDEX, LEGEND, AND NOTES		
	A6.02	EXTERIOR ELEVATIONS	P1.0	PLUMBING SITE PLAN		
	A7.01	INTERIOR ELEVATIONS	PD2.1	PLUMBING DEMOLITION PLANS - ADMIN &		
	A8.01	DOORS, WINDOW FRAME DETAILS	/	KINDERGARTEN, BLDG A,B&C		
	A8.02	PARTITION TYPES AND MISC. DETAILS	P2.1	PLUMBING FLOOR PLANS - ADMIN &		
	A8.03	CEILING & MISC DETAILS	D4 1			
	A9.01	DOORS SCHEDULE & WINDOWS FRAMING	P4.1			
			P 5.1 P 6 1			
	A10.01	FINISH PLANS & SCHEDULE	10.1			
		STRUCTURAL *				
	SN1	GENERAL NOTES				
	S1	FLOOR/ROOF PLANS - BLDG A & B	FAU.UU			
	S2	FLOOR / ROOF PLANS - BLDG ADMIN	FA1.UU			
	S3	ROOF PLAN BLDG C	FA1.01	FIRE ALARIVI FLOOK PLAN ADIVIIN KINDEK & BLDG A		
(2016 Edition, CA Amended) (2016 Edition, CA Amended)	SD1		FΔ1 02			
(2017 Edition)	SD2		FΔ1 03	FIRE ALARM FLOOR PLAN RELOCILASSROOMS		
(2016 Edition)	SD2A		FA1 04	FIRE ALARM FLOOR PLAN MULTIPURPOSE		
(2013 Edition) (2016 Edition. CA Amended)	SD3	HUNG UNITS DETAILS	FA2 00	FIRE ALARM RISER DIAGRAM		
(2016 Edition, CA Amended)			FA3.00	FIRE ALARM CALCULATIONS		

TOTAL SHEET: 73

FA4.00 FIRE ALARM DETAILS






















E PATIH: Z:\Project





	 EXISTING NOMENCLATURE CONTRACTOR SHALL VISIT SITE TO ASCERTAIN EXACT EXISTING CONDITIONS AND COMPONENTS RELATED TO THE WORK CONDUCTIONS AND COMPONENTS RELATED TO THE WORK COLO HAVE REQUEST FOR ADDITIONAL MONEY SHALL NOT BE APPROVED IF THE WORK COULD HAVE BEEN ANTICIPATED DURING THE SITE VISIT BY THE CONTRACTOR, ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH ACCEPTED MANUFACTURER'S PRINTED INSTRUCTIONS & WARRANTY REQUIREMENTS. DIMENSIONS, DETALS, EQUIPMENT SIZE AND LOCATION S WARRANTY REQUIREMENTS. DIMENSIONS, DETALS, EQUIPMENT SIZE AND LOCATION S & WARRANTY REQUIREMENTS. DIMENSIONS, DETALS, EQUIPMENT SIZE AND LOCATION S & WARRANTY REQUIREMENTS. DIMENSIONS, DETALS, EQUIPMENT SIZE AND LOCATION S & WARRANTY REQUIREMENTS. DIMENSIONS, DETALS, EQUIPMENT SIZE AND LOCATION S & WARRANTY REQUIREMENTS. DIMENSIONS, DETALS, EQUIPMENT SIZE AND LOCATION S & WARRANTY REQUIREMENTS. DIMENSIONS, DETALS, EQUIPMENT SIZE AND LOCATION S & WARRANTY REQUIREMENTS. DIMENSIONS, DETALS, EQUIPMENT SIZE AND LOCATION S & WARRANTY REQUIREMENTS. ALL NEW CRICKETS AND TAPERED INSULATION SHALL BE INSTALLED WITH A FINISHED 1/4" PER FOOT MIN, SLOPE. CRICKET THE UP SLOPE SIDE OF ALL SQUARE CURES AND PROJECTIONS. REMOVE ALL ABRANDANCE SQUER SLEET METAL TO EXISTING DECK HOLES GREATER THAN 10" WIDE-SCREW NEW METAL DECK (MATCH EXISTING) SPAN FROM JOIST OJOIST. ALL HWAC AND/OR DX UNITS, ELECTRICAL TRANSFORMERS, ROOF TOP EQUIPMENT, ETC. THAT ARE ON SLEEPERS SHALL DE EXISTING DISCONNECTED/REMOVED, RAISED, & PLACED ON NEW CURBED PLATFORMS (RE: DETAL), AND REPREPIXEL. UNER SAIL BE DISCONNECTED AND MUTED MINTS, EQUIPMENT, ETC. HAVE A MINIMUM 10" CURB HEGHT (RAISED AS REQUIRED) & A LICENSIGE SARDA MONETA PLECITICAL SHALL BE PERFORMED MAY END MISCONNECTES AND RECONNECTED AND AND REPREPT AND DISCONNECTES AND NECTIONE SHELL METAL TARCH TYPE OF WORK PERMINES AND INSPECTIONS REQUIRED AS REQUIRED) ALL
Image: Constraint of the second se	SYSTEM ATTACHMENT. Q. PROVIDE ONE-WAY MOISTURE VENTS 1 PER 900 SF AT ALL LT. WT. OVER POUR AREAS 7 GENERAL NOTES 3"=1'-0" Ø PLUMBING VENT Ø PLUMBING VENT Ø FLANGE VENT Ø NEW ROOF DRAIN Ø SPLASH BLOCK PITCH PAN SPLASH BLOCK Ø REW TAPERED Ø EXIST. ROOF DRAIN Ø A/C ON POSTS OF OVERFLOW DRAIN SL SKYLIGHT All ROOF AREA Ø GUTB MOUNTED VENT Ø BANDONED CURB TO SE SCUPPER Ø GORAREA <







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.01 - DOORS SCHEDULE & WINDOWS FRAMING ELEVATION

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- 1. THE MAXIMUM OPERATIONAL WEIGHTS OF NEW UNITS ARE LISTED IN THE ANCHORAGE SCHEDULE IN DETAIL 18/SD2. EXACT SIZE AND WEIGHT OF UNITS MAY SLIGHTLY DIFFER FROM THE ONES SPECIFIED ON THESE DRAWINGS/SCHEDULE. SHOULD THE ACTUAL WEIGHT OF ANY UNITS EXCEED MORE THAN 10% OF THE LISTED WEIGHTS, IMMEDIATELY NOTIFY SE OR AND DSA DISTRICT ENGINEER FOR FURTHER INSTRUCTION.
- 2. THE OPERATABLE WEIGHT OF UNITS SHALL BE LESS OR EQUAL TO THE VALUES SHOWN, CONTRACTOR SHALL NOTIFY SEOR ABOUT HEAVIER UNITS. (MORE THAN 5% OF LISTED VALUES)
- . UNIT DIMENSION SHOWN HERE REPRESENT THE BEST ESTIMATE BASED ON THE AVAILABLE DATA.
- 4. MINOR ADJUSTMENTS IN UNIT POSITION WITH RESPECT TO EXISTING ROOF FRAMING MAY BE NECESSARY TO MISS CONFLICT, ALIGN NEW BLOCKINGS TO MATCH THE EXACT UNIT LOCATION/DIMENSIONS.
- . FINAL CONFIGURATION OF EACH UNIT, WITH RESPECT TO THE EXISTING ROOF FRAMING, SHALL BE FIELD VERIFY TO AVOID CONFLICT.
- 6. THE EXACT LOCATION AND SIZE OF MECH. UNIT SHALL BE VERIFIED BY VENDOR/INSTALLER IN COORDINATION WITH THE LATEST MECH. DRAWING/ CUT SHEETS.
- A. PRIOR TO DEMOLITION WORK, SEE GENERAL NOTES ON SN1. FOR EXACT EXTENT OF DEMOLITION WORK REFER TO THE ARCH. DWG'S.
- ALL EXISTING FRAMING MEMBERS THAT ARE BEING CUT/NOTCHED/TRIMMED SHALL BE PROPERLY SECURED BY SHORING.
- C. SIZES SPACING LOCATIONS OF ALL EXISTING STRUCTURAL ELEMENTS SHALL BE FIELD VERIFIED & ANY DISCREPANCIES BE REPORTED TO SEoR.
- D. IF EXISTING MEMBERS ARE SMALLER THAN WHAT IS SHOWN IN DRAWINGS AND CONSIDERED IN CALCULATIONS, PLEASE NOTICE SEOR FOR DETAIL OR FURTHER INFO

LEGEND	

	(E) W12X @ 16'-0" o.c., V.O.S., PER PLAN SEE NOTE A-D
	(E) HEADER, V.O.S., PER PLAN, SEE NOTES
	(E) ROOF FRAMING, PER PLAN, SEE NOTES
	(E) STL POST, V.O.S.
	(N) MATCHING SISTER JOIST, PER PLAN FOR EXACT LOCATION, SEE DETAIL 2/SD2
	(N) CONC. SLAB-ON-GRADE
EF HP	(N) ROOFTOP UNIT, PER PLAN, SEE 2/SD2 SEE NOTE 1-7
FC -	(N) SUSPENDED UNIT, PER PLAN, SEE 4/S SEE NOTE 1-7
- -	(N) HVAC UNIT, PER MECH. PLANS SEE NOTE 1-7
	DUCT THROUGH ROOF PENETRATION PER MECH.

	EQUII	PMENT SCHEDULE (*	')
UNIT DESCRIPTION	(+) OVERALL WEIGHT(LBS)	DIMENSIONS	DETAIL REF.
		AC AC K-1 K-2	
AIR CONDITIONER (ON ROOF)	930	74"L x 44"W x 33"H	4/SD2
		$ \begin{array}{c c} HP \\ HP \\ K-1 \\ K-2 \\ K-3 \\ K-4 \end{array} $	
HEAT PUMP (ON ROOF)	75101		4/SD2 SIM.
		FC FC FC K-1 K-2 K-3 K-4	
FAN COIL (SUSPENDED)	4054		4/SD3
		EF EF EF K-3	
EXHAUST FAN	1574		

(*) SUBJECT TO CHANGE REFER TO LATEST MECHANICAL PACKAGE. SEE NOTES 1-7

(+) AC UNIT WEIGHT INCLUDES RTU SELF WEIGHT AND WEIGHT OF MECH. CURB

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ELECTRICAL ONE-LINE DIAGRAM NOTES; * INDICATES GENERAL NOTE. INDICATES KEYED NOTE. IREFER TO RISER DIAGRAM FOR FEEDER WIRE / CONDUIT SIZES AND FOR AL FEEDER SIZES NOT SHOWN ON THIS SHEET. SC SHALL REMOVE EXISTING METER. COORDINATE ALL WORK EFFORTS WITH SCE REPRESENTATIVE. * EXISTING FEEDERS AND CONDUIT SHALL BE DEMOLISHED BACK TO SWITCHBOARD. SEE NEW SINGLE LINE 2/5.1 FOR NEW FEEDERS AND CONDULY STRING. * EXISTING SWITCHBOARD SHALL BE RE-FED FROM NEW SWITCHBOARD MS: SEE NEW SINGLE LINE DIAGRAM 2/65.1 FOR ADDITIONAL INFORMATION. * DISCONNECT AND REMOVE CONDUIT AND FEEDERS FROM PV DISCONNECT TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD MS'. SEE NEW SINGLE LINE DIAGRAM 2/65.1 FOR ADDITIONAL INFORMATION. * ON DISCONNECT TO MEMOVE CONDULT AND FEEDERS FROM PV DISCONNECT TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD MS'. * SEE NEW SINGLE LINE DIAGRAM 2/65.1 FOR ADDITIONAL INFORMATION. * ON DISCONNECT AND REMOVE CONDULT AND FEEDERS FROM PV DISCONNECT TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD MS'. SEE NEW SINGLE LINE DIAGRAM 2/65.1 FOR ADDITIONAL INFORMATION. * ON DISCONNECT AND REMOVE CONDULT AND FEEDERS FROM PV DISCONNECT TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD MS'. SEE NEW SINGLE LINE DIAGRAM 2/65.1 FOR ADDITIONAL INFORMATION. * ON DISCONNECT AND REMOVE CONDULT AND FEEDERS FROM PV DISCONNECT TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD MS'. SEE NEW SINGLE LINE DIAGRAM 2/65.1 FOR ADDITIONAL INFORMATION. * ON SUBJECT AND REMOVE CONDULT AND FEEDERS FROM PV DISCONNECT TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD MS'. SEE NEW SINGLE LINE DIAGRAM 2/65.1 FOR ADDITIONAL INFORMATION. * ON MALL MEMORY AND A MALL BE RELOCATED TO NEW SWITCHBOARD MS'. SEE NEW SINGLE LINE DIAGRAM 2/65.1 FOR ADDITIONAL INFORMATION. * ON MALL MEMORY AND Y SHORY AND	ELECTRICAL ONE-LINE DIAGRAM NOTES: NENCATES GENERAL NOTE. INDICATES KEVED NOTE. INDICATES STATUP. INDICATES STATUP. INDI	ILECTRICAL ONE-LINE DIAGRAM NOTES: I. NOTACTES REFERENT NOTE: I. NOTACTES REFERENT NOTE: I. REFERENT OR ISSEN DIAGRAM FOR FEEDER WIRE / CONDUIT SIZES AND FOR A I. REFERENT REPRESENTATION: I. SCHEME REMOVE EXISTING METER: COORDINATE ALL WORK EFFORTS I. SCHIME REMOVE EXISTING METER: COORDINATE ALL WORK EFFORTS I. SCHIME REMOVE EXISTING METER: COORDINATE ALL WORK EFFORTS I. SCHIME REMOVE EXISTING METER: COORDINATE ALL WORK EFFORTS I. SCHIME REMOVE EXISTING METER: COORDINATE ALL WORK EFFORTS I. SCHIME REMOVE EXISTING SMITCHEDARD SHALL BE PROTECTED AND REMAIN IN PLACE I. SCHIME SMITCHEDARD SHALL BE PROTECTED FROM NEW SWITCHEDARD METORS I. SCHIME SMITCHEDARD SHALL BE PROTECTED FROM NEW SINGLE LINE JISTING SWITCHEDARD SHALL BE EREFORE FROM PUBLICANTION. I. SCHIME SMITCHEDARD SHALL BE EREFORE SWITCHEDARD METORS. I. SCHIME SMITCHEDARD SHALL BE EREFORE SWITCHEDARD METORS. I. SCHIME SMITCHEDARD SHALL BE EREFORE SWITCHEDARD METORS. I. SCHIME SMITCHEDARD METORIZATION. I. SCHIME SMITCHEDARD SHALL BE EREFORE SWITCHEDARD METORS. I. SCHIME SMITCHEDARD METORIZATION. I. S	ELECTRICAL ONE-LINE DIAGRAM NOTES: 9. INDICATES GENERAL NOTE. 9. INDICATES MENER DIAGRAM FOR FEEDER WIRE / CONDUIT SIZES AND FORA 10. CES STALL REMOVE EXISTING METER. COORDINATE ALL WORK EFFORTS 10. SOCE SHALL NEMOVE EXISTING METER. COORDINATE ALL WORK EFFORTS 10. SOCE SHALL NEMOVE EXISTING METER. COORDINATE ALL WORK EFFORTS 11. SOCE SHALL NEMOVE EXISTING METER. COORDINATE ALL WORK EFFORTS 12. SISTING SWITCHBOARD SHALL BE PROTECTED AND RELAIN IN FLACE EXISTING SWITCHBOARD SHALL BE PROTECTED AND RELAIN IN FLACE EXISTING SWITCHBOARD SHALL BE REVORCED AND RELAIN IN FLACE EXISTING SWITCHBOARD SHALL BE REVORCED AND RELAIN IN FLACE EXISTING SWITCHBOARD SHALL BE REVORCED AND RELAIN IN FLACE EXISTING SWITCHBOARD SHALL BE REVORCED AND RELAIN IN FLACE SWITCHBOARD SHALL BE REVORCED AND INTONIN INFORMATION. 10. DISCONNECT AND REMOVE CONDUIT AN FEDERS FROM PY DISCONNECT SWITCHBOARD METER. COORDINAL INFORMATION AND AND AND AND AND AND AND AND AND AN
(3) EXISTING SWITCHBOARD SHALL BE PROTECTED AND REMAIN IN PLACE. EXISTING SWITCHBOARD SHALL BE RE-FED FROM NEW SWITCHBOARD 'MS'. SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (4) DISCONNECT AND REMOVE CONDUIT AND FEEDERS FROM PV DISCONNECT TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD 'MS'. SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (1) TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD 'MS'. SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (2) TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD 'MS'. SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (2) TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD 'MS'. SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (3) TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD 'MS'. SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION.	 (3) EXISTING SWITCHBOARD SHALL BE PROTECTED FROM REW SWITCHBOARD MALL BE RE-ED FROM NEW SWITCHBOARD MALL BE RELED FROM REW SWITCHBOARD MS: SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (4) DISCONNECT AND REMOVE CONDUIT AND FEEDERS FROM PV DISCONNECT TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD 'M'S'. SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (4) DISCONNECT AND REMOVE CONDUIT AND FEEDERS FROM PV DISCONNECT TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD 'M'S'. SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (4) DISCONNECT AND REMOVE CONDUIT AND FEEDERS FROM PV DISCONNECT TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD 'M'S'. SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (4) DISCONNECT AND REMOVE CONDUCT AND FEEDERS FROM PV DISCONNECT TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD 'M'S'. SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (4) DISCONNECT AND REMOVE CONDUCT AND FEEDERS FROM PV DISCONNECT TO 'MSB'. PV SHALL BE RELOCATED TO NEW SWITCHBOARD 'M'S'. SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (4) DISCONNECT AND REMOVE CONDUCT AND FEEDERS FROM PV DISCONNECT AND THE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (5) DISCONNECT AND REMOVE CONDUCT AND FEEDERS FROM PV DISCONNECT AND THE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (6) ELECTRICAL ONE-LINE DIAGRAM - EXISTING NOT TO SCALE 	1) EXISTING SWITCHBOARD SHALL BE PROTECTED AND REMAIN IN PLACE EXISTING SWITCHBOARD SHALL BE RE-FED FROM NEW SWITCHBOARD INS: 3) DISCONNECT AND REMOVE CONDUIT AND FEEDERS FROM PV DISCONNECT TO MSB: PV SHALL BE RELOCATED TO NEW SWITCHBOARD MS: SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (*) DISCONNECT AND REMOVE CONDUIT AND FEEDERS FROM PV DISCONNECT TO MSB: PV SHALL BE RELOCATED TO NEW SWITCHBOARD MS: SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (*) DISCONNECT AND REMOVE CONDUIT AND FEEDERS FROM PV DISCONNECT TO MSB: PV SHALL BE RELOCATED TO NEW SWITCHBOARD MS: SEE NEW SINGLE LINE DIAGRAM 2/E5.1 FOR ADDITIONAL INFORMATION. (*) DISCONNECT AND REMOVE ZOARD ADDITIONAL INFORMATION. (*) DISCONNECT AND REMOVE ZOARD ADDITIONAL INFORMATION. (*) DISCONNECT AND REMOVE ZOARD ADDITIONAL INFORMATION. (*) DISCONNECT ADDITIONAL INFORMATION.	1 ELECTRICAL ONE-LINE DIAGRAM - EXISTING 1 ELECTRICAL ONE-LINE DIAGRAM - EXISTING Not to scale Not to scale
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	1 ELECTRICAL ONE-LINE DIAGRAM - EXISTING NOT TO SCALE	1 ELECTRICAL ONE-LINE DIAGRAM - EXISTING NOT TO SCALE	1 ELECTRICAL ONE-LINE DIAGRAM - EXISTING NOT TO SCALE
1 ELECTRICAL ONE-LINE DIAGRAM - EXISTING	NOT TO SCALE	• NOT TO SCALE	• NOT TO SCALE

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		Mounting	SURFAC	E										
	1	J Main Type	MCB (200)A)					Voltage:		208Y/120	V-3PH 4	w	
		Neutral	100%	,					Main Size:		225 AM	PS		
														
PANEL:	MA										ALL L	OADS	IN VA	
Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	V
		1664					0.00	AC 'A-1'	30/3	10	1	A	2	<u> </u>
		1664					0.00			10	3	В	4	<u> </u>
		1664					0.00			10	5	С	6	-
		270					0.00	AC 'A-1' PWR EXH	15/3	12	7	Α	8	
		270					0.00			12	9	В	10	<u> </u>
		270					0.00			12	11	С	12	<u> </u>
		1664					0.00	AC 'A-2'	30/3	10	13	Α	14	Ľ
		1664					0.00			10	15	В	16	
		1664					0.00			10	17	С	18	
		270					0.00	AC 'A-2' PWR EXH	15/3	12	19	Α	20	
		270					0.00			12	21	В	22	
		270					0.00			12	23	С	24	
		1664					0.00	AC 'A-3'	30/3	10	25	Α	26	
		1664					0.00			10	27	в	28	
		1664					0.00			10	29	С	30	
		270					0.00	AC 'A-3' PWR EXH	15/3	12	31	Α	32	
		270					0.00			12	33	в	34	
-		270					0.00			12	35	С	36	
							1.00	SPARE	20/1		37	Α	38	
-							1.00	SPARE	20/1		39	в	40	
							1.00	SPARE	20/1		41	С	42	
0	0	17410	0	0	0	0	3.00	TOTALS						
								_						1
			LOAD SI	JMMARY				_			_	Phas	e Load	1
Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description				Ph	KVA	1
0.0	0.0	34.8	0.0	0.0	0.0	0.0	6.0	Connected KVA				Α	11.6	1
1.25	**	1.00	1.00	1.00	1.00	0.65	0.50	*Design Factors				В	11.6	
0.0	0.0	34.8	0.0	0.0	0.0	0.0	3.0	Design KVA				С	11.6	1

							Jo	b:Schmitt ES - Modernizatior	1					
		Mounting	SURFAC	E										
		Main Type	MLO						Voltage:		208Y/120	V-3PH	4W	
		Neutra	100%						Main Size:		125 AM	PS		
PANEL:	MA1										ALL		IN VA	
Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	1
		1664					0.00	AC 'A-7'	30/3	10	1	Α	2	
		1664					0.00			10	3	в	4	
		1664					0.00			10	5	С	6	
		270					0.00	AC 'A-7' PWR EXH	15/3	12	7	Α	8	
		270					0.00			12	9	в	10	
		270					0.00			12	11	С	12	
	360						0.00	ROOFTOP CONV. REC.	20/1	12	13	Α	14	
							1.00	SPARE	20/1		15	в	16	
							1.00	SPARE	20/1		17	С	18	
							1.00	SPARE	20/1		19	Α	20	
							0.00	SPACE			21	в	22	
							0.00	SPACE			23	С	24	
0	360	5803	0	0	0	0	3.00	TOTALS						
											ſ	Dhae	e Load	1
Lta.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	 Description			-	Ph	KVA	
0.0	0.4	12.1	0.0	0.0	0.0	0.0	6.0	Connected KVA			-	Α	4.8	
1.25	**	1.00	1.00	1.00	1.00	0.65	0.50	*Design Factors			-	В	3.9	1
0.0	0.4	12.1	0.0	0.0	0.0	0.0	3.0	Design KVA			-	С	3.9	1
*Input div **100% c	/. factor per of 1st 10 K\ Con. KVA	descriptic /A, 50% o Con. Amps	ons as requ	uired for ca g. Des. KVA	Des.									
ΤΟΤΔΙ	18.5	51.3		15.5	43.0	1					Date [.]	10/0	/2023	
TOTAL	10.0	01.0		10.0	43.0							10/8	0/2023	

		Mounting	SURFAC	F			Jol	o:Schmitt ES - Modernizati	on					
	ľ	Main Type	MCB (200	ר_ 1∆1					Voltage.		2087/120	V-3PH	4W	
		Neutral	100%	,	_				Main Size:		225 AM	PS	+**	
					-									
PANEL:	мв										ALL	LOADS	IN VA	
Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	Wi
		1664					0.00	AC 'B-1'	30/3	10	1	Α	2	1(
		1664					0.00			10	3	В	4	1(
		1664					0.00			10	5	С	6	1(
		270					0.00	AC 'B-1' PWR EXH	15/3	12	7	Α	8	12
		270					0.00			12	9	В	10	12
		270					0.00			12	11	С	12	12
		1664					0.00	AC 'B-2'	30/3	10	13	Α	14	1(
		1664					0.00			10	15	В	16	1(
		1664					0.00			10	17	С	18	1(
		270					0.00	AC 'B-2' PWR EXH	15/3	12	19	Α	20	12
		270					0.00			12	21	В	22	12
		270					0.00			12	23	С	24	12
		1664					0.00	AC 'B-3'	30/3	10	25	Α	26	10
		1664					0.00			10	27	В	28	10
		1664					0.00			10	29	С	30	10
		270					0.00	AC 'B-3' PWR EXH	15/3	12	31	Α	32	1:
		270					0.00			12	33	В	34	1:
		270					0.00			12	35	С	36	1:
							1.00	SPARE	20/1		37	Α	38	
							1.00	SPARE	20/1		39	В	40	
							1.00	SPARE	20/1		41	С	42	
0	0	17410	0	0	0	0	3.00	TOTALS						
								_						
			LOAD S	UMMARY								Phas	e Load	1
Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description				Ph	KVA	1
0.0	0.0	34.8	0.0	0.0	0.0	0.0	6.0	Connected KVA				Α	11.6	l
1.25	**	1.00	1.00	1.00	1.00	0.65	0.50	*Design Factors				В	11.6	1
0.0	0.0	34.8	0.0	0.0	0.0	0.0	3.0	Design KVA				С	11.6	l

		Mounting	SURFAC	E		
		Main Type	MLO			
		Neutral	100%			
PANEL:	MB1					
Ltg.	Recept	Motor	Heat	Cool	Other	Kitche
		1664				
		1664				
		1664				
		270				
		270				
		270				
	360					
0	360	5803	0	0	0	0
			LOAD SI	JMMARY		
Ltg.	Recept	Motor	Heat	Cool	Other	Kitche
0.0	0.4	12.1	0.0	0.0	0.0	0.0
1.25	**	1.00	1.00	1.00	1.00	0.65
		10.1	0.0			0.0

*Input div. factor per descriptions as required for calculations. **100% of 1st 10 KVA, 50% of remaining.

TYPE	DESCRIPTION	VOLTAGE	MOUNTING	MANUFACTURER & NO.	REMARKS
				LITHONIA LIGHTING	
гх-А	2X4 TROFFER	INIVOLI	RECESSED	EPANL 2X4 4000LM 80CRI 35K MIN1 MVOLT	
				LITHONIA LIGHTING	
FX-AE	2X4 TROFFER - EMERG.	IVIVOLI	RECESSED	EPANL 2X4 4000LM 80CRI 35K MIN1 MVOLT E10WCP	PROVIDE 90 WIIN. EWERGENCT BATTERT BACKOP ELOWCP
			DECESSED	LITHONIA LIGHTING	
ГЛ-Д	1X4 TROFFER	IVIVOLI	RECESSED	EPANL 1X4 4000LM 80CRI 35K MIN1 MVOLT	
		NAVOLT	DECECCED		
FX-BE	1X4 TROFFER - EIVIERG.	MIVOLI	RECESSED	EPANL 1X4 4000LM 80CRI 35K MIN1 MVOLT E10WCP	PROVIDE 90 MIN. EMERGENCY BATTERY BACKUP 'ELOWCP'
FX-C	2X4 TROFFER	MVOLT	SURFACE		PROVIDE SURFACE MOUNT KIT 'SMKSH'.
FX-D	5" DOWNLIGHT	MVOLT	SURFACE	JUNO LIGHTING	PROVIDE EMERGENCY BATTERY BACKUP 'E10WLCP'
				JSF 5IN 07LM 35K 90CRI 120 FRPC WH E10WLCP	
EY_E			SUBEACE	LITHONIA LIGHTING	DROVIDE SUBEACE MOUNT KIT 'SMKSH'
I X-L			JUNIACE	EPANL 1X4 4000LM 80CRI 35K MIN1 MVOLT	
FX-EE	1X4 TROFFER	MVOLT	SURFACE	EPANI 1X4 4000LM 80CRI 35K MIN1 MVOLT E10WCP	PROVIDE 90 MIN. EMERGENCY BATTERY BACKUP 'E10WCP'
FX-EX	EMERGENCY EXIT	MVOLT	SURFACE		
				LE S 1 R EL N SD - WITH MOUNTING KIT 'ELA WG1'	

1-1-	Ochusiit EQ Madamiastian							lak Nia	00000045								
Job	Schmitt ES - Modernization	Voltage:		208Y/120	V-3PH	4W		Job No	.220308AR		ŀ	AIC Rating	22000				
		Main Size:		225 AM	IPS				-			Ground Lugs	Equipme SINGLE	nt Ground	1		
	1			ALL	LOADS	IN VA											
S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	Wire	Amp/P	Description	Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S
0.00	AC 'K-1'	40/3	8	1	Α	2	12	20/1	SF 'K-1'			1176					0.00
0.00			8	3	В	4	12	15/2	HP 'K1'			884					0.00
0.00			8	5	С	6	12					884					0.00
0.00	AC 'K-1' - PWR EXH	15/3	12	7	Α	8	12	15/2	HP 'K2'			884					0.00
0.00			12	9	В	10	12					884					0.00
0.00			12	11	С	12	12	15/2	HP 'K3'			1508					0.00
0.00	AC 'K-2'	40/3	8	13	Α	14	12					1508					0.00
0.00			8	15	В	16	12	15/2	HP 'K4'			884					0.00
0.00			8	17	С	18	12					884					0.00
0.00	AC 'K-2' - PWR EXH	15/3	12	19	Α	20	12	15/1	EF 'K-1'			530					0.00
0.00			12	21	В	22	12	20/1	ROOFTOP CONV. REC.		360						0.00
0.00			12~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	С	24											0.00
0.00	EF 'K-2' & 'K-3'	20/1	12	25	A	26		20/1	SPARE								1.00
1.00	SPARE	20/1		27	В	28		20/1	SPARE								1.00
1.00	SPARE	20/1		29	С	30		20/1	SPARE								1.00
1.00	SPARE	20/1		31	Α	32		20/1	SPARE								1.00
1.00	SPARE	20/1		33	В	34		20/1	SPARE								1.00
0.00	SPACE			35	С	36			SPACE								0.00
0.00	SPACE			37	Α	38			SPACE								0.00
0.00	SPACE			39	В	40			SPACE								0.00
0.00	SPACE			41	С	42			SPACE								0.00
4.00	TOTALS								TOTALS	0	360	10026	0	0	0	0	5.00
]				Phas	e Load						Panel Rer	narks:				
S/S	Description				Ph	KVA								NEW	PANEL		
9.0	Connected KVA				Α	9.7						FE		I MAIN S	WITCHE	OARD 'M	S'
0.50	*Design Factors				В	8.3											
4.5	Design KVA				c	8.6											
				I	-	0.0											
												PANFI ·	мк				
				Date:	10/9	9/2023		Ву:	N.OROPEZA								
								1							I		

E6.1 - ELECTRICAL DETAILS

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FILE PATH: Z:\Projects\...

		FIRE ALARM SHEET NOTES
	1	EXISTING FIRE-LITE FACP LOCATED IN PORTABLE "P".
	2	EXISTING EXTERIOR NOTIFICATION APPLIANCE.
	3	EXISTING UNDERGROUND PULL BOX.
	4	EXISTING UNDERGROUND CONDUIT. CONTRACTOR TO FIELD VERIFY CONDITION OF EXISTING CONDUIT FOR SERVICEABILITY PRIOR TO CONSTRUCTION.
	5	EXISTING NOTIFICATION APPLIANCES POWER SUPPLY.
	6	ALL EXISTING FIRE ALARM DEVICES ARE TO BE REMOVED (DEMO'D) FROM ALL BUILDINGS AND REPLACED WITH NEW DEVICES, WIRE AND CONDUIT WHERE APPLICABLE.
$\widehat{\Lambda}$	7	NEW EXTERIOR WEATHERPROOF ENCLOSURE.
	8	NEW UNDERGROUND CONDUIT SYSTEM. ROUTE ALL NEW FIRE ALARM WIRING IN NEW UNDERGROUND CONDUIT SYSTEM FROM BUILDING TO BUILDING. PROVIDE ONE (1), 2" UNDERGROUND CONDUIT (FIRE ALARM DEDICATED) PVC, SCHEDULE 40 AT 24" BELOW GRADE.
	9	NEW IN-GROUND PULL BOX.
	10	NOT IN THIS SCOPE OF WORK.

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FIRE ALARM SHEET NOTES	
1	INSTALL NEW EMERGENCY VOICE/ALARM COMMUNICATION PANEL WITH MICROPHONE FRONT OFFICE. FIELD VERIFY EXISTING LOCATION PRIOR TO ROUGH IN.
2	INSTALL HEAT DETECTION IN ALL ABOVE CEILING SPACES. FIELD VERIFY ALL WALLS TH ARE FULL HEIGHT WALLS AND ADD ADDITIONAL DETECTION AS REQUIRED.
3	INSTALL NEW CELLULAR COMMUNICATOR AT EVAC LOCATION. FIELD VERIFY AND COORDINATE WITH STAFF FOR EXACT LOCATION.
4	INSTALL NEW FIRE ALARM DOCUMENT ENCLOSURE AT EVAC LOCATION. FIELD VERIFY COORDINATE WITH STAFF FOR EXACT LOCATION.
5	INSTALL ONE (1) MANUAL PULL STATION AT MAIN EVAC PANEL IN ACCORDANCE WITH D GL-2 §1.2.4, NFPA 72 AND CFC §907.
6	INSTALL ADDRESSABLE RELAY MODULE(S) FOR HVAC UNIT SHUNT. UPON DETECTION A HVAC UNITS ARE TO SHUNT TO STOP AIR FLOW. (REFERENCE CMC §608.1 EXCEPTION 1
7	EXTERIOR AUDIO APPLIANCES ARE MOUNTED IN EVERY OTHER HALL/CORRIDOR AS TO PREVENT UNINTELLIGIBILITY. (REFERENCE NFPA 72 §18.4.1.5* & §18.4.10*)
8	INSTALL COMBINATION SMOKE/CARBON MONOXIDE DETECTORS IN ALL CLASSROOMS T ARE SERVICED BY A NATURAL GAS OR FUEL BASED HVAC SYSTEM IN ACCORDANCE WI CFC §915.
9	NEW UNDERGROUND CONDUIT SYSTEM BY ELECTRICAL. REFER TO FA SITE PLAN OR ELECTRICAL SITE PLAN FOR NEW CONDUIT SYSTEM LOCATION.
10	INSTALL SMOKE DETECTION IN IRREGULAR SPACE IN ACCORDANCE WITH NFPA 72, CHAPTER 17 AND ANNEX "A". REFERENCE SHEET A4.01 DETAILS.

