BID
ADDENDUM #03

FOR THE

RENOVATION TO MAIN TELECOMMUNICATIONS ROOM

AT

WEST VALLEY COLLEGE

Owner
West Valley-Mission Community College District
Saratoga, California

Bid #2-1415

02/05/15

WEST VALLEY-MISSION COMMUNITY COLLEGE DISTRICT
14000 Fruitvale Avenue
Saratoga, CA 95070

Bid #2-1415

RENOVATION TO MAIN TELECOMMUNICATIONS ROOM
WEST VALLEY COLLEGE

BID ADDENDUM #3
CONSISTS OF THE
FOLLOWING

1. ACKNOWLEDGEMENT
2. DESCRIPTION OF CHANGES

Bidders sign and return one copy of this addendum with your bid.
Failure to do so may subject bidder to disqualification.

The Bid Addendum #3 supersedes and modifies portions of the bid and contract documents issued by the District for Bids listed above for RENOVATION TO MAIN TELECOMMUNICATIONS ROOM, West Valley College.

Brigit Espinosa
Director, General Services
(408)741-2187

Date: _____

Company Name: _____

Signed By: _____

Printed Name: _____

Phone/Fax: _____

Email: _____

LPA
5161 California Avenue, Suite 100, Irvine, California 92617
p. 949.261.1001 f. 949.260.1190
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BID ADDENDUM #03

ADDENDUM NO.

February 04, 2015

TO THE CONTRACT DOCUMENTS FOR
WEST VALLEY COLLEGE MISSION COMMUNITY COLLEGE DISTRICT
FOR THE
WEST VALLEY COLLEGE MAIN TELECOMMUNICATIONS ROOM

NOTICE TO BIDDERS

This Addendum forms a part of the Contract and modifies the original bidding documents dated 8/27/14. It is intended that all work affected by the following modifications shall conform to related provisions and general conditions of the Contract of the original drawings and specifications. Modify the following items wherever appearing in any drawings or sections of the specifications. Acknowledge receipt of Addendum No. C in the space provided on the Bid Form. Failure to do so may subject to disqualification.

CHANGES TO DRAWINGS

ITEM NO. 1 Sketch revision ASK-01 of 02 / A3.10. Revised to indicate uniform layer of rigid insulation board over new 2x construction. Revision to keynote to indicate batt insulation to fill full depth of framing.

ITEM NO. 2 Sketch revision ASK-02 of 03 / A3.10. Revised to indicate uniform layer of rigid insulation board over new 2x construction. Revision to keynote to indicate batt insulation to fill full depth of framing.

ITEM NO. 3 Sketch revision MSK-01 of 01/M2.01
1. Return air grille size revised from 72”x30” to 72”x24”.
2. Keynote 5 denoting supply air grille size revised from 60”x24” to 60”x18”.
3. Supply air grille extended 1’-0” from shear wall to prevent SA short cycling.
4. Note changed to reflect new RA grille type as Egg-Crate.

ITEM NO. 4 Sketch revision MSK-02 of 02/M3.01
1. Note added calling out SA grilles as type Egg-Crate.
2. Hex callout changed to reflect new SA grille size.
3. New supply and return grilles pushed to upper and lower edges of original shear wall opening.

ITEM NO. 5 Sketch revision MSK-03 of 03/M3.01
1. Supply air grille extended 1’-0” from shear wall.
2. Grilles moved per new locations noted in Mechanical Section 2.

ITEM NO. 6 Sketch revision SK-EP01 of EP1.0. Provided missing plan.

ITEM NO. 7 Sketch revision SK-FP01 of FP1.0. Provided missing plan.

ITEM NO. 8 Sketch revision SKE-01 of E1.01. Revised conduit routing based on as-built information.

ITEM NO. 9 Sketch revision SKE-02 of E1.01. Revised conduit routing based on as-built information.

ITEM NO. 10 Sketch revision SKE-03 of FP1.0. Revised plan notes based on as-built information.

ITEM NO. 11 Sketch revision SKE-04 of E2.01. Revised lighting circuiting and occupancy sensor layouts.

ITEM NO. 12 Sketch revision SKE-05 of E3.01. Added plan note 3.

ITEM NO. 13 Sketch revision SKE-06 of E3.01. Revised power plan and associated notes addressing district comments and HVAC control.

ITEM NO. 14 Sketch revision SKE-07 of E3.01. Added motorized equipment schedule notes.

ITEM NO. 15 Sketch revision SKE-08 of E3.02. Added plan note 17.

ITEM NO. 16 Sketch revision SKE-09 of E4.01. Revised busway schedule model numbers.

ITEM NO. 17 Sketch revision SKE-10 of E4.06. Changed UPS manufacturer. Powerware is not a district approved equal. Only manufacturers accepted will be Mitsubishi or Toshiba.

ITEM NO. 18 Sketch revision SKE-11 of E4.06. Clarified overlapping text.

ITEM NO. 19 Sketch revision SKE-12 of E4.06. Revised fiber optic cable specification.

ITEM NO. 20 Sketch revision SKE-13 of E6.02. Removed analog line and dialer from fire alarm riser.

ITEM NO. 21 Sketch revision SKE-14 of T4.01. Revised fiber patch cable quantity.

CLARIFICATIONS

ITEM NO. 22 Contractor to pay particular attention to District Standard for conduit. Review E1.01 Sheet note 10.

ITEM NO. 23 Supplemental Information provided for clarification of Hoffman pullbox noted on E3.01. See SKE-15.

CHANGES TO SPECIFICATIONS

ITEM NO. 24 Addition of Specification section 072216 Roof Board Insulation

RESPONSE TO QUESTIONS

ITEM NO. 25 **Q:** Dimming Controls & Lighting RE: E2.01, E5.01, E5.05 E2.01 shows dimming ceiling mount occupancy sensors in Room 100 & 101. Per the fixture schedule shown on E5.01 light fixture type 1 does not have dimming capabilities. The switching shown on E2.01 are standard toggle switches, not dimming switches. Does the owner want the light fixture in Room 100 & 101 to dim?
A: Light fixtures are not intended to be dimmed.

ITEM NO. 26 **Q:** 2/S8.1 refers to straps the length of shear wall, however on S2.1 column line D there are no such dimensions shown.
A: Line D refers to detail 10/S8.2 which notes straps to be across full length of wall.

ITEM NO. 27 **Q:** Wall sections 6/7-A3.20 show (N) roof framing for addition to be 2x ceiling joist framing. Structural calls it to be 2x6 joists, however, the drawings call for R-30 insulation which will not fit in 2x6 joist bays. Please advise.
A: At 2x6 joist framing in area of new construction, provide batt insulation full depth between joists. Provide 2" of rigid insulation board over new roof framing from D-line westward. Refer to added specification section 072216.

ITEM NO. 28 **Q:** Can the exterior doors have flanges in lieu of straps? This will allow a solid seal @ the exterior of the building.
A: The preferred system is shown in the contract documents. Please submit product you are referring to as a continuous flange, if you would like the Design Team to consider.

ITEM NO. 29 **Q:** The attachment point for the top of the siding in details 1, 2- A8.01 appear to be above the (E) sheet-metal shaped piece. Will this be able to be accomplished, or will another sheet-metal piece be required to trim out the gap if the siding cannot go high enough.
A: The contract document detail intent is to bring the new siding up to interface with the existing shaped metal flashing/fascia/trim. If the existing shaped metal components are unable to be reused, they shall be replaced in kind with matching profiles to maintain visual continuity around the perimeter of the building. The contractor may choose through means and methods to utilize new components matching the existing profiles, in lieu of reusing existing, provided there is no additional expense to the District.

ITEM NO. 30 **Q:** Are details 9,10,11/S8.1 used on this Job? We have been unable to find any reference of them. Are they for (E) conditions? Please advise.
A: These are typical details and are not specifically referenced. They are there in case any suspended ceilings or soffits might be required at some point.

ITEM NO. 31 **Q:** Is there a preferred Fire Alarm vendor for this job?
A: Tri-Signal.

ITEM NO. 32 **Q:** The drawings FP1.0 and EP1.0 do not have the floor plans shown. There is no drop ceiling in the area protected by FM200 shown, the only concerns for ceiling would be the perimeter walls which would require a full 1 hour type of wall.
A: There is a hard lid gypsum board ceiling required throughout the new construction. Refer to 02/A2.01. Additionally there is a 1-hour wall type construction required between Room 101 and rooms 103 & 102, See 01/A2.01.

ITEM NO. 33 **Q:** No time duration in spec???
A: District provided update to the specification 005200 Agreement & Bid Calendar in Addendum 2.

ITEM NO. 34 **Q:** E3.01, Column Lines D/E & 1/2 shows a Hoffman pullbox #A47H7224LP3PT-MOD 30” x 48” x 96”. These dimensions do not match the size of the part number shown on the drawings. Which supersedes the part number or the dimensions?
A: The dimensions take precedence. The part numbers A74H7224LP3PT-MOD and A86M3E20LP-MOD are custom part numbers generated by Hoffman. Hoffman Quote Number: 1025915 Revision 2. Please see attached Supplemental Information, Item No 23 for additional information.

ITEM NO. 35 **Q:** E3.01, Column Lines E/E & 4/5 shows a Hoffman pullbox #A86M3E2OLP-MOD 30”x112”x96”. These dimensions do not match the size of the part number shown on the drawings. Which supersedes the part number or the dimensions?
A: The dimensions take precedence. The part numbers A74H7224LP3PT-MOD and A86M3E20LP-MOD are custom part numbers generated by Hoffman. Hoffman Quote Number: 1025915 Revision 2. Please see attached Supplemental Information, Item No 23 for additional information.

END OF ADDENDUM NO. C

Sketch ASK-01 02/A3.10 -		Revision Addendum C	
Job. No.	13122.10	Description Addition of uniform rigid insulation board over new framing	
Reference	A3.10		
Date	2/4/15		
Scale	NTS		

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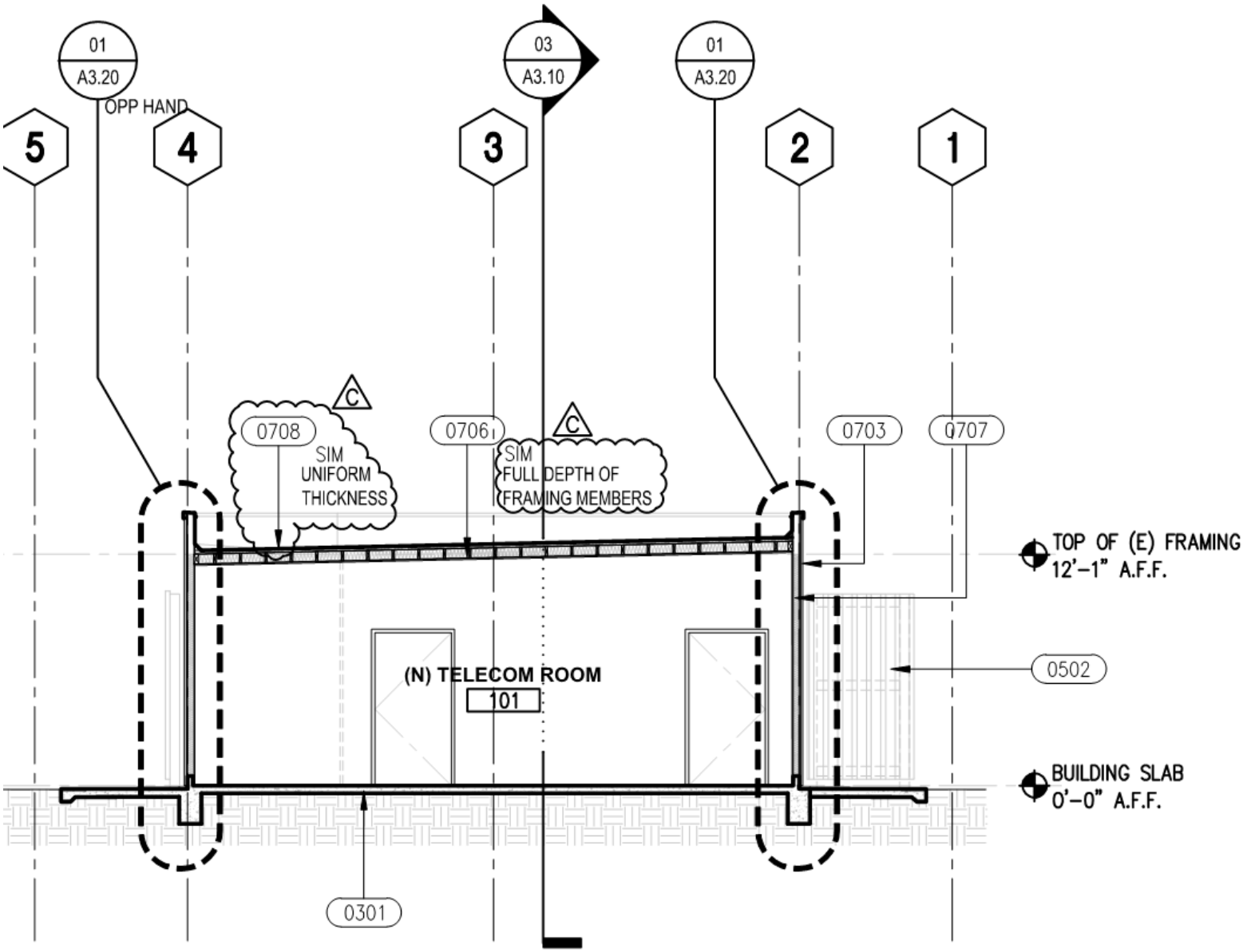
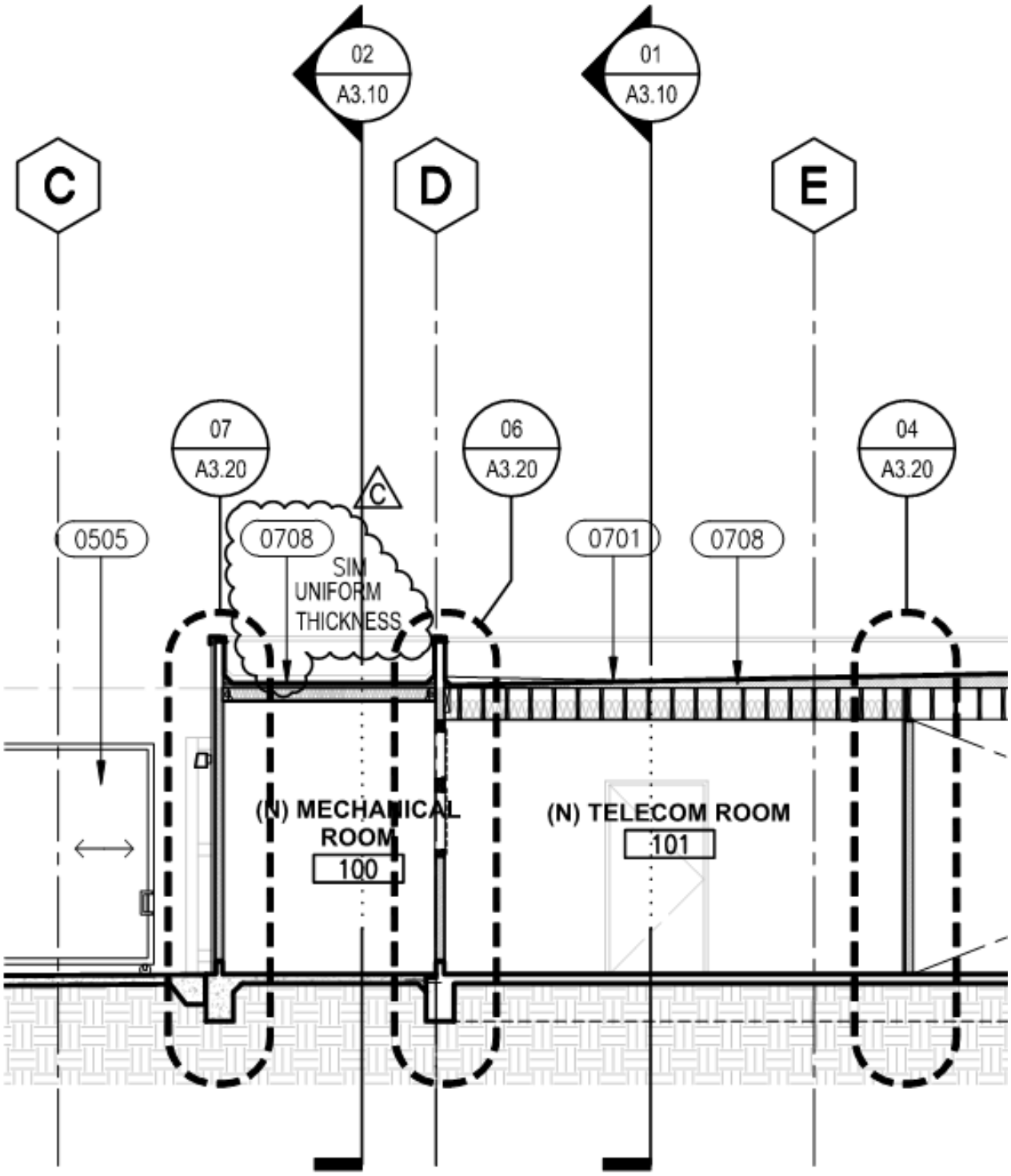


DSA #: 01-113831 **File #:** 43-C3

Sketch ASK-02 03/A3.10 -	Revision Addendum C	LPA	**Main Telecommunications Room West Valley College**
Job. No. 13122.10	Description Addition of uniform rigid insulation board over new framing	p. 949. 261.1001 f. 949. 260.1190 w. lpainc.com e. info@lpainc.com 5161 California Avenue, Suite 100 Irvine, California 92617	WVMCCD
Reference A3.10			
Date 2/4/15			
Scale NTS			



BID ADDENDUM #03

DSA #: 01-113831 File #: 43-C3

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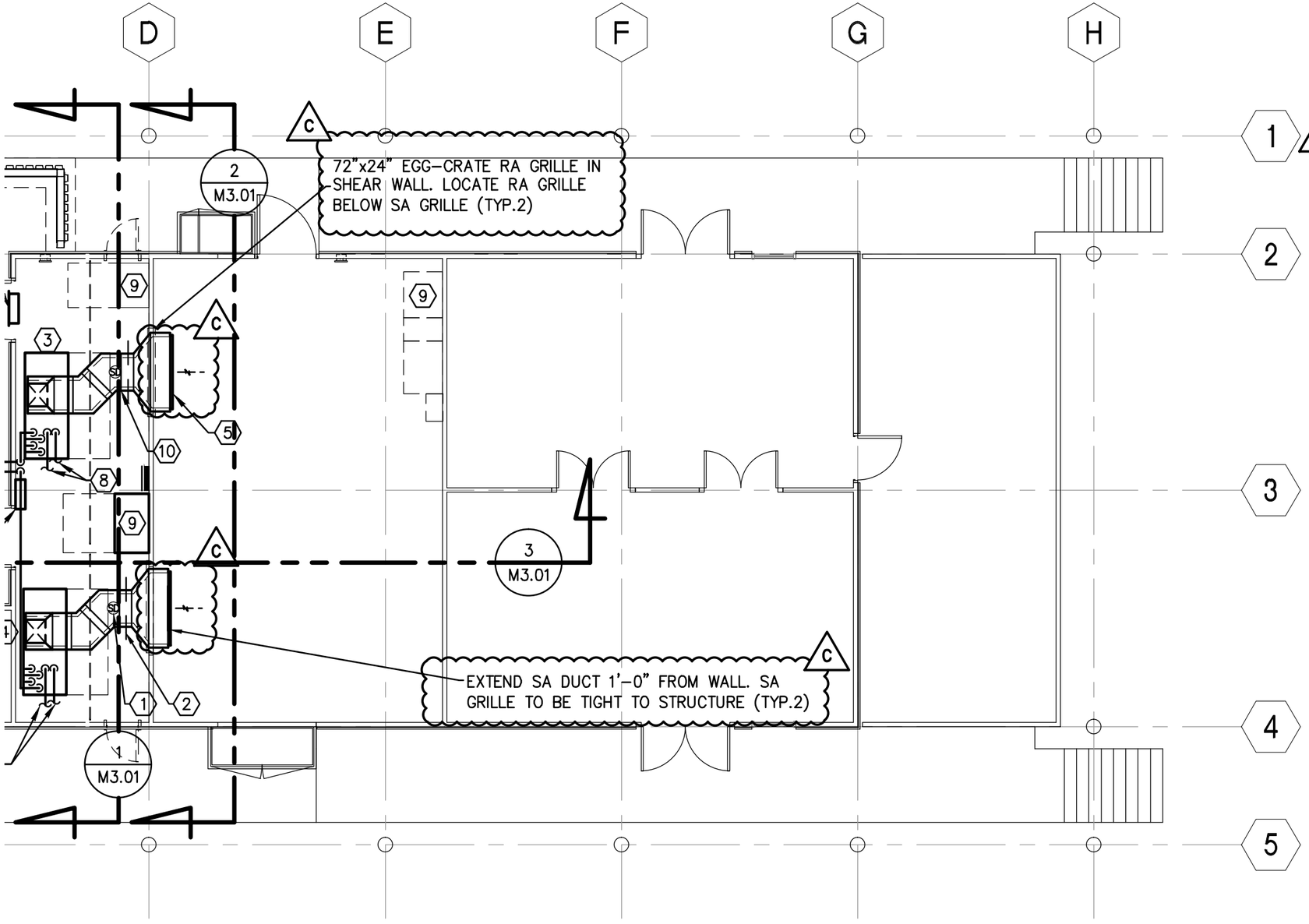

1 DUCT SMOKE DETECTOR (TYP.2)

2 B.D.D. (TYP.2)

3 CRAC 1

4 CRAC 2

5 60X18 6300 (TYP.2)

6 1/2" LIQUID & 5/8" HOT-GAS (TYP2 PER UNIT)

7 SITELINK PANEL.

8 CONDENSATE & HUMIDIFIER CONNECTIONS. SEE PLUMBING DRAWINGS.

9 ELECTRICAL EQUIPMENT. SEE ELECTRICAL DWGS.

10 30"X24" S.A. DUCT.

11 HVAC EMS CONTROL PANEL. LOCATE PANEL BELOW SITELINK PANEL.

1 of 3

MECHANICAL PLAN

SCALE: 1/8"=1'-0"

1

Sketch MSK-01
PARTIAL MECHANICAL PLAN

ADDENDUM C

Revision	Description	Job. No.	Reference	Date	Scale
	Extend SA duct	13122.10	01/M2.01	2/4/15	1/8" = 1'-0"

BID ADDENDUM #03

DSA #: 01-113831 File #: 43-C3

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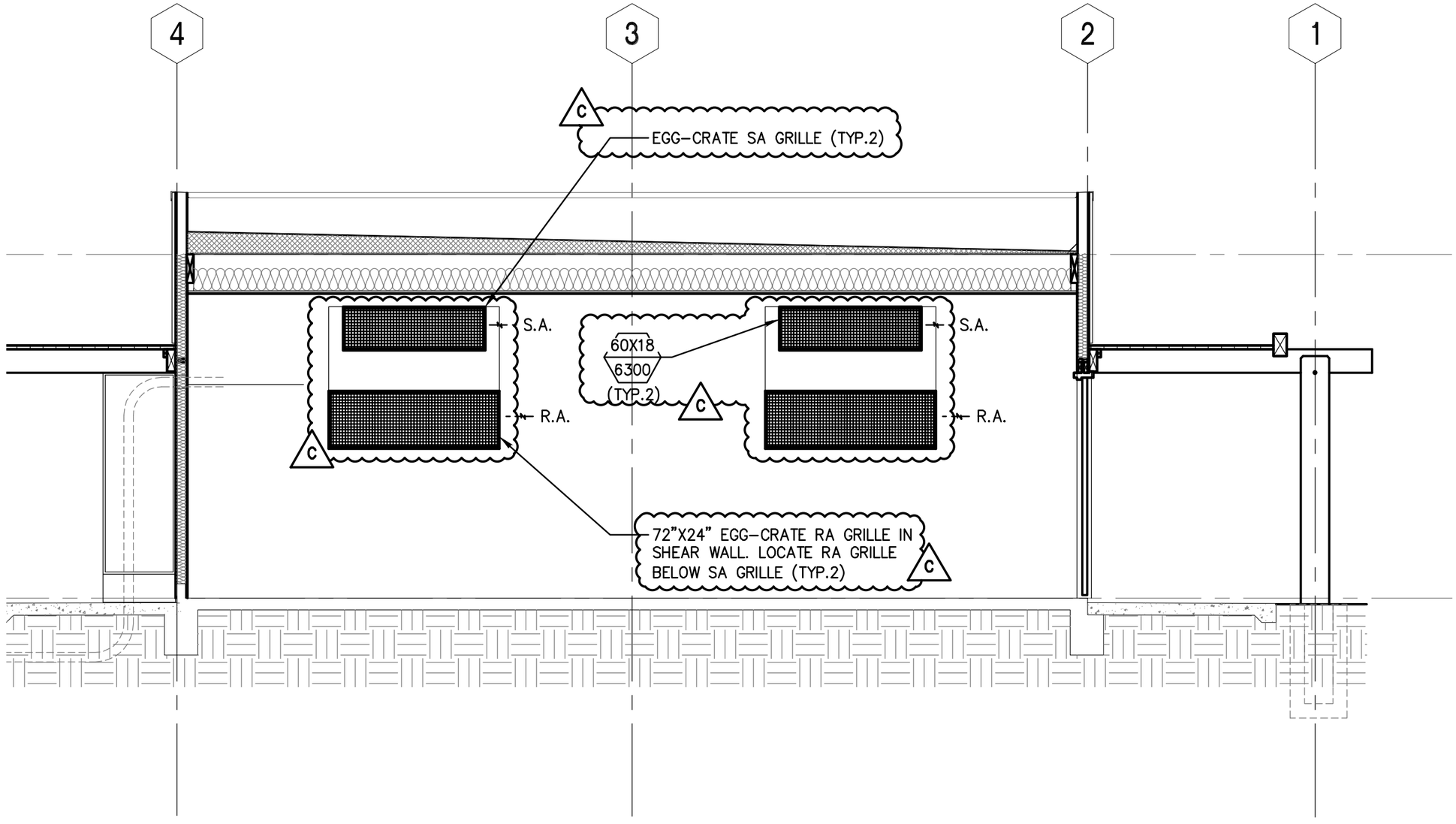
Sketch MSK-02
MECHANICAL SECTION 2

Revision	Description
ADDENDUM C	Revise SA & RA duct size and grille

Job. No.	13122.10
Reference	02/M3.01
Date	2/4/15
Scale	1/4" = 1'-0"



MECHANICAL SECTION

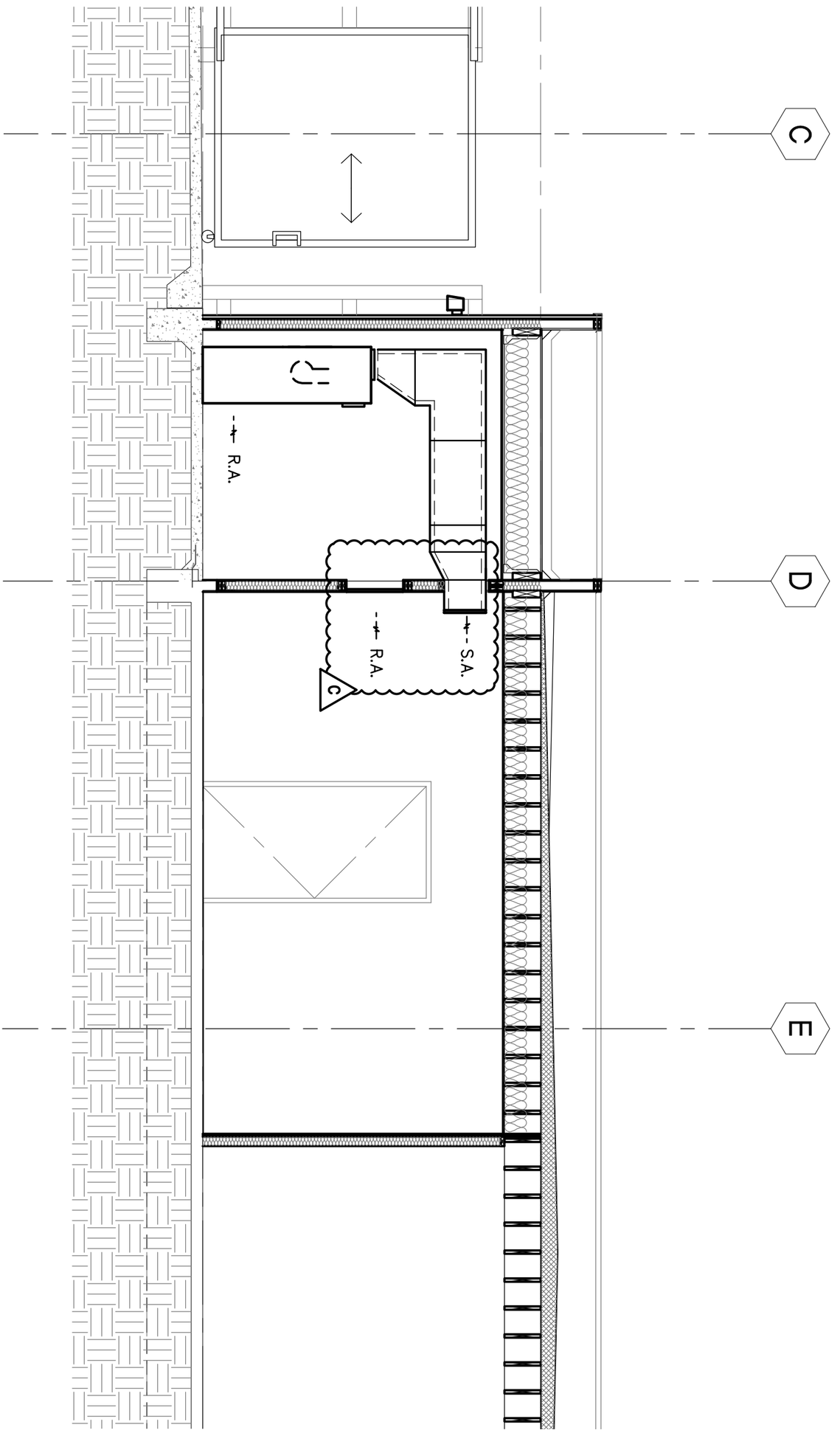
SCALE: 1/4"=1'-0"

2

Sketch MSK-03 **MECHANICAL SECTION 3**	Revision **ADDENDUM C**	LPA p. 949 261 1001 f. 949 260 1180 w. lpainc.com e. info@lpainc.com 5161 California Avenue, Suite 103 Irvine, California 92617	**Main Telecommunictions Room** **West Valley College** WVMCCD
Job. No. 13122.10 Reference 03/M3.01 Date 2/4/15 Scale 1/4" = 1'-0"	Description Revise SA & RA duct size and grille		

MECHANICAL SECTION

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



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Sketch	SK-FP1.0 -	Revision	Addendum C -
Job. No.	13122.10	Description	FP Floor Plan
Reference	FP1.0		
Date	2/4/15		
Scale	NTS		

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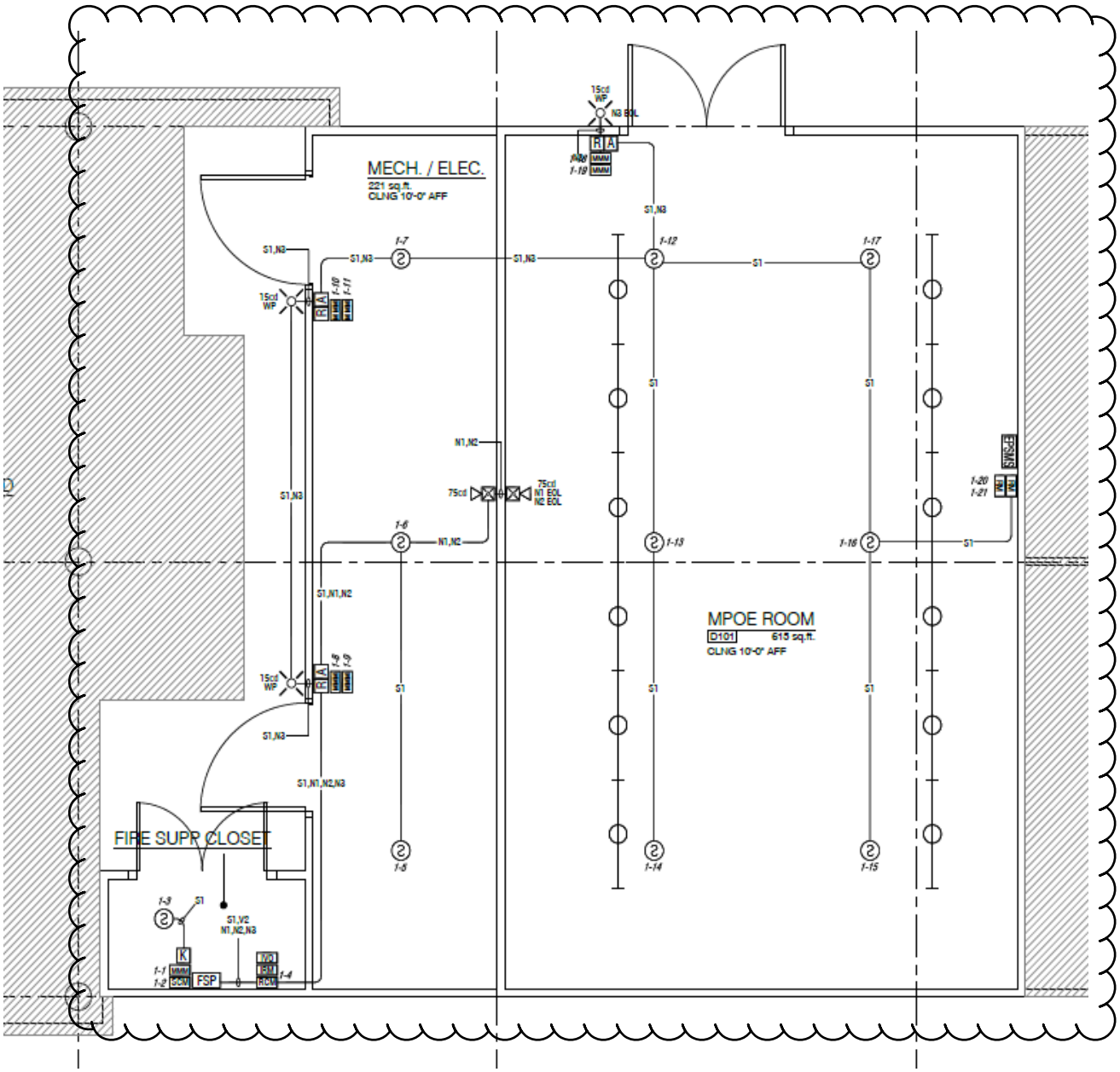

Sketch	Revision
SK-EP-01 -	Addendum C -

Job. No.	13122.10
Reference	EP1.0
Date	2/4/15
Scale	NTS

Description: EPMS Floor Plan

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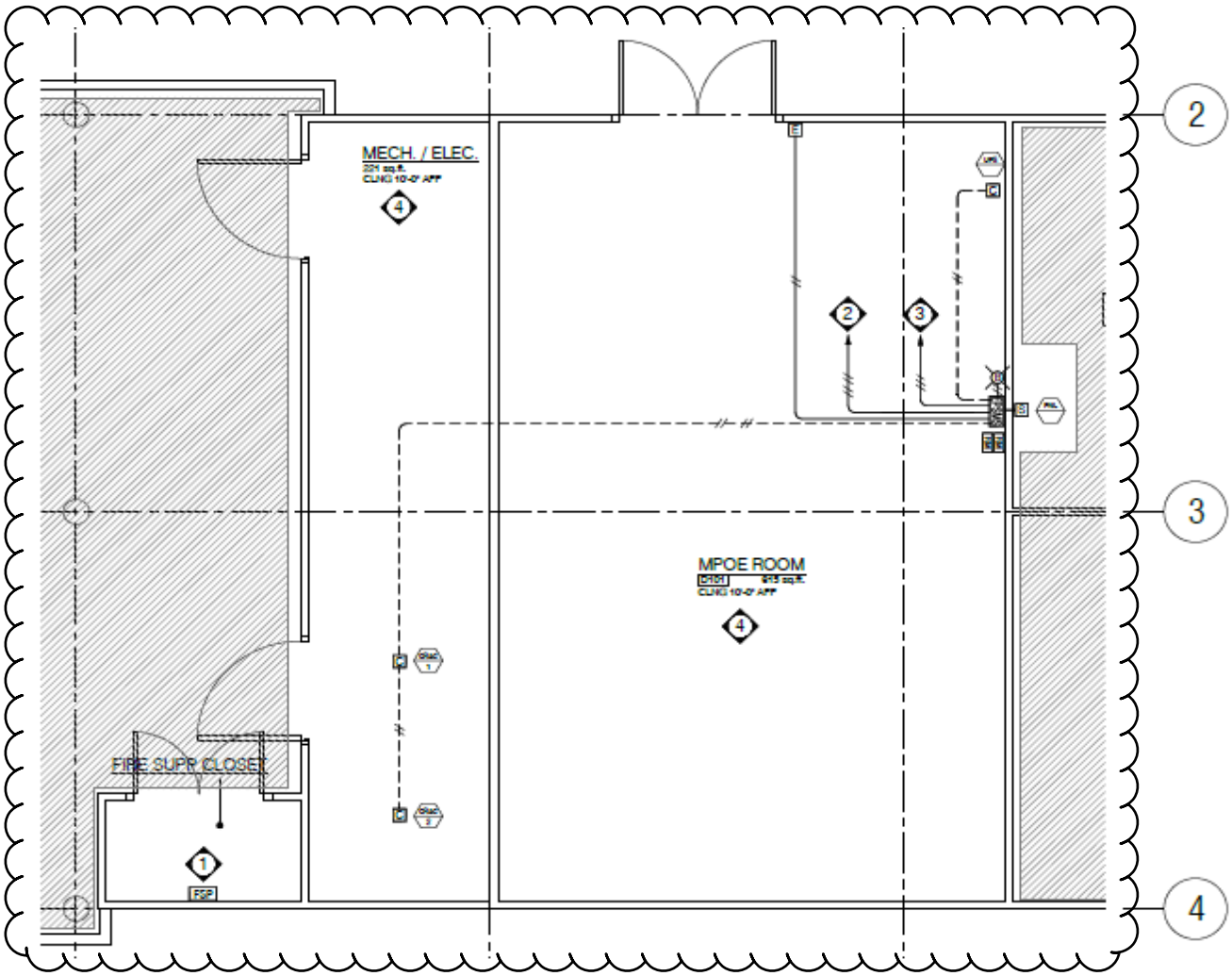

FLOOR PLAN NOTES

1. PROVIDE CONDUIT AND WIRE FOR INTERFACING THE FIRE SYSTEM CONTROL PANEL AND EPSMS PANEL INPUT/OUTPUT RELAYS FOR:
   - 2ND ALARM SHUTDOWNS: TYPICALLY HVAC UNITS & DAMPERS
   - DISCHARGE SHUTDOWNS: TYPICALLY UPS & PDU UNITS.

   COORDINATE LOCATIONS AND INTERFACES WITH FIRE SYSTEM CONTRACTOR. CONDUIT PROVIDED AND INSTALLED BY-OTHERS.

2. PROVIDE CONDUIT AND WIRE TO BUILDING FIRE ALARM CONTROL PANEL AND/OR BMS SYSTEM FOR MONITORING ALARM (ACTIVATION) AND TROUBLE (POWER LOSS). CONDUIT PROVIDED AND INSTALLED BY-OTHERS.

3. PROVIDE CONDUIT AND WIRE FOR 120VAC POWER TO EPSMS. THE 120VAC DEDICATED POWER SHOULD BE AN EMERGENCY POWER BRANCH CIRCUIT, AND SHALL NOT BE A SOURCE WHICH WILL BE DE-POWERED BY THE EPSMS.

4. PROVIDE CONDUIT AND WIRE TO ALL DAMPERS. CONFIRM DAMPER CIRCUITS AND LOCATION IN FIELD.

EPSMS FLOOR PLAN

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

N

BID ADDENDUM #03

DSA #: 01-113831 **File #:** 43-C3

Sketch	Revision
SKE-01	**Addendum C**

Job. No. 13122.10	
Reference	E1.01
Date	2/4/15
Scale	NTS

Description
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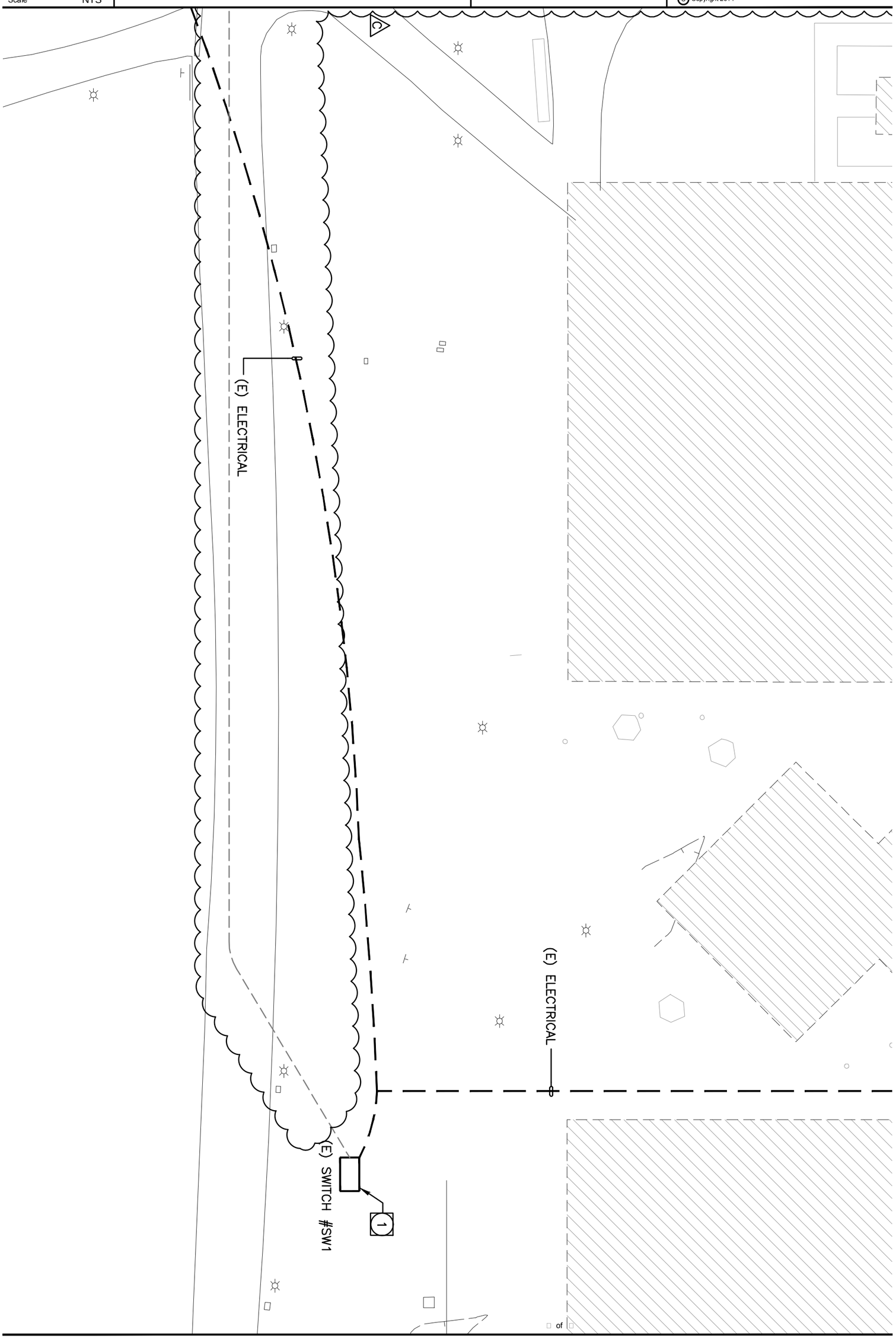

BID ADDENDUM #03

DSA #: 01-113831 **File #:** 43-C3

Sketch	**SKE-02**
Revision	**Addendum C**
Job. No.	13122.10
Reference	E1.01
Date	2/4/15
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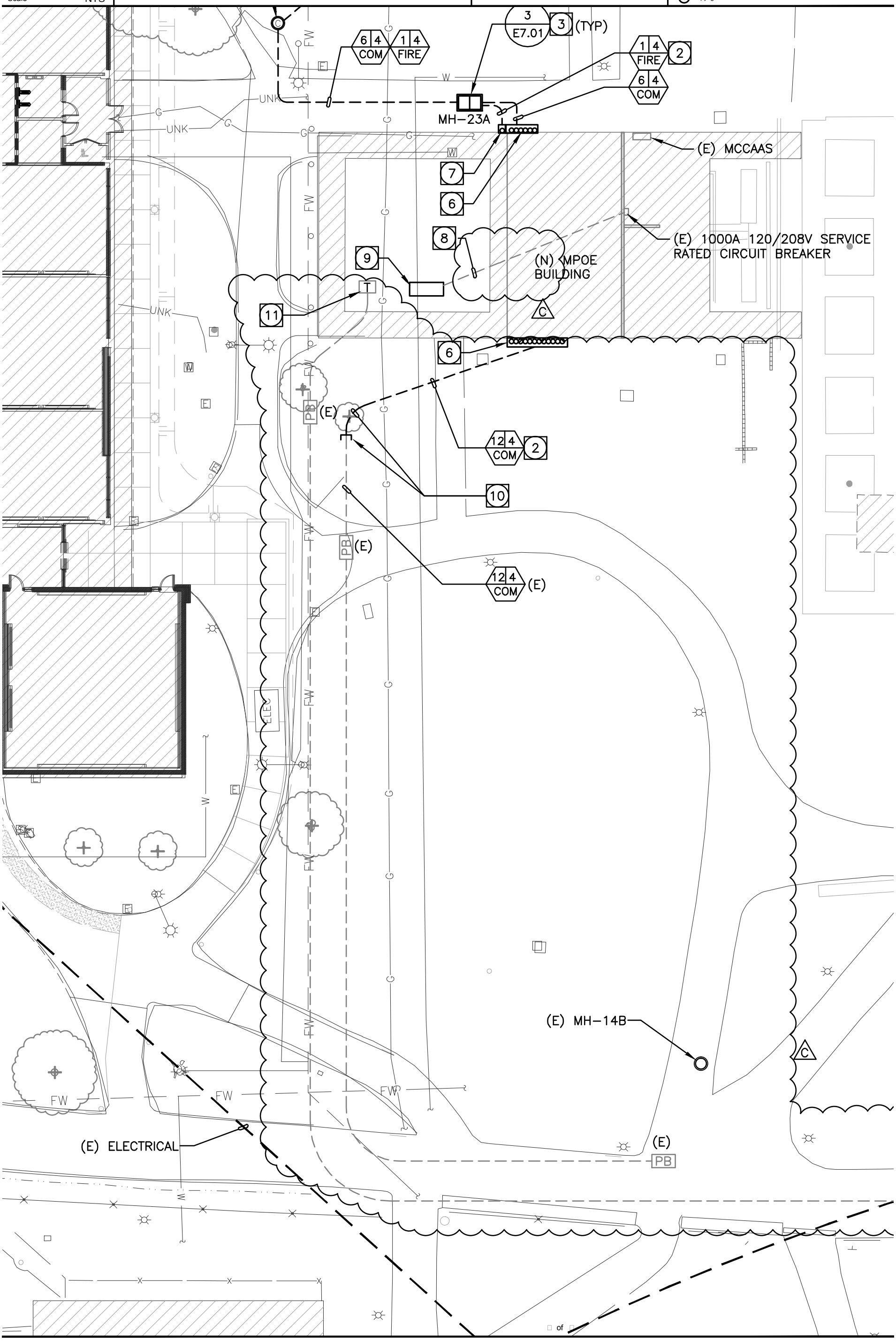

Sketch		Revision
	SKE-03	**Addendum C**
Job. No.	13122.10	Description
Reference	E1.01	S□□□□ □1.01
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SPECIFIC PLAN NOTES:

1. APPROXIMATE LOCATION OF SWITCH #1.
2. SEE SHEET E3.01 FOR MORE INFORMATION.
3. 4'–6" X 8'–6" X 6'–0" CONCRETE PULL BOX (OLDCASTLE #PG&E–4686) WITH BOLT DOWN 4–PIECE STEEL DIAMOND PLATE LID (TRAFFIC RATED). CONTRACTOR TO PROVIDE A MINIMUM OF 6" COMPACTED CRUSHED ROCK TO ENSURE UNIFORM DISTRIBUTION OF SOIL PRESSURE ON THE FLOOR AND BE ABLE TO DISSIPATE WATER OUT OF THE PULL BOX. SEE CONSTRUCTION NOTES BELOW FOR MORE INFORMATION.
4. EXISTING MEDIUM VOLTAGE ELECTRICAL LINE.
5.
6. SEE SHEET E3.02 FOR MORE INFORMATION. C
7. PROVIDE SEPARATE ENCLOSURE FOR FIRE ALARM CONDUIT AND CONDUCTORS. PROVIDE CONDUIT FROM ENCLOSURE TO FIRE ALARM PANEL. FIRE ALARM ENCLOSURE HEIGHT TO MATCH COMMUNICATIONS ENCLOSURE HEIGHT. SEE SHEET E3.02 FOR MORE INFORMATION.
8. EXISTING BOILER ROOM FEEDER.
9. EXISTING SERVICE EQUIPMENT "MS".
10. EXTEND EXISTING (12) 4"C.O. AS SHOWN, AS REQUIRED.
11. EXISTING PADMOUINT TRANSFORMER INSTALLED UNDER SEPARATE PERMIT. C

BID ADDENDUM #03

DSA #: 01-113831 File #: 43-C3

Sketch	Revision
SKE-04	Addendum C

Job. No. 13122.10	Description
Reference E2.01	S□□□□ □2.01
Date 2/4/15	□□R□□□□□□N
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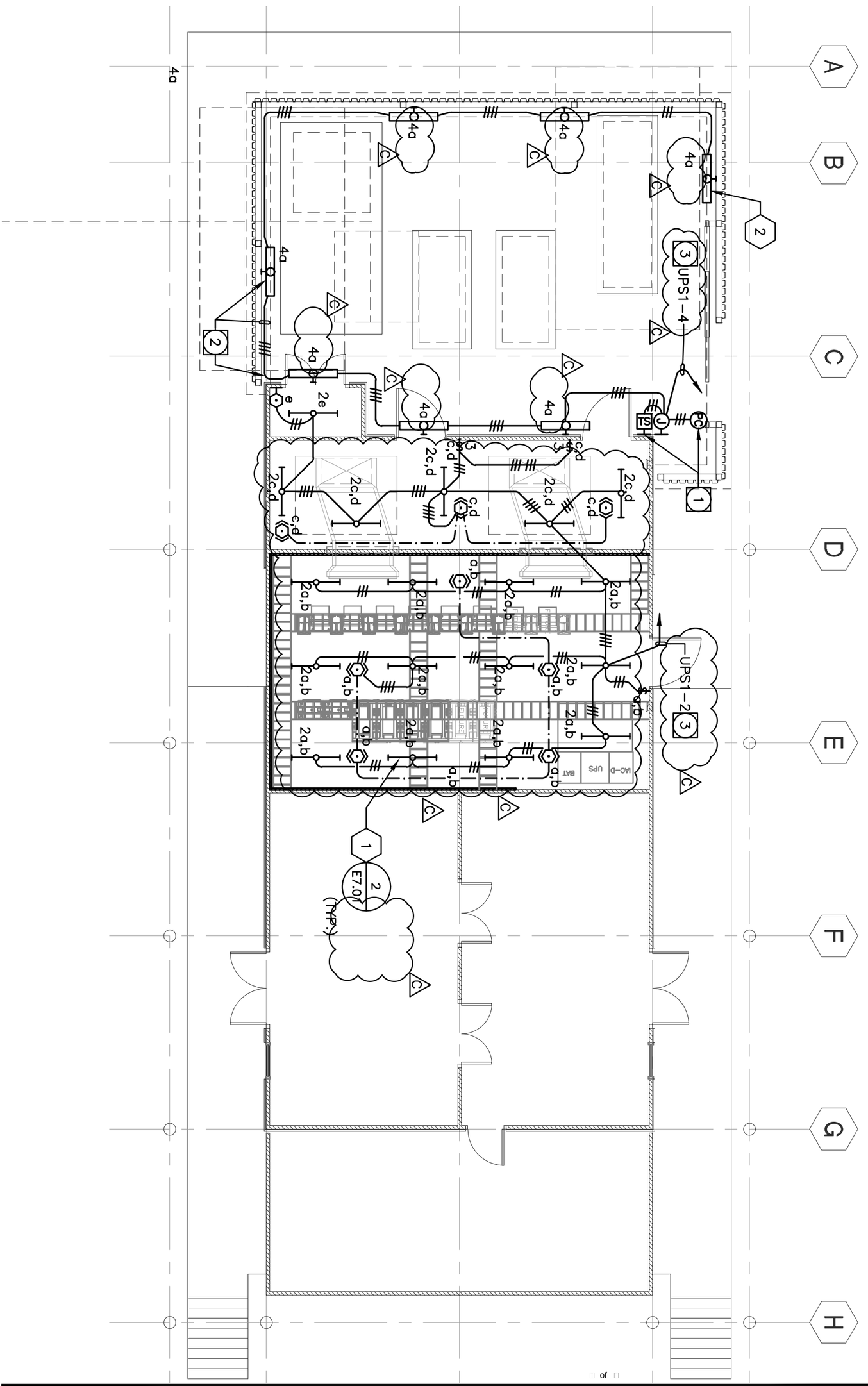

DSA #: 01-113831 **File #:** 43-C3

Sketch	SKE-05	Revision	Addendum C
Job. No.	13122.10	Description	S□□□□ □3.01 □□R□□□ □□□N
Reference	E3.01		
Date	2/4/15		
Scale	NTS		

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PLAN NOTES:

1. EXTERIOR RATED, WALL MOUNTED, 120V, 15A, PHOTOSENSOR WITH SWIVEL ARM (INTERMATIC #K4136M & #K42–SWA OR EQUAL). MOUNT AT ELEVATION MIN. 6" ABOVE ADJACENT LIGHT FIXTURES. ROUTE SWITCHED PHOTOCELL OUTPUT THROUGH A 120V, 20A, MECHANICAL TIME SWITCH WITH 4 HOUR TIME CYCLE – NO HOLD (INTERMATIC #FD4HW OR EQUAL) MOUNTED UNDER A RAINTITE WHILE IN–USE COVER.

2. FIXTURE TO BE MOUNTED ON STEEL PIPE THAT SUPPORTS FENCE. CONDUITS TO BE RUN ON PIPE FROM ELECTRICAL PANEL. PROVIDE FLEX CONNECTION BETWEEN BUILDING AND FENCE.

3. ROUTED THROUGH A U.L. LISTED TRANSFER RELAY (LC & D #GR–2001E/S) FOR SWITCHED CONTROLS. SEE DISTRIBUTED LIGHTING CONTROL SPECIFICATIONS FOR DEVICE REQUIREMENTS WHEN CONTROLLED BY OCCUPANCY SENSORS.

DSA #: 01-113831 File #: 43-C3

Sketch	Revision
SKE-06	Addendum C

Job. No.	13122.10
Reference	E3.01
Date	2/4/15
Scale	NTS

Description
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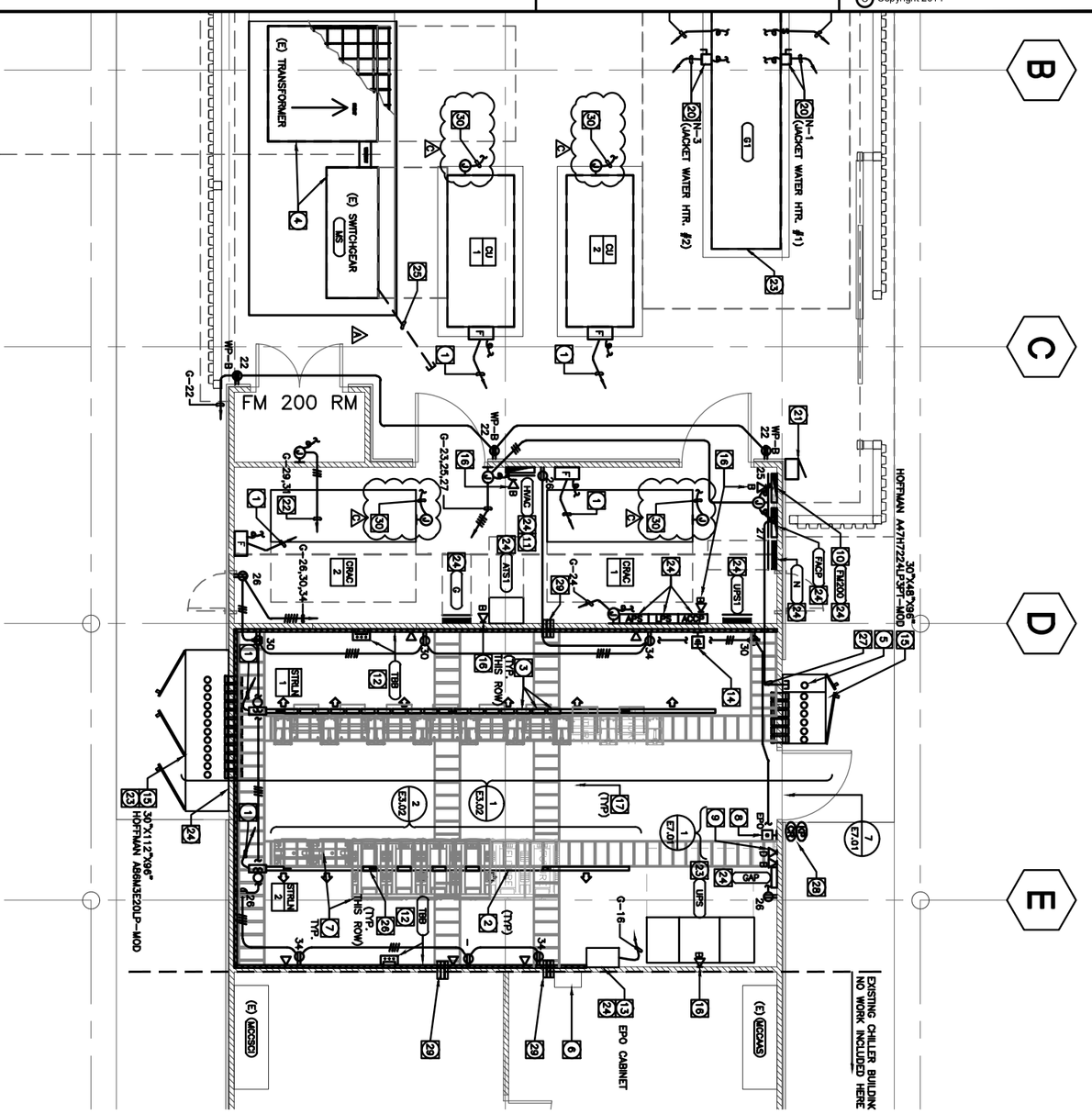

3 PLUG-IN CIRCUIT BREAKER RECEPTACLE ENCLOSURES WITH 6' DROP CORDS. REFER TO BUSWAY SCHEDULE AT SHEET E4.01 PLUG IN UNIT REQUIREMENTS. C

7 DATA CABINET/RACK. FURNISHED & INSTALLED BY SCS CONTRACTOR. SEE ELEVATIONS FOR MORE INFORMATION. C

12 BACKBOARD BY E.C. E.C. TO INSTALL ANSI-J-STD 607A COMPLIANT U.L.-LISTED TELECOMMUNICATIONS MAIN GROUND BUSBAR (TMGB) & TELECOMMUNICATIONS BONDING BACKBONE (TBB) PER ANSI-J-STD-607-A. GROUND AND BOND ALL TRAY, CABINETS, PDUS, UPS, HVAC SYSTEMS ETC. GROUND BUS BAR TO BE MOUNTED AT 83" AFF OR JUST BELOW LADDER TRAY. COORDINATE WITH MECH. CONTRACTOR TO PROVIDE OPENINGS IN BACKBOARD FOR HVAC DIFUSERS. C

17 CABLE TRAY BY SCS CONTRACTOR. SEE ELEVATION DRAWINGS FOR MORE INFORMATION. C

26 PLUG-IN CIRCUIT BREAKER RECEPTACLE ENCLOSURE. REFER TO BUSWAY SCHEDULE AT SHEET E4.01 PLUG IN UNIT REQUIREMENTS. C

30 PROVIDE 1/2" C.O.(S) TO RESPECTIVE CONTROL DEVICE(S) FOR CONTROL WIRING. REFER TO THE EQUIPMENT CONTROL WIRING DIAGRAMS FOR ADDITIONAL INFORMATION. C

MOTORIZED EQUIPMENT SCHEDULE SPECIFIC NOTES:

A. FUSED AS RECOMMENDED BY MANUFACTURER.

B. MAGNETIC MOTOR STARTER WITH CONTROL TRANSFORMER, AUXILIARY CONTACTS, INDICATOR LIGHT & H.O.A. SWITCH. VERIFY CONTROL TRANSFORMER VOLTAGE WITH MC PRIOR TO ORDERING MATERIAL.

C. ROUTE THROUGH LINE VOLTAGE CONTROL. SEE MECHANICAL PLANS FOR ADDITIONAL REQUIREMENTS.

D. VERIFY LOCATION WITH PLUMBING PLANS PRIOR TO ROUGH-IN. CONNECT TO AQUASTAT AND TIME CLOCK AS REQUIRED.

E. REMOTE VFD. REFER TO MECHANICAL PLANS FOR LOCATION. PROVIDE FEEDER(S) TO CONNECT REMOTE VFD AND MOTOR(S) AS REQUIRED.

F. INTEGRAL VFD PROVIDED WITH EQUIPMENT. REFER TO MECHANICAL PLANS FOR LOCATION. CONNECT TO VFD AS REQUIRED.

G. INTEGRAL DISCONNECT PROVIDED WITH EQUIPMENT. REFER TO MECHANICAL PLANS FOR LOCATION. CONNECT TO INTEGRAL DISCONNECT AS REQUIRED.

H. INTEGRAL DISCONNECT PROVIDED WITH VFD. REFER TO MECHANICAL PLANS FOR LOCATION. CONNECT TO INTEGRAL DISCONNECT AS REQUIRED.

J. ROUTE 1 PHASE CONDUCTOR OF EACH UPS ROOM / DATA ROOM EXHAUST FAN BRANCH CIRCUIT THROUGH / AROUND A DEDICATED, CURRENT-OPERATED LOAD MONITORING SWITCH THAT DETECTS OVERLOADS AND UNDERLOADS (INCLUDING FAN BELT BREAKAGE) WITHIN +/- 15 PERCENT OF AVERAGE CURRENT DRAW. LOCATE IN BARRIERED PULL BOX - NEMA 3R FOR WET LOCATIONS - AND CONNECT N.O. CONTACT TO FIRE ALARM MONITORING MODULE (SUPERVISORY SIGNAL). LOCATE PULL BOX WITH DEVICES INDOORS WHERE POSSIBLE AND ADJACENT TO THE SERVING ELECTRICAL DISTRIBUTION EQUIPMENT. PROVIDE LABEL "USPA BATTERY EX. FAN MONITOR" PER LABELING SPECIFICATIONS. (NK TECHNOLOGIES #ASM-NOU-OU-FT - www.nktechnologies.com).

K. ROUTE THROUGH LINE VOLTAGE CONTROL FOR KITCHEN HOOD FIRE SUPPRESSION SYSTEM. SEE MECHANICAL, FIRE ALARM & FOOD SERVICE PLANS FOR ADDITIONAL REQUIREMENTS.

MOTORIZED EQUIPMENT SCHEDULE GENERAL NOTES:

1. ALL BRANCH CIRCUIT DATA IS BASED UPON METALLIC CONDUITS. IF THE CONTRACTOR ELECTS TO USE NONMETALLIC CONDUITS, AN ADDITIONAL EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED, AND THE CONDUIT SIZE SHALL BE INCREASED ACCORDINGLY.

2. ELECTRICAL CONTRACTOR SHALL REFER TO ALL DOCUMENTS RELATED TO THE EQUIPMENT (I.E., SHOP DRAWINGS, CONSTRUCTION DOCUMENTS, ETC.) IN REGARDS TO ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT LISTED IN THE SCHEDULE. ANY MODIFICATION AND / OR ADDITIONAL WORK NECESSARY SHALL BE INCLUDED IN THE BASE BID.

3. ELECTRICAL CONTRACTOR SHALL CHECK THE ROTATION OF ALL THREE PHASE MOTORS AND CORRECT THE ROTATION IF REVERSED.

4. ELECTRICAL CONTRACTOR SHALL PROVIDE FUSES SIZED PER THE EQUIPMENT NAMEPLATE INFORMATION.

5. DISCONNECT SWITCHES SHALL BE HEAVY DUTY TYPE, EXTERNALLY OPERATED, QUICK MAKE QUICK BREAK AND SHALL BE FUSIBLE OR NON FUSIBLE AS INDICATED. A MAXIMUM VOLTAGE, CURRENT AND HORSEPOWER SHALL BE CLEARLY MARKED ON SWITCH ENCLOSURE. SWITCHES HAVING DUAL RATINGS (HIGHER RATINGS WHEN USED WITH DUAL ELEMENT FUSES) SHALL HAVE RATINGS INDICATED ON METAL PLATES RIVETED OR OTHERWISE PERMANENTLY ATTACHED TO THE ENCLOSURE. WHEN INDICATED, TOGGLE SWITCHES SHALL BE MOTOR RATED FOR THE APPLICATION.

6. STARTERS SHALL BE FULL VOLTAGE, REDUCED VOLTAGE OR COMBINATION DISCONNECT AND STARTER, WITH CONTROL VOLTAGE AS REQUIRED, AS INDICATED ON THE DOCUMENTS RELATED TO THE EQUIPMENT, SUCH AS SHOP DRAWINGS, CONSTRUCTION DOCUMENTS, ETC. STARTERS SHALL INCLUDE MOTOR OVERLOAD PROTECTION, PHASE LOSS AND PHASE UNBALANCE PROTECTION AS REQUIRED.

7. ALL TERMINATIONS AND ENCLOSURES SHALL BE RATED FOR USE WITH 75 DEGREE C CONDUCTORS.

8. COMPLETE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF N.E.C. ARTICLES 430 AND 440.

C

BID ADDENDUM #03

DSA #: 01-113831 File #: 43-C3

Main Telecommunications Room
West Valley College

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Revision: Addendum C

SKE-07

Description: S... E3.01 ... R... N

Sketch

Job. No. 13122.10

Reference: E3.01

Date: 2/4/15

Scale: NTS

DSA #: 01-113831 **File #:** 43-C3

Sketch	Revision
SKE-08	**Addendum C**

Job. No.	13122.10
Reference	E3.02
Date	2/4/15
Scale	NTS

Description
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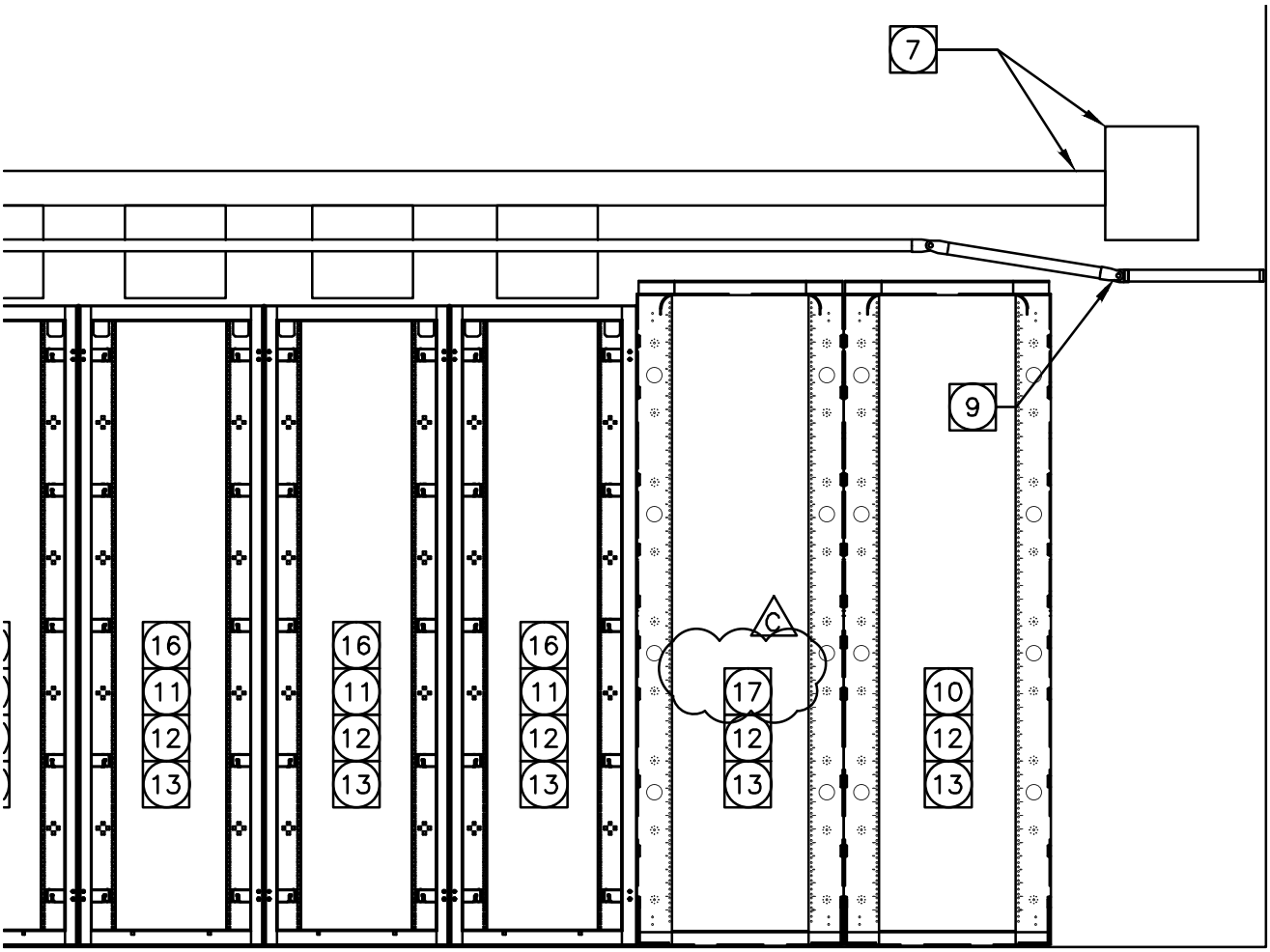
17 U.L LISTED 23" RACK WITH 6" DEEP MOUNTING CHANNELS (CHATSWORTH #66383-713).

C



4-POLE TRACK BUSWAY STRLN-1

VOLTAGE	120 - 208	MOUNTING	THREADED ROD	FEED TYPE	END
PHASE / WIRE	3 - 4	200% NEUTRAL	NO	PAINT COLOR	STANDARD
BUSWAY AMP RATING	225	I/G BUS	NOT AVAILABLE	MONITORING	YES

EQUIPMENT INFORMATION		LOAD INFO (KVA)			PLUG-IN / CONNECTION INFORMATION						NOTES
ID#	EQUIPMENT NAME	A	B	C	PLUG-IN	BRK(S)	RECEPT(S)	CORD DROP(S)	CORD RECEPT(S)	LENGTH	
	RACK #1 PLUG-IN #1	1000	1000	1000	1	(3)20/2	(3) L620	3	3	6 ft.	CBMDC225E286-(3)L620C-4
	RACK #1 PLUG-IN #2	1000	1000	1000	2	(3)20/2	(3) L620	3	3	6 ft.	CBMDC225E286-(3)L620C-4
	RACK #1 PLUG-IN #3-C	1000	1000	---	3	(2)20/2	(2) L620	2	2	6 ft.	CBMDC225E286-520Q-(2)L620C-4
	---	---	---	600	---	(1)20/1	(1) 520Q	1	2	6 ft.	"
	RACK #2 PLUG-IN #1	1000	1000	1000	4	(3)20/2	(3) L620	3	3	6 ft.	CBMDC225E286-(3)L620C-4
	RACK #2 PLUG-IN #2	1000	1000	1000	5	(3)20/2	(3) L620	3	3	6 ft.	CBMDC225E286-(3)L620C-4
	RACK #2 PLUG-IN #3-B	1000	---	1000	6	(2)20/2	(2) L620	2	2	6 ft.	CBMDC225E286-520Q-(2)L620C-4
	---	---	600	---	---	(1)20/1	(1) 520Q	1	2	6 ft.	"
	RACK #3 PLUG-IN #1	1000	1000	1000	7	(3)20/2	(3) L620	3	3	6 ft.	CBMDC225E286-(3)L620C-4
	RACK #3 PLUG-IN #2	1000	1000	1000	8	(3)20/2	(3) L620	3	3	6 ft.	CBMDC225E286-(3)L620C-4
	RACK #3 PLUG-IN #3-A	---	1000	1000	9	(2)20/2	(2) L620	2	2	6 ft.	CBMDC225E286-520Q-(2)L620C-4
	---	600	---	---	---	(1)20/1	(1) 520Q	1	2	6 ft.	"
	RACK #4 PLUG-IN #1	1000	1000	1000	10	(3)20/2	(3) L620	3	3	6 ft.	CBMDC225E286-(3)L620C-4
	RACK #4 PLUG-IN #2	1000	1000	1000	11	(3)20/2	(3) L620	3	3	6 ft.	CBMDC225E286-(3)L620C-4
	RACK #4 PLUG-IN #3-C	1000	1000	---	12	(2)20/2	(2) L620	2	2	6 ft.	CBMDC225E286-520Q-(2)L620C-4
	---	---	---	600	---	(1)20/1	(1) 520Q	1	2	6 ft.	"
	RACK #5 PLUG-IN #1	1000	1000	1000	13	(3)20/2	(3) L620	3	3	6 ft.	CBMDC225E286-(3)L620C-4
	RACK #5 PLUG-IN #2	1000	1000	1000	14	(3)20/2	(3) L620	3	3	6 ft.	CBMDC225E286-(3)L620C-4
	RACK #5 PLUG-IN #3-B	1000	---	1000	15	(2)20/2	(2) L620	2	2	6 ft.	CBMDC225E286-520Q-(2)L620C-4
	---	---	600	---	---	(1)20/1	(1) 520Q	1	2	6 ft.	"
	RACK #6 PLUG-IN #1	1000	1000	1000	16	(3)20/2	(3) L620	3	3	6 ft.	CBMDC225E286-(3)L620C-4
	RACK #6 PLUG-IN #2	1000	1000	1000	17	(3)20/2	(3) L620	3	3	6 ft.	CBMDC225E286-(3)L620C-4
	RACK #6 PLUG-IN #3-A	---	1000	1000	18	(2)20/2	(2) L620	2	2	6 ft.	CBMDC225E286-520Q-(2)L620C-4
	---	600	---	---	---	(1)20/1	(1) 520Q	1	2	6 ft.	"
	TOTAL KVA PER PHASE	17200	17200	17200							

TOTAL VA=	51600	TOTAL AMPS W/LCL=	143.2
HIGH PHASE VA=	17200	HIGH PHASE AMPS W/LCL=	143.3

C

DSA #: 01-113831 File #: 43-C3

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Revision: Addendum C

SKE-09

Sketch

Job. No. 13122.10

Reference: E4.01

Date: 2/4/15

Scale: NTS

BID ADDENDUM #03

DSA #: 01-113831 File #: 43-C3

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Revision SKE-10 Addendum C

Description S R N

Job. No. 13122.10
Reference E4.06
Date 2/4/15
Scale NTS

Sketch

U.P.S. SCHEDULE

UPS	KVA	KW	OUTPUT PF	INPUT DATA V,P,W	OUTPUT DATA V,P,W	LB SYNCH.	BATTERIES TYPE	BATTERIES LOC	BATTERIES TIME (MIN)	BATTERIES REDUNDANT STRING	AIC RATING	COMM. OPTIONS	EXTERNAL BYPASS	ECO MODE	GEC SIZE	INTEG. DIST.	RAISED FLOOR	DESIGN BASIS	REMARKS
UPS1 C	80	72	0.9	208V,3ø,4W	208V,3ø,4W (2)X225A BRK (1)X100A BRK	NO	VRLA	A	8	NO	65K	SNMP	3CB	YES	1"C,#1/0	YES	NO	TOSHIBA	PROVIDE WITH INTEGRATED DISTRIBUTION UNIT. C

1. BATTERY TYPE: DRY
2. CHEMICALS IN BATTERIES:

COMMON NAME	CHEMICAL NAME	%	CAS #	MATERIAL FORM	QUANTITY STORED	QUANTITY IN USE	LOCATION	HAZARD CLASSES
GRID	LEAD	34%	7439-921	SOLID	N/A	CLOSED	RM 101	TARGET ORGAN
LEAD OXIDE	LEAD DIOXIDE	31%	1309-60-0	SOLID	N/A	CLOSED	RM 101	CORROSIVE / TOXIC / TARGET ORGAN / CLASS 1 WATER REACTIVE
ANGLESITE	LEAD SULFATE	<1%	7446-14-2	SOLID	N/A	CLOSED	RM 101	CORROSIVE / TOXIC / TARGET ORGAN / CLASS 1 WATER REACTIVE
BATTERY ELECTROLYTE	SULFURIC ACID	34%	7446-93-9	LIQUID	N/A	CLOSED	RM 101	CORROSIVE / TOXIC / TARGET ORGAN / CLASS 1 WATER REACTIVE

3. NUMBER OF BATTERIES: 40 BATTERIES
4. LIQUID GALLON CAPACITY OF EACH BATTERY: 0.696 GALLONS
5. TOTAL SYSTEM GALLON CAPACITY: 27.87 GALLONS
6. BATTERY STORAGE LOCATION / METHOD: IN UPS / METAL CABINET
7. REASON FOR BATTERY USE: ALTERNATE POWER SOURCE

C

PROVIDE A TOTAL OF 10 SERVER SOFTWARE SHUTDOWN LICENSES TO ALLOW OWNER TO PERFORM STAGED/ORDERLY SERVER SHUTDOWN OF ALL SERVERS. OWNER TO INSTALL AND CONFIGURE SOFTWARE WITH ASSISTANCE OF UPS VENDOR'S TECHNICIAN AS REQUIRED.

C

3

P.

SPECIFICATIONS:

SHALL HAVE A ONE (1) YEAR WARRANTY ON CABINET AND
U.P.S. SHALL HAVE A MINIMUM 3 YEAR FULL REPLACEMENT
PRO-RATA THEREAFTER, ON THE BATTERIES. PROVIDE A
ENANCE AGREEMENT FROM THE MANUFACTURER AFTER

SHALL BE FACTORY ASSEMBLED AND SHALL HAVE THE
S AND CERTIFICATIONS:

O / ANSI C62.41

8 (UPS LISTING)

D REGULATIONS 47, CLASS "A"

OF N.E.C., AND O.S.H.A.

8. ALL REQUIRED SEISMIC BRACING SHALL BE PROVIDED TAKING INTO ACCOUNT SPECIFIC PROJECT SEISMIC CRITERIA INDICATED ELSEWHERE IN THESE DRAWINGS AND SPECIFIC BUILDING CONTRUCTION OF FLOORS AND WALLS WHERE THE UPS(S) IS TO BE INSTALLED.

9. BATTERY INFORMATION SHALL BE INDICATED AS FOLLOWS:

TYPE: "VRLA" – VALVE REGULATED LEAD ACID BATTERIES
"WET" – VENTED LEAD ACID BATTERIES

LOC: "R" – REMOTE BATTERY CABINETS LOCATED PER PLANS.
"A" – BATTERY CABINETS LOCATED IMMEDIATELY ADJACENT TO UPS ELECTRONICS.
"INT" – BATTERIES LOCATED WITHIN UPS CABINET.

TIME: – INDICATES MINIMUM PROTECTION TIME AT 100% LOADING IN MINUTES.

a. UNLESS OTHERWISE INDICATED IN UPS SCHEDULE, ALL UPS BATTERIES SHALL BE VALVE REGULATED, ABSORBENT GLASS MAT, LEAD-ACID TYPE (VRLA) DESIGNED FOR

12. WHEN THE U.P.S. SCHEDULE INDICATES AN "EXTERNAL
EXTERNAL MAINTENANCE BYPASS SWITCH SHALL BE PR
ON SCHEDULE– SEE SINGLE LINE DIAGRAM. EACH MA
BE EQUIPPED WITH BOTH MECHANICAL AND ELECTRICAL
UPS(S) CANNOT BE PLACED IN/TAKEN OFF MAINTENAN
STATIC BYPASS. MECHANICAL INTERLOCKS SHALL CONS
QUANTITY AND SEQUENCING AS REQUIRED TO PREVENT
MIS-OPERATION THAT MIGHT CREATE A HAZARD OR EQ
TRANSFER/RETRANSFER SEQUENCE OF OPERATIONS INS
OF THE EXTERNAL MAINTENANCE BYPASS CABINET OR
INVOLVE USE OF KIRK-KEYS, EACH KEY SHALL BE GIV
TURN, SHALL BE SPECIFICALLY REFERENCED ON THE T
OF OPERATIONS INSTRUCTIONS. PROVIDE THE FOLLOWI
BYPASS CABINET OR PANEL:

– EXTERNAL MAINTENANCE BYPASS CABINET (WHITE L
BACKGROUND, MIN. 0.75" HIGH LETTERING).

– CIRCUIT BREAKERS WITH BOTH THEIR FUNCTION IN

of

Sketch	SKE-11	Revision	Addendum C
Job. No.	13122.10	Description	
Reference	E4.06		
Date	2/4/15		
Scale	NTS		

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& LESS THAN 2% HARMONIC DISTORTION LINEAR LOADS.
- -SUPPORT LEADING POWER FACTORS OF UP TO 0.95 WITHOUT ANY DERATING.
- -OVERLOAD RATINGS SHALL BE A MIN. 125% FOR 10 MINUTES & 150% FOR 1 MINUTE WHILE ON-LINE.
- -PROVIDE DYNAMIC BROWN-OUT PROTECTION
- -LESS THAN 3 DEGREES OF PHASE ANGLE DISPLACEMENT.
- -LESS THAN 16.67 MILLISECOND VOLTAGE RECOVERY
- -ACCEPT 100% STEP LOAD AND 100% NON-LINEAR LOADS.

- EXCLUDING INTEGRATED DISTRIBUTION/PDU TRANSFORMERS EFFICIENCIES AND ECO-MODE EFFICIENCIES, UPS SHALL BE A MINIMUM OF 92.5% EFFICIENT AT LOAD LOAD RANGES OF 30% TO 60% LOAD FACTOR. WITH ECO-MODE, UPS EFFICIENCY SHALL IMPROVE BY A MINIMUM OF 3% OVER THE SAME LOAD FACTOR RANGE.

- STANDARD INTERNAL MAINTENANCE BYPASS SWITCH RATED FOR 100% CONTINUOUS OPERATION.

- PROVIDE SINGLE OR DUAL INPUT AS INDICATED ON THE SINGLE LINE DIAGRAM.

- MICROPROCESSOR-BASED, SOFTWARE-CONTROLLED, PULSE- WIDTH-MODULATED DESIGN WITH DIGITAL POWER QUALITY LOGIC AND TRUE "NO-BREAK" SINE WAVE OUTPUT.

- SELF-TESTING, SELF-DIAGNOSTIC, AND SELF-EXERCISING FUNCTIONS WITH A LOG THE LAST 20 ALARM/U.P.S. EVENTS.

- AUTOMATIC-OVERLOAD PROTECTION, SHORT CIRCUIT PROTECTION, LIGHTNING AND SURGE PROTECTION, AS WELL AS A BACK-FEED RELAY. UPS SHALL BE ABLE TO SUPPORT A BOLTED FAULT ON THE OUTPUT WITHOUT DAMAGE TO THE UPS. WHE BYPASS IS UNAVAILABLE THE UPS INVERTER SHALL CURRENT LIMIT ALLOWING SUFFICIENT TIME DOWNSTREAM PROTECTIVE DEVICES TO CLEAR/OPEN (MIN. OF 5 SECONDS).

- MIN. OF 10 STANDARD FUNCTION ALARMS.
- MIN. OF 21 STANDARD DIGITAL METER DISPLAYS. C

- 110% RATED STATIC SWITCH (ANY SIZE UPS) CAPABLE OF SUSTAINING 1000% OF RATED LOAD FOR 10 CYCLES.

5. THE TRANSFORMER-BASED U.P.S. SYSTEMS SHALL HAVE THE FOLLOWING CHARACTERISTICS:

   (NOT USED ON THIS PROJECT)

6. IF INDICATED ON THE UPS SCHEDULE, THE U.P.S. SYSTEM SHALL BE PROVIDED WITH LOAD BUS SYNCHRONIZATION (LBS) WITH THE FOLLOWING CHARACTERISTICS:

   - ENSURE THE SYNCHRONOUS OPERATION OF A MINIMUM OF (4) UPS SYSTEMS.

   - CONTINUOUSLY SENSES THE PHASE RELATIONSHIP BETWEEN THE OUTPUTS (CRITICA BUS) OF A DESIGNATED SLAVE SYSTEM (DSS) UPS AND A DESIGNATED MASTER SYSTEM (DMS), WHICH IS ANOTHER UPS.

   - IF THE TWO SYSTEMS LOSE SYNC WITH EACH OTHER FOR MORE THAN A PREDETERMINED PERIOD OF TIME (ADJUSTABLE FROM 0.1 TO 5 SECONDS), THE LO BUS SYNCHRONIZATION WILL SYNC THE DSS TO THE DMS IF THE AUTO/MANUAL SWITCH IS IN THE AUTO POSITION. SYNCHRONIZATION IS ACCOMPLISHED BY SWITCHING THE LINE SYNC REFERENCE IN THE DSS FROM ITS OWN BYPASS INPUT

BID ADDENDUM #03

DSA #: 01-113831 File #: 43-C3

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Revision Addendum C

SKE-12

Description
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Sketch

Job. No. 13122.10
Reference E6.01
Date 2/4/15
Scale NTS

WIRING LEGEND

WIRE DESIGNATION	WIRE IN CONDUIT	WIRE IN CONDUIT UNDERGROUND/WET LOC.	UNDERGROUND/WET WIRE DESIGNATION
INIT. LOOP Z	TWO PAIR 2 CONDUCTOR #16 UNSHIELDED WEST PENN #D990	TWO PAIR 2 CONDUCTOR #16 FPL UNSHIELDED WEST PENN #AQ–225	INIT. LOOP ZU
POWER CKT. P	2 CONDUCTOR #14 THHN STRANDED	2 CONDUCTOR #12 STRANDED TYPE THWN	POWER CKT. PU
NETWORK CONTROL C	2 CONDUCTOR #12 THHN STRANDED	2 CONDUCTOR #12 STRANDED TYPE THWN	NETWORK CONTROL CU
ANN./TELE. D,T	2 CONDUCTOR #18 FPL TWISTED/ SHIELDED WEST PENN #D975	2 CONDUCTOR #18 FPL TWISTED/ SHIELDED WEST PENN #AQ–293	ANN./TELE. DU,TU
LOW LEV. AUD. X,Y	2 CONDUCTOR #18 FPL TWISTED/ SHIELDED WEST PENN #D975	2 CONDUCTOR #18 FPL TWISTED/ SHIELDED WEST PENN #AQ–293	LOW LEV. AUD. XU,YU
MISC./AUDIBLE/ VISUAL N	2 CONDUCTOR #12 THHN STRANDED	2 CONDUCTOR #12 STRANDED TYPE THWN	MISC./VISUAL NU
FIBER OPTIC F	12 STRAND SINGLE MODE FIBER	SYSTIMAX TERASPEED. FURNISHED AND INSTALLED BY SCS CONTRACTOR, PATCHED BY FA CONTRACTOR. C	FIBER OPTIC FU

NOTE:

1. ALL WIRE MODEL NUMBERS ARE WEST PENN. EQUIVALENT BY OTHER MANUFACTURER IS ACCEPTABLE.
2. COLOR CODE ALL FIRE ALARM CONDUCTORS PER DISTRICT STANDARDS. VERIFY COLOR SCHEMES PRIOR TO ORDERING FIRE ALARM CONDUCTORS.

Sketch	Revision
SKE-13	Addendum C

Job. No.	13122.10
Reference	E6.02
Date	2/4/15
Scale	NTS

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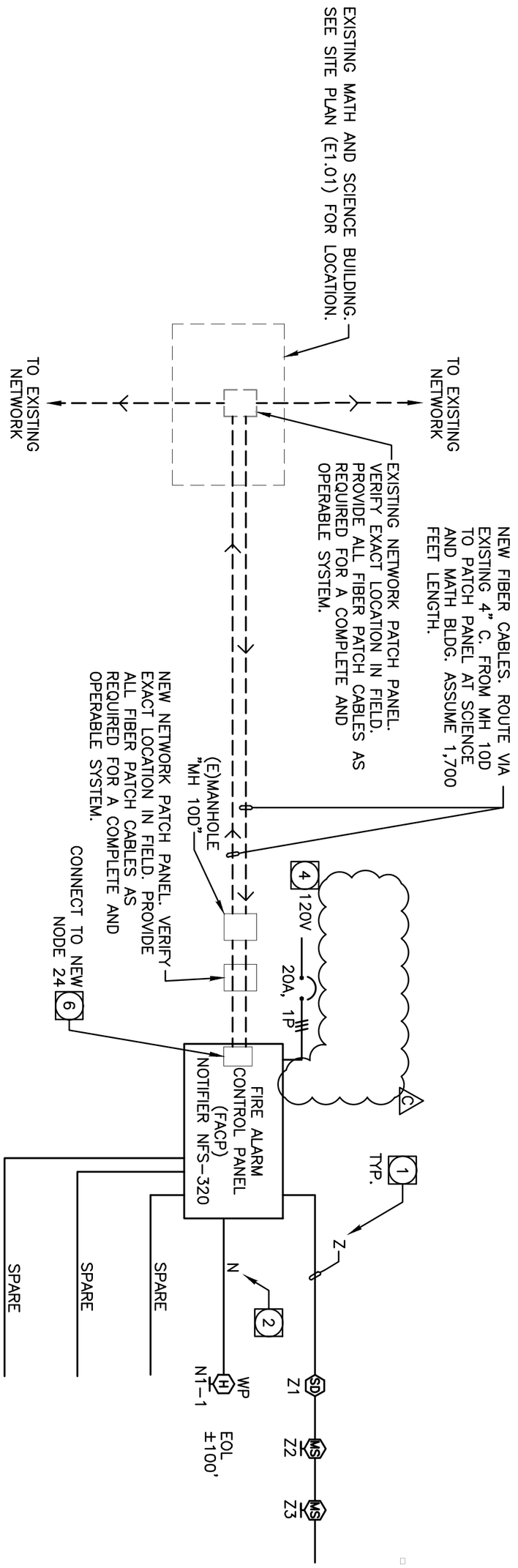

DSA #: 01-113831 **File #:** 43-C3

Sketch **SKE-14**	Revision **Addendum C**	LPA	**Main Telecommunications Room** **West Valley College**
Job. No. 13122.10	Description	51□1 California □ve□S□ite 100 □rvine□California □2□1□	
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Date 2/4/15	□□R□□□ □□□N	□ □4□ |2□1-1001 □ □4□ |2□0-11□0 □ lpa□ lpainc.co□ W □□□.lpainc.co□	
Scale NTS			

CAT-6A COPPER PATCH CABLES

	Type	Quantity C
IDF	5' light blue	20 total
station	25' dark blue	10 total

COPPER PATCH CABLE MATRIX | 04

FIBER PATCH CABLES		*3m*	*10m*	*25m* C
DUPLEX				
Singlemode, RED	*LC-LC*	*5*	*5*	*0*
Singlemode, YELLOW	*LC-SC*	*0*	*0*	*4*

PROVIDE FIBER PATCH CABLES AT BEGINNING OF PROJECT

FIBER PATCH CABLE MATRIX | 05

DSA #: 01-113831 File #: 43-C3

Sketch: SKE-15 -	Revision: Addendum C	LPA	Main Telecommunications Room West Valley College
Job. No. 13122.10	Description: Clarification on Hoffman Box requirements	p. 949. 261.1001 f. 949. 260.1190 w. lpainc.com e. info@lpainc.com 5161 California Avenue, Suite 100 Irvine, California 92617	WVMCCD
Reference E3.01			
Date 2/4/15			
Scale NTS			

A74H7224LP3PT-MOD
Type Ratings
NEMA Type Rating: 4
Dimensions
Height (A): 96
Width (B): 48
Depth (C): 30
Holes and Cutouts
Enclosure Body Holes and Cutouts
Doors
Additional Options
Provide a 12" wide door on the left and a 36" wide door on the right.
Structural
Additional Options
Provide a vertical barrier welded in place between the doors, front to back.
Estimated Lead Time to Ship
25 - 30 business days after receipt of complete order information
Lead time is estimated based on conditions at time of quote.
Actual lead time will be provided at time of order.

A86M3E20LP-MOD
Type Ratings
NEMA Type Rating: 4
Dimensions
Height (A): 96
Width (B): 112
Depth (C): 30
Holes and Cutouts
Enclosure Body Holes and Cutouts
Structural
Convert Enclosure from Type 12 to Type 4
Estimated Lead Time to Ship
20 - 30 business days after receipt of complete order information
Lead time is estimated based on conditions at time of quote.
Actual lead time will be provided at time of order.

Item 23 Supplemental Information
Reference Contract Documents sheet E3.01

SECTION 072216 - ROOF BOARD INSULATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Rigid board roof insulation, flat and tapered types.

B. Referenced Sections:
   1. Section 012513 - Product Substitution Procedures
   2. Section 013300 - Submittal Procedures
   3. Section 017419 - Construction Waste Management Procedures.
   4. Section 018113 - Sustainable Design Requirements.
   5. Section 072100 - Thermal Insulation.
   6. Section 076200 - Sheet Metal Flashing and Trim.

1.02 1.02 REFERENCES

A. ASTM International (ASTM):
   1. C 518-04 - Test Method for Steady-State Heat Flux Measurements and Thermal Transmission by Means of the Heat Flow Meter Apparatus
   2. C 1289-07 - Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
   3. D 41-05 - Specification for Asphalt Primer Used in Roofing and Waterproofing.
   4. D 312-00(2006) - Specification for Asphalt Used in Roofing.
   5. D696-03 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C With a Vitreous Silica Dilatometer.
   6. C 1289-08 - Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
   7. D 1621-04a - Test Method for Compressive Properties of Rigid Cellular Plastics.
   8. D 1622-03 - Test Method for Apparent Density of Rigid Cellular Plastics.
   9. D 2126-04 - Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
   10. E 84-07 - Test Method for Surface Burning Characteristics of Building Materials.
   11. E 96-05 - Test Methods for Water Vapor Transmission of Materials.

B. California Building Standards Code (CBSC):
   1. California Building Code [CCR Title 24, Part 2] (CBC), 2007 edition:
      a. Chapter 15 - Roof Assemblies and Rooftop Structures.
         1) Section 1508 - Roof Insulation.

C. FM Global (FM):
   1. Factory Mutual Research Corporation Approval Guide, latest edition.
      a. 4450 - Class 1 Insulated Steel Roof Decks.
      b. 4470 - Class 1 Roof Covering.
   2. Loss Prevention Data Sheets:
      a. 1-28 - Design Wind Loads.

D. National Roofing Contractors Association (NRCA):
   1. Technical Bulletin No. 7.
   2. Technical Bulletin No. 9.

E. Polyisocyanurate Insulation Manufacturers Association (PIMA):
   1. Technical Bulletin 101.

F. Roof Insulation Contractors/Thermal Insulation Manufacturers Association (RIC/TIMA):
   1. Technical Bulletin 281-1.

G. Underwriters Laboratories (UL):
   1. 1256 - Fire Test of Roof Deck Constructions.

H. United States Green Building Council (USGBC):

1. Leadership in Energy and Environmental Design (LEED):
   a. Green Building Rating System.

1.03 DEFINITIONS

A. R-Value is the thermal resistance of insulation only, and does not take into account alleged air spaces or other factors assumed to result in higher values.
   1. Conditioned R-Value: Thermal resistance of permeable-faced polyurethane / polyisocyanurate insulation determined by ASTM C 518 in accordance with 6-month conditioning procedure outlined in RIC/TIMA Technical Bulletin 101.
   2. Design Stabilized R-Value: Thermal resistance of polyisocyanurate foam insulation based on 5-year stabilization period after manufacture.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate with construction waste management requirements specified in Section 017419.

B. Coordination: Coordinate with applicable Credit descriptions for more specific procedural requirements of Section 018113.

C. Coordination: Conform to requirements for roofing system guaranty and coordinate work with Section 075100.

1.05 SUBMITTALS

A. Product Data: In accordance with the provisions of Section 013300, submit complete manufacturer's descriptive literature and specifications.

B. Samples: In accordance with the provisions of Section 013300, submit 6-inch square by 1.5-inch thick samples of each insulation material clearly identified with manufacturer's name, brand name, R-value, fire- resistive classification, and composition.

C. Quality Control Submittals: In accordance with the provisions of Section 013300, submit the following when and as directed by the Architect:
   1. Test Reports: Certified laboratory test reports confirming physical characteristics of materials used in the performance of the work of this Section.
   2. Certificates:
      a. Certificates confirming that roofing membranes proposed for use are mutually acceptable for application to both the manufacturer of the roofing membrane and the manufacturer of the insulation system, and that no warranty, guaranty or bond issued by either party is modified or rendered void by virtue of such application.
      b. Upon completion of installation of building envelope insulation, and in conjunction with Section 072100, submit one card certifying compliance with requirements of Title 24 for installation of insulation to local building officials, and conspicuously post one card at a location on site acceptable to the building official.
      c. Upon completion of installation of building envelope insulation, and in conjunction with roofing system work, one card certifying compliance with requirements of Title 24 for installation of insulation shall be completed, executed, and delivered to local building officials, and one card shall be conspicuously posted at a location on site acceptable to the building official.
   3. Manufacturer's Instructions: The manufacturer's current recommended methods of installation, including relevant limitations, safety and environmental cautions, and application rates.

1.06 QUALITY ASSURANCE

A. Qualifications:
   1. Installer's Qualifications: Regularly engaged and specializing, for the preceding 5 years, in the installation of building insulation systems equivalent in size, type, and physical characteristics to those required.
   2. Certifications: Certify that average overall R-value of area covered by tapered roof insulation is not less than R-value indicated on Contract Drawings.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Storage: Store insulation indoors, dry, off-floor, and under cover.

1.08 FIELD CONDITIONS

A. Ambient Conditions: Do not apply roofing insulation materials when moisture in any form is present or anticipated during installation operations.

1.09 WARRANTY

A. Include insulation as part of a single source, single responsibility guaranty covering insulation, membrane, bituminous flashing, walkways, roofing manufacturer-supplied roof drains, expansion joint covers, copings systems and fascia systems.
   1. Refer to roofing sections for specific warranty information.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers: Materials shall be products of, or specifically recommended by, one manufacturer and shall be acceptable by manufacturer of roofing system for issuance of roofing system guaranties.
   1. Atlas Roofing Corporation, Atlanta, GA (770)933-4479, (800)933-1476, www.atlasroofing.com.
   2. Carlisle SynTec Inc., Carlisle, PA (800)479-6832, www.carlisle- syntec.com.
   3. The Dow Chemical Company, Midland, MI, (800)441-4369, www.dow.com/styrofoam/na/dowpro/.
   4. Johns Manville Roofing Systems, Denver, CO (303)978-9900, (800)654-3103, with manufacturing facilities in Pittsburgh, CA (510)432-6426, (800)922-5922, and sales offices in Burbank, CA (213)849-6938.
   5. Premier Industries Inc., Phoenix, AZ (602)997-8754, (800)254-8989, with representation in Southern California at (909)591-7425.
   6. Sika Sarnafil Inc., a Sarna Group Company, Canton, MA (617)828-5400, (800)576-2358, www.sarnafilus.com.

B. Acceptable Manufacturers of Accessories:
   1. G-P Gypsum Corporation, a subsidiary of the Georgia-Pacific Corpo- ration, Atlanta, GA (800)824-7503 [Sales West],(800)225-6119 [Technical], www.gp.com/gypsum.
   2. Gold Bond Building Products, National Gypsum Company, Charlotte, NC (704)365-7300, (800)824-4227 [Sales West],www.national-gypsum.com.
   3. United States Gypsum Company (USG), Chicago, IL (800)874-4968, (877)874-6655 [Sales], with offices in Ontario, CA (800)964-4874, www.usg.com.

C. Acceptable Manufacturers of Adhesive Attachments:
   1. Insta-Foam Products, Inc., a division of Flexible Products Company, Joliet, IL (815)741-6800, (800)800-3626.

D. Like materials shall be the products of one manufacturer and shall be either the ones upon which the design is based or equal products of other manufacturers approved in advance in accordance with Section 012513.

2.02 DESCRIPTION

A. Regulatory Requirements:
   1. Provide insulation and insulation fasteners listed in the FM Guide referenced that are tested and approved by Factory Mutual in accordance with their Standard 4470.
   2. Provide Class I Wind Rating, IA-90 Approval, as determined in accordance with FMRC Standard 4470.
   3. Provide U.L. Class A Fire Rating for entire roof system. System shall be listed in the current U.L. Building Materials Directory.

2.03 PERFORMANCE CRITERIA

A. Performance Characteristics: Performance characteristics of roof insulation board proposed for use shall have been confirmed by tests in accordance with the following:
   1. Thermal Resistivity (R-Value) **11**: ASTM C 518 and, in the case of foamed-plastic insulations, comply with the conditioning requirements of RIC/TIMA 281-1 and PIMA 101.
   2. Permeability of Insulation Facing: ASTM E 96, less than 1 perm.
   3. Thickness: As need to achieve specified R value.
   4. Surface Burning Characteristics (Flame Spread and Smoke Developed Characteristics): ASTM E 84 (25-foot Tunnel Test), 25-50.
   5. Compressive Strength: ASTM D 1621, 20 psi.
   6. Density: ASTM D 1622, nominal 2.0 psf.
   7. Dimensional Stability: ASTM D 2126 or ASTM D 696, less than 2 percent linear change.

B. Design Requirements: Provide product compatible with warranty related requirements of specified roofing system.

2.04 MATERIALS

A. Rigid insulation shall be of type and acceptable to roofing system manufacturer for inclusion in roofing system warranty.

B. Core: HCFC-free, closed cell faced rigid cellular polyisocyanurate core thermal roof insulation board bonded in the foaming process to universal non-asphaltic fiberglass reinforced faced roof insulation board and tapered panels.
   1. FS HH-I-1972/Gen, or HH-I-1972/2, Class I, as applicable.
   2. Comply with ASTM C 1289, Type II, Class 1, Grade 2.
   3. UL listed for Class A rated assemblies.
   4. FM rated as Class 1A-60 and 1A-90 for fire and wind resistant systems for built-up roofing.
   5. Conditioned in accordance with RIC/TIMA Technical Bulletin 281-1.
   6. Design-stabilized R-value shall equal 5.56 per inch of foam thickness over expected life of roof system. Provide total R-value indicated on Contract Drawings.
   7. Tapered Insulation: Provide tapered shapes with pre-cut miters and pre-cut crickets of same insulation material proposed for use. Provide slope as indicated in Part 3 of this Section.
      a. Provide degree of slope as indicated on Contract Drawings.

C. Cover Board: One of the following:
   1. Gypsum Deck: Non-structural, glass mat faced siliconized gypsum panel with water-resistant core equal to DensDeck, DensDeck Prime, or DensDeck Duraguard Protection Board, manufactured by G-P Gypsum.
      a. Provide Dens-Deck Prime where a pre-primed surface on one side is required.
   2. OSB: Polyisocyanurate foam core bonded to a 7/16-inch thick oriented strand board (OSB) on top and non-asphaltic fiberglass mat on bottom, equal to Atlas Roofing AC Foam Nail Base, Apache Products Company Nail Line, or Johns Manville Roofing Products JM Nailboard.

D. Accessories:
   1. Low Rise Foam Adhesive: Manufacturer's standard FM-approved low rise foam adhesive.
   2. Mechanical Fasteners: Manufacturers standard, FM listed, corrosion resistant, threaded fasteners and metal or plastic plates of appropriate width as approved for Guaranteed systems.
   3. Fabric Barrier: A spun-bonded polyester fabric separation layer used to separate the membrane from unfaced extruded or expanded polystyrene.
   4. Nailers and Curb Assemblies: Refer to Section 061000 or Section 060573.
   5. Adhesive Fasteners: Insta-Stik Professional Roofing Adhesive, manufactured by Insta-Foam Products, or equal, and complying with Factory Mutual I-90 fire and wind uplift resistance tests.

6. Vapor Retarder: 10-mil polyethylene.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Refer to roofing system specifications for examination and verification procedures.

B. Roof Deck Systems:
   1. Verify that flatness and fastening of roof deck to structure complies with the following:
      a. Top Flanges: No concavity or convexity in excess of 1/16-inch across any three adjacent flanges.
      b. Side Laps: Properly nested and mechanically fastened at maximum 36 inches on centers.
      c. End Laps: Minimum 2-inch laps located over fastened supports.
   2. Verify that metal deck is securely fastened with no projecting fasteners or severe weld "burn-throughs."
   3. Verify that roof openings, curbs, pipes, sleeves, ducts, vents, or other penetrations through the roof are solidly set, and that flashings, tapered edges, reglets, and wood nailers are secure and tight to the building.

C. Verify that roof shall roof slope is at least 1/4-inch per foot.
   1. Tapered insulation shall be used in areas where adequate slope does not exist to build proper slope.
   2. Lightweight insulating concrete shall be used in areas where adequate slope does not exist to build proper slope.

3.02 PREPARATION

A. Secure wood nailers for perimeters, roof openings, vents, and drains in place with mechanical fasteners.

B. Vapor Retarder: In accordance with insulation manufacturer's recommendations and the general requirements of roofing manufacturer for the roofing system proposed for use, install vapor retarder prior to installation of rigid insulation.

3.03 INSTALLATION

A. Install insulation in accordance with the manufacturer's instructions, and in accordance with the requirements of FM 1-28 for an 1-90 installation.
   1. For single-layer construction, apply insulation board with cover board, and fasten in accordance with manufacturer's recommendations.
      a. Install rigid roof insulation board with specified attachments in accordance with FM Property Loss Preventions Data Sheet 1-28.
      b. At installations over metal deck that are exposed to view underneath, install rigid insulation board to metal deck with adhesive fasteners.
         1) Apply to panels no larger than 4 feet by 4 feet.
         2) Apply in accordance with manufacturer's instructions with multi-bead adhesive dispenser.
         3) Apply only on dry surfaces at ambient temperatures between 40 degrees F and 110 degrees F.
   2. For bottom layer of two-layer construction, fasten rigid insulation board in accordance with manufacturer's recommendations.
      a. Stagger end and side joints of insulation in successive rows.
   3. For top layer of two-layer construction, embed insulation board with low-rise foam adhesive in accordance with manufacturer’s requirements and recommendations.

B. Other requirements for roof insulation:
   1. Do not leave insulation exposed to the weather. Apply no more in one day than can be covered with roofing membrane on the same day.
   2. Insulation shall not bridge expansion joints where they occur.

3. Insulation, where necessary, shall be chamfered at edges to provide closed joints and full edge surface contact with wood cants.
4. Insulation shall be laid in 24-inch widths wherever possible.

C. Tapered Insulation: Install over non-drainable deck areas in the form of crickets to direct the flow of water around objects to roof drains.
1. Lay insulation with edges parallel to perimeter of roof. Lay in ashlar pattern with joints between the long dimension of the board parallel.
2. Arrange tapered sections to maintain a minimum 1/4-inch per foot slope over entire roof area. Horizontal fill areas shall be same mate- rial as tapered insulation.
3. Keep roof insulation 1/4-inch from vertical flashing.
4. Secure to deck with mechanical fasteners.
5. Secure perimeter wood nailers, and wood nailers for roof openings, vents, and drains shall be secured in place.
6. Stagger end joints of insulation in successive rows.

3.04 CLEANING

A. Promptly remove trash and clean areas of debris caused by work of this Section.

END OF SECTION