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ADDENDUM NO. 2

BERRYESSA UNION SCHOOL DISTRICT Cherrywood Elementary School Modernization & Flexible Instruction Space (FIS)

ADDENDUM NO. TWO DATE: November 26, 2018

CLIENT / PROJECT: Berryessa Union School District
Cherrywood ES Modernization &
FIS

ARCHITECT'S
PROJECT NO. 109583

ARCHITECT: **IBI Group**
160 W. Santa Clara St., Suite 800
San Jose, CA 95113

D.S.A. APPLICATION NO. 01-117059

D.S.A. FILE NO. 43-7

NOTICE TO ALL CONTRACTORS SUBMITTING BIDS FOR THIS WORK AND TO ALL PLAN HOLDERS:

You are hereby notified of the following CHANGES, clarifications or modifications to the original Contract Documents, Project Manual, Drawings, Specifications and subsequent Addenda. This Addendum shall supersede the original Contract Documents and previous Addenda wherein it contradicts the same and shall take precedence over anything to the contrary therein. All other conditions remain UNCHANGED.

A. CHANGES AND/OR CLARIFICATIONS TO THE PROJECT MANUAL, CONTRACT DOCUMENTS AND SPECIFICATIONS:

Item (1) Refer to the Project Manual, the following sections:

A. **REPLACE** Document 00 43 13 Bid Bond Form

Item (2) Refer to Section 11 61 43 Stage Curtains:

a. **REVISE** Part 2.1.B Product to be KM Fabrics, Inc.; Prestige 1118 Navy.

Item (3) Refer to Section 09 06 00 Colors and Finishes:

a. **REPLACE** spec 09 06 00 Colors and Finishes in its entirety, SEE ATTACHED.

Item (4) Refer to Section 23 34 16 Rooftop Air Handling Units:

a. **REPLACE** spec 23 34 16 Rooftop Air Handling Units in its entirety, SEE ATTACHED. Updated Spec 23 34 16 Part 2, Section 2.1 adding Manufacturer's as Carrier, Trane, York or Approved Equal.

Item (5) Pre-Bid RFIs

RFI #1: Question: There are alternates listed on the G1000 Cover Page of the plans that are NOT listed in the spec section for alternates nor on the bid form. Please advise.

Answer: Please refer to Addendum #1, Bid Proposal Form

B. CHANGES AND/OR CLARIFICATIONS TO THE DRAWINGS:

Item (6) Refer to sheet G1000 Title Sheet, Scope of Work:

- a. **REVISE** scope of work as follows:
 - 1. Limited Site Work, including but not limited to fencing and gates.
 - 2. Alteration to, but not limited to, the existing Mezzanine Space.
 - 3. Add LULA elevator.

ADD ALTERNATES

ADDITIVE ALTERNATE #2 ONLY

Item (7) Refer to sheet A1100 Site Plan:

- a. **DELETE** scope of work to add ornamental fencing and gates as indicated by keynote 1133 and 1135.

Item (8) Refer to sheet A1200 Enlarged Site Plans:

- a. **DELETE** scope of work to add ornamental fencing and gates as indicated by keynote 1133 and 1135.

Item (9) Refer to sheet A2010 First Floor Demolition Plan, General Notes:

- a. **ADD** the following in its entirety:
 - 11. Scope of work is within, but not limited to the following areas: 101 Entry, 137 Stage Area, 142 Hall, 144 Multipurpose, 166 (E) Elev, 151 Hall, 136 Entry, 148 Elev. Eq., 149 Storage. All finish work shown in classrooms and ancillary spaces is NIC. The removal of the drinking fountain and alcove bars outside of Classroom 8 is included in the scope of this project.

Item (10) Refer to sheet A2020 Mezzanine Demolition Plan and Elevations, Keynotes:

- a. **REVISE** the following keynotes:
 - 2023 Remove (E) portion of wall, from mezzanine finish floor to top of wall. Existing 2x finish wood creating the railing shall be salvaged, protected, and stored for reuse.
 - 2053 Remove (E) finish and studs, (E) posts to remain. Existing 2x finish wood creating the railing shall be salvaged, protected, and stored for reuse.

Item (11) Refer to sheet A2310 First Floor Plan & Finish Plan, General Notes:

- a. **ADD** the following in its entirety:
 - 10. Scope of work is within, but not limited to the following areas: 101 Entry, 137 Stage Area, 142 Hall, 144 Multipurpose, 167 Storage, 151 Hall, 136 Entry, 148 Storage, 149 Storage. All work shown in

classrooms and ancillary spaces is NIC. The drinking fountain and alcove bars outside of Classroom 8 are included in the scope of this project.

- Item (12) Refer to sheet A2310 First Floor Plan & Finish Plan:
a. **ADD** keynote to plan as shown on AD2-A01, SEE ATTACHED. Refer to spec section 09 06 00 for keynote designation of vinyl-wrapped panels.
- Item (13) Refer to sheet A2320 Mezzanine Floor, Dimension, and Enlarged Plan:
a. ADD keynote to 2300 – KEYNOTES to read:
“2365 EMERGENCY EVACUATION CHAIR FOR DISABLED PERSONS BY CROSSWIND CONCEPTS OR EQUAL”
b. ADD emergency evacuation chair near elevator & interior elevation callout as shown on AD2-A02, SEE ATTACHED.
- Item (14) Refer to sheet A4001, Sections, General Notes:
a. ADD the following in its entirety:
8. For blocking between existing trusses for walls and bracing, refer to attached detail shown on addendum drawing AD2-A09.
- Item (15) Refer to sheet A6010, Interior Elevations:
a. **DELETE** sheet in its entirety.
- Item (16) Refer to sheet A6011 Interior Elevations
a. **ADD** keynote to 6000 – KEYNOTES to read :
“6071 (E) WOOD SIDING TO REMAIN, PAINT”
“6072 GYP. BD. WALL FINISH, PAINT”
“6073 SOFFIT WALL PANELING, SEE DETAIL 27/A8501”
“6074 ATTACH METAL BACKING TO WOOD FRAMING PER DETAIL 24/A8500”
b. **REVISE** interior elevations as shown on AD2-A03 thru AD2-A06, SEE ATTACHED.
c. **ADD** interior elevation 202-9 as shown on AD2-A04, SEE ATTACHED.
d. **REMOVE** keynote 6043 and sign lettering on interior elevations shown on AD2-A03, AD2-A05, and AD2-A06, SEE ATTACHED
- Item (17) Refer to sheet A6012, Interior Elevations:
a. **DELETE** interior elevations 137-1A, 137-2 and 137-3.
- Item (18) Refer to sheet A6013, Interior Elevations:
a. **DELETE** sheet in its entirety.
- Item (19) Refer to sheet A6014, Interior Elevations
a. **DELETE** interior elevation/photos Instructional Material Resource Center 137.
- Item (20) Refer to sheet A8200, Wall Details, Detail 13:
a. **REVISE** the detail for blocking between existing trusses for walls and bracing as shown on attached addendum drawing AD2-A09.
- Item (21) Refer to sheet A8500 Interior Details:
a. **REVISE** detail 24 BLOCKING as shown on AD2-A07, SEE ATTACHED.

- Item (22) Refer to sheet A8501 Interior Details:
- a. **ADD** detail 27 SOFFIT WALL PANELING as shown on AD2-A08, SEE ATTACHED.
 - b. **REVISE** note on detail 10 PEGBOARD, pegboard size to be "16"x48"x1/4" THICK PEGBOARD"
- Item (23) Refer to sheet A8600 Opening Details Detail 6 Section at Glazing:
- a. **REVISE** the note at the window sills from "1/2" Wood Trim, Paint" to read as follows:

"At sill, install the salvaged and stored existing 1 1/2" finish wood railing. Apply clear finish/protectant."
- Item (24) Refer to sheet A9201 Door & Window Schedules:
- a. **ADD** door schedule remark to Door No. 144C to read:
"5. Paint exposed side of door and frame facing the Stage to be IP-8. Paint exposed side of door and frame facing the Multipurpose to be IP-3."
- Item (25) Refer to sheet S2.1 Partial Floor/Roof Framing Plan Mezzanine:
- a. **REVISE** Partial Floor Framing Plan Mezzanine as shown on AD2-S01, SEE ATTACHED.
- Item (26) Refer to sheet S8.1 Typical Wood Details:
- a. **REVISE** detail 16/S8.1 FLOOR INFILL/NEW OPENING as shown on AD2-S02, SEE ATTACHED.
- Item (27) Refer to sheet P0.02 Plumbing Schedule and Details:
- b. **ADD** to Plumbing Fixture Schedule:
Flush valve for existing water closet and new non-ADA sink as shown on AD2-P01, SEE ATTACHED.
- Item (28) Refer to sheet P2.11 Demolition and Plumbing Plans:
- a. **MODIFY** Demolition Mezzanine Plan and Demolition Sheet Notes as shown on AD2-P02, SEE ATTACHED.
 - b. **MODIFY** Plumbing New Mezzanine Plan and Sheet Notes as shown on AD2-P03, SEE ATTACHED.
- Item (29) Refer to sheet M7.01 Mechanical Controls:
- a. **MODIFY** Diagram 2/M7.01. Added space pressure sensor, updated location of exhaust fan in air handler and added a duct smoke detector at the supply outlet as shown on AD2-M01, SEE ATTACHED.
 - b. **MODIFY** Diagram 1/M7.01. Added integral CO2 Sensor in Thermostats as shown on AD2-M02, SEE ATTACHED.

CONFORMANCE WITH CONTRACT DOCUMENTS, PROJECT MANUAL, DRAWINGS AND SPECIFICATIONS

All addenda work shall be in strict conformance with the Contract Documents, Project Manual, Drawings and Specifications as they pertain to work of a similar nature.

IBI Group Architecture Planning

DOCUMENT 00 43 13

BID BOND

KNOW ALL MEN BY THESE PRESENTS that we the undersigned _____ as Principal and _____ as Surety, are hereby held and firmly bound unto the Berryessa Union School District ("Owner") in the sum of _____ Dollars (\$_____) for payment of which sum, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the Owner a certain bid, attached hereto and hereby made a part hereof, to enter into a Contract in writing for the Cherrywood Elementary School Modernization and F.I.S. Project in strict accordance with Contract Documents.

NOW, THEREFORE,

- a. If said bid shall be rejected, or, in the alternative;
- b. If said bid shall be accepted and the Principal shall execute and deliver a contract in the form of agreement attached hereto and shall execute and deliver Performance and Payment Bonds in the forms attached hereto (all properly completed in accordance with said bid), and shall in all other respects perform the agreement created by the acceptance of said bid;

Then this obligation shall be void, otherwise the same shall remain in full force and effect, it being expressly understood and agreed that the liability of the Surety for any and all default of the Principal hereunder shall be the amount of this obligation as herein stated.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract on the call for bids, or to the Work to be performed hereunder, or the specifications accompanying the same, shall in any way affect its obligation under this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of said Contract or the call for bids, or to the Work, or to the specifications.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under several seals this ____ day of _____, 201__, the name and corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body. In the presence of:

(Notary Seal)

(Principal)

(Business Address)

(Corporate Surety)

Business Address)

By: _____

The rate or premium of this bond is _____ per thousand, the total amount of premium charged, \$ _____.

(The above must be filled in by Corporate Surety).

END OF DOCUMENT

SECTION 09 06 00
COLORS AND FINISHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes:
 - 1. Color, pattern, and finish selections for products and materials specified in other specification Sections of this Project Manual.
- B. Related Sections: Refer to Color/Finish Schedule in Part 3 for other sections specifying materials and products for which color and finish is specified in this Section.

1.3 SUBMITTALS

- A. Samples: Submit Samples in accordance with requirements of individual Specification Sections for review of kind, color, pattern, and texture for Architect's review of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 - 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance for construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual specification sections. Such Samples must be in undamaged condition at time of use.

4. Samples for Initial Selection: Where color/finish is indicated as “selected by Architect,” submit manufacturer’s color charts or samples showing the full range of colors, textures, and patterns available.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected.

PART 2 - PRODUCTS

2.1 COLORS AND FINISHES

- A. In addition to Color/Finish Schedule in Part 3 of this Section, refer to Drawings and individual Specification Sections for information indicating extent and location of each color and finish designation specified in this Section.
- B. Product Options: Information on Drawings and in Specifications establishes requirements for systems’ aesthetic effects.
 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect’s approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review. Refer to Division 1 requirements for product substitutions.

PART 3 - EXECUTION

3.1 COLOR/FINISH SCHEDULE

- A. Refer to following Color/Finish Schedules, to be used in conjunction with referenced Specification Sections, for color/finish selections. Refer to referenced Specification Section for product/material descriptive and performance criteria.
 1. Where color/finish is indicated “As selected by Architect,” refer to Part 1 “Submittals” Article for requirements for Samples for initial selection.

Section 06 41 00 – Architectural Wood Cabinets		
Designation	Description	Color/Finish
PL-1	Plastic laminate	Wilsonart-#4783-60 White Tigris
PL-2	Plastic laminate	Wilsonart-#4919-60 Blue Agave
PL-3	Plastic laminate	Wilsonart-#4913-60 Eggplant
EB-1	PVC edge banding	Wilsonart-#4783-60 White Tigris
LPL	Low-pressure laminate (melamine)	White

Color Schedule

<u>Designation</u>	<u>Locations</u>
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PL-1	Cabinets at all locations & at Bench Countertop except as noted otherwise below (exposed surfaces as defined in Section 06 41 00)
PL-2	Countertop at F.I.S. 2
PL-3	Countertop at bench cabinet at F.I.S. 1 & 2
EB-1	Edge banding at PL-1
LPL	Semi-exposed surfaces of cabinets as defined in Section 06 41 00

Section 08 41 13 – Glazed Aluminum Entrances and Storefronts

Description	Color/Finish
Aluminum storefront framing and entrance doors	Clear anodized

Section 08 42 10 – Glazed Operable Panel Entrance Systems

Description	Color/Finish
Glazed operable panel framing	Fluoropolymer, custom color to match Clear anodized

Section 08 51 13 – Aluminum Windows

Description	Color/Finish
Aluminum window frame	Clear anodized

Section 08 87 00 – Window Film		
Designation	Description	Color/Finish
WF-1	Window Film 1	3M Fasara - As selected by Architect from manufacturer's full range
WF-2	Window Film 2	3M Fasara - As selected by Architect from manufacturer's full range
WF-3	Window Film 3	3M Fasara - As selected by Architect from manufacturer's full range
<u>Color Schedule</u> <u>Designation</u> <u>Locations</u> WF-1 Refer to Interior Elevations WF-2 Refer to Interior Elevations WF-3 Refer to Interior Elevations		

Section 08 91 00 – Louvers		
Designation	Description	Color/Finish
LVR-STL	Steel louver	Powder-coated, custom color to match Kelly Moore #KM4988 Passionate Blueberry
<u>Color Schedule</u> <u>Designation</u> <u>Locations</u> LVR-STL Refer to Drawings (Door Schedule)		

Section 09 30 00 – Ceramic Tile		
Designation	Description	Color/Finish
CT-1	Ceramic floor tile	Color to match existing tile. As selected by Architect from manufacturer's full range
CT-2	Ceramic base tile	Color to match existing tile. As selected by Architect from manufacturer's full range
CT-3	Ceramic wall tile	Daltile Elevare – EL40 Lunar 6x18
CT-4	Ceramic wall tile accent	Daltile Elevare – EL44 Carbon 4x16

CT-5	Ceramic wall tile	Color to match existing tile. As selected by Architect from manufacturer's full range
CT-6	Ceramic wall tile accent	Color to match existing tile. As selected by Architect from manufacturer's full range
GRT-1	Epoxy grout	As selected by Architect from manufacturer's full range
GRT-2	Epoxy grout	Color to match existing grout. As selected by Architect from manufacturer's full range

Color Schedule

Designation

Locations

CT-1	Boys Toilet Room - floors
CT-2	Boys & Girls Toilet Room – coved base tile
CT-3	Boys Toilet Room – walls (field)
CT-4	Boys Toilet Room – walls (accent)
CT-5	Girls Toilet Room – walls (field)
CT-6	Girls Toilet Room – walls (accent)
GRT-1	Boys Toilet Room - walls and floor grout
GRT-2	Girls Toilet Room - walls and floor grout

Section 09 51 13 – Suspended Lay-In Panel Ceilings

Designation	Description	Color/Finish
LCP-1	Lay-in ceiling panel	Armstrong; #1729 Fine Fissured, White

Color Schedule

Designation

Locations

LCP-1	Refer to Drawings (Ceiling Plan)
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Section 09 65 00 – Resilient Flooring		
Designation	Description	Color/Finish
VCT-1	Vinyl composition tile	Armstrong – Standard Excelon #51911 Classic White
VCT-2	Vinyl composition tile	Armstrong – Standard Excelon #51804 Earthstone Greige
VCT-3	Vinyl composition tile	Armstrong – Standard Excelon #51882 Serene Blue
VCT-4	Vinyl composition tile	Armstrong – Standard Excelon #51915 Charcoal
SV-1	Sheet vinyl flooring	Mohawk Group – Serenity Collection, Calmness C2023, #949 Harmony
SV-2	Sheet vinyl flooring	Mohawk Group – Serenity Collection, Therapeutic C2020, #838 Placid
SV-3	Sheet vinyl flooring	Mohawk Group – Serenity Collection, Ephemeral C2022, #878 Mood
<u>Color Schedule</u> <u>Designation</u> <u>Locations</u> VCT-1 Refer to Drawings (Finish Schedule), field color VCT-2 Refer to Drawings (Finish Schedule), accent color VCT-3 Refer to Drawings (Finish Schedule), accent color VCT-4 Refer to Drawings (Finish Schedule), accent color SV-1 Refer to Drawings (Finish Schedule), field color in Rooms 202 & 204 SV-2 Refer to Drawings (Finish Schedule), accent color in Room 204 SV-3 Refer to Drawings (Finish Schedule), accent color in Rooms 202 & 204		

Section 09 65 13 – Resilient Base and Accessories	
Description	Color/Finish
Resilient base	Burke – #523 Black Brown
Resilient transition molding	Burke – #523 Black Brown
Resilient stair nosing	Burke (profile # 575) – As selected by Architect from manufacturer's full range

Section 09 68 13 – Tile Carpeting		
Designation	Description	Color/Finish
TC-1	Walk-off Carpet tile	Lees – Tuff Stuff II, Step Up II, #983 Iron Ore
<u>Color Schedule</u> <u>Designation</u> <u>Locations</u> TC-1 Refer to Drawings (Finish Schedule)		

Section 09 68 16 – Sheet Carpeting		
Designation	Description	Color/Finish
CP-1	Carpet	Mohawk Group – Faculty Remix/ GL154, #989 Greatest Charcoal
CP-2	Carpet	Mohawk Group – ColorBeat, #976 Brushed Metal
<u>Color Schedule</u> <u>Designation</u> <u>Locations</u> CP-1 Refer to Drawings (Finish Schedule) CP-2 Refer to Drawings (Finish Schedule), at stairs, step seating, boxed curb/seating block		

Section 09 72 21 – Vinyl-Wrapped Panels		
Designation	Description	Color/Finish
VWC-1	Vinyl wall covering	Koroseal – Harborweave, Silver Fox #2118-93
VWC-2	Vinyl wall covering	Charles G. Hardy Inc. – Snowdrift #393349
VWC-3	Vinyl wall covering (Stage side)	Koroseal – Linden, Newcastle #4621-94

Section 09 91 00 – Painting		
Designation	Description	Color/Finish
EP-1	Exterior paint color	Match Kelly Moore #159 Sequoia Redwood
EP-2	Exterior paint color	Match Kelly Moore #KM5793 Jasmine Hollow
EP-3	Exterior paint color	Match Kelly Moore #302 Mission Tan
IP-1	Interior paint color	Match Kelly Moore #KM4928 Lucky Dog
IP-2	Interior paint color	Match Kelly Moore #KM5793 Jasmine Hollow
IP-3	Interior paint color	Match Kelly Moore #KM4988 Passionate Blueberry
IP-4	Interior paint color	Match Kelly Moore #KM4958 Rushing River
IP-5	Interior paint color	Match Kelly Moore #23 Swiss Coffee
IP-6	Interior paint color	Match Kelly Moore #KMA25-5 Belly Flop
IP-7	Interior paint color	Match Kelly Moore #KM5540-5 Thor's Thunder
IP-8	Interior paint color	Match Kelly Moore #KM4876-5 Wrought Iron Gate
IP-9	Interior paint color (trim)	Match Kelly Moore #KM5056-3 Beach Glass
IP-10	Interior paint color (trim)	Match Kelly Moore #KM5054-1 Catch the Wave
IP-11	Interior paint color (trim)	Match Kelly Moore #KM5035-3 Princess Kate
IP-12	Interior paint color (trim)	Match Kelly Moore #KM5034-2 Mallard Lake
IP-13	Interior paint color (trim)	Match Kelly Moore #KM5033-1 Alexandrian Sky

Color Schedule

<u>Designation</u>	<u>Locations</u>
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EP-1	Exterior classroom doors/frames, typical
EP-2	Exterior siding, typical
EP-3	Exterior cement plaster, typical
IP-1	Interior gypsum board walls, paint over existing tackable wall, typical
IP-2	Interior gypsum board walls, wood trim, typical
IP-3	Interior doors/frames, typical
IP-4	Interior gypsum board walls, typical
IP-5	Interior gypsum board walls, typical
IP-6	Interior gypsum board walls accent, typical
IP-7	Interior gypsum board walls accent, typical
IP-8	Interior doors/frames, exposed surface at Stage side
IP-9	Trim color, typical
IP-10	Trim color, typical
IP-11	Trim color, typical
IP-12	Trim color, typical
IP-13	Trim color, typical

Section 10 11 00 – Visual Display Surfaces

Description	Color/Finish
Tackboard vinyl fabric facing	Koroseal – Harborweave, Silver Fox #2118-93

Section 10 14 00 – Signage

Designation	Description	Color/Finish
SGN-1	Polymer sign	As selected by Architect from manufacturer's full range
SGN-2	Polymer sign	As selected by Architect from manufacturer's full range

SGN-3	Polymer sign	White
<u>Color Schedule</u>		
<u>Designation</u>	<u>Locations</u>	
SGN-1	Lower portion of polymer-based panel signs	
SGN-2	Upper portion of polymer-based panel signs	
SGN-3	Sign text of polymer-based panel signs	

Section 11 61 43 – Stage Curtains	
Description	Color/Finish
Stage curtains	KM Fabrics – Prestige, #1118 Navy

Section 12 52 19 – Upholstered Seat Cushion	
Description	Color/Finish
Fabric Seat Cushion FAB-1	Carnegie – Xorel Meteor #6427 747

END OF SECTION 09 06 00

SECTION 23 34 16

ROOFTOP AIR HANDLING UNITS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
Company specializing in manufacturing the products specified in this section with minimum of 5 years documented experience.
- B. The management system governing the manufacture of this product is ISO (International Organization for Standardization) 9001:2008 certified.
- C. Air-handling unit assembly shall have UL (Underwriters Laboratories) 1995 certification for safety, including use with electric heat.
- D. Products requiring electric connection shall be listed and classified by ETL and CSA (Canadian Standards Association) as suitable for the purpose specified and indicated.
- E. Coil performance shall be certified in accordance with AHRI (Air-Conditioning, Heating, and Refrigerating Institute) Standard 410, latest edition.
- F. Unit performance shall be rated in accordance with AHRI Standard 430 for Central Air-Handling Units and subject to verification of rating accuracy by AHRI-sponsored, third party testing. Units shall meet NFPA (National Fire Protection Association) 90A requirements.

1.2 DELIVERY, STORAGE AND PROTECTION

- A. All outdoor units shall be completely shrink-wrapped from the factory for protection during shipment. Tarping of bare units is unacceptable.
- B. Inspect for transportation damage and store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

1.3 START-UP REQUIREMENTS

Do not operate units until ductwork is clean, filters are in place, bearings lubricated, condensate properly trapped, piping connections verified and leak tested, belts aligned

and tensioned, all shipping braces have been removed, and fan has been test run under observation.

1.4 SUBMITTALS

- A. Product Data: Include manufacturer's technical data for each model indicated, including rated capacities, dimensions, required clearances, characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection. Prepare the following by or under the supervision of a qualified professional engineer:
 - 1. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
 - 2. Detail mounting, securing, and flashing of roof curb to roof structure. Indicate coordinating requirements with roof membrane system.
 - 3. Wiring Diagrams: Power, signal, and control wiring.
- C. Manufacturer Seismic Qualification Certification: Submit certification that rooftop air conditioners, accessories, and components will withstand seismic forces defined in Division 23 Section "Mechanical Vibration and Seismic Controls." Include the following:
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: For rooftop air conditioners to include in emergency, operation, and maintenance manuals.
- F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Product Options: Drawings indicate size, profiles, and dimensional requirements of rooftop air conditioners and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.6 COORDINATION

- A. Coordinate installation of roof curbs, equipment supports, and roof penetrations with Roofing contractor.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace components of rooftop air conditioners which fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period for Coils: Manufacturer's standard, but not less than ten (10) years from date of Substantial Completion.
 - 2. Warranty Period for Control Boards: Manufacturer's standard, but not less than one (1) year from date of Substantial Completion.
 - 3. Warranty Period for Variable-Speed Fan Motors: Manufacturer's standard, but not less than one (1) year from date of Substantial Completion.
 - 4. Warranty Period for Electronic Thermostats: Manufacturer's standard, but not less than one (1) year from date of Substantial Completion.

1.8 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Fan Belts: One (1) set for each belt-drive fan.
 - 2. Filters: One (1) set of filters for each unit.

PART 2 - PRODUCTS

2.1 GENERAL DESCRIPTION

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Carrier
 - 2. Trane
 - 3. York
 - 4. Or Approved Equal
- B. Units shall ship assembled.
- C. Unit shall be factory-supplied, factory-assembled, outdoor, curb-mounted central station air handler. The air-handling unit may consist of a fan with the following factory-installed components as indicated on the equipment schedule.
 - 1. Mixing Box Section.
 - 2. Exhaust Box Section.
 - 3. Plenum Section:
 - 4. Filter Section with 2" angle filters.
 - 5. Coil Section with hot and chilled water coils.
 - 6. Horizontal draw-thru Fan Section

2.2 CASING

- A. Construction:
 - 1. Unit shall be constructed of a complete frame with easily removable panels. Removal of any panel shall not affect the structural integrity of the unit.
 - 2. All units shall be supplied with a perimeter, 14-gage or heavier, G-90 galvanized, high tensile steel base rail with a pocket to accommodate roof curb. Perimeter lifting lugs for overhead lifting shall be provided on each shipping section. Sliding units in place of lifting lugs shall not be acceptable.
 - 3. Unit shall be thermally broken to minimize the conduction path from the inside of the casing to the outside.
 - 4. Casing panels (top, sides, and bottom) shall be constructed of galvanized steel (18 gauge optional), and shall have one of the following exterior finishes as specified:
 - a. Unpainted G-90 galvanized steel.

5. Casing panels (top, sides, and bottom) shall be constructed of galvanized or stainless steel (18 gauge optional), and shall have one of the following interior finishes as specified:
 - a. Unpainted G-90 galvanized steel.
6. Roof shall be double-wall, pitched in four directions at a minimum roof slope of $\frac{1}{4}$ -in. per foot across the width of the unit. No penetrations shall be made in pressure sensitive panels. Roof shall incorporate a standing top seam. All seams in the roof shall be gasketed and capped to prevent water infiltration into the unit.
7. Casing panels (top, sides, and bottom) shall be one piece double-wall construction with foam insulation sealed between the inner and outer panels. Panel assemblies shall not carry an R-value of less than 13.
8. Casing deflection shall not exceed an L/240 ratio when subject to an internal pressure of ± 8 -in. wg and shall exhibit no permanent deformation at ± 9 in. wg L is defined as the longest linear panel or cabinet length (measured to AHRI 1350 Cd level 2).
9. Casing leakage rate shall be less than 1% at ± 8 in. wg of nominal unit airflow or 50 cfm, whichever is greater. Leakage rate shall be tested and documented on a routine basis on random production units. Optionally, factory witness leak testing and/or test reports shall be available.
10. Side panels shall be easily removable for access to unit and shall seal against a full perimeter automotive style gasket to ensure a tight seal.
11. The panel retention system shall comply with UL 1995 which states all moving parts (for example, fan blades, blower wheels, pulleys, and belts) that, if accidentally contacted, could cause bodily injury, shall be guarded against accidental contact by an enclosure requiring tools for removal.
12. Base rail shall overhang the curb to facilitate water run-off and protection of the curb to base connection from water intrusion.
13. Accessibility options shall be as follows:
 - a. Hinged, lockable double-wall access door on either side with removable access panel(s) on the other side.
 - b. Hinged, lockable double-wall access doors on both sides.
 - c. Removable double-wall access panels on both sides.
14. Depending on the options selected and the remaining available space inside each section, the following options may be available:
 - a. Reinforced glass viewports shall be factory-installed on the access panel(s) or door(s) of this section.
 - b. Marine lights shall be factory-installed with or without GCFI (ground fault circuit interrupter) convenience outlets.
15. Fan supports, structural members, panels, or flooring shall not be welded, unless aluminum, stainless steel, or other corrosion-resistant material is used. Painted welds on unit exterior steel or galvanized steel are not acceptable.

16. All coil sections shall be double-wall construction with foam insulation sealed between the inner and outer panels. Panel assemblies shall not carry an R-value of less than 13.

17. Blow-thru fan sections shall have a diffuser plate as an integral part of the fan section.

B. Access Doors:

Access doors shall be one piece, hinged, lockable, double-wall construction with foam insulation sealed between the inner and outer panels. Panel assemblies shall not carry an R-value of less than 13.

C. Drain Pans:

Drain pans shall be foam insulated double-wall galvanized or stainless steel construction (18 gauge optional). The pan shall be sloped toward the drain connection. Drain pan shall have 1½-in. MPT connection exiting through the hand side or opposite side of the casing as specified. Drain connection shall be insulated from the drain pan to the point at which it exits the casing. One drain outlet shall be supplied for each cooling coil section. Drain pan shall allow no standing water and comply with ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) Standard 62.1-2010. Where 2 or more coils are stacked in a coil bank, intermediate drain pans shall be provided and the condensate shall be piped to the bottom drain pan. The bottom coil shall not serve as a drain path for the upper coil.

D. Hoods and Louvers:

1. Outside Air Hoods:

- a. Outside air hoods shall be constructed of 20-gage galvanized G-90 steel and sized for 100% of unit nominal cfm.
- b. Hoods shall include easily accessible 1-in. moisture eliminators with a maximum velocity of no more than 500 fpm.

2. Exhaust Air Hoods:

- a. Exhaust air hoods shall be constructed of 16-gage galvanized G-90 steel and shipped collapsed in place.
- b. Expanded metal bird screen shall be provided to prevent entry of unwanted materials into air handler.

3. Power Exhaust Air Hood:

- a. Power exhaust air hoods shall be constructed of 18-gage galvanized G-90 pre-painted steel.
- b. Expanded metal bird screen shall be provided to prevent entry of unwanted materials into air handler.
- c. Optional backdraft damper blades shall be 6063-T5 extruded aluminum channel with galvanized steel braces and extruded vinyl blade seals. Blades shall be

mechanically fastened to axle rods rotating in corrosion-resistant, synthetic bearings. Blades begin to open at 0.12 in. wg and are fully open at 0.2 in. wg.

4. Side Intake Louvers:

- a. Frames and blades shall be 6063 alloy, 0.081 in. thick, mechanically fastened with stainless steel fasteners. Frame depth shall be 6 inches.
- b. Vertical blades shall be designed to collect and drain water to exterior at sill by means of a center rain hook and channels in jambs and mullions.
- c. Louvers shall have 1/2-in. mesh removable aluminum bird screen.
- d. Visible mullions required for louver widths greater than 96 inches.
- e. Provide sill-flashing pans 4 in. high by full depth formed from minimum 0.060 in. thick aluminum.
- f. Louvers shall be designed to withstand a wind load of 25 lb per sq ft.
- g. Water penetration shall be no more than 0.01 oz per sq ft of free area at 1250 fpm per AMCA publication 511. The AMCA test was unable to determine the beginning water penetration for this louver due to the fact that it lies above 1250 fpm through free area.
- h. Louver shall have a mill finish.

2.3 FANS

A. General:

1. Forward-curved fan sections shall have one double-width double-inlet (DWDI) fan wheel and scroll. They shall be constructed of galvanized steel with baked enamel. They shall be designed for continuous operation at the maximum rated fan speed and motor horsepower. Fans shall have an AMCA class rating corresponding to the static pressure at which the fan is designed to operate (Class I or II). Completed fan assembly shall be dynamically balanced in accordance with AHRI Guideline G and ANSI S2.19 at design operating speed using contract drive and motor if ordered.
5. Fan assembly vibration shall not exceed 0.248 in. per second when mounted on active isolators. Vibration shall be measured in both vertical and horizontal directions at the specified fan operating speed using specified motor. For testing purposes, accelerometers shall be mounted on the motor near the bearing locations and removed before shipment.
6. All fan sled components shall provide corrosion protection to pass 100-hour salt spray test per ASTM B-117.
7. Fan wheels shall be keyed to the shaft and shall be designed for continuous operation at maximum rated fan speed and motor horsepower. Fan wheels and shafts shall be selected with a maximum operating speed 25% below the first critical.
8. Belt drive fan motor shall be mounted within the fan section casing on slide rails equipped with adjusting screws. Motor shall be premium efficiency, open drip-proof or totally enclosed fan cooled NEMA (National Electrical Manufacturers

Association) Design A or B with size and electrical characteristics as shown on the equipment schedule. Motor shall be mounted on a horizontal flat surface and shall not be supported by the fan or its structural members. All three-phase motors shall have a $\pm 10\%$ voltage utilization range and a 1.15 minimum service factor. Motor shall be compliant with the Energy Independence and Security Act (EISA) of 2007 where applicable. Single-phase motors shall be available up to and including 5 hp.

B. Performance Ratings:

Fan performance shall be rated and certified in accordance with AHRI Standard 430.

C. Sound Ratings:

Manufacturer shall submit first through eighth octave sound power for fan discharge and casing radiated sound. Sound ratings shall be tested in accordance with AHRI 260.

D. Mounting:

Fan scroll, wheel, shaft, bearings, drives, and motor shall be mounted on a common base assembly. The base assembly is isolated from the outer casing with factory-installed isolators and vibration absorbent an discharge seal. A canvas style duct connection between fan discharge and cabinet is not acceptable. Units shall use 2-in. deflection spring isolators.

E. Fan Accessories:

1. Forward curved fans:

- a. Variable frequency drives without bypass.
- b. Magnetic motor starters.
- c. Motor disconnects.
- e. Piezo ring transducer.
- f. Motor shaft grounding ring.
- g. Belt guards.
- h. Inlet screen.

F. Flexible Connection:

The base assembly is isolated from the outer casing with factory-installed isolators and vibration absorbent fan discharge seal. A canvas style duct connection between fan discharge and cabinet is not acceptable.

2.4 BEARINGS AND DRIVES

A. Bearings:

Self-aligning, grease lubricated, anti-friction with lubrication fittings extended to drive side of fan section. Optional grease fittings extended to the exterior of the casing are available. All bearing life calculations shall be done in accordance with ABMA 9 for ball bearings and ABMA 11 for roller bearings.

1. Size 03 to 110 forward-curved fans: Cartridge type bearings for Class I fans. Heavy-duty pillow block type, self-aligning, regreasable ball or roller type bearings selected for a minimum average life (L50) of 200,000 hours.

B. Shafts:

Fan shafts shall be solid steel, turned, ground, polished and coated with a rust inhibitor.

C. V-Belt Drive:

Drive shall be designed for a minimum 1.2 service factor as standard with a 1.5 service factor option and/or a factory-supplied extra set of belts. Drives shall be fixed pitch with optional variable pitch for motors 15 hp and less. All drives shall be factory mounted, with sheaves aligned and belts properly tensioned.

2.5 COILS

- A. All coils shall be provided to meet the scheduled performance. All coil performance shall be certified in accordance with AHRI Standard 410. All water coils shall be tested at 450 psig air pressure. Factory-supplied 1/2-in. OD coils shall be covered under the standard product one-year limited warranty. All integral face and bypass coils and 5/8-in. OD coils shall be warranted for a period not in excess of 12 months from their shipment from the manufacturer. General Fabrication:

1. All water and refrigerant coils shall have minimum 1/2-in. OD copper tubes mechanically expanded into fins to ensure high thermal performance with lower total flow and pumping requirements. Minimum tube wall thickness shall be 0.016 inches. Optional tube wall thickness of 0.025 in. shall be supplied, if specified.
- 2.. Minimum tube wall thickness shall be 0.020 inches. Aluminum plate fin type with belled collars. . Fin type shall be sine wave construction.
3. Aluminum-finned coils shall be supplied with die-formed casing and tube sheets of mill galvanized steel or stainless steel as specified. Copper-finned coils shall be supplied with stainless steel casing and tube sheets.

C. Hydronic Heating and Cooling Coils:

1. Headers shall be constructed of steel with steel MPT connections. Headers shall have drain and vent connections accessible from the exterior of the unit. Optional non-ferrous headers and red brass MPT connections shall be supplied if specified.
2. Configuration: Coils shall be drainable, with non-trapping circuits. Coils will be suitable for a design working pressure of 300 psig at 200 F.

2.6 FILTER SECTIONS

Angle filter sections shall accept either 2-in. or 4-in. filters of standard sizes, arranged in a horizontal V formation.

2.7 DAMPERS

- A. Factory-supplied dampers shall be warranted to be free from defects in material and workmanship for a period of 12 months after being installed or placed in service, but in no instance shall the period of warranty be longer than 18 months from the date of the original shipment by the manufacturer.
- B. Mixing boxes, filter-mixing boxes, and exhaust boxes shall have parallel or opposed blades and interconnecting outside-air and return-air dampers. Bottom damper locations shall be optionally available with a tool screen to prevent most objects from falling through a bottom damper opening.
 - 1. Standard Dampers:

Damper blades shall be constructed of galvanized steel, with blade seals and stainless steel jamb seals. Blades shall be mechanically fastened to axle rods rotating in self-lubricating synthetic bearings. Maximum leakage rate shall be 4 cfm/ft² at 1 in. wg differential pressure.
 - 2. Premium Dampers:

Damper blades shall be constructed of galvanized steel with a double-skin airfoil design, with blade seals and stainless steel jamb seals. Blades shall be mechanically fastened to axle rods rotating in self-lubricating synthetic bearings. Maximum leakage rate shall be 2 cfm/ft² at 1 in. wg differential pressure.
 - 3. Outside Air Measurement Dampers:
 - a. Damper frame shall be nominal 4 in. x 1 in. x minimum 0.081 in. and constructed of 6063-T5 extruded aluminum.
 - b. Airflow measuring blades shall be airfoil-shaped, heavy gage anodized 6063-T5 extruded aluminum and fixed in 10 in. x minimum 16 gage galvanized steel frame.
 - c. Jamb seals shall be flexible metal compression type along control damper sides.
 - d. Blade seals shall be neoprene along control damper blade edges.
 - e. Bearings shall be molded synthetic.
 - f. Linkage shall be galvanized steel, concealed in frame.
 - g. Axles shall be minimum 1/2-in. diameter plated steel, hex-shaped, mechanically attached to blade.
 - h. Operating temperature shall be -22 to 140 F.

- i. Air straightener section shall be aluminum alloy honeycomb contained in 5 in. long, 16 gage galvanized steel sleeve attached to monitoring blade frame.
 - j. Airflow range shall be 400 to 5,000 ft per minute face velocity.
 - k. Maximum leakage rate shall be 2 cfm/ft² at 1 in. wg differential pressure.
 - 1. Integral face and bypass (IFB) coils shall be capable of maintaining a constant air volume, within 5%, shall be capable of maintaining a constant leaving air temperature as entering air conditions vary, and shall be capable of producing mixed leaving air temperatures within 3 ft downstream with a maximum variance in air temperature of 5° F, regardless of damper position.
 - 2. Coil casing, dampers and baffles shall be fabricated from galvanized steel with an option for stainless steel. Coils shall be tested at 300 psig.
 - 3. Actuator connection point shall be mechanically attached to dampers via linkage mechanisms. Dampers shall be interconnected for operation simultaneously across each face of coil.
- .
- E. Power Exhaust Hood Dampers:
- Backdraft damper blades shall be 6063-T5 extruded aluminum channel with galvanized steel braces and extruded vinyl blade seals. Blades shall be mechanically fastened to axle rods rotating in corrosion-resistant, synthetic bearings. Blades begin to open at 0.12 in. wg and are fully open at 0.2 in. wg.

2.8 VARIABLE FREQUENCY DRIVES:

A. Referenced Standards and Guidelines:

- 1. Institute of Electrical and Electronic Engineers (IEEE)
 - a. IEEE 519-1992, Guide for Harmonic Content and Control.
- 2. Underwriters Laboratories (as appropriate)
 - a. UL508
 - 2) UL508A
 - 3) UL508C
- c. National Electrical Manufacturer's Association (NEMA)
 - 1) ICS 7.0, AC Adjustable Speed Drives
- d. International Electrotechnical Commission (IEC)
 - 1) EN/IEC 61800-3
- e. National Electric Code (NEC)
 - 1) NEC 430.120, Adjustable-Speed Drive Systems
- f. International Building Code (IBC)
 - 1) IBC 2012 Seismic – referencing ASC 7-05 and ICC AC-156

B. Qualifications:

- a. VFDs and options shall be UL508 listed as a complete assembly. The base VFD shall be UL listed for 100 kA SCCR without the need for external input fuses.
- b. CE Mark – The base VFD shall conform to the European Union Electromagnetic Compatibility directive, a requirement for CE marking. The VFD shall meet product standard EN 61800-3 for the First Environment restricted level (Category C2). Base drives that only meet the Second Environment (Category C3, C4) shall be supplied with filters to bring the drive in compliance with the First Environment levels.
- c. The entire VFD assembly, including the bypass (if specified), shall be seismically certified and labeled as such in accordance with the 2012 International Building Code (IBC):
 - 1) VFD manufacturer shall provide Seismic Certification and Installation requirements at time of submittal.
 - 2) Seismic importance factor of 1.5 rating is required, and shall be based upon actual shake test data as defined by ICC AC-156.
 - 3) Seismic ratings based upon calculations alone are not acceptable. Certification of Seismic rating must be based on testing done in all three axis of motion.
 - 4) Special seismic certification of equipment and components shall be provided by OSHPD preapproval.
- C. Factory-mounted variable frequency drives (VFDs) shall be wired to factory-supplied motors.
- D. Factory-supplied VFDs are programmed and started up from the factory and qualify the VFD, through ABB, for a 24-month warranty from date of commissioning or 30 months from date of sale, whichever occurs first.
- E. The VFD parameters are programmed into the controller and removable keypad. In the event that the VFD fails and needs replacement, the program can then be uploaded to the replacement VFD via the original keypad.
- F. The VFD package as specified herein and defined on the VFD schedule shall be enclosed in a UL Type enclosure (enclosures with only NEMA ratings are not acceptable), completely assembled and tested by the manufacturer in a facility where the management system governing the manufacture of this product is ISO 9001:2008 certified.
- G. The VFD shall provide full rated output from a line of $\pm 10\%$ of nominal voltage. The VFD shall continue to operate without faulting from a line of $+30\%$ to -35% of nominal voltage.
- H. VFDs shall be capable of continuous full load operation under the following

environmental operating conditions:

1. -15 to 40 C (5 to 104 F) ambient temperature. Operation to 50 C shall be allowed with a 10% reduction from VFD full load current.
2. Altitude 0 to 3300 feet above sea level. Operation to 6600 shall be allowed with a 10% reduction from VFD full load current.
3. Humidity less than 95%, non-condensing.

I. All VFDs shall have the following standard features:

1. All circuit boards shall be coated to protect against corrosion.
2. All VFDs shall have the same customer interface, including digital display, and keypad, regardless of horsepower rating. The keypad shall be removable, capable of remote mounting and allow for uploading and downloading of parameter settings as an aid for start-up of multiple VFDs.
3. The keypad shall include Hand-Off-Auto selections and manual speed control. The drive shall incorporate "bumpless transfer" of speed reference when switching between "Hand" and "Auto" modes. There shall be fault reset and "Help" buttons on the keypad. The Help button shall include "on-line" assistance for programming and troubleshooting.
4. There shall be a built-in time clock in the VFD keypad. The clock shall have a battery backup with 10 years minimum life span. The clock shall be used to date and time stamp faults and record operating parameters at the time of fault. VFD programming shall be held in non-volatile memory and is not dependent on battery power
5. The VFDs shall utilize pre-programmed application macros specifically designed to facilitate start-up. The Application Macros shall provide one command to reprogram all parameters and customer interfaces for a particular application to reduce programming time. The VFD shall have two user macros to allow the end-user to create and save custom settings.
6. The VFD shall have cooling fans that are designed for easy replacement. The fans shall be designed for replacement without requiring removing the VFD from the wall or removal of circuit boards. The VFD cooling fans shall operate only when required, based on the temperature of and run command to the drive. VFD protection shall be based on thermal sensing and not cooling fan operation.
7. The VFD shall be capable of starting into a coasting load (forward or reverse) up to full speed and accelerate or decelerate to set point without tripping or component damage (flying start).
8. The VFD shall have the ability to automatically restart after an over-current, over-voltage, under-voltage, or loss of input signal protective trip. The number of restart attempts, trial time, and time between attempts shall be programmable.
9. The overload rating of the drive shall be 110% of its normal duty current rating for 1 minute every 10 minutes, 130% overload for 2 seconds every minute. The

minimum FLA rating shall meet or exceed the values in the NEC/UL table 430.250 for 4-pole motors.

10. VFDs through 200 HP shall have internal swinging (non-linear) chokes providing impedance equivalent to 5% to reduce the harmonics to the power line. Swinging choke shall be required resulting in superior partial load harmonic reduction. Linear chokes are not acceptable. 5% impedance may be from dual (positive and negative DC bus) chokes, or 5% swinging AC line chokes. VFD's with only one DC choke shall add an AC line choke.
11. The input current rating of the VFD shall not be greater than the output current rating. VFDs with higher input current ratings require the upstream wiring, protection devices, and source transformers to be oversized per NEC 430.122. Input and output current ratings must be shown on the VFD nameplate.
12. The VFD shall include a coordinated AC transient surge protection system consisting of 4 MOVs (phase to phase and phase to ground), a capacitor clamp, 1600 PIV Diode Bridge and internal chokes. The MOVs shall have a minimum 125 joule rating per phase across the diode bridge. VFDs that do not include coordinated AC transient surge protection shall include an external TVSS (Transient Voltage Surge Suppressor).
13. The VFD shall provide a programmable loss-of-load (broken belt/broken coupling) Form-C relay output. The drive shall be programmable to signal the loss-of-load condition via a keypad warning, Form-C relay output, and/or over the serial communications bus. The loss-of-load condition sensing algorithm shall include a programmable time delay that will allow for motor acceleration from zero speed without signaling a false loss-of-load condition.
14. The VFD shall include multiple "two zone" PID algorithms that allow the VFD to maintain PID control from two separate feedback signals (4 to 20 mA, 0 to 10V, and/or serial communications). The two zone control PID algorithm will control motor speed based on a minimum, maximum, or average of the two feedback signals. All of the VFD PID controllers shall include the ability for "two zone" control.
15. If the input reference is lost, the VFD shall give the user the option of either (1) stopping and displaying a fault, (2) running at a programmable preset speed, (3) hold the VFD speed based on the last good reference received, or (4) cause a warning to be issued, as selected by the user. The drive shall be programmable to signal this condition via a keypad warning, Form-C relay output and/or over the serial communication bus.
16. The VFD shall have programmable "Sleep" and "Wake up" functions to allow the drive to be started and stopped from the level of a process feedback signal.

J. All VFDs to have the following adjustments:

1. Three (3) programmable critical frequency lockout ranges to prevent the VFD from operating the load continuously at an unstable speed. The lockout range must be fully adjustable, from 0 to full speed.

2. Two (2) PID Set point controllers shall be standard in the drive, allowing pressure or flow signals to be connected to the VFD, using the microprocessor in the VFD for the closed-loop control. The VFD shall have 250 mA of 24 VDC auxiliary power and be capable of loop powering a transmitter supplied by others. The PID set point shall be adjustable from the VFD keypad, analog inputs, or over the communications bus. There shall be two independent parameter sets for the PID controller and the capability to switch between the parameter sets via a digital input, serial communications or from the keypad. The independent parameter sets are typically used for night setback, switching between summer and winter set points, etc.
3. There shall be an independent, second PID loop that can utilize the second analog input and modulate one of the analog outputs to maintain the set point of an independent process (i.e. valves, dampers, etc.). All set points, process variables, etc. to be accessible from the serial communication network.
4. Two (2) programmable analog inputs shall accept current or voltage signals.
5. Two (2) programmable analog outputs (0 to 20 mA or 4 to 20 mA). The outputs may be programmed to output proportional to Frequency, Motor Speed, Output Voltage, Output Current, Motor Torque, Motor Power (kW), DC Bus voltage, Active Reference, Active Feedback, and other data.
6. Six (6) programmable digital inputs for maximum flexibility in interfacing with external devices. All digital inputs shall be programmable to initiate upon an application or removal of 24VDC.
7. Three (3) programmable, digital Form-C relay outputs. The relay outputs shall include programmable on and off delay times and adjustable hysteresis. The relays shall be rated for maximum switching current 8 amps at 24 VDC and 0.4 A at 250 VAC; Maximum voltage 300 VDC and 250 VAC; continuous current rating of 2 amps RMS. Outputs shall be true Form-C type contacts; open collector outputs are not acceptable. Drives that have only two (2) relay outputs must provide an option card that provides additional relay outputs.
8. Run permissive circuit - There shall be a run permissive circuit for damper or valve control. Regardless of the source of a run command (keypad, input contact closure, time-clock control, or serial communications), the VFD shall provide a dry contact closure that will signal the damper to open (VFD motor does not operate). When the damper is fully open, a normally open dry contact (end-switch) shall close. The closed end-switch is wired to a VFD digital input and allows VFD motor operation. Two separate safety interlock inputs shall be provided. When either safety is opened, the motor shall be commanded to coast to stop and the damper shall be commanded to close. The keypad shall display "start enable 1 (or 2) missing". The safety input status shall also be transmitted over the serial communications bus.

9. The VFD control shall include a programmable time delay for VFD start and a keypad indication that this time delay is active. A Form C relay output provides a contact closure to signal the VAV boxes open. This will allow VAV boxes to be driven open before the motor operates. The time delay shall be field programmable from 0 to 120 seconds. Start delay shall be active regardless of the start command source (keypad command, input contact closure, time-clock control, or serial communications), and when switching from drive to bypass.
 10. Seven (7) programmable preset speeds.
 11. Two independently adjustable accel and decel ramps with 1 to 1800 seconds adjustable time ramps.
 12. The VFD shall include a motor flux optimization circuit that will automatically reduce applied motor voltage to the motor to optimize energy consumption and reduce audible motor noise. The VFD shall have selectable software for optimization of motor noise, energy consumption, and motor speed control.
 13. The VFD shall include a carrier frequency control circuit that reduces the carrier frequency based on actual VFD temperature that allows higher carrier frequency settings without derating the VFD.
 14. The VFD shall include password protection against parameter changes.
- K. The keypad shall include a backlit LCD display. The display shall be in complete English words for programming and fault diagnostics (alpha-numeric codes are not acceptable). All VFD faults shall be displayed in English words. The keypad shall include a minimum of 14 assistants including:
1. Start-up assistant
 2. Parameter assistants
 - a. PID assistant
 - b. Reference assistant
 - c. I/O assistant
 - d. Serial communications assistant
 - e. Option module assistant
 - f. Panel display assistant
 - g. Low noise set-up assistant
 3. Maintenance assistant
 - a. Troubleshooting assistant
 - b. Drive optimizer assistants
- L. All applicable operating values shall be capable of being displayed in engineering (user) units. A minimum of three operating values from the list below shall be capable

of being displayed at all times. The display shall be in complete English words (alpha-numeric codes are not acceptable):

1. Output Frequency
2. Motor Speed (RPM, %, or Engineering units)
3. Motor Current
4. Motor Torque
5. Motor Power (kW)
6. DC Bus Voltage
7. Output Voltage

M. The VFD shall include a fireman's override input. Upon receipt of a contact closure from the fire/smoke control station, the VFD shall operate in one of two modes: 1) Operate at a programmed predetermined fixed speed ranging from -500Hz (reverse) to 500Hz (forward). 2) Operate in a specific fireman's override PID algorithm that automatically adjusts motor speed based on override set point and feedback. The mode shall override all other inputs (analog/digital, serial communication, and all keypad commands), except customer defined safety run interlocks, and force the motor to run in one of the two modes above. "Override Mode" shall be displayed on the keypad. Upon removal of the override signal, the VFD shall resume normal operation, without the need to cycle the normal digital input run command.

N. Serial Communications

1. The VFD shall have an EIA-485 port as standard. The standard protocols shall be Modbus*, Johnson Controls N2, Siemens Building Technologies FLN, and BACnet†. [Optional protocols for LonWorks**, Profibus, EtherNet, BACnet IP, and DeviceNet shall be available.] Each individual drive shall have the protocol in the base VFD. The use of third party gateways and multiplexers is not acceptable. All protocols shall be "certified" by the governing authority (i.e. BTL Listing for BACnet). Use of non-certified protocols is not allowed.
2. The BACnet connection shall be an EIA-485, MS/TP interface operating at 9.6, 19.2, 38.4, or 76.8 Kbps. The connection shall be tested by the BACnet Testing Labs (BTL) and be BTL Listed. The BACnet interface shall conform to the BACnet standard device type of an Applications Specific Controller (B-ASC). The interface shall support all BIBBs defined by the BACnet standard profile for a B-ASC including, but not limited to:
 - a. Data Sharing – Read Property – B.
 - b. Data Sharing – Write Property – B.
 - c. Device Management – Dynamic Device Binding (Who-Is; I-Am).

- d. Device Management – Dynamic Object Binding (Who-Has; I-Have).
 - e. Device Management – Communication Control – B.
 - 3. Serial communication capabilities shall include, but not be limited to; run-stop controls, speed set adjustment, and lock and unlock the keypad. The drive shall have the capability of allowing the BAS to monitor feedback such as process variable feedback, output speed / frequency, current (in amps), % torque, power (kW), kilowatt hours (resettable), operating hours (resettable), and drive temperature. The BAS shall also be capable of monitoring the VFD relay output status, digital input status, and all analog input and analog output values. All diagnostic warning and fault information shall be transmitted over the serial communications bus. Remote VFD fault reset shall be possible.
 - 4. Serial communication in bypass (if bypass is specified) shall include, but not be limited to; bypass run-stop control, the ability to force the unit to bypass, and the ability to lock and unlock the keypad. The bypass shall have the capability of allowing the BAS to monitor feedback such as, current (in amps), kilowatt hours (resettable), operating hours (resettable), and bypass logic board temperature. The BAS shall also be capable of monitoring the bypass relay output status, and all digital input status. All bypass diagnostic warning and fault information shall be transmitted over the serial communications bus. Remote bypass fault reset shall be possible.
 - 5. The VFD/bypass shall allow the BAS to control the drive and bypass digital and analog outputs via the serial interface. This control shall be independent of any VFD function. The analog outputs may be used for modulating chilled water valves or cooling tower bypass valves. The drive and bypass' digital (Form-C relay) outputs may be used to actuate a damper, open a valve or control any other device that requires a maintained contact for operation. In addition, all of the drive and bypass' digital inputs shall be capable of being monitored by the BAS system. This allows for remote monitoring of which (of up to 4) safeties are open.
 - 6. The VFD shall include an independent PID loop for customer use. The independent PID loop may be used for cooling tower bypass value control, chilled water value/ hot water valve control, etc. Both the VFD PID control loop and the independent PID control loop shall continue functioning even if the serial communications connection is lost. As default, the VFD shall keep the last good set point command and last good DO and AO commands in memory in the event the serial communications connection is lost and continue controlling the process.
- O. EMI/RFI filters. All VFDs shall include EMI/RFI filters. The onboard filters shall allow the VFD assembly to be CE Marked and the VFD shall meet product standard EN 61800-3 for the First Environment restricted level (Category C2) with up to 100 feet of

motor cable. Second environment (Category C3, C4) is not acceptable, no Exceptions. Certified test reports shall be provided with the submittals confirming compliance to EN 61800-3, First Environment (C2).

- P. Drive options shall be furnished and mounted by the drive manufacturer as defined on the VFD schedule. All optional features shall be UL Listed by the drive manufacturer as a complete assembly and carry a UL508 label.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units level and plumb, maintaining manufacturer's recommended clearances. Install according to ARI Guideline B.
- B. Curb Support: Install roof curb on roof structure, level and secure, according to NRCA's "Low-Slope Membrane Roofing Construction Details Manual," Illustration "Raised Curb Detail for Rooftop Air Handling Units and Ducts." Install and secure rooftop air conditioners on curbs and coordinate roof penetrations and flashing with roof construction. Secure units to structural support with anchor bolts.
- C. Isolation Curb Support: Install units on isolation curbs and install flexible duct connectors and the following vibration isolation and seismic-control devices. Flexible duct connectors are specified in Division 23 33 00 Section "Duct Accessories." Vibration isolation and seismic-control devices are specified in Division 23 05 33 Section "Mechanical Vibration and Seismic Controls."

3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to machine to allow service and maintenance.
 - 1. Gas Piping: Comply with applicable requirements in Division 23 11 00 Section "Facility Gas Piping." Connect gas piping to burner, full size of gas train inlet, and connect with union and shutoff valve with sufficient clearance for burner removal and service.
- C. Duct installation requirements are specified in other Division 23 Sections. Drawings indicate the general arrangement of ducts. The following are specific connection requirements for down flow units (where applicable):
 - 1. Install ducts to termination in roof curb.
 - 2. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.

3. Terminate return-air duct through roof structure and insulate space between roof and bottom of unit with 2-inch thick, acoustic duct liner.
- D. Electrical System Connections: Comply with applicable requirements in Division 26 Sections for power wiring, switches, and motor controls.
- E. Ground equipment according to Division 26 Section associated with "Grounding and Bonding."
- F. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.
- B. Perform the following field quality-control tests and inspections and prepare test reports:
 1. After installing rooftop air conditioners and after electrical circuitry has been energized, test units for compliance with requirements.
 2. Inspect for and remove shipping bolts, blocks, and tie-down straps.
 3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Remove malfunctioning units, replace with new units, and retest as specified above.

3.4 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
- B. Complete installation and startup checks according to manufacturer's written instructions and do the following:
 1. Inspect for visible damage to unit casing.
 2. Inspect for visible damage to furnace combustion chamber.
 3. Inspect for visible damage to compressor, air-cooled outside coil, and fans.
 4. Inspect internal insulation.
 5. Verify that labels are clearly visible.
 6. Verify that clearances have been provided for servicing.

7. Verify that controls are connected and operable.
8. Verify that filters are installed.
9. Clean outside coil and inspect for construction debris.
10. Clean furnace flue and inspect for construction debris.
11. Connect and purge gas line.
12. Adjust vibration isolators.
13. Inspect operation of barometric dampers.
14. Lubricate bearings on fan.
15. Inspect fan-wheel rotation for movement in correct direction without vibration and binding.
16. Adjust fan belts to proper alignment and tension.
17. Start unit according to manufacturer's written instructions.
 - a. Start refrigeration system in summer only.
 - b. Complete startup sheets and attach copy with Contractor's startup report.
18. Inspect and record performance of interlocks and protective devices; verify sequences.
19. Operate unit for an initial period as recommended or required by manufacturer.
20. Perform the following operations for both minimum and maximum firing and adjust burner for peak efficiency. Adjust pilot to stable flame.
 - a. Measure gas pressure on manifold.
 - b. Measure combustion-air temperature at inlet to combustion chamber.
 - c. Measure flue-gas temperature at furnace discharge.
 - d. Perform flue-gas analysis. Measure and record flue-gas carbon dioxide and oxygen concentration.
 - e. Measure supply-air temperature and volume when burner is at maximum firing rate and when burner is off. Calculate useful heat to supply air.
21. Adjust and inspect high-temperature limits.
22. Inspect outside-air dampers for proper stroke and interlock with return-air dampers.
23. Start refrigeration system and measure and record the following:
 - a. Coil leaving-air, dry- and wet-bulb temperatures.
 - b. Coil entering-air, dry- and wet-bulb temperatures.
 - c. Outside-air, dry-bulb temperature.
 - d. Outside-air-coil, discharge-air, dry-bulb temperature.
24. Inspect controls for correct sequencing of heating, mixing dampers, refrigeration, and normal and emergency shutdown.

25. Measure and record the following minimum and maximum airflows. Plot fan volumes on fan curve.
 - a. Supply-air volume.
 - b. Return-air volume.
 - c. Relief-air volume.
 - d. Outside-air intake volume.
26. Simulate maximum cooling demand and inspect the following:
 - a. Compressor refrigerant suction and hot-gas pressures.
 - b. Short circuiting of air through outside coil or from outside coil to outside-air intake.
27. Verify operation of remote panel, including pilot-light operation and failure modes. Inspect the following:
 - a. High-limit heat exchanger.
 - b. Warm-up for morning cycle.
 - c. Freezestat operation.
 - d. Economizer to limited outside-air changeover.
 - e. Alarms.
28. After startup and performance testing, change filters, vacuum heat exchanger and cooling and outside coils, lubricate bearings, adjust belt tension, and inspect operation of power vents.

3.5 ADJUSTING

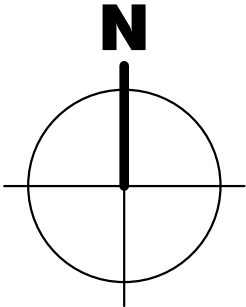
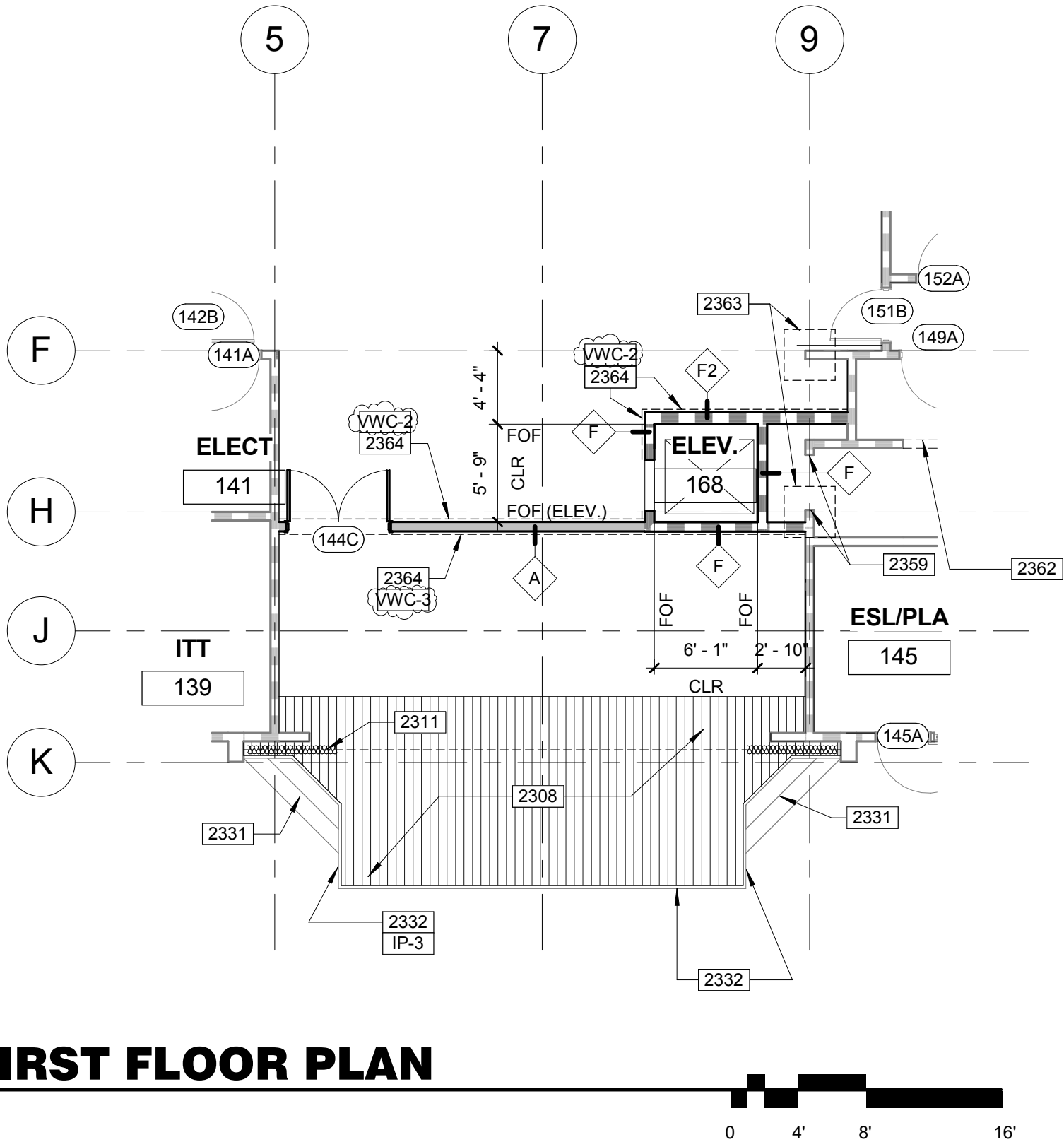
- A. Adjust initial temperature and humidity set points.
- B. Set field-adjustable switches and circuit-breaker trip ranges as indicated.
- C. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to site outside normal occupancy hours for this purpose, without additional cost.

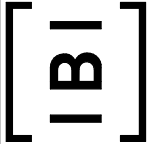
3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain rooftop air conditioners. Refer to Division 1 Sections "Closeout Procedures" and "Demonstration and Training."

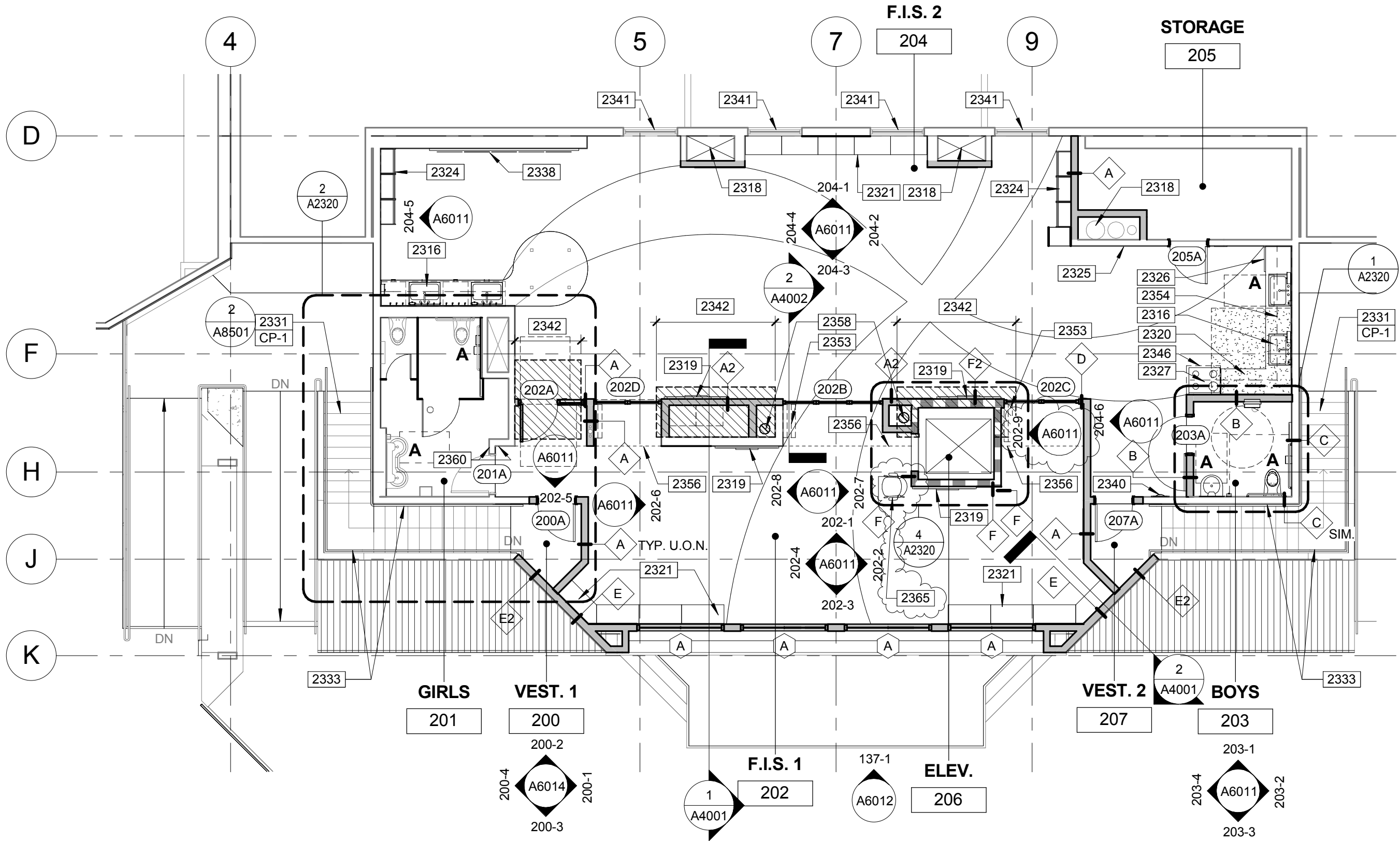
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FIRST FLOOR PLAN



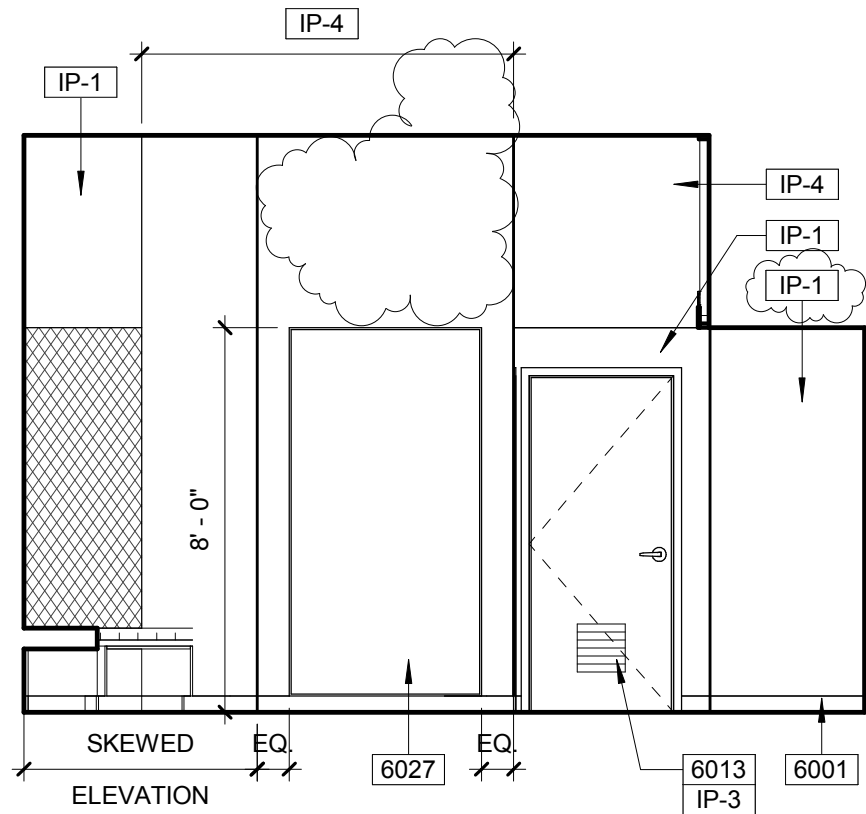
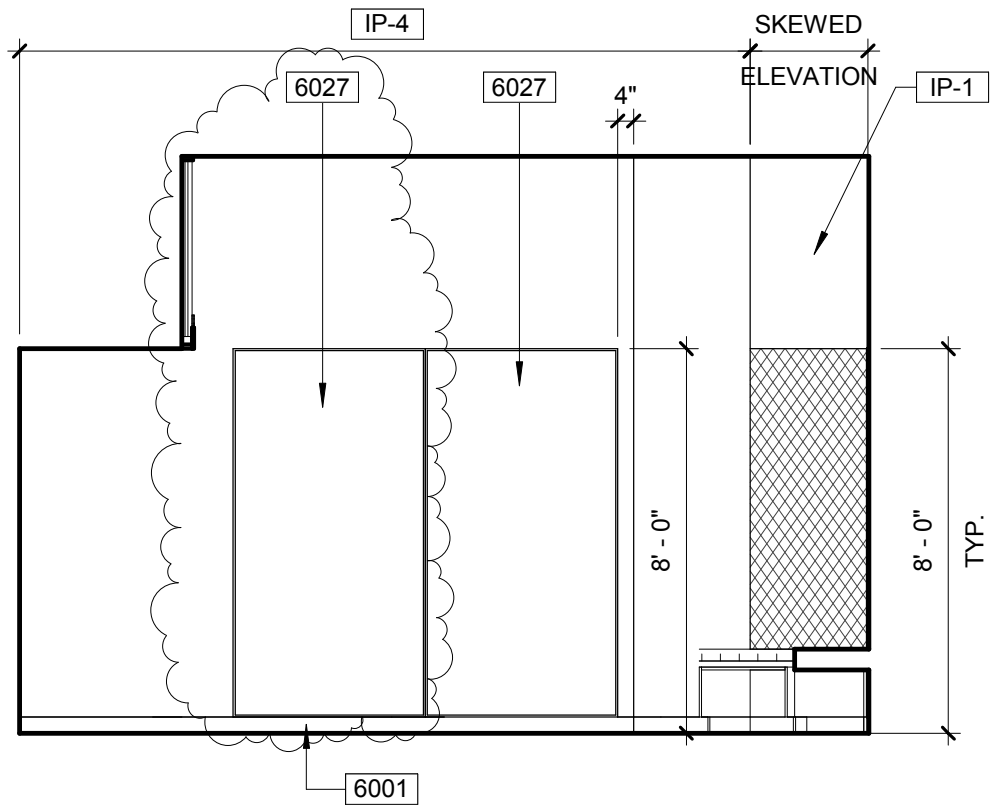
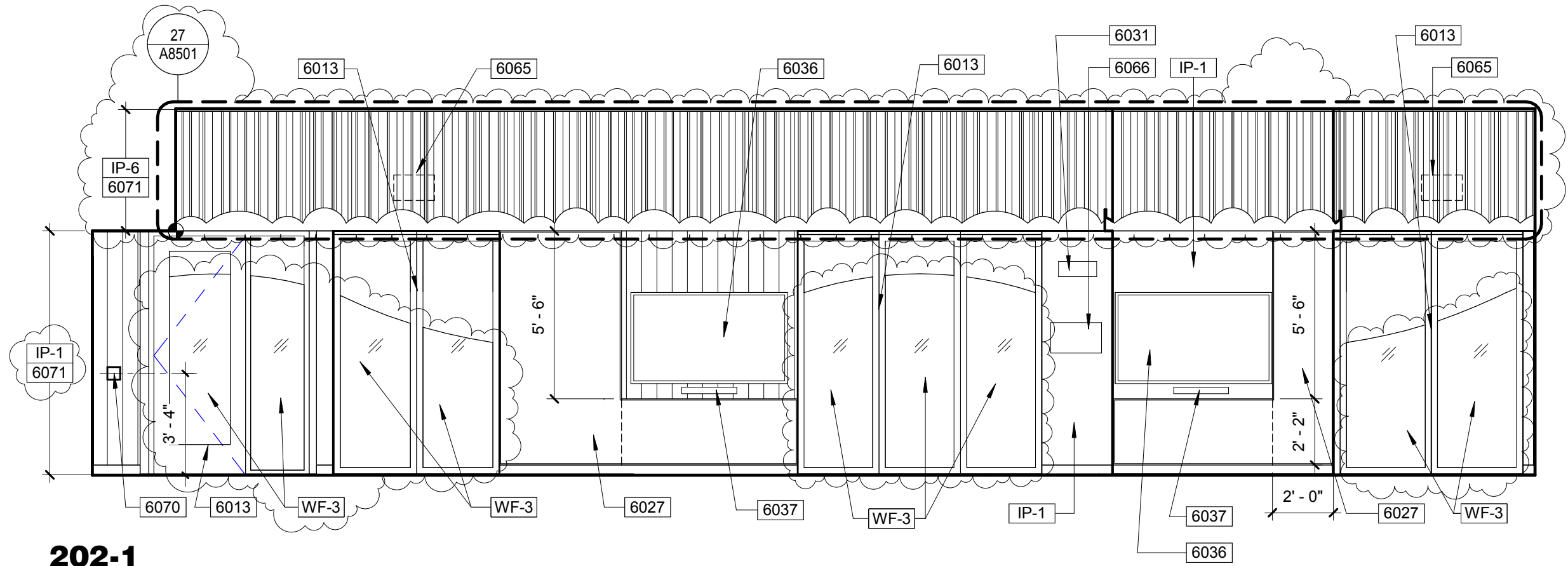
 ARCHITECTURE PLANNING San Jose 160 W. Santa Clara St., Suite 800 San Jose, California 95113 408.924.0811 fax: 408.924.0844	FIRST FLOOR PLAN		DATE 11/12/18	AD2 A01	
	CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.				
	BERRYESSA UNION SCHOOL DISTRICT		SAN JOSE CA		
PROJECT NO. 109583		DSA FILE NO. 43-7	REFERENCE SHEET NO. A2310	01-117059	



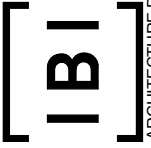


FLOOR PLAN - MEZZANINE

FLOOR PLAN MEZZANINE		DATE 11/12/18	AD2 A02	
		CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.		
BERRYESSA UNION SCHOOL DISTRICT		SAN JOSE CA		REFERENCE SHEET NO. A2320
		PROJECT NO. 109583		
		DSA FILE NO. 43-7		
		DSA APP. NO. 01-117059		
		San Jose 160 W. Santa Clara St., Suite 800 San Jose, California 95113 408.924.0811 fax: 408.924.0844		

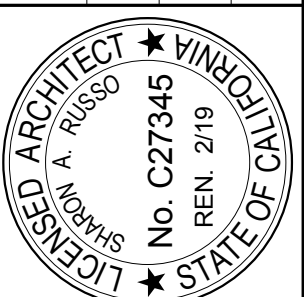


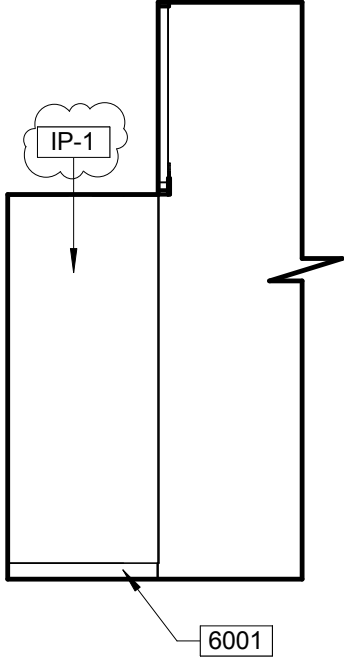
INTERIOR ELEVATIONS CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S. BERRYESSA UNION SCHOOL DISTRICT	DATE 11/12/18	AD2 A03	
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	DSA FILE NO. 43-7	DSA APP. NO. 01-117059	



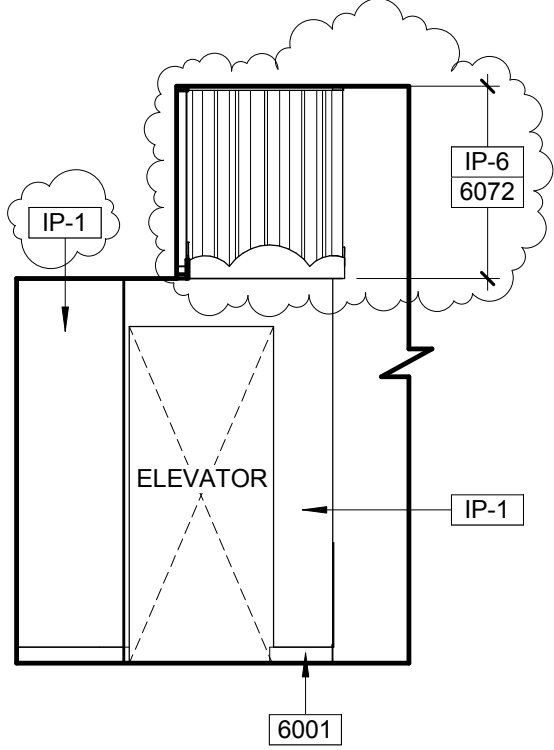
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 San Jose, California 95113
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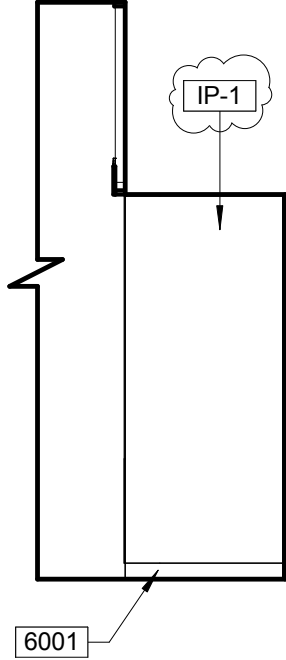




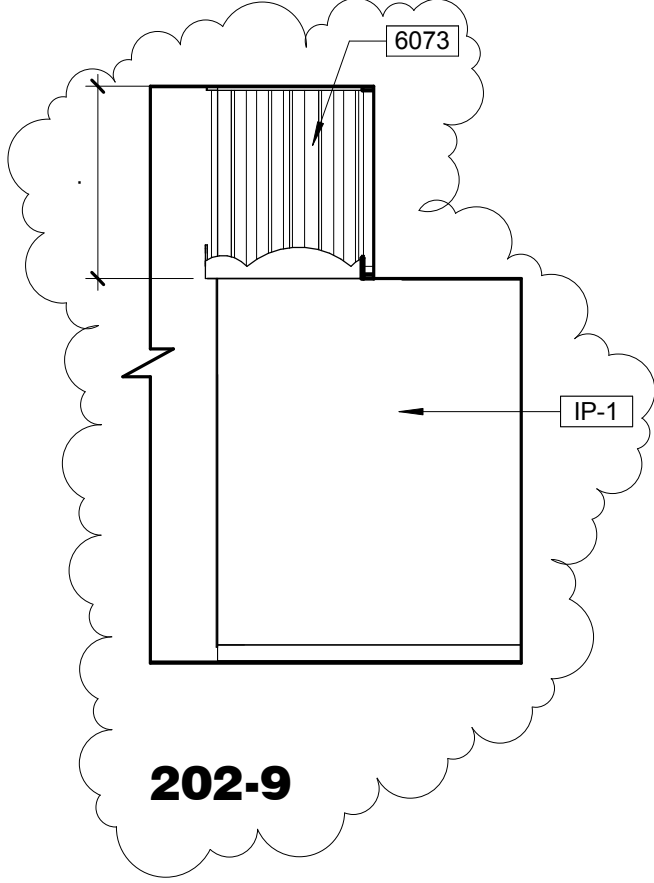
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202-7



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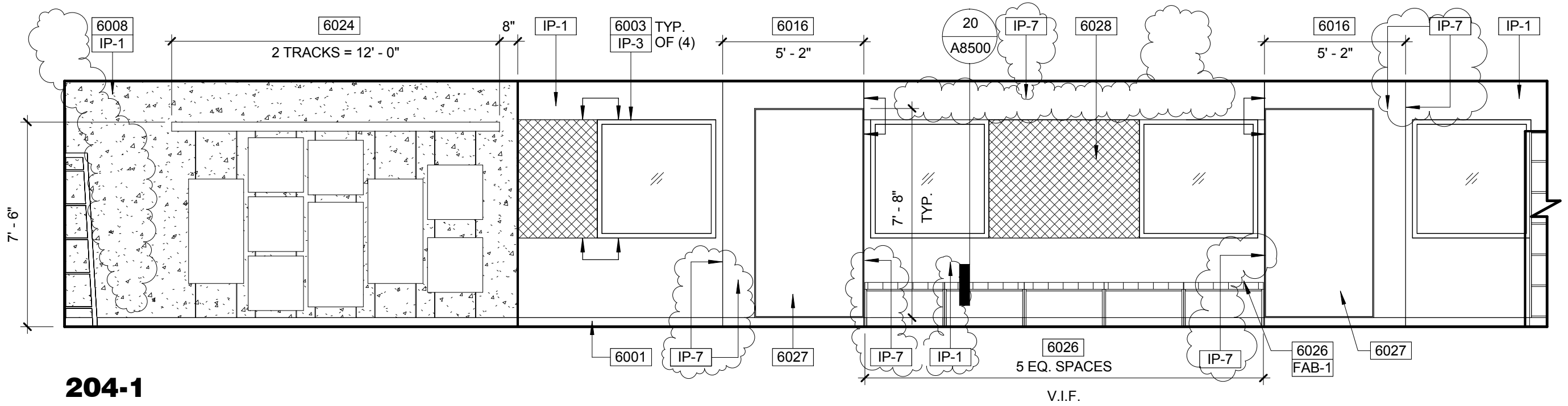
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No. C27345

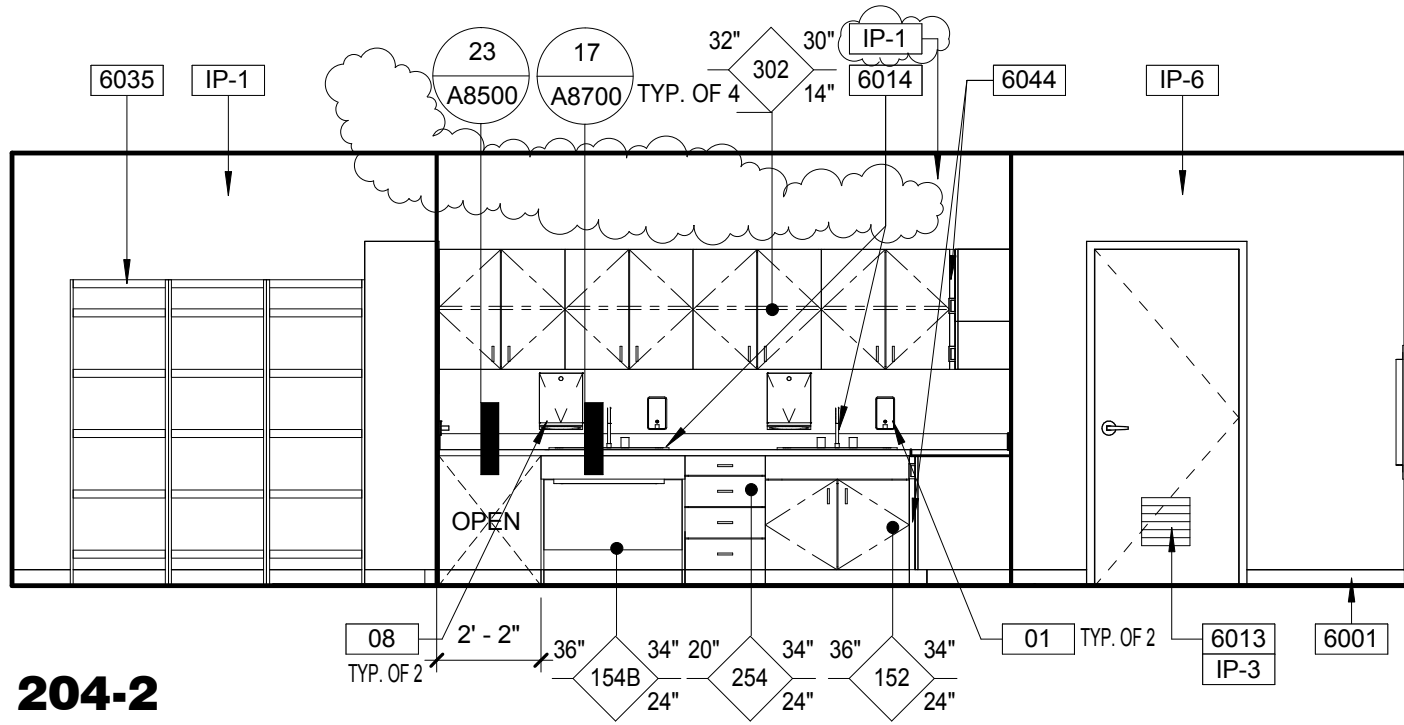
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STATE OF CALIFORNIA

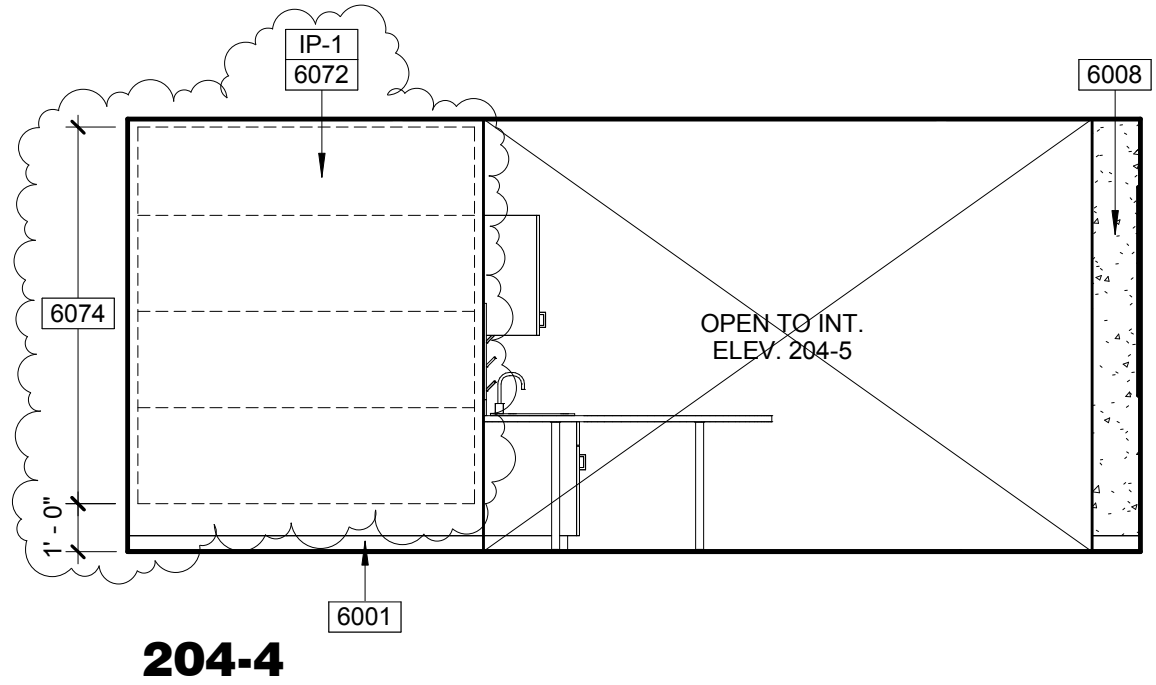
INTERIOR ELEVATIONS		DATE 11/12/18	AD2 A04
CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.			
BERRYESSA UNION SCHOOL DISTRICT		SAN JOSE CA	REFERENCE SHEET NO. A6011
PROJECT NO. 109583	DSA FILE NO. 43-7 DSA APP. NO. 01-117059		



204-1

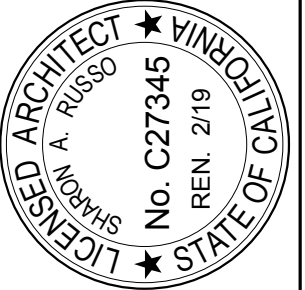


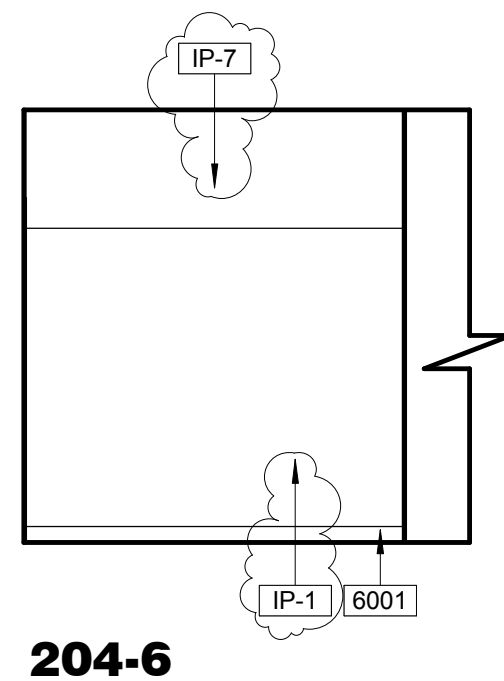
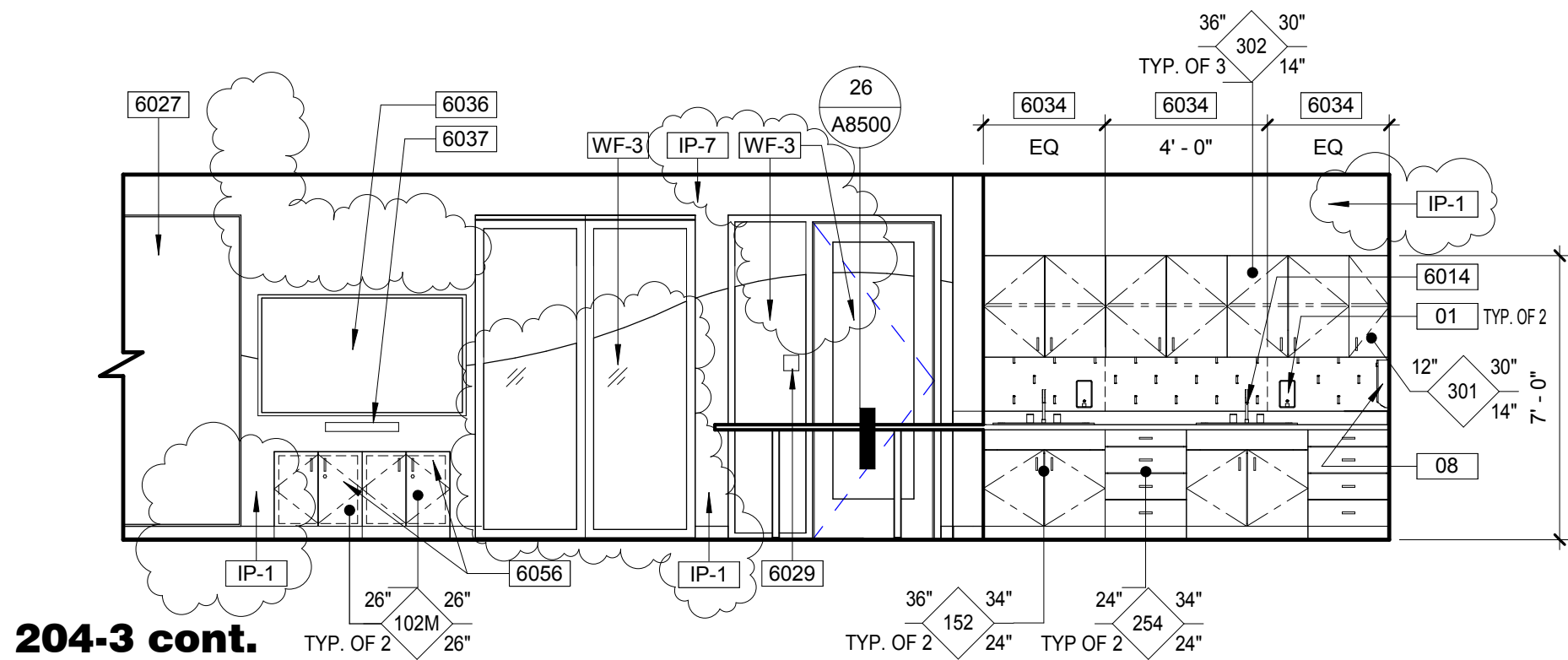
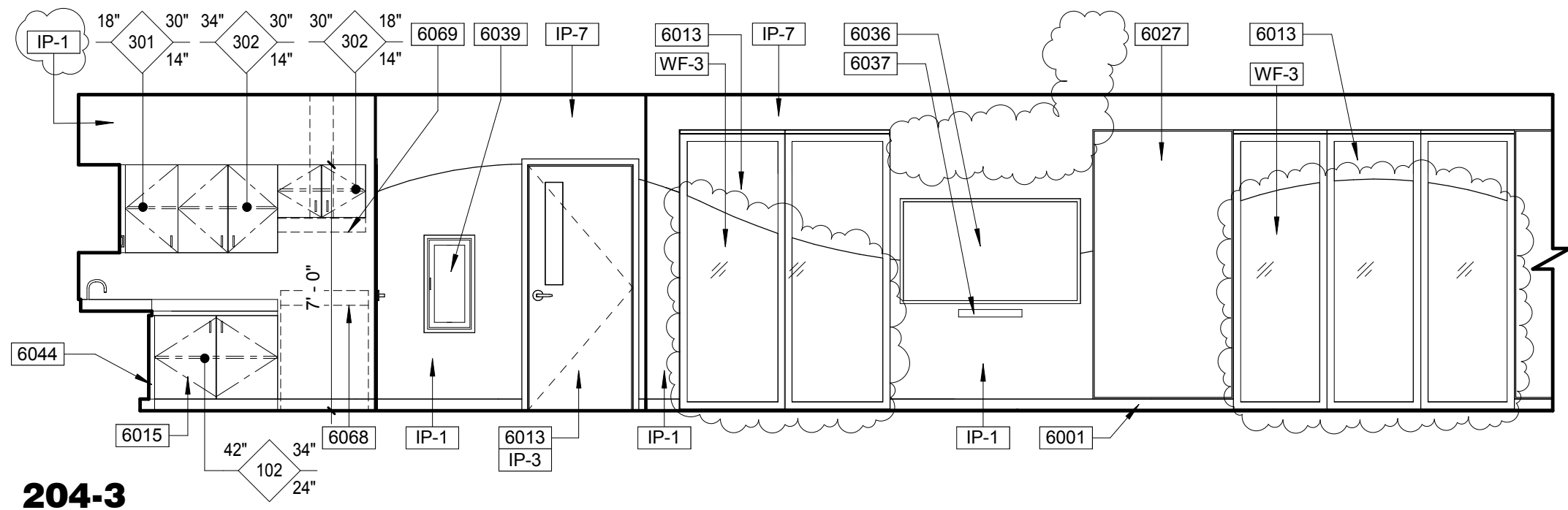
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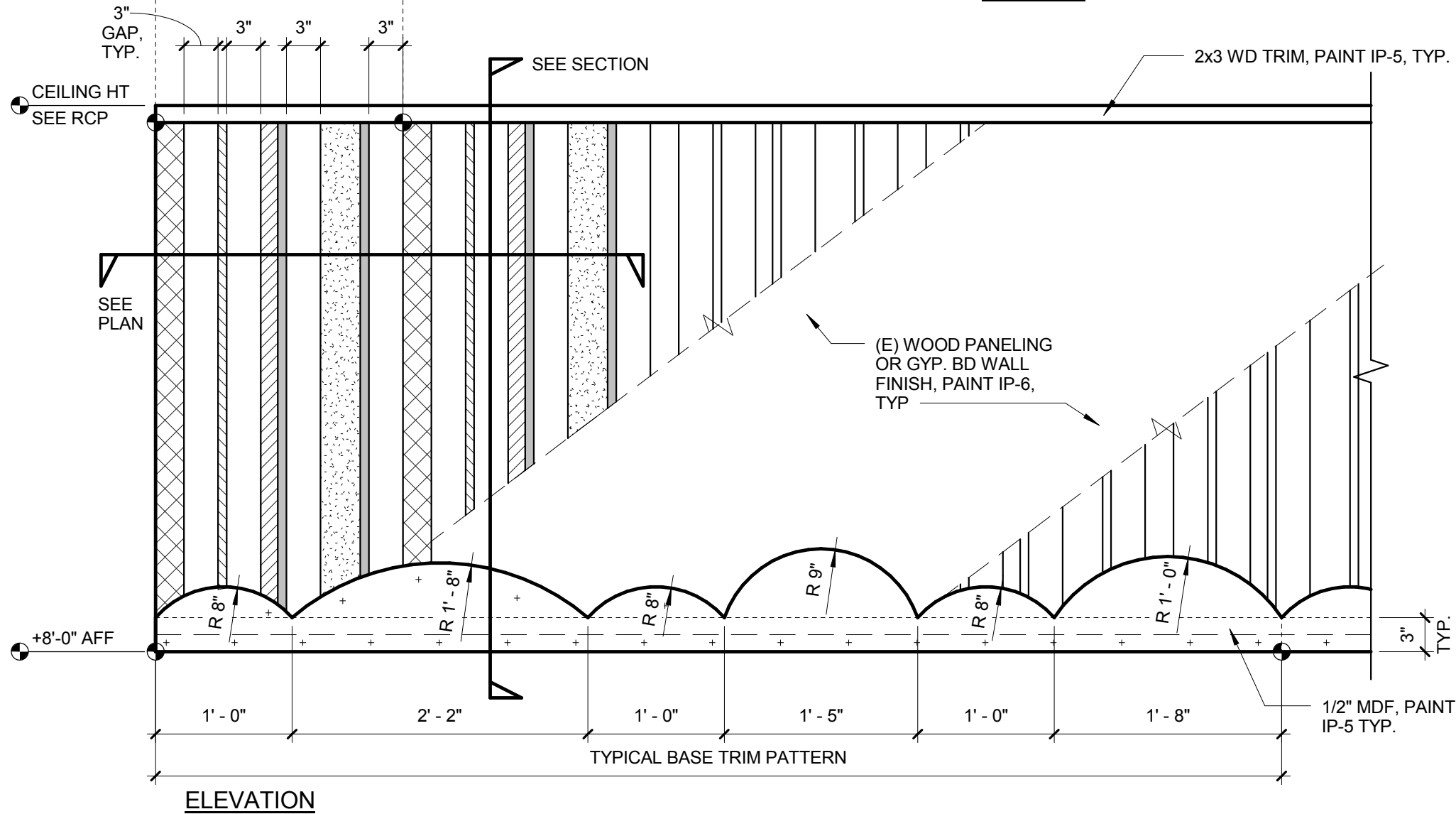
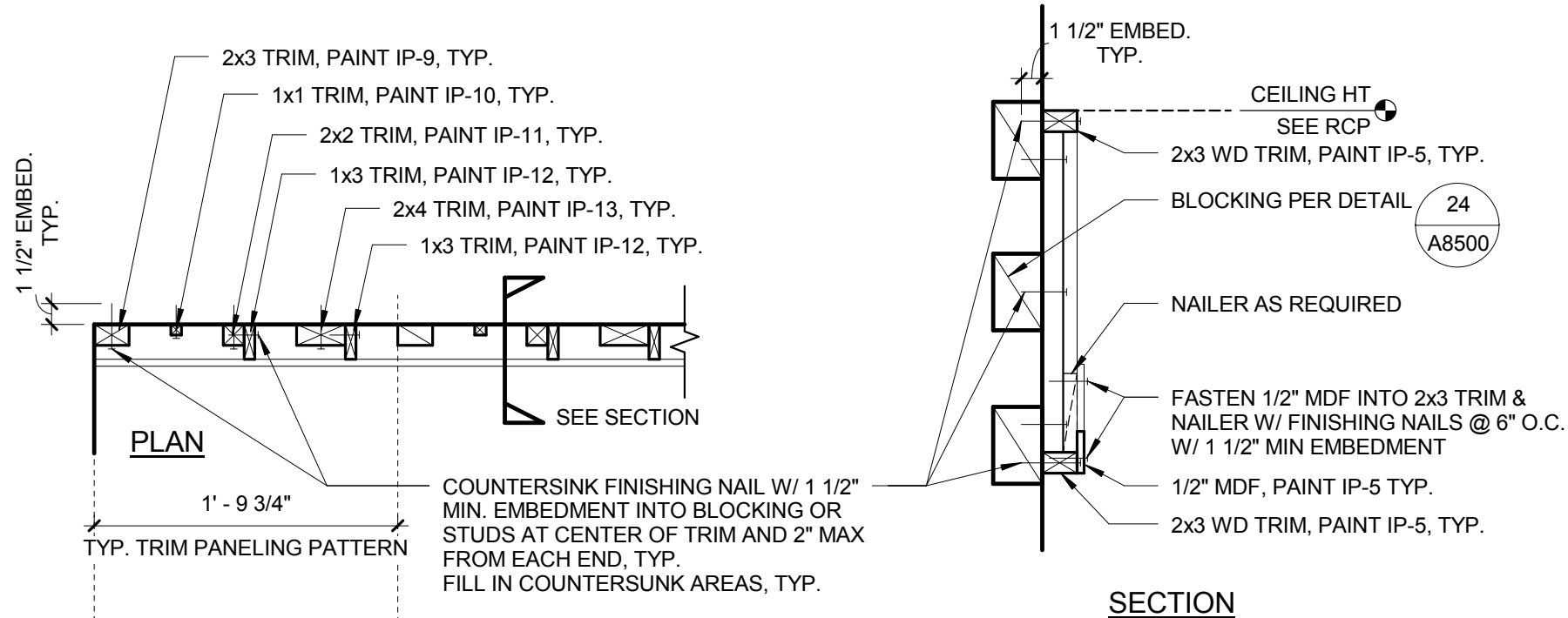


204-4

IBI ARCHITECTURE PLANNING San Jose 160 W. Santa Clara St., Suite 800 San Jose, California 95113 408.924.0811 fax: 408.924.0844	INTERIOR ELEVATIONS		DATE 11/12/18
	CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.		
	BERRYESSA UNION SCHOOL DISTRICT	SAN JOSE CA	PROJECT NO. 109583
			REFERENCE SHEET NO. A6011
			DSA APP. NO. 01-117059
			AD2 A05



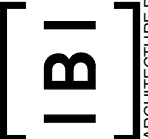





27 SOFFIT WALL PANELING

1" = 1'-0"

INTERIOR DETAIL		DATE 11/12/18		AD2 A08
		PROJECT NO. 109583		
CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.				
BERRYESSA UNION SCHOOL DISTRICT		SAN JOSE CA	REFERENCE SHEET NO. A8501	
DSA FILE NO. 43-7		DSA APP. NO. 01-117059		

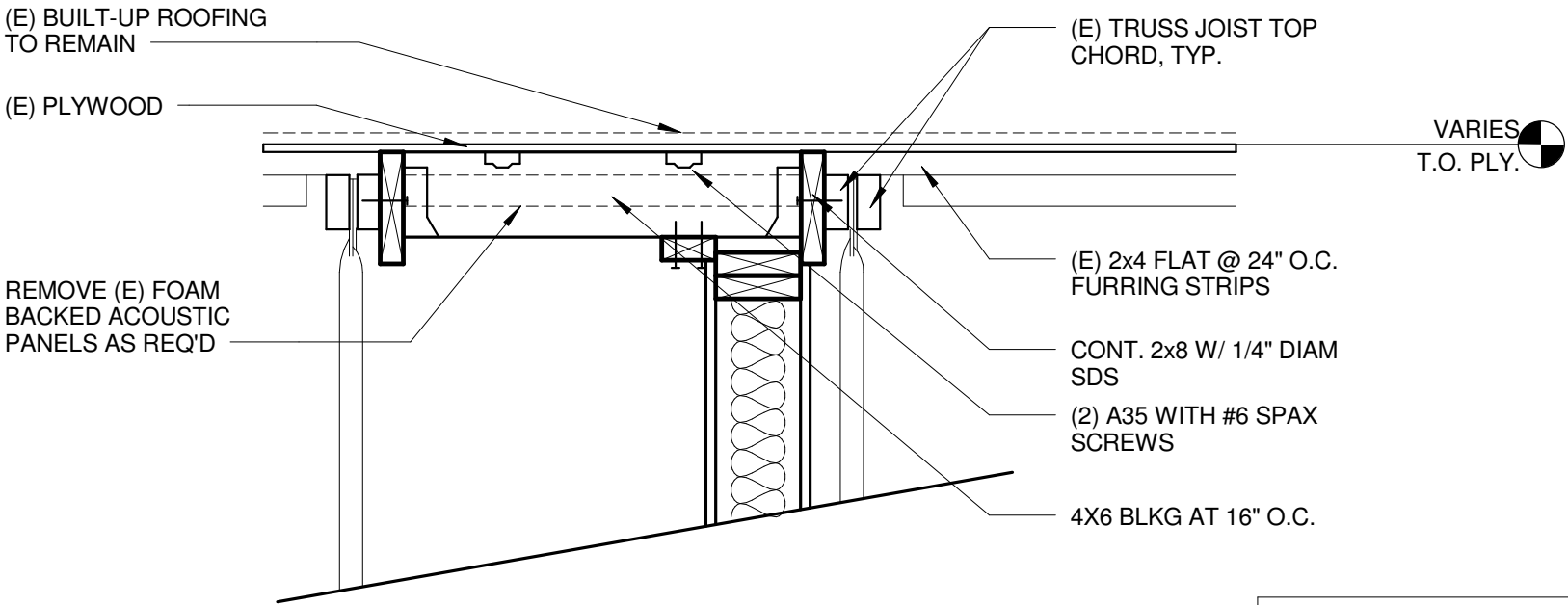


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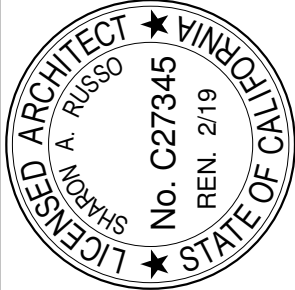


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1 SECTION @ GLAZING
1" = 1'-0"



**WALL ATTACHMENT @
UNDERSIDE OF (E) ROOF**



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BLOCKING

CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.

BERRYESSA UNION SCHOOL DISTRICT

PROJECT NO.
109583

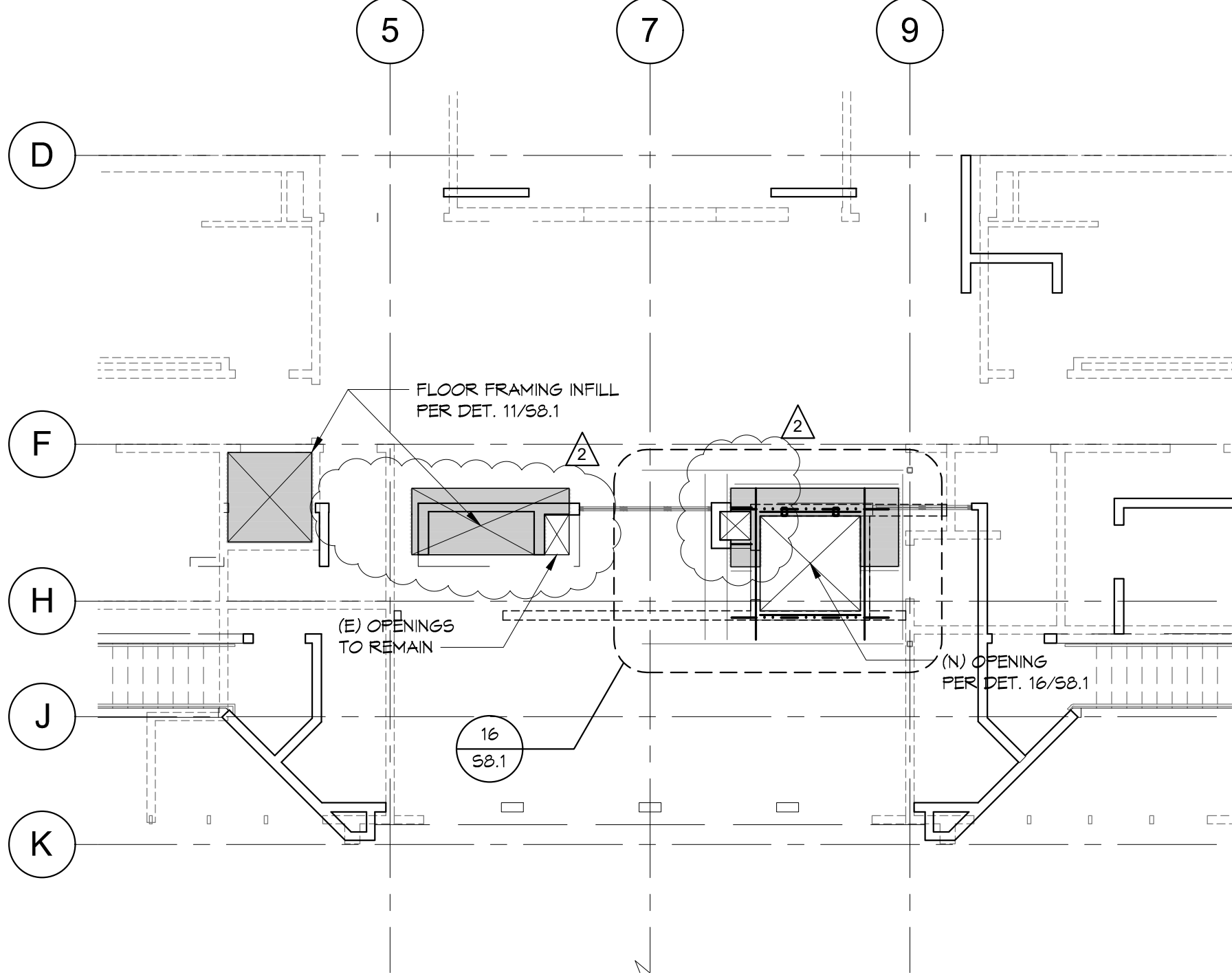
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DSA APP. NO. 01-117059

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REFERENCE SHEET NO.
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DATE
11/12/18

**AD2
A09**



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PARTIAL FLOOR FRAMING PLAN - MEZZANINE

CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.

BERRYESSA UNION SCHOOL DISTRICT

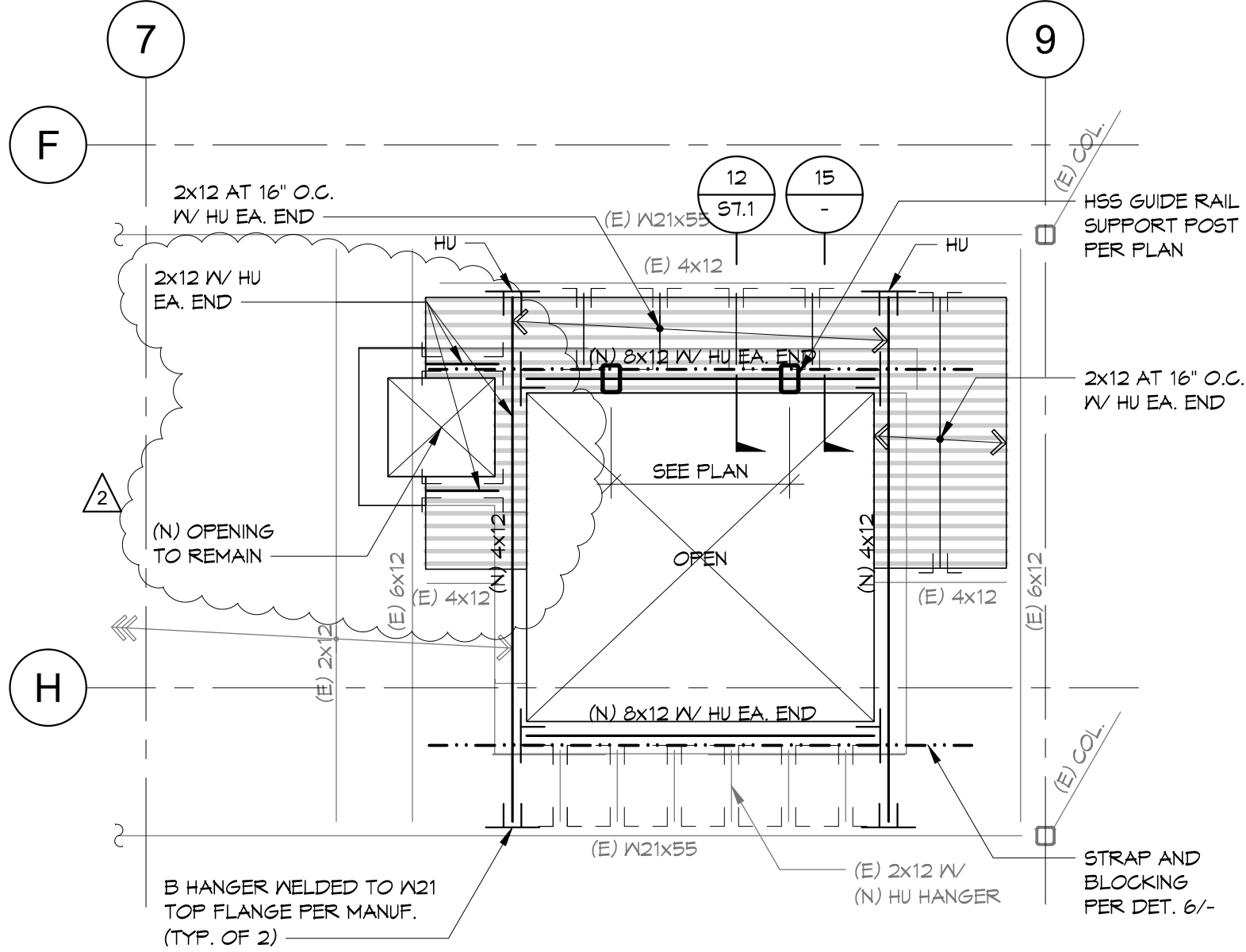
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REFERENCE SHEET NO.
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DATE
11/12/18

AD2
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PROJECT NO.
109583
DSA FILE NO. 43-7
DSA APP. NO. 01-117059



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FLOOR INFILL/ NEW OPENING

CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.

BERRYESSA UNION SCHOOL DISTRICT

PROJECT NO.
109583

DSA FILE NO. 43-7
DSA APP. NO. 01-117059

SAN JOSE
CA

REFERENCE SHEET NO.
16/S8.1

AD2
S02

DATE
11/12/18

PLUMBING FIXTURE SCHEDULE

CODE	DESCRIPTION	WASTE (INCHES)	VENT (INCHES)	MINIMUM SUPPLY CONNECTION (INCHES)		REMARKS
				CW	HW	
WC-1	WATER CLOSET (ACCESSIBLE)	4	2	1 1/4	-	AMERICAN STANDARD 3461128.020 MADERA FLOWISE 16-1/2" HIGH 1.6 GPF FLUSHOMETER TOILET SYSTEM, VITREOUS CHINA, FLOOR MOUNTED. FLUSH VALVE: AMERICAN STANDARD 6065161.002; 1.6 GPF EXPOSED, BATTERY POWERED SENSOR OPERATED. SEAT COVER: OLSONITE 95SS EXTRA HEAVY DUTY SOLID PLASTIC WITH OPEN FRONT LESS COVER.
<div>2</div> WC	EXISTING WATER CLOSET	4	1-1/2	1 1/4	-	EXISTING WATER CLOSET TO REMAIN. FLUSH VALVE: AMERICAN STANDARD 6065161.002; 1.6 GPF EXPOSED, BATTERY POWERED SENSOR OPERATED.
L-1	LAVATORY (ACCESSIBLE)	2	2	1/2	1/2	AMERICAN STANDARD 0954.004EC MURRO VITREOUS CHINA, CONCEALED ARMS OR SUPPORT WALL MOUNTED LAVATORY WITH 0059.020EC SHROUD/KNEE CONTACT GUARD VITREOUS CHINA WITH EVERCLEAN. FAUCET: CHICAGO #895-E2805-5CP DECK MOUNTED LEVER HANDLES, SWING GOOSENECK SPOUT 0.5GPM SPRAY OUTLET. DRAIN: STRAINER, 17GA. P-TRAP CP, SPEEDWAY CR1915A STOPS AND SUPPLIES WITH ESCUTCHEONS.
SK-1	SINK	2	2	1/2	1/2	ELKAY LUSTERTONE SINGLE BOWL SINK LRAD3122, ADA COMPLIANT, 6.5" DEPTH BOWL WITH CENTERED DRAIN OPENING, SINGLE PUNCH HOLE, TYPE 304 GAUGE #18 S.S. SATIN FINISH. FAUCET: ELKAY MODEL LK6000 SINGLE HANDLE PULL-DOWN KITCHEN FAUCET AT 1.5 GPM. DRAIN: ELKAY LK35, TYPE 304 STAINLESS STEEL BODY AND REMOVABLE CONICAL BASKET STRAINER WITH METAL BALL BEARING LOCKING STEM AND RUBBER STOPPER. S.S. TAILPIECE; "P" TRAP CHROME PLATED, TUBING TO WALL WITH ESCUTCHEON; SPEEDWAY CR1912A STOP & SUPPLY.
<div>2</div> SK-2	SINK	2	2	1/2	1/2	ELKAY DAYTON SINGLE BOWL TOP MOUNT SINK DPC13322, STAINLESS STEEL 32"x22"x8-1/4" WITH CENTERED DRAIN OPENING, SINGLE PUNCH HOLE, TYPE 304 GAUGE #18 S.S. SATIN FINISH. FAUCET: ELKAY MODEL LK6000 SINGLE HANDLE PULL-DOWN KITCHEN FAUCET AT 1.5 GPM. DRAIN: ELKAY LK35, TYPE 304 STAINLESS STEEL BODY AND REMOVABLE CONICAL BASKET STRAINER WITH METAL BALL BEARING LOCKING STEM AND RUBBER STOPPER. S.S. TAILPIECE; "P" TRAP CHROME PLATED, TUBING TO WALL WITH ESCUTCHEON; SPEEDWAY CR1912A STOP & SUPPLY.
AP-1	ACCESS PANEL	-	-	-	-	KARP 12"x12" SQ, STAINLESS STEEL SATIN POLISH FINISH DSC-214MS WITH CONCEALED CONTINUOUS PIANO HINGE, SCREW DRIVER OPERATED WITH STAINLESS STEEL CAM.

PLUMBING SCHEDULE DETAILS

DATE
11/12/18

CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.

AD2
P01

SAN JOSE
CA

BERRYESSA UNION SCHOOL DISTRICT

PROJECT NO.
109583

DSA FILE NO.
43-7

DSA APP. NO.
01-117059

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San Jose

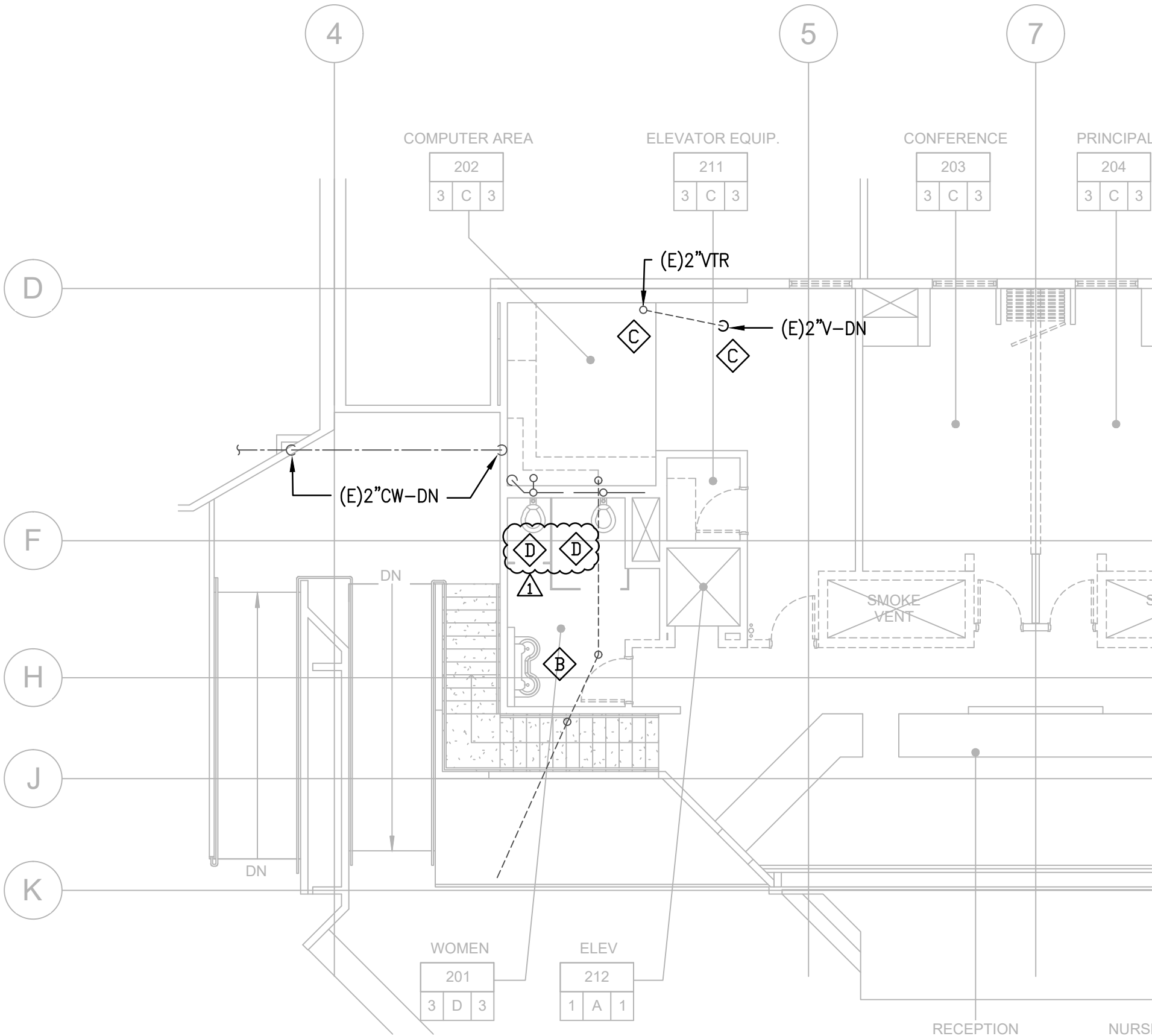
160 W. Santa Clara St., Suite 800
San Jose, California 95113
408.924.0811 fax: 408.924.0844

REGISTERED PROFESSIONAL ENGINEER
MECHANICAL
No. M0297293
Exp. 6-30-18
STATE OF CALIFORNIA

11/12/18

CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.

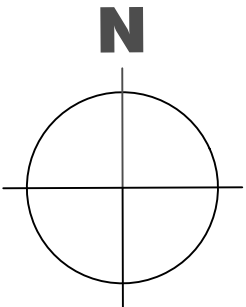
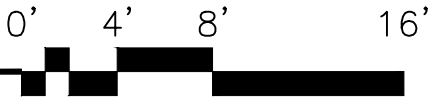
BERRYESSA UNION SCHOOL DISTRICT



DEMOLITION SHEET NOTES:

- A** DEMOLISH (E) PLUMBING FIXTURE, TRIM, FAUCET, AND FLUSHVALVE AND ASSOCIATED PIPING BACK TO THE MAIN LINES. CAP WASTE/WATER PIPING BELOW FLOOR.
- B** EXISTING TO REMAIN.
- C** MOVE VENT RISER TO CONCEAL EXPOSED PORTION INTO A WALL.
- D** EXISTING WATER CLOSET TO REMAIN. REMOVE THE EXISTING FLUSHOMETER.

DEMOLITION MEZZANINE PLAN



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DEMOLITION AND PLUMBING PLANS

CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.

BERRYESSA UNION SCHOOL DISTRICT

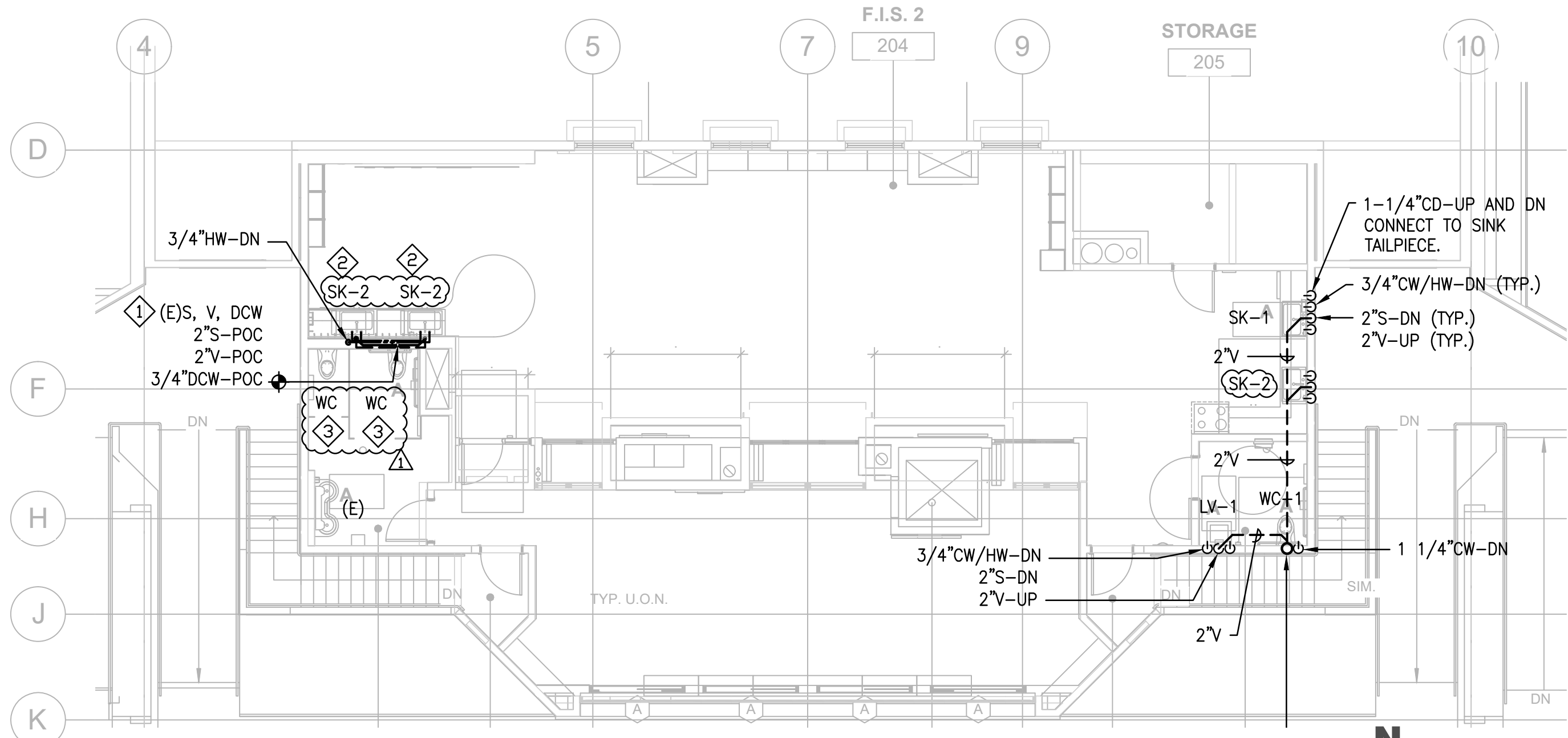
PROJECT NO. 109583
DSA FILE NO. 43-7
DSA APP. NO. 01-117059

SAN JOSE
CA

REFERENCE SHEET NO.
P2.11

DATE
11/12/18

AD2
P02



2

PLUMBING NEW MEZZANINE PLAN

0'

4'

8'

16'

N

SHEET NOTES:

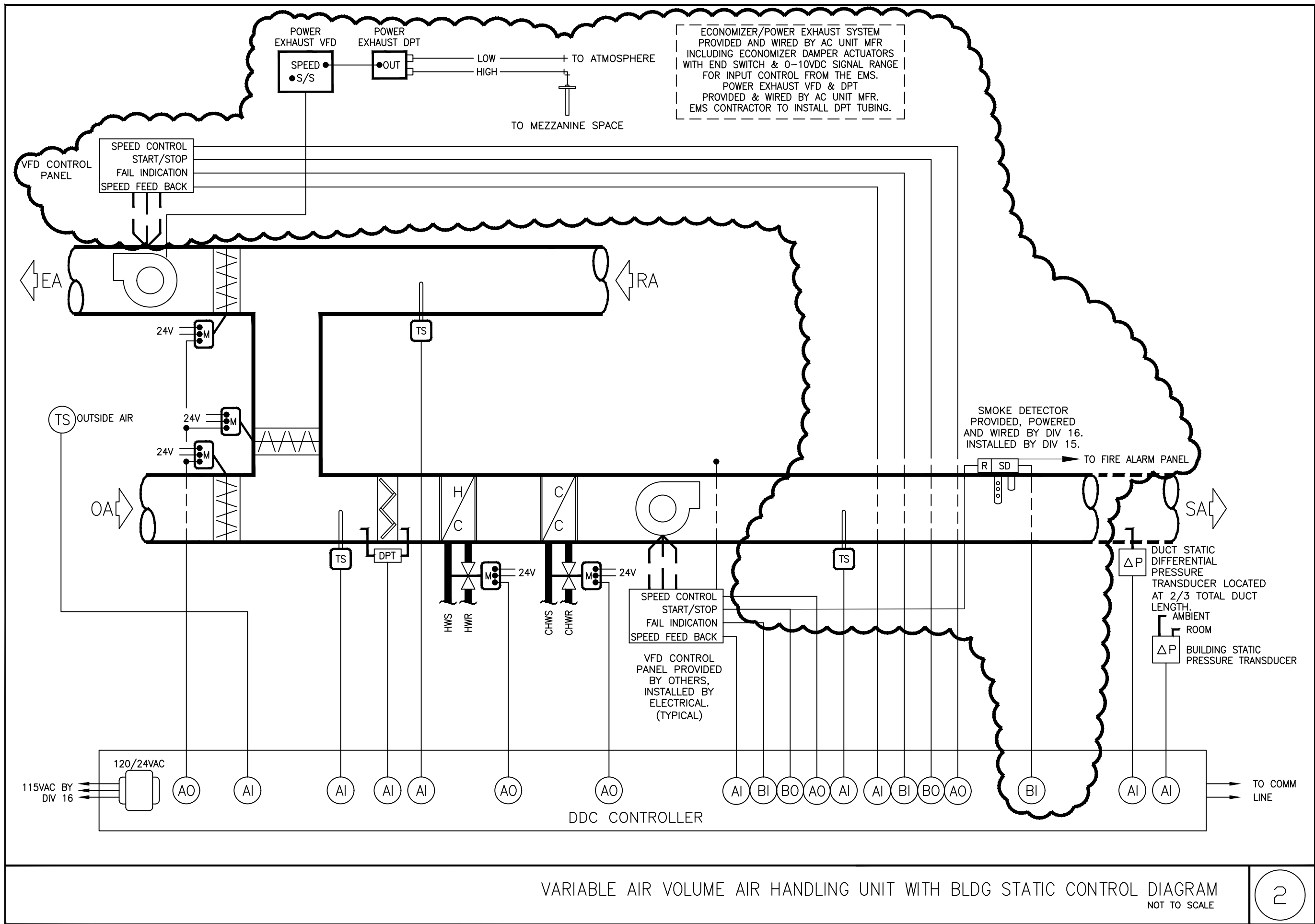
- 1


FIELD VERIFY POINT OF CONNECTION AND PIPE SIZES PRIOR TO INSTALLATION.
- 2

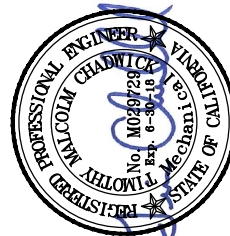
INSTALL (N) SINK AND CONNECT ROUGH-INS TO (E) STUB-OUTS. MODIFY PIPING AS REQUIRED TO COMPLETE PLUMBING WORK.
- 3

INSTALL (N) FLUSHOMETER AND CONNECT ROUGH-INS TO (E) DCW. MODIFY PIPING AS REQUIRED TO COMPLETE PLUMBING WORK.

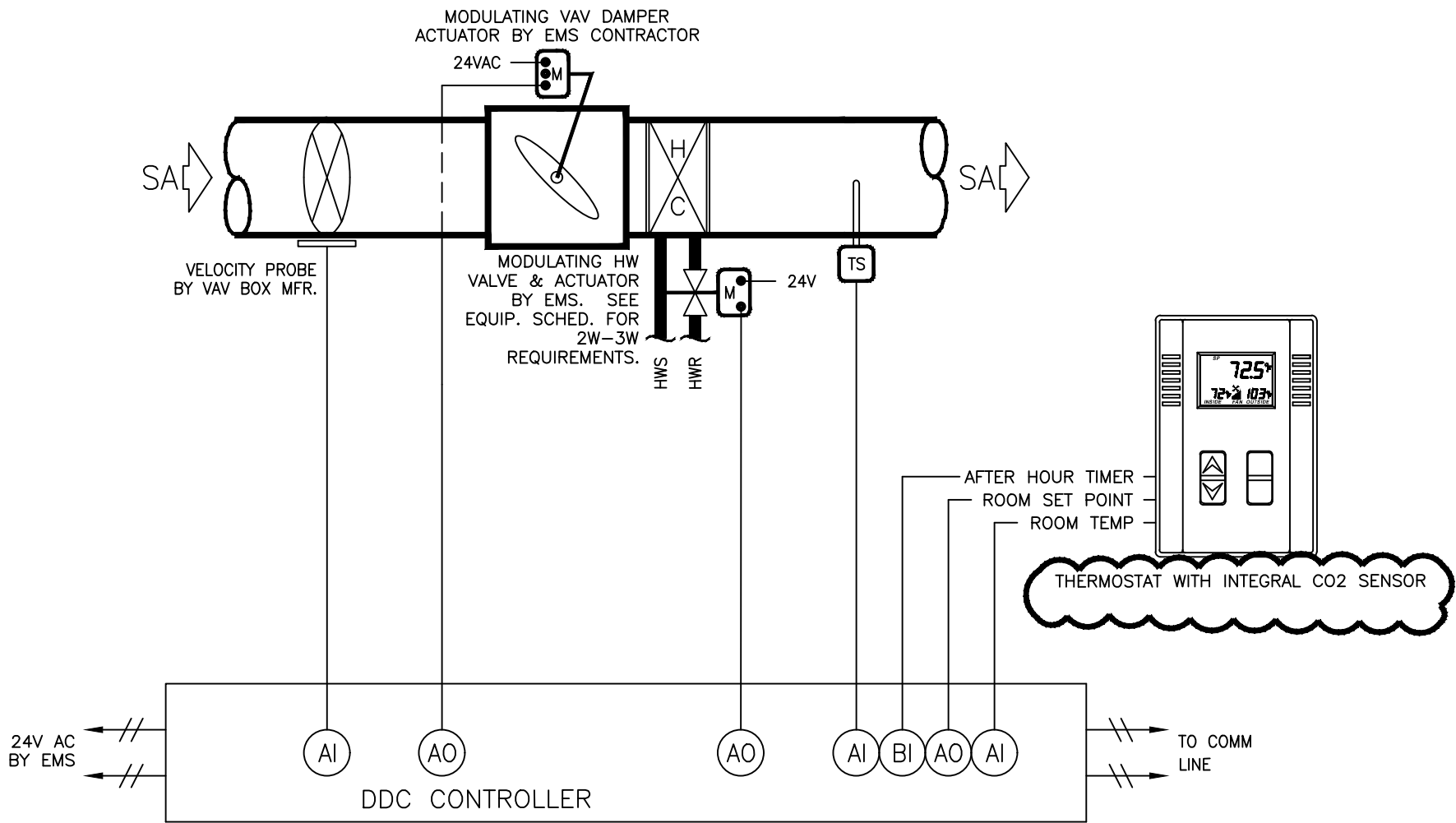
DEMOLITION AND PLUMBING PLANS		DATE 11/12/18	AD2 P03
		CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.	
BERRYESSA UNION SCHOOL DISTRICT		SAN JOSE CA	REFERENCE SHEET NO. P2.11
		DSA FILE NO. 43-7	DSA APP. NO. 01-117059
<div> <div> <div>IBI</div> <div>ARCHITECTURE PLANNING</div> <div>San Jose</div> <div>160 W. Santa Clara St., Suite 800</div> <div>San Jose, California 95113</div> <div>408.924.0811 fax: 408.924.0844</div> </div> <div> </div> </div>			



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<div>CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.</div>			<div>DATE 11/12/18</div>					
<div>BERRYESSA UNION SCHOOL DISTRICT</div>			<div>SAN JOSE CA</div>					
<div>PROJECT NO. 109583</div>		<div>DSA FILE NO. 43-7</div>		<div>REFERENCE SHEET NO. M7.01</div>				
<div>DSA APP. NO. 01-117059</div>								



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TYPICAL VAV BOX W/ HOT WATER REHEAT
NOT TO SCALE



DEMOLITION AND PLUMBING PLANS

CHERRYWOOD ELEMENTARY SCHOOL MODERNIZATION & F.I.S.

BERRYESSA UNION SCHOOL DISTRICT

SAN JOSE

CA

REFERENCE SHEET NO.

M7.01

PROJECT NO.

109583

DSA FILE NO.

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DSA APP. NO.

01-117059

DATE

11/12/18

AD2
M02