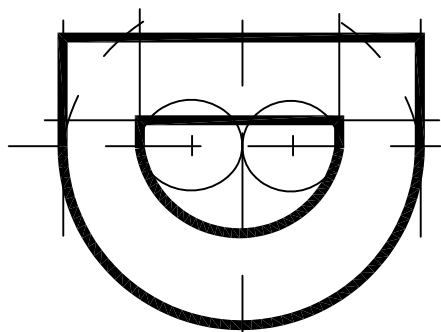


# PROPOSED HVAC IMPROVEMENTS BUILDING 700 FELLSMERE ELEMENTARY SCHOOL FELLSMERE, FLORIDA

FEBRUARY 13, 2017  
BID SET



STRUCTURAL ENGINEER  
M L ENGINEERING INC.

2030 37th Avenue  
Vero Beach, Florida 32960  
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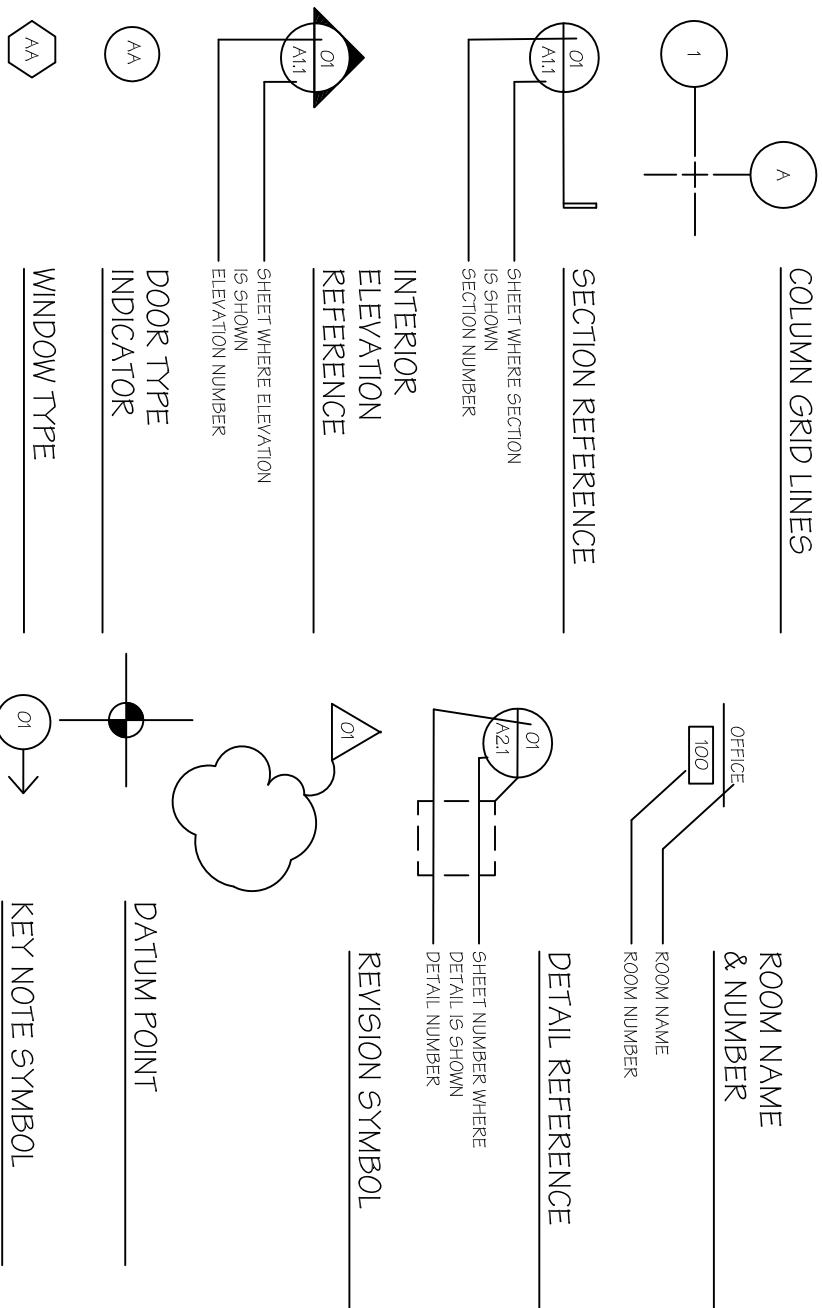
MECHANICAL AND ELECTRICAL ENGINEER

INGENUITY ENGINEERS, INC.  
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Orlando, Florida 32814  
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License No. AA0002238

## ARCHITECTURAL SYMBOLS



### INDEX OF DRAWINGS

J/O	Dwg. No	Drawing Name
<input checked="" type="checkbox"/>	A-0.10	COVER SHEET / INDEX OF DRAWINGS

### ARCHITECTURAL DRAWINGS

J/O	Dwg. No	Drawing Name
<input checked="" type="checkbox"/>	A-2.10	PLANS, ELEVATIONS AND BUILDING SECTION
<input checked="" type="checkbox"/>	A-4.20	WALL SECTIONS

### STRUCTURAL DRAWINGS

J/O	Dwg. No	Drawing Name
<input checked="" type="checkbox"/>	S-1	PLANS & SPECIFICATIONS
<input checked="" type="checkbox"/>	S-2	SECTIONS & DETAILS

### MECHANICAL DRAWINGS

J/O	Dwg. No	Drawing Name
<input checked="" type="checkbox"/>	M-0.00	LEGENDS, ABBREVIATIONS & SCHEDULES - MECHANICAL
<input checked="" type="checkbox"/>	M-1.00	DEMOLITION PLAN - MECHANICAL
<input checked="" type="checkbox"/>	M-2.00	FLOOR PLAN - MECHANICAL
<input checked="" type="checkbox"/>	M-3.00	DETAILS - MECHANICAL
<input checked="" type="checkbox"/>	M-4.00	DETAILS - MECHANICAL
<input checked="" type="checkbox"/>	M-5.00	MECHANICAL SEQUENCES

### ELECTRICAL DRAWINGS

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<input checked="" type="checkbox"/>	E-1.00	ELECTRICAL - DEMO, LEGEND, NOTES & ABBREVIATIONS
<input checked="" type="checkbox"/>	E-2.00	FLOOR PLAN - ELECTRICAL

### PLUMBING DRAWINGS

J/O	Dwg. No	Drawing Name
<input checked="" type="checkbox"/>	P-1.00	PLUMBING - FLOOR PLAN, LEGEND, NOTES & ABBREVIATIONS



Project:

PROPOSED HVAC IMPROVEMENTS  
BUILDING 700

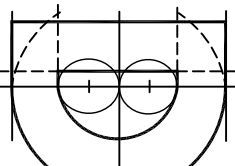
FELLSMERE  
ELEMENTARY SCHOOL

FELLSMERE, FLORIDA



ISBID#:	Description:
No:	
Date:	
A. 01/26/17	COST ESTIMATE
B. 02/13/17	BID SET

Architect:



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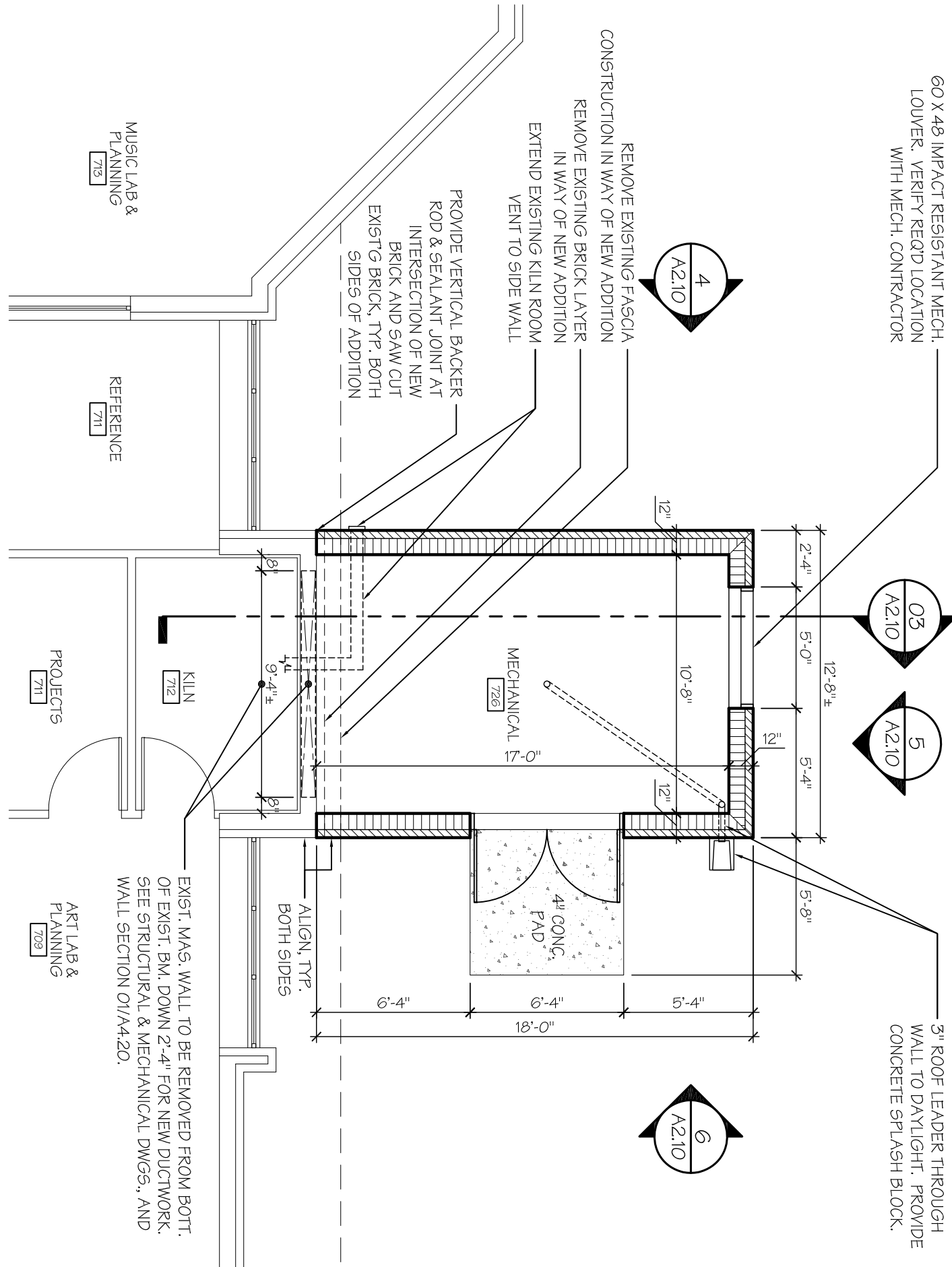
Consultant:

Drawing Title:  
PLANS, ELEVATIONS AND  
BUILDING SECTION



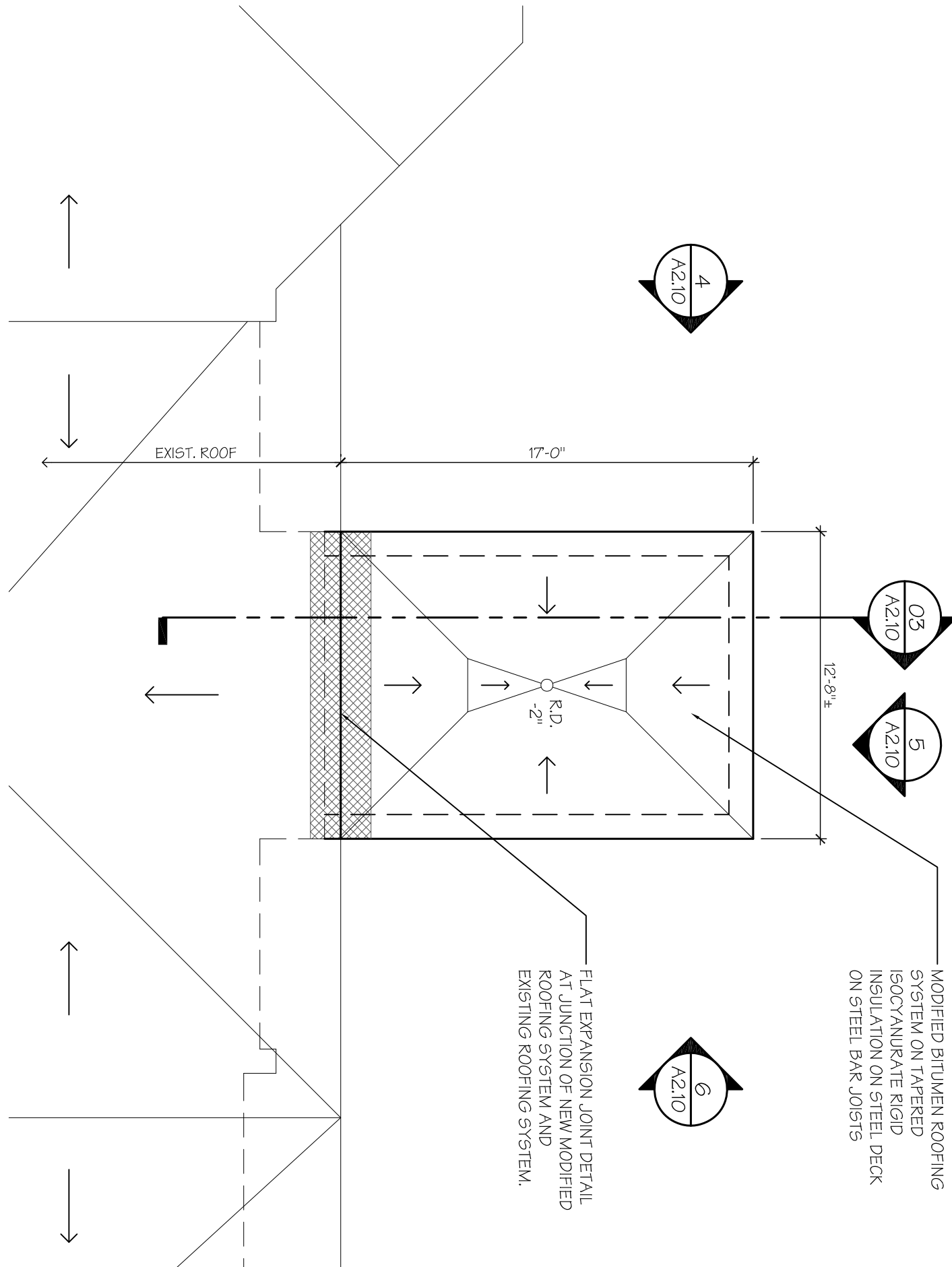
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Project No.:	Proc. File:
2016-43	
Sheet No.:	

Get. No.: 12.456  
Date Stamp: A2.10



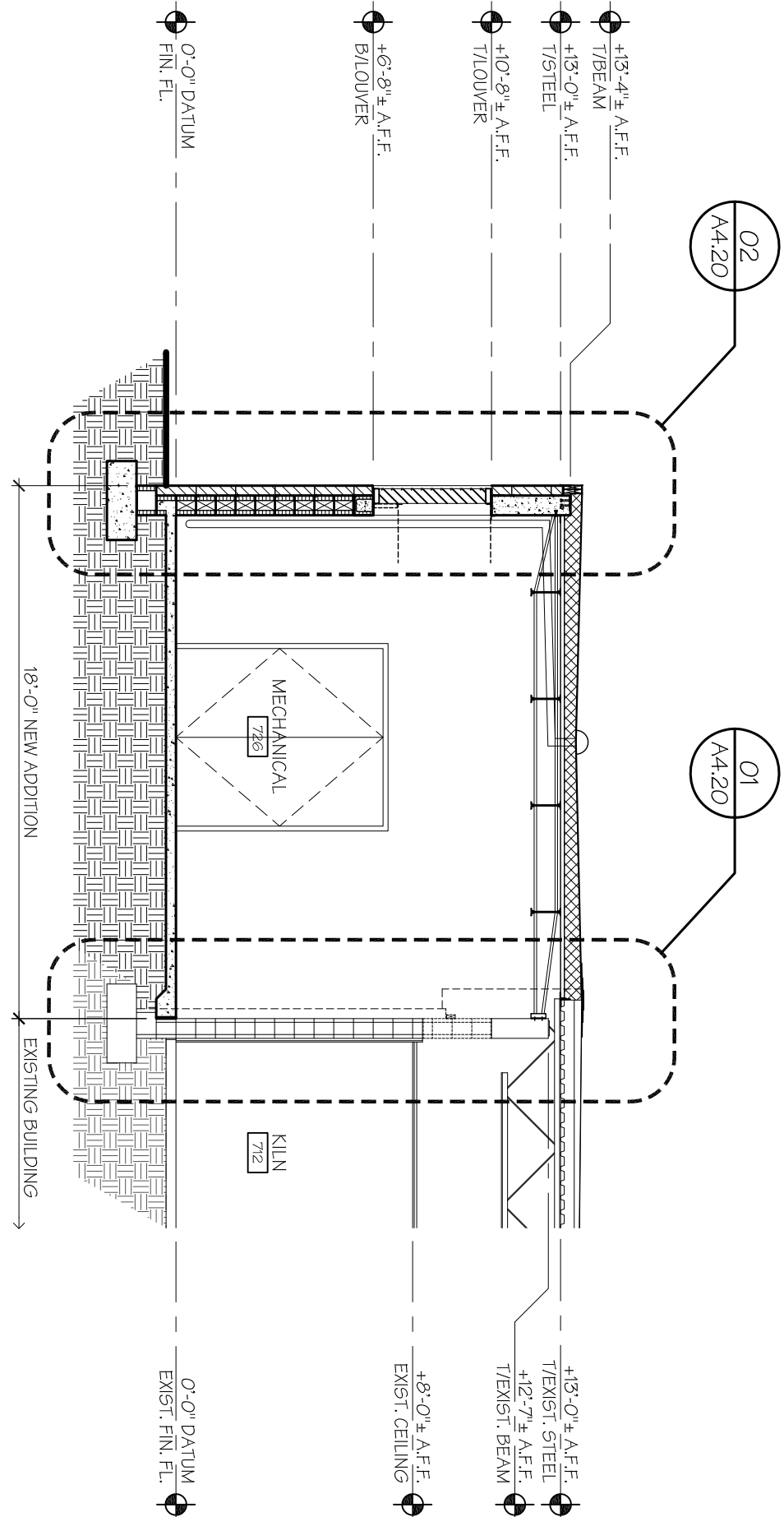
## 01 PARTIAL FLOOR PLAN

SCALE: 3/16" = 1'-0"



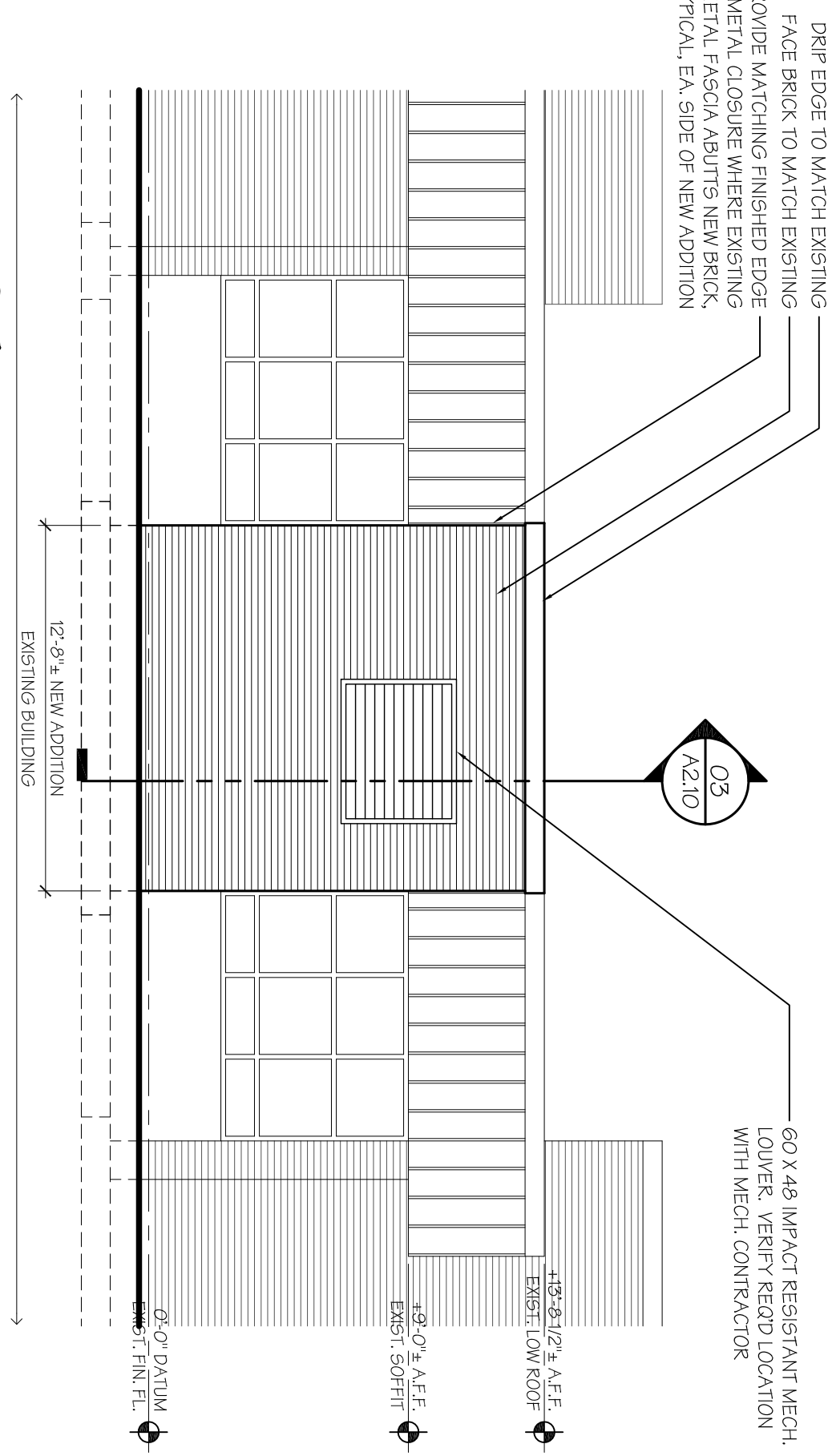
## 02 ROOF PLAN

SCALE: 3/16" = 1'-0"



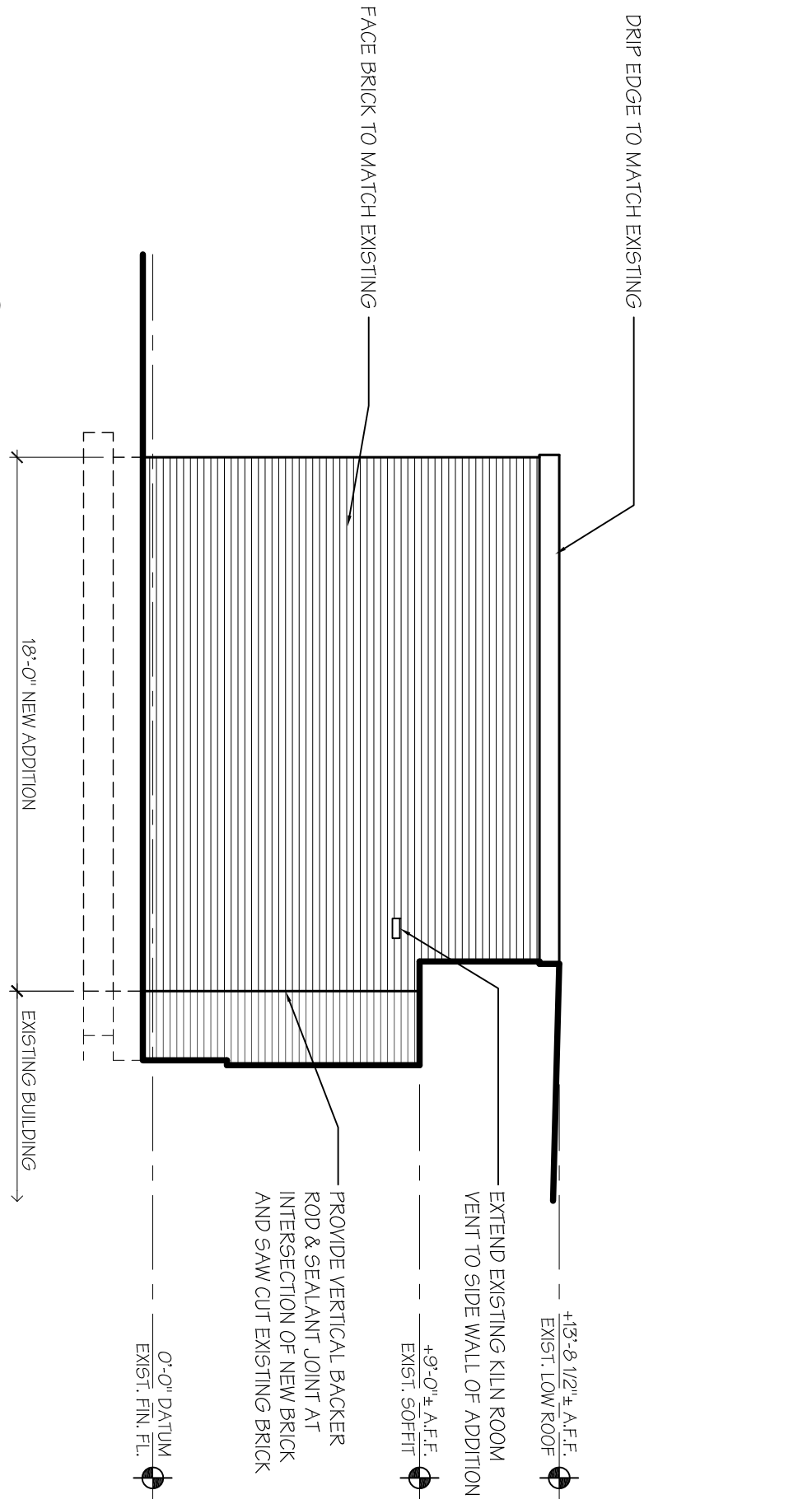
## 03 BUILDING SECTION

SCALE: 3/16" = 1'-0"



## 05 ELEVATION

SCALE: 3/16" = 1'-0"



## 04 ELEVATION

SCALE: 3/16" = 1'-0"

### CONSTRUCTION NOTES

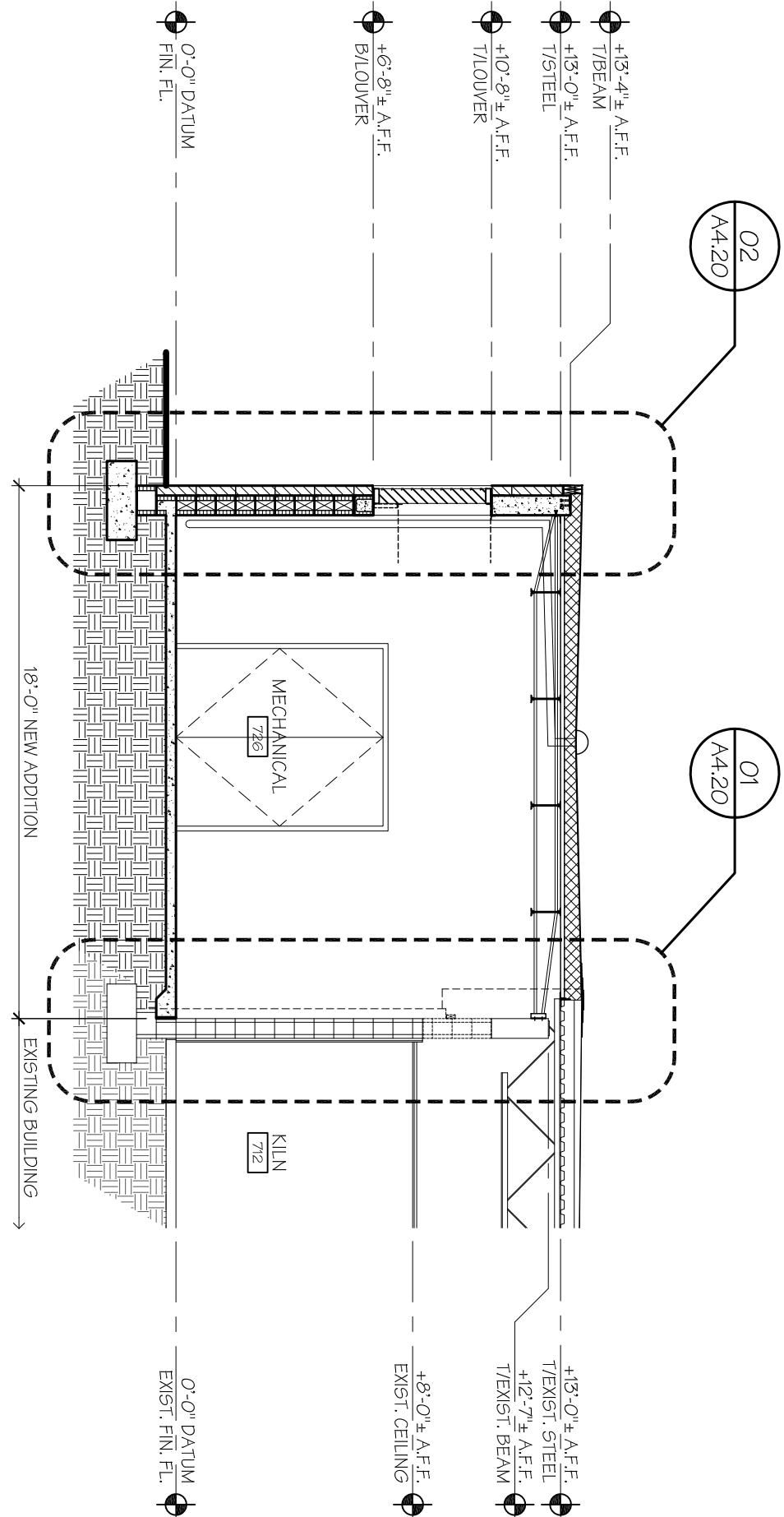
- (FR) 3'-0" X 7'-0" 16 GA. IMPACT RESISTANT STEEL DOORS AND FRAME. NOA No. 15-0422.03.
- SEE DETAILS 02A.420 AND 02A.420.
- IMPACT RESISTANT LOUVER - NOA No. 10-0924.10.
- CEILING TILE, CEILING GRID, CEILING LIGHTS, SPRINKLER HEADS, SMOKE DETECTORS, ETC. SHALL BE REMOVED AND/OR ADJUSTED TO ACCOMMODATE THE DEMOLITION AND REPLACEMENT OF THE HVAC DUCTWORK. REMOVED MATERIAL SHALL BE STORED AND PROTECTED FOR PUT BACK REUSE, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- CONTRACTOR SHALL INDICATE FACE FRAMED UP ALL SURFACES TO RECEIVE PAINT PRIOR TO COMMENCING WORK. CEILING, ETC. THAT ARE NOT TO BE MOVED OR RENOVATED.

### DOOR HARDWARE

Hardware Group No. 01  
Per 6'-0" X 7'-0" X 1.34" X HMD X HMF X NONRDT  
For use on mek/door #01.

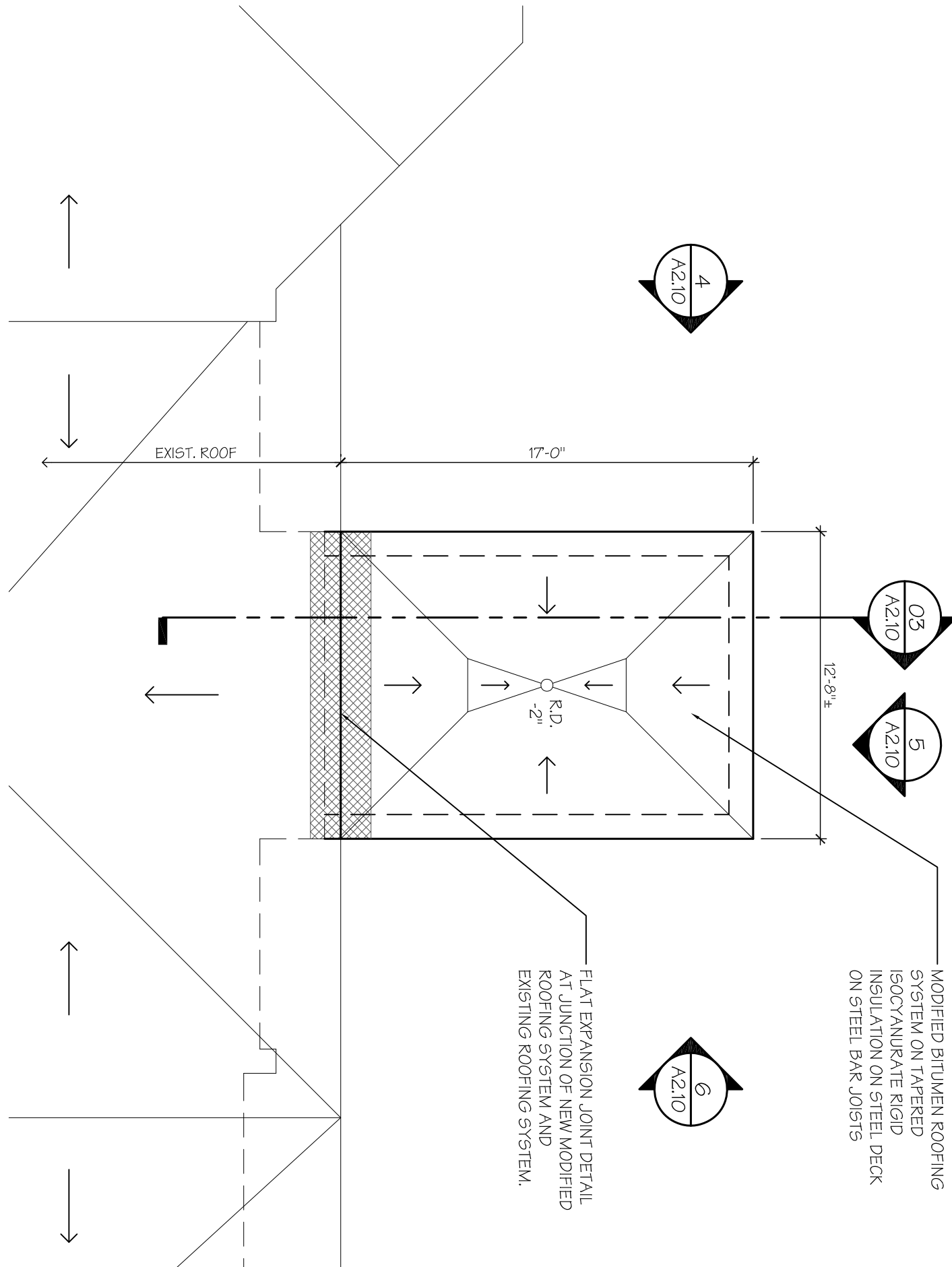
DR. HEDCH	BR. DETAIL	with the following:	Finish	MT.
6	EA	HINGE	604	VE
2	EA	SURFACE BOLT	604	VE
1	EA	MORTISE LOCK	626	CR
1	EA	SPRING HOOK	626	CR
2	EA	SURFACE CLOSER	689	LCN
2	EA	KICK PLATE	630	VE
2	EA	WALL STOPHOLDER	626	VE
1	EA	RAMP GRP	34076	AL
1	EA	STOP	34076	AL
1	EA	THRESHOLD	2055AV	AL
1	EA	ASTRAGAL		STE

Operational Description: Self Closing.



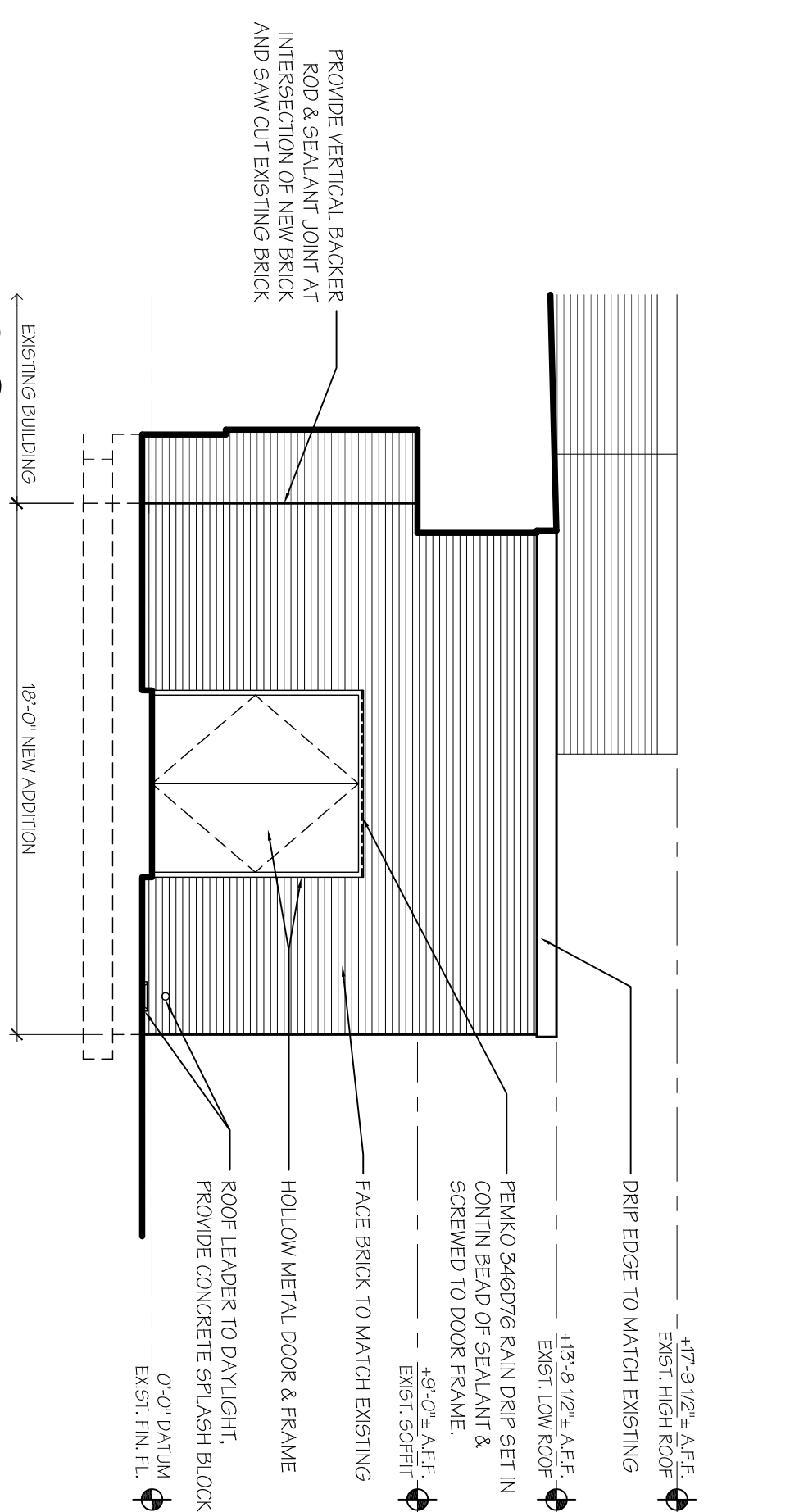
## 03 BUILDING SECTION

SCALE: 3/16" = 1'-0"



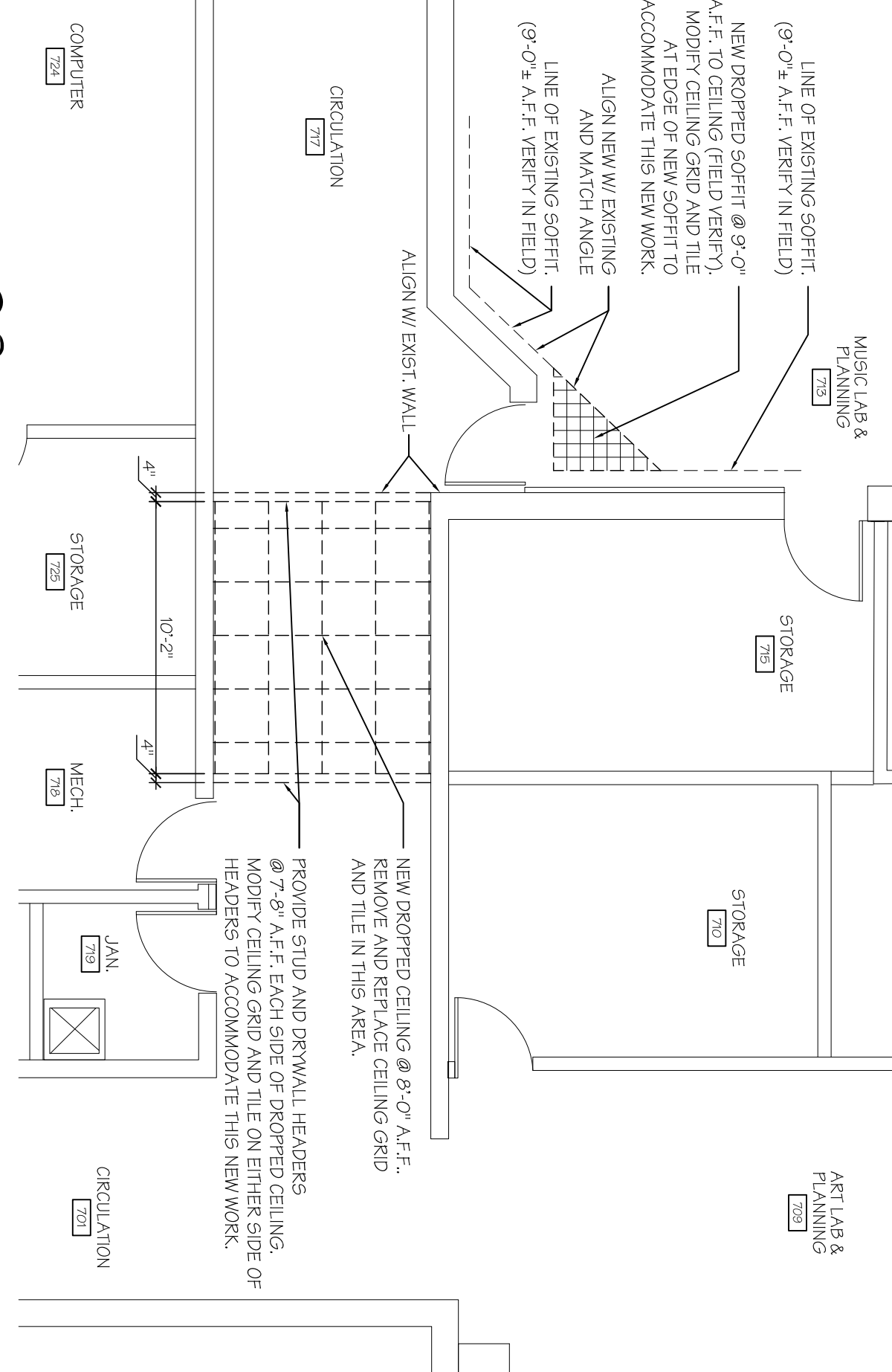
## 02 ROOF PLAN

SCALE: 3/16" = 1'-0"



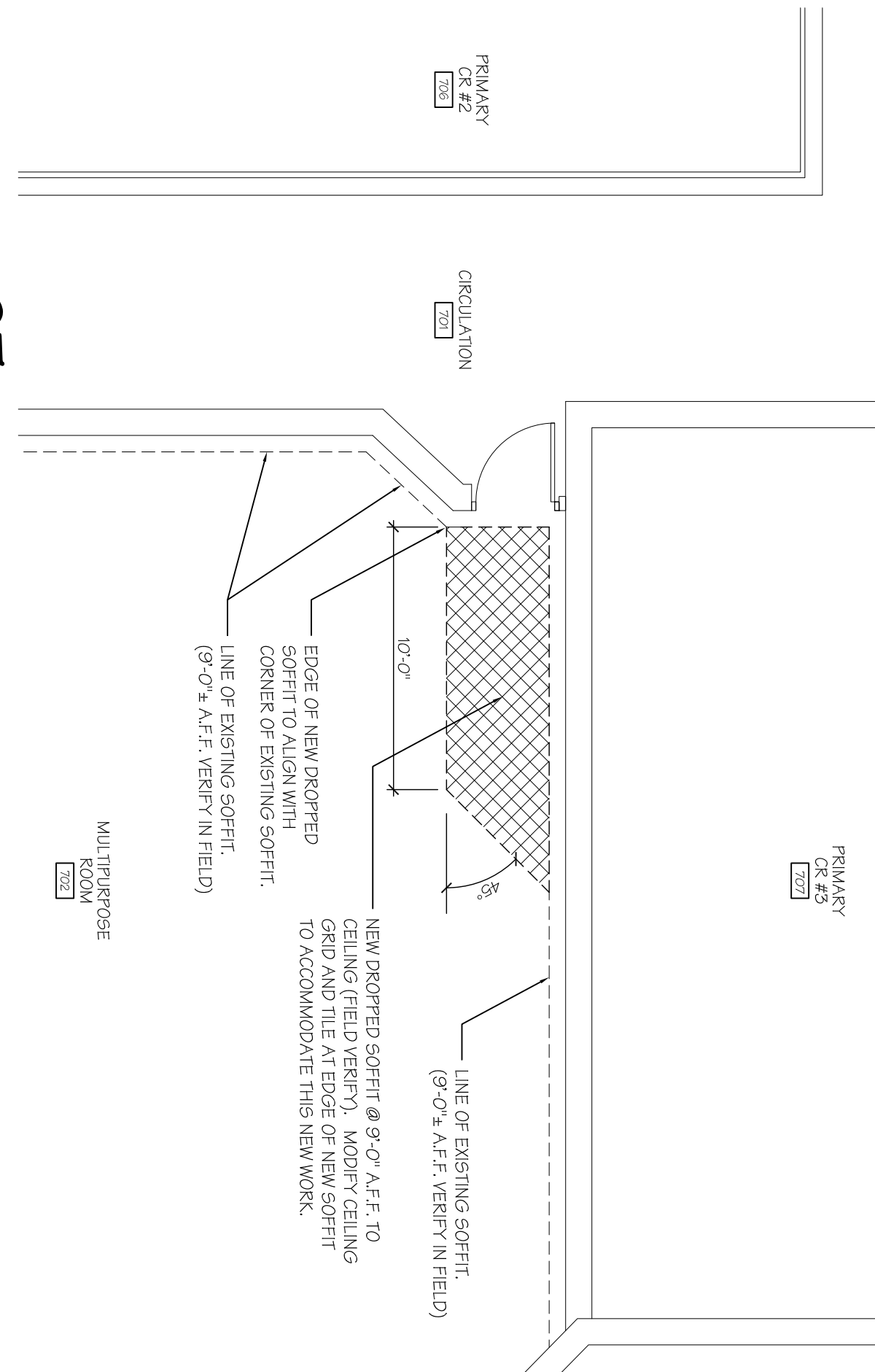
## 06 ELEVATION

SCALE: 3/16" = 1'-0"



## 08 PARTIAL FLOOR PLAN

SCALE: 3/16" = 1'-0"



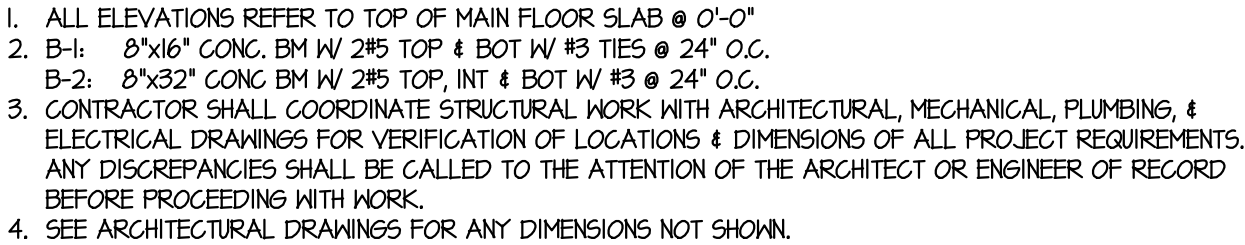
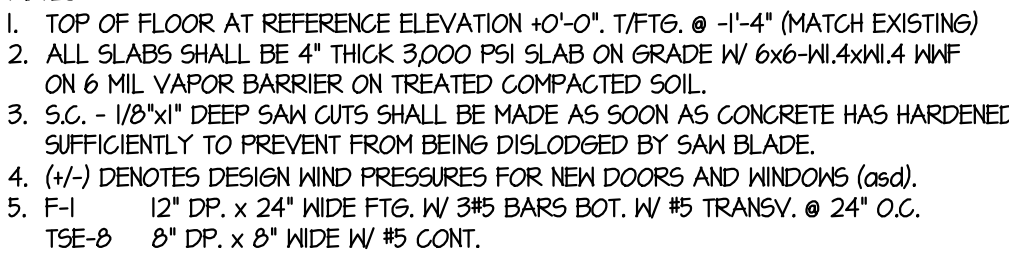
## 07 PARTIAL FLOOR PLAN

SCALE: 3/16" = 1'-0"

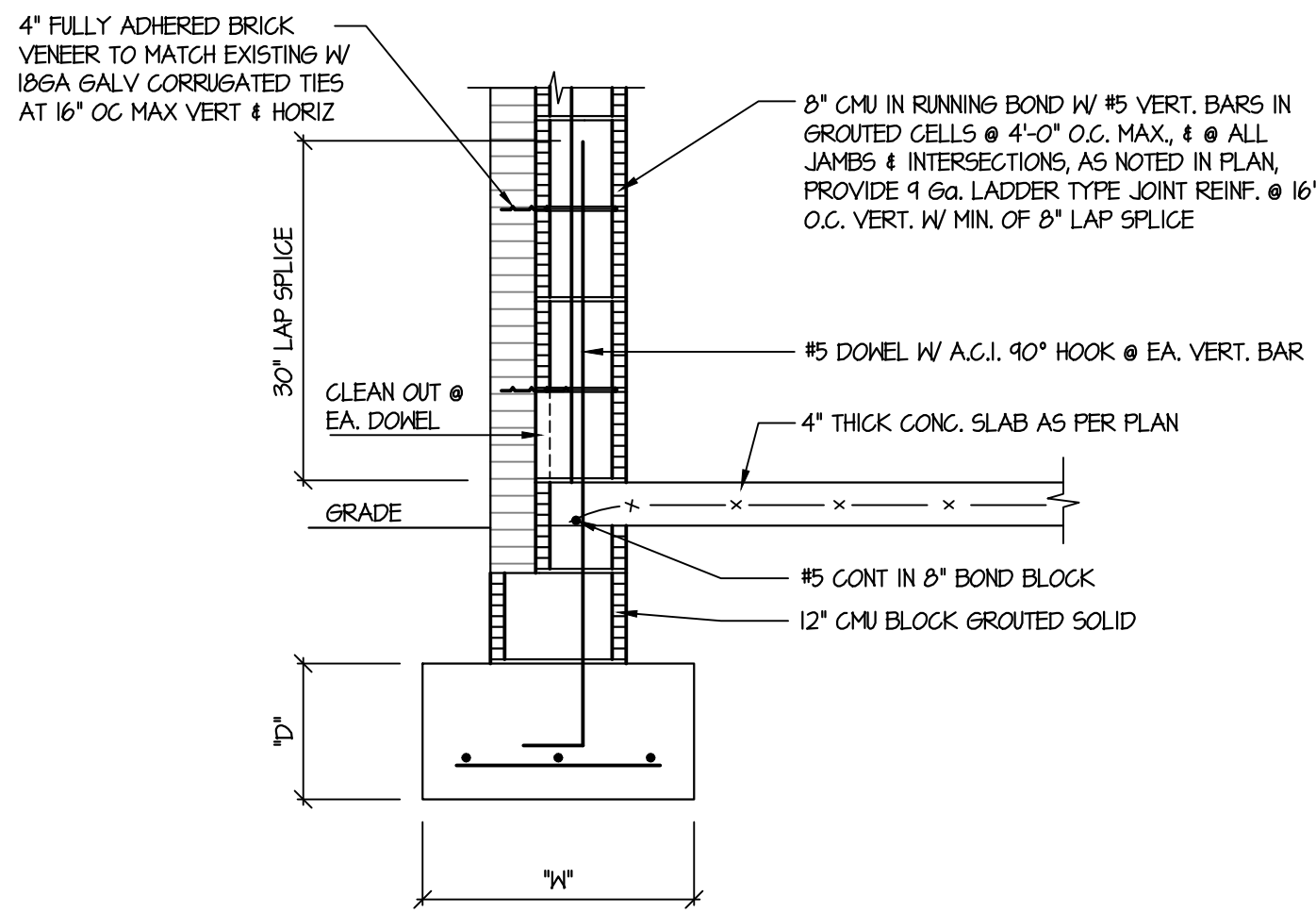




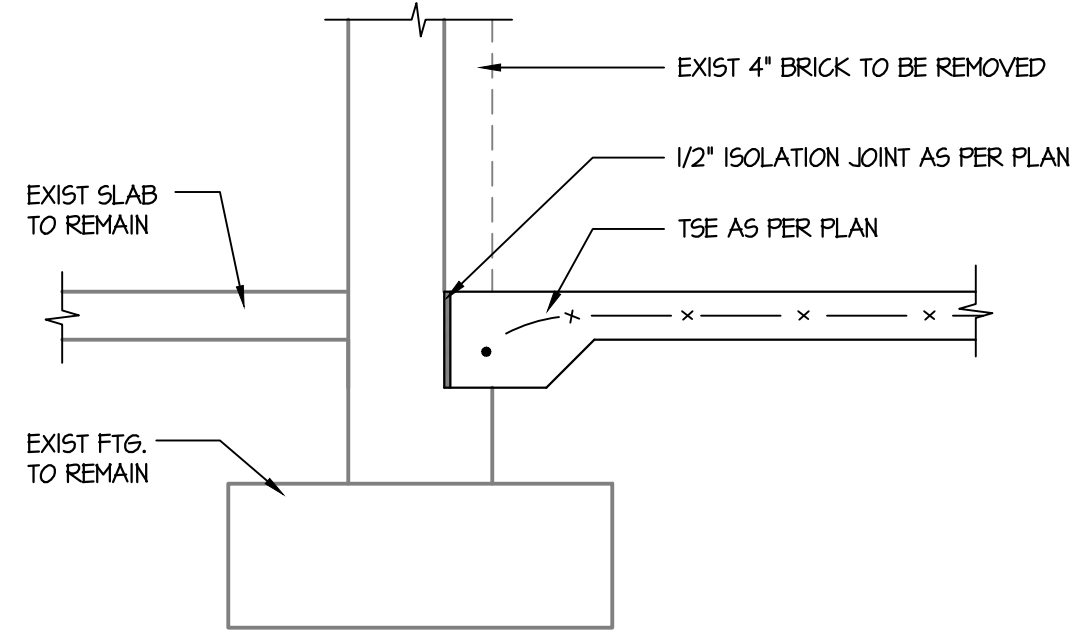




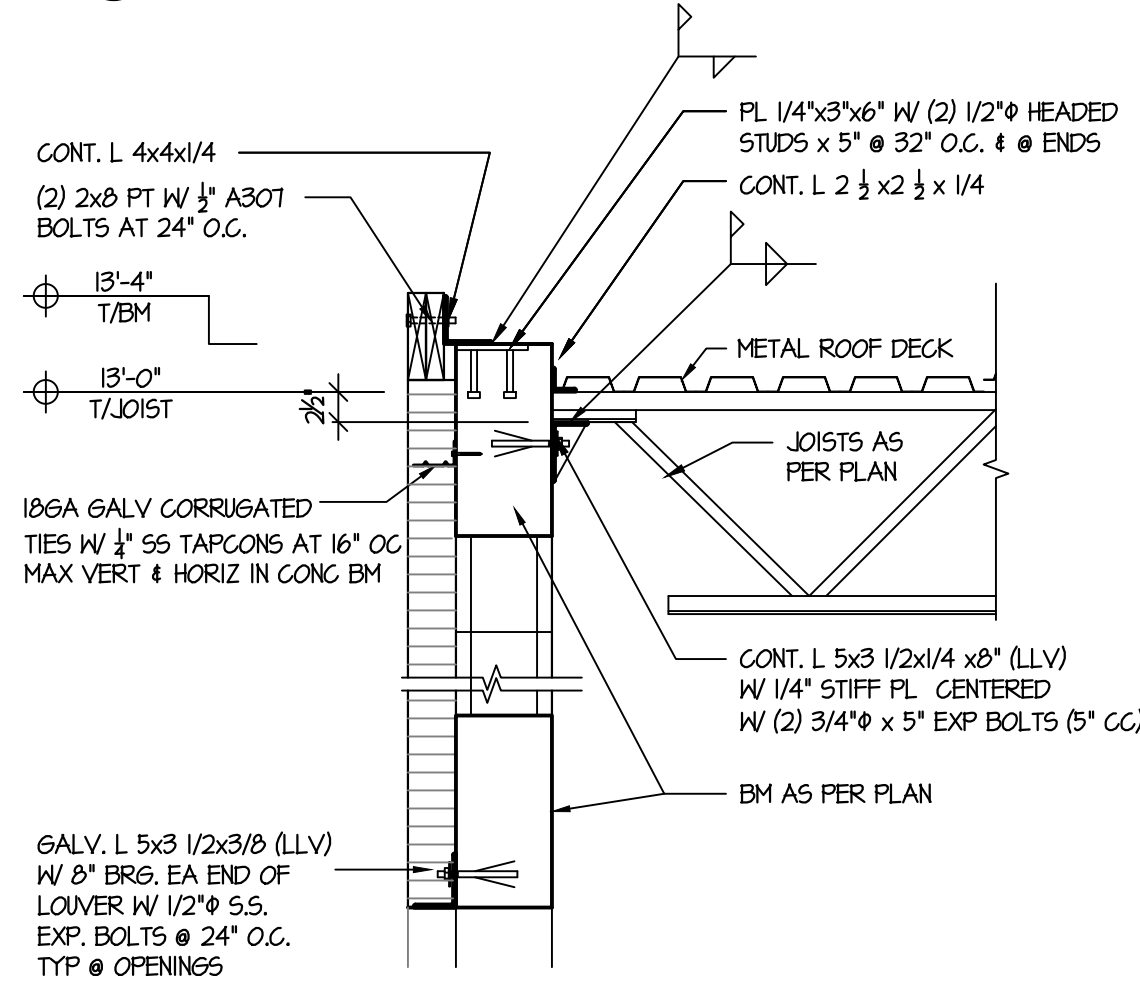




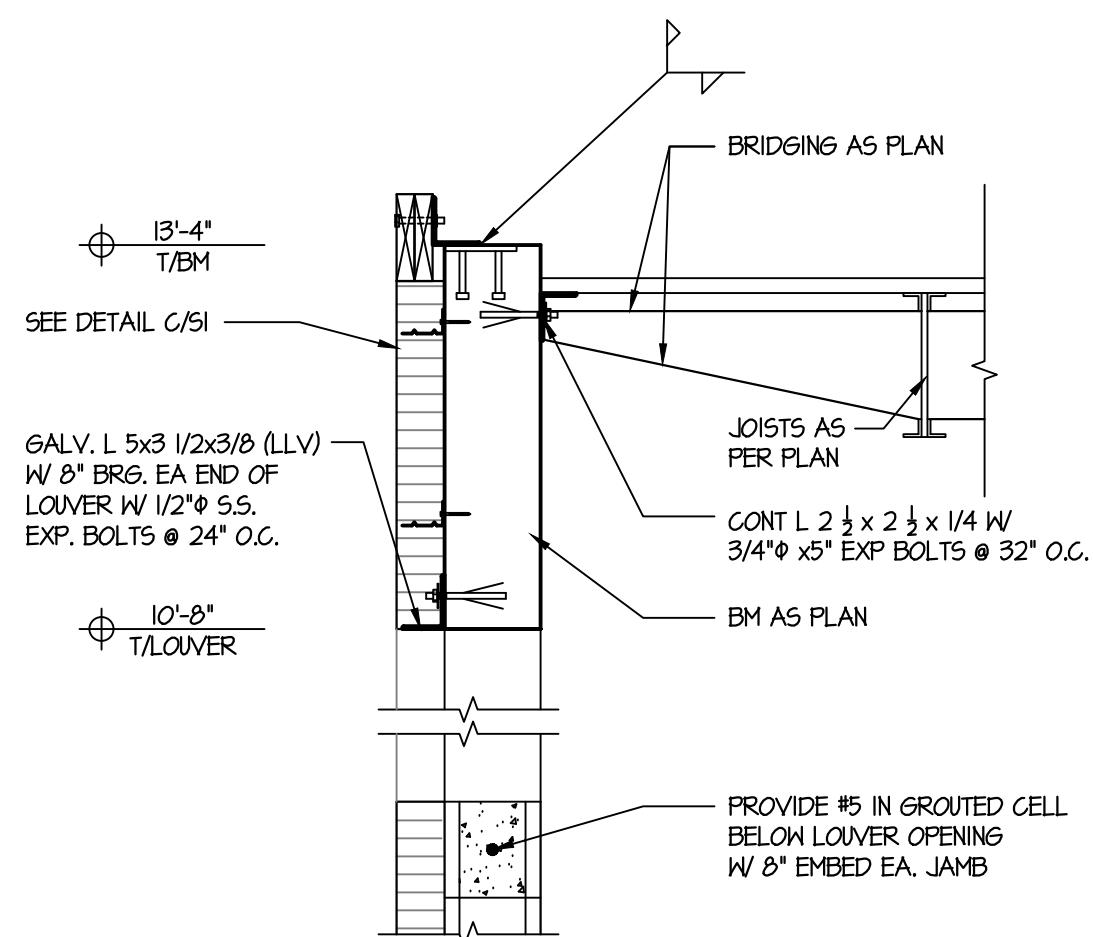
**A**  
**52** SECTION SCALE: 3/4" = 1'-0"



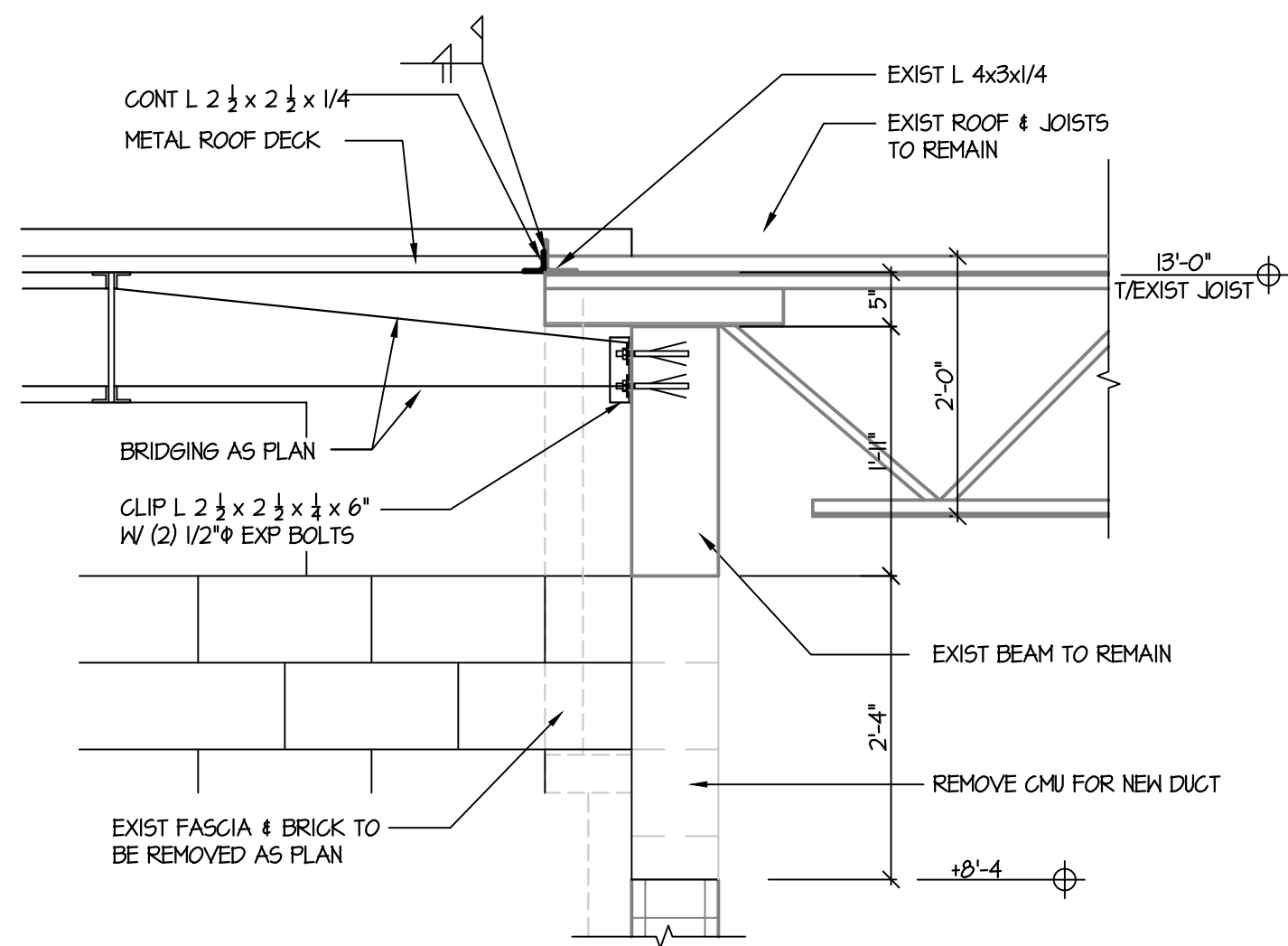
**B**  
**52** SECTION SCALE: 3/4" = 1'-0"



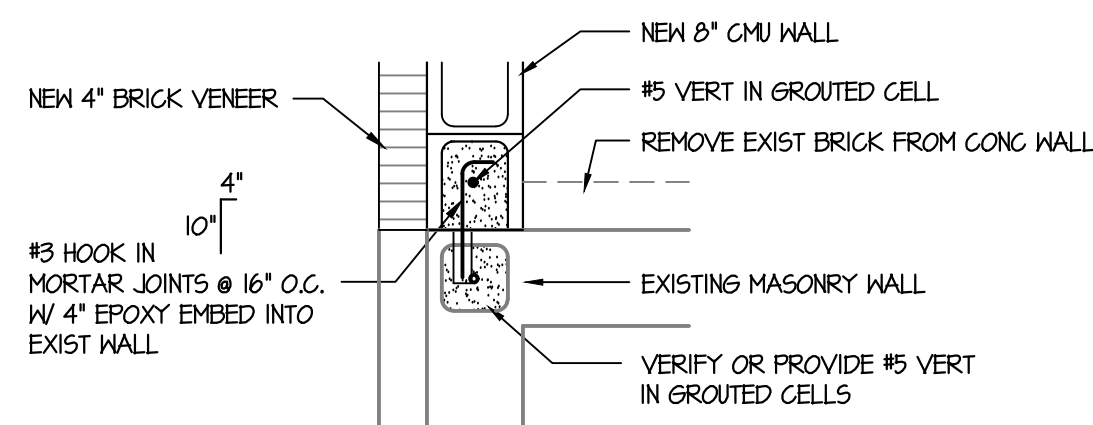
**C**  
**52** SECTION SCALE: 3/4" = 1'-0"



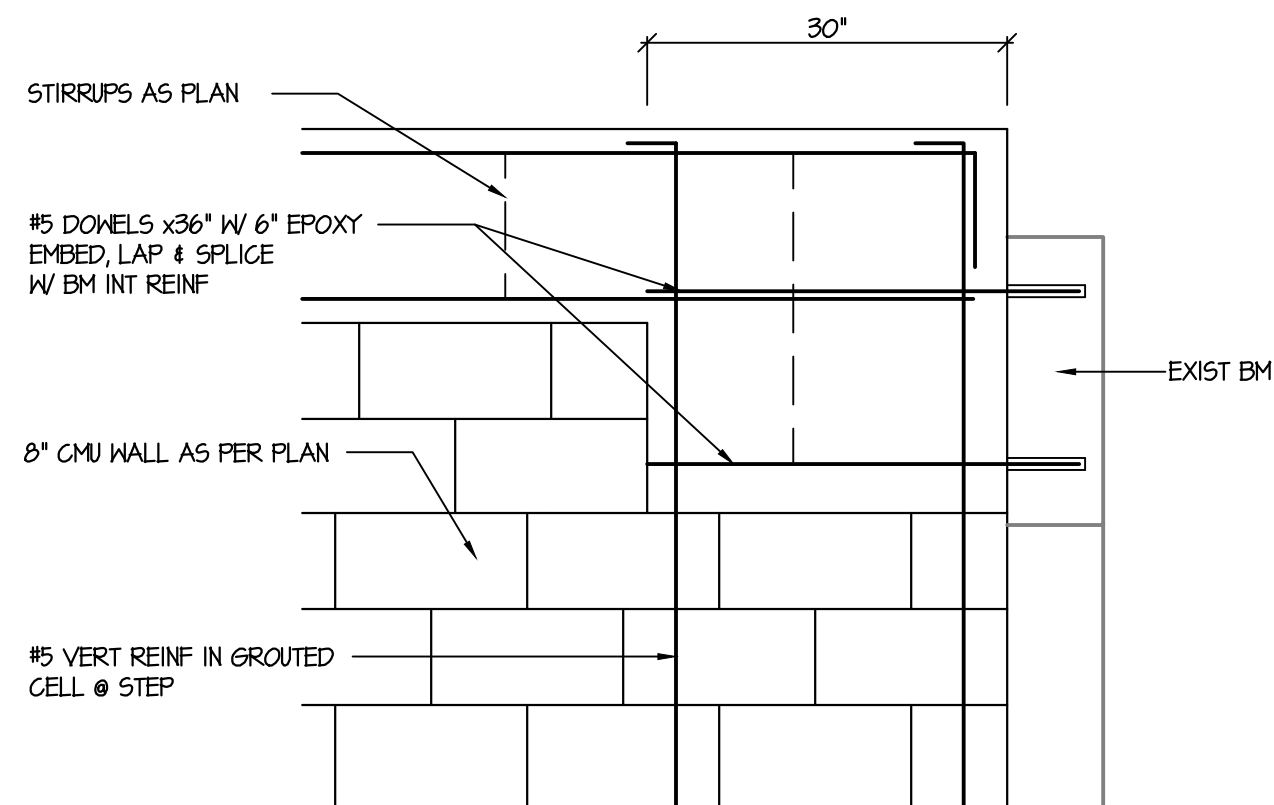
**D**  
**52** SECTION SCALE: 3/4" = 1'-0"



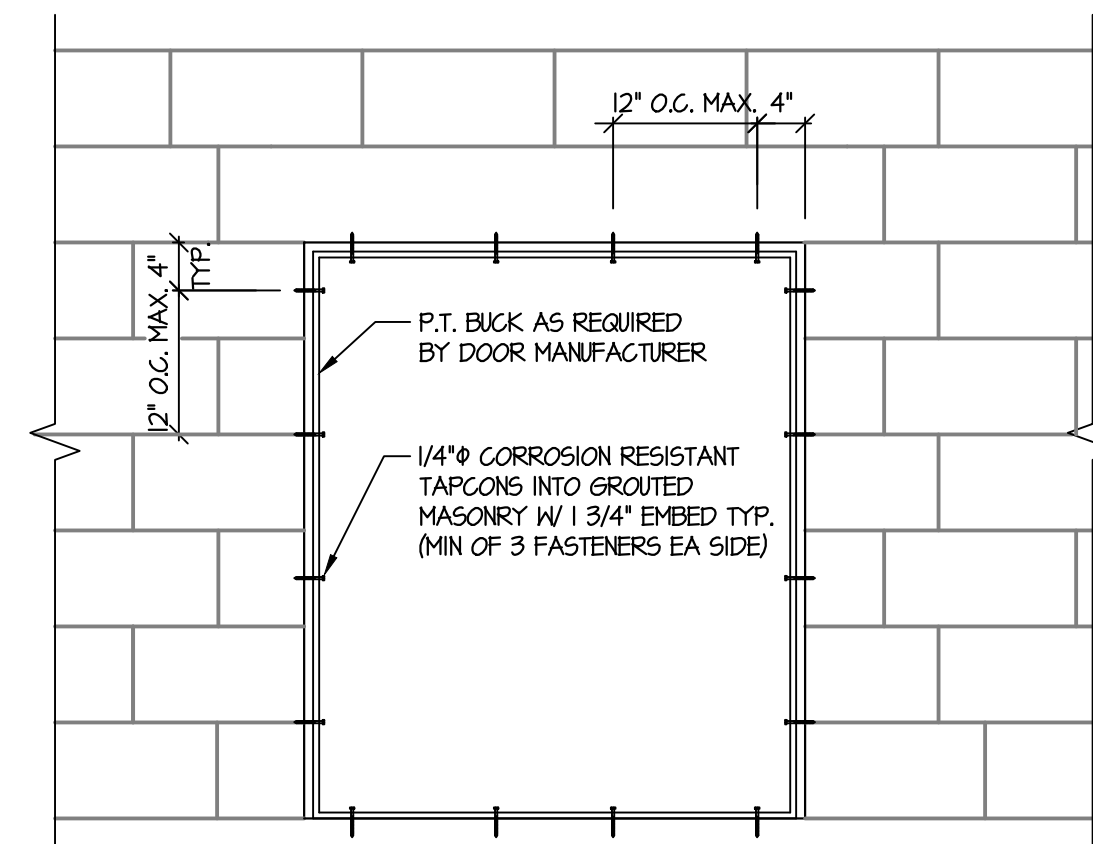
**E**  
**52** SECTION SCALE: 3/4" = 1'-0"



**TYPICAL CMU WALL CONNECTION DETAIL** SCALE: 3/4" = 1'-0"



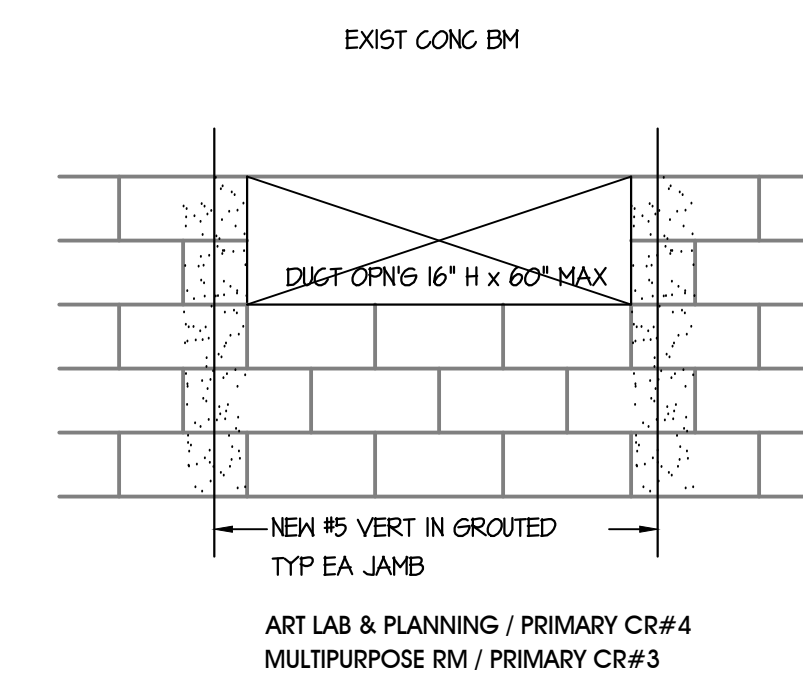
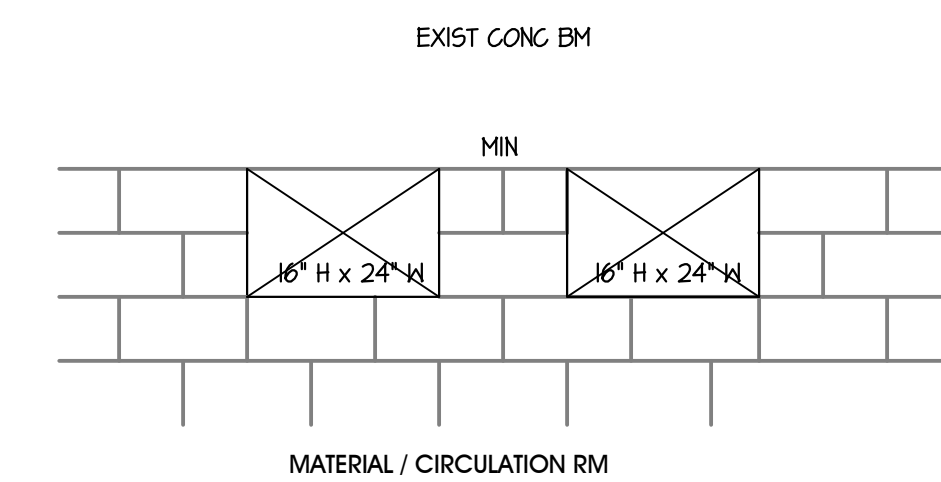
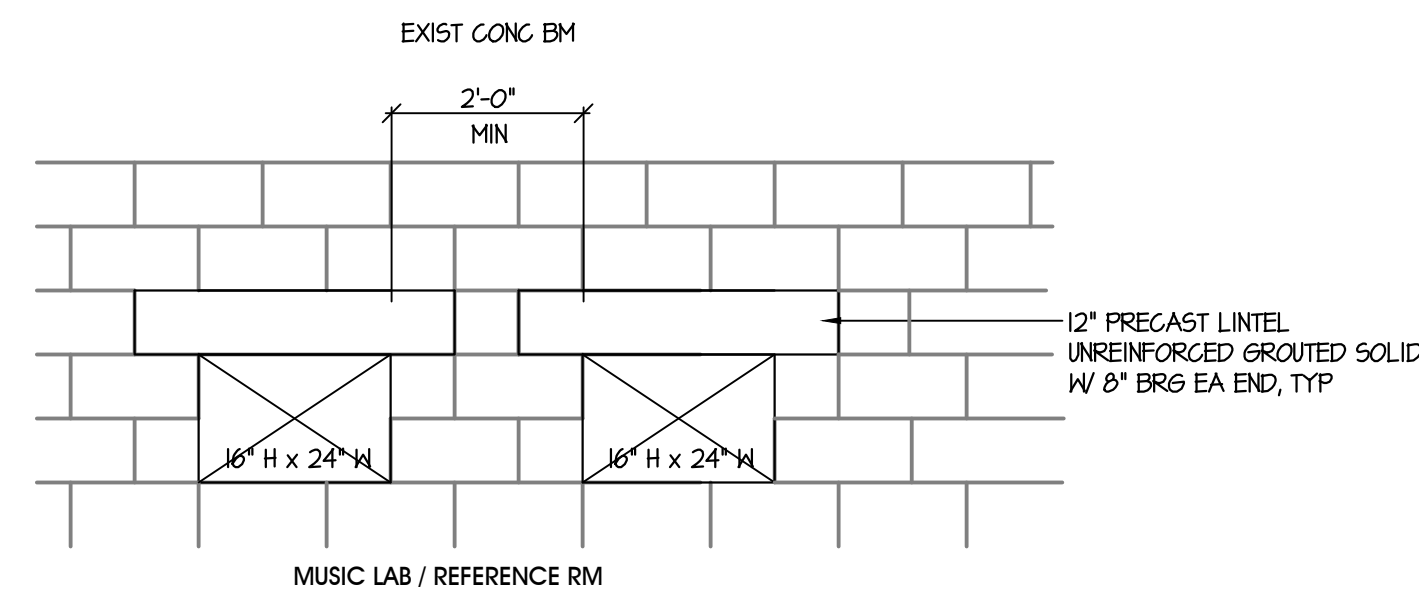
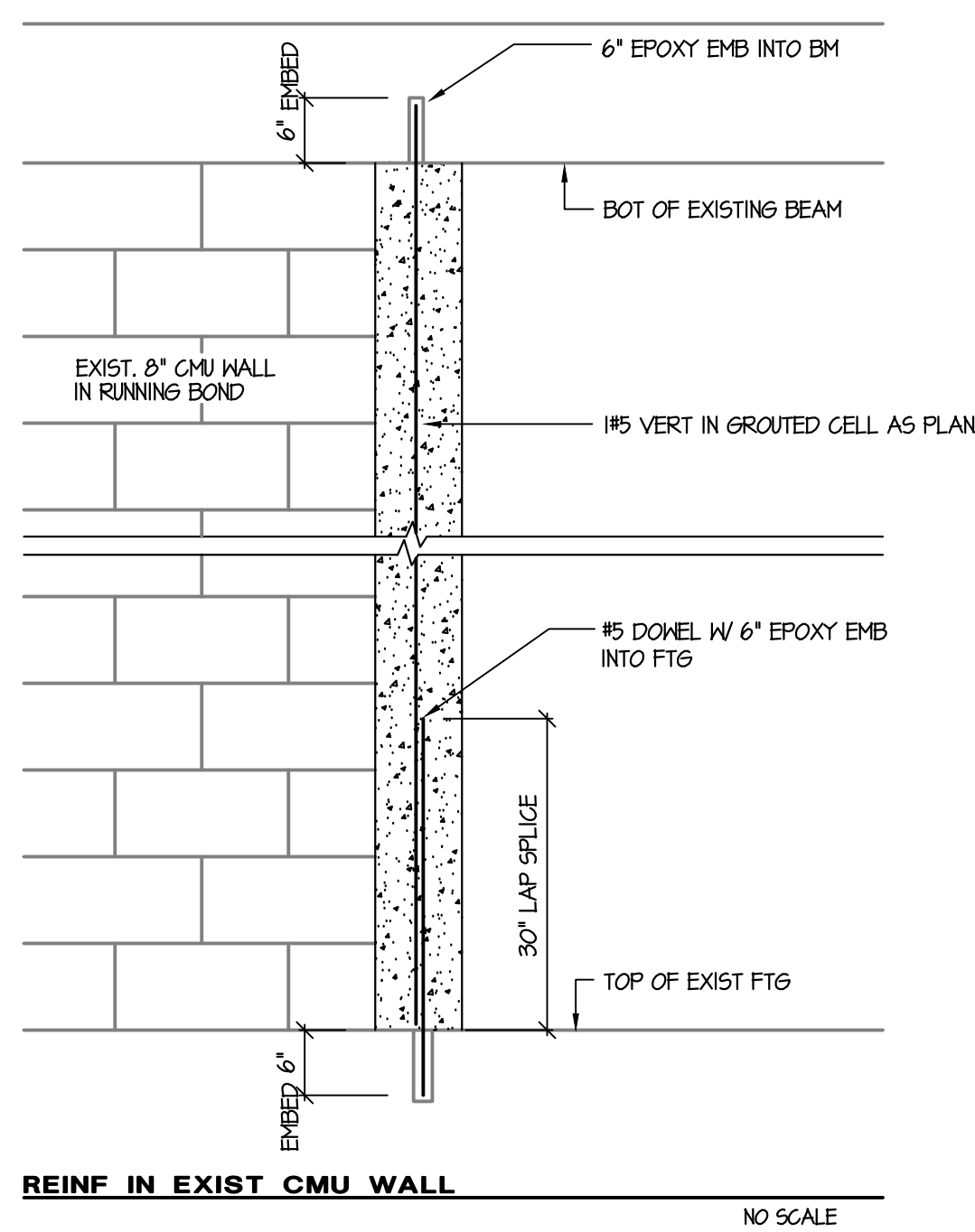
**BEAM STEP DETAIL** NO SCALE



**MASONRY DOOR/ LOUVER ATTACHMENT DETAIL** NO SCALE

NOTES:

- DOOR & LOUVER SHALL BE DESIGNED, MANUFACTURED, INSTALLED & CERTIFIED TO WITHSTAND A MIN. DESIGN WIND PRESSURE AS NOTED IN PLAN & SHALL BE PROTECTED BY SHUTTERS OR BE IMPACT RATED.
- ALL DOOR PERIMETERS SHALL BE WATERTIGHT. PROVIDE AN APPLICABLE WATERPROOF COATING (1) COAT BEFORE INSTALLING BUCKS & (1) COAT AFTER BUCK INSTALLATION.



**DUCT PENETRATION DETAILS THRU EXIST WALLS** NO SCALE



SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY DIFFUSER. (4-WAY)		AIR DEVICE TAG MARK-CFM		TEE (PLAN, UP, DOWN).
	RETURN OR OUTDOOR AIR GRILLE		SIDEWALL TRANSFER GRILLE		ELBOW (PLAN, UP, DOWN).
	EXHAUST GRILLE		SIDEWALL SUPPLY REGISTER		VALVE.
	SUPPLY DUCT UP SECTION (RECTANGULAR)		SIDEWALL RETURN GRILLE		TWO WAY MOTORIZED CONTROL VALVE.
	RETURN DUCT UP SECTION (RECTANGULAR)		SIDEWALL EXHAUST GRILLE		THREE WAY MOTORIZED CONTROL VALVE.
	EXHAUST DUCT UP SECTION (RECTANGULAR)		SIDEWALL FRESH AIR INTAKE OR EXHAUST LOUVER		PRESSURE REDUCING VALVE.
	SUPPLY DUCT DOWN SECTION (RECTANGULAR)		WALL MOUNTED DDC TEMPERATURE/HUMIDITY SENSOR MOUNT 5'-0" ABOVE FINISHED FLOOR.		FLOW CONTROL VALVE.
	RETURN DUCT DOWN SECTION (RECTANGULAR)		PRESSURE SENSOR MOUNT 5'-0" ABOVE FINISHED FLOOR.		BALL VALVE FOR PIPING 2-INCHES AND SMALLER. BUTTERFLY VALVE FOR PIPING 2-1/2 INCHES AND LARGER.
	EXHAUST DUCT DOWN SECTION (RECTANGULAR)		WALL MOUNTED CO SENSOR MOUNT 5'-0" ABOVE FINISHED FLOOR.		CHECK VALVE.
	SUPPLY DUCT UP SECTION (ROUND).		WALL MOUNTED CO2 SENSOR MOUNT 5'-0" ABOVE FINISHED FLOOR.		STRAINER.
	SUPPLY DUCT DOWN SECTION (ROUND).		REFERENCE NOTES		BALANCE VALVE WITH INTEGRAL TAPS FOR CONNECTION OF DIFFERENTIAL PRESSURE METER. VALVE SHALL HAVE NAMEPLATE INDICATING WATER FLOW RATE VERSUS VALVE PRESSURE DROP.
	LINEAR SLOT DIFFUSER		REFERENCE NOTE - MULTI-DISCIPLINE SHEETS		AUTOMATIC FLOW CONTROL VALVE WITH INTEGRAL TEMPERATURE AND PRESSURE TEST PORTS.
	EXISTING LINEAR SLOT DIFFUSER		DEMOLITION NOTES		UNION.
	RECTANGULAR DUCTWORK WITH TAKE-OFF, BALANCING DAMPER AND INSULATED FLEXIBLE ROUND DUCT. SAME SIZE AS DIFFUSER INLET UNLESS NOTED OTHERWISE. FIRST DIMENSION IS THAT OF SIDE SHOWN.		INDICATES POINT OF CONNECTION BETWEEN NEW AND EXISTING.		VENTURI FLOW METER.
	ROUND DUCTWORK.		POINT OF DISCONNECT		PRESSURE AND/OR TEMPERATURE PORT
	CONICAL FITTING WITH DAMPER ON BRANCH CONNECTION TO RECTANGULAR MAIN (PROVIDE DAMPER IN LOW PRESSURE DUCTWORK ONLY).		CWS ——— CONDENSER WATER SUPPLY PIPING.		THERMOMETER.
	EXISTING DUCTWORK TO REMAIN		CWR ——— CONDENSER WATER RETURN PIPING.		PRESSURE GAUGE WITH GAUGE COCK.
	DUCT OFFSETS UP (RISE) IN DIRECTION INDICATED.		BCWS ——— BUILDING CONDENSER WATER SUPPLY PIPING.		FLEXIBLE CONNECTION.
	DUCT OFFSETS DOWN (DROP) IN DIRECTION INDICATED.		BCWR ——— BUILDING CONDENSER WATER RETURN PIPING.		PRESSURE RELIEF VALVE.
	OPPOSED BLADE VOLUME DAMPER (OBD).		CHWS ——— CHILLED WATER SUPPLY PIPING.		MOTORIZED ACTUATOR
	BACKDRAFT DAMPER		CHWR ——— CHILLED WATER RETURN PIPING.		OPENING IN WALL ABOVE CEILING.
	FLEXIBLE DUCT CONNECTION.		HWS ——— HEATING WATER SUPPLY PIPING.		EQUIPMENT TAG
	FIRE DAMPER WITH ACCESS PANEL.		HWR ——— HEATING WATER RETURN PIPING.		1" DOOR UNDER CUT. ARROW INDICATES DIRECTION OF FLOW
	SMOKE DAMPER WITH ACCESS PANEL.		CD ——— CONDENSATE DRAIN PIPING.		ELBOW WITH TURNING VANES
	FIRE/SMOKE DAMPER WITH ACCESS PANEL.		R ——— REFRIGERANT PIPING		IDENTIFICATION TARGET. A = DETAIL NUMBER. B = SHEET NUMBER ON WHICH DETAIL IS LOCATED.
	EXISTING DUCTWORK TO BE REMOVED		FS ——— FLOW SENSOR.		RADIATION DAMPER INSTALLED IN AIR DEVICE
	DUCT MOUNTED SMOKE DETECTOR PROVIDED AND WIRED BY ELECTRICAL CONTRACTOR AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. REFER TO SPECIFICATIONS FOR CONTROL REQUIREMENTS.		SP ——— STATIC PRESSURE TRANSMITTER ASSEMBLY.		RADIATION DAMPER INSTALLED IN DUCT.
			RECTANGULAR BRANCH DUCT CONNECTION.		

ABV	ABOVE	IN. H <sub>2</sub> O	INCHES WATER GAUGE
ADJ	ADJUSTABLE	KW	KILOWATTS
AF	AIRFOIL	LAT	LEAVING AIR TEMPERATURE
AFF	ABOVE FINISHED FLOOR	LD	LINEAR DIFFUSER
AC	AIR CONDITIONER	LWT	LEAVING WATER TEMPERATURE
ACU	AIR CONDITIONING UNIT	MAX	MAXIMUM
AHU	AIR HANDLING UNIT	MBH	1000 X BTUH
AP	ACCESS PANEL	MIN	MINIMUM
BAS	BUILDING AUTOMATION SYSTEM	MVD	MANUAL VOLUME DAMPER
BI	BACKWARD INCLINE	MZ	MULTI-ZONE
BLDG	BUILDING	N.T.S.	NOT TO SCALE
BHP	BRAKE HORSEPOWER	OA	OUTSIDE AIR
BTUH	BRITISH THERMAL UNIT PER UNIT	OBMVD	OPPOSED BLADE MANUAL VOLUME DAMPER
CD	CONDENSATE DRAIN	OPD	OPEN DRIP PROOF
CFM	CUBIC FEET PER MINUTE	PROP	PROPELLER
CLG	CEILING	PCR	PRE-CONDITIONED AIR SYSTEM RETURN WATER
CWR	CONDENSER WATER RETURN	PCS	PERCENT
CWS	CONDENSER WATER SUPPLY	PD	PRESSURE DROP
CHWR	CHILLED WATER RETURN	PERF. PL.	PERFORATED PLATE
CHWS	CHILLED WATER SUPPLY	PLBG	PLUMBING
CONC	CONCRETE	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
COND	CONDENSATE	PSIG	POUNDS PER SQUARE INCH GAUGE
CONT	CONTINUOUS	RA	RETURN AIR
CO	CARBON MONOXIDE	RD	RADIANT DAMPER
COP	COEFFICIENT OF PERFORMANCE	REG	REGISTER
CU	CONDENSING UNIT	REQ'D	REQUIRED
DB	DRYBULB	RG	RETURN AIR GRILLE
DWDI	DOUBLE WIDTH, DOUBLE INLET	RH	RELATIVE HUMIDITY
DWGS	DRAWINGS	RPM	REVOLUTIONS PER MINUTE
DX	DIRECT EXPANSION	RR	RETURN AIR REGISTER
EF	EXHAUST FAN	RTU	ROOFTOP UNIT
EXH	EXHAUST	SA	SUPPLY AIR
EA	EACH	SF	SUPPLY FAN
EAT	ENTERING AIR TEMPERATURE	SDT	SMOKE DETECTOR
EER	ENERGY EFFICIENCY RATIO	SD	SUPPLY DIFFUSER
ELECT	ELECTRICAL	SDMP	SMOKE DAMPER
ENT	ENTERING	SQ.FT.	SQUARE FOOT
EQ	EQUAL	SR	SUPPLY REGISTER
ER	EXHAUST REGISTER	STR	STARTER
EWT	ENTERING EATER TEMPERATURE	SWSI	SINGLE WIDTH, SINGLE INLET
FC	FORWARD CURVED	SZ	SINGLE ZONE
FCU	FAN COIL UNIT	TEFC	TOTALLY ENCLOSED FAN COOLED
FD	FIRE DAMPER	TEMP	TEMPERATURE
FL	FLOOR	TG	TRANSFER GRILLE
FLEX	FLEXIBLE CONNECTOR OR DUCT	T/O	TRANSFER OPENING ABOVE CEILING
FPM	FEET PER MINUTE	T'STAT	THERMOSTAT
F/S	COMBINATION FIRE AND SMOKE DAMPER	TP	TYPICAL
FT. HD.	FEET OF HEAD	VFDC	VARIABLE FREQUENCY DRIVE CONTROLLER
°F	DEGREES FAHRENHEIT	VAV	VARIABLE AIR VOLUME
GAL	GALLON	VS	VARIABLE SPEED
GALV	GALVANIZED	W	WATTS
GPM	GALLONS PER MINUTE	W/	WITH
HP	HORSEPOWER	W/O	WITHOUT
HTWR	HIGH TEMPERATURE HOT WATER RETURN	WB	WETBULB
HTWS	HIGH TEMPERATURE HOT WATER SUPPLY	ZD	ZONE DAMPER
HW	HOT WATER		
HWR	HOT WATER RETURN		
HWS	HOT WATER SUPPLY		
HVAC	HEATING VENTILATING AND AIR CONDITIONING		
HV	HEATING AND VENTILATING		

MARK	SERVICE	AIR DATA		ESP (IN WC)	MAXIMUM N.C.	WEIGHT LBS.	INLET SIZE DIA. INCHES	HEATING			V/8/HZ	MANUFACTURER	MODEL NUMBER	NOTES
		DESIGN CFM	MINIMUM CFM					HEATING CFM	ΔT°	KW				
NAV 1	CLASSROOM	1,000	250	0.75	30	—	10	600	20	4.0	208/1/60	PRICE	SDV	1,2,3,4
NAV 2	CLASSROOM	1,000	250	0.75	30	—	10	600	20	4.0	208/1/60	PRICE	SDV	1,2,3,4
NAV 3	CLASSROOM	3,500	500	0.75	30	—	16	2,100	20	6.5	208/3/60	PRICE	SDV	1,2,3,4
NAV 4	CLASSROOM	1,000	250	0.75	30	—	10	600	20	4.0	208/1/60	PRICE	SDV	1,2,3,4
NAV 5	CLASSROOM	1,000	250	0.75	30	—	10	600	20	4.0	208/1/60	PRICE	SDV	1,2,3,4
NAV 6	CLASSROOM	1,400	500	0.75	30	—	12	840	20	5.5	208/3/60	PRICE	SDV	1,2,3,4
NAV 7	CLASSROOM	2,000	500	0.75	30	—	14	1,200	20	6.5	208/3/60	PRICE	SDV	1,2,3,4
NAV 8	CLASSROOM	1,200	500	0.75	30	—	10	720	20	4.0	208/1/60	PRICE	SDV	1,2,3,4
NAV 9	CORRIDOR	1,200	200	0.75	30	—	10	720	20	4.0	208/1/60	PRICE	SDV	1,2,3,4
ACCESSORIES:														
1. PROVIDE ELECTRONIC ROOM THERMOSTAT WITH DIGITAL DISPLAY, ADJUSTABLE SETPOINT AND NIGHT SET-BACK OVERRIDE AND CANCEL BUTTONS.														
2. PROVIDE FUSED CONTROL POWER TRANSFORMER.														
3. PROVIDE PRESSURE INDEPENDENT TYPE.														
4. PROVIDE ALL NECESSARY EQUIPMENT TO ALLOW COMMUNICATION WITH BUILDING MANAGEMENT SYSTEM (BMS)														

MARK	AREA	SERVED	TYPE	CFM	DRIVE TYPE	E.S.P.	WATTS/HP	R.P.M.	VOLTS/PH	[SONES]	MANUFACTURER	MODEL NO.	NOTES
EF-X	KILN ROOM	CEILING	150	DIRECT	0.25	81 WATTS	819	120/1#	—	COOK		5-10	—
EF-1	RELIEF FAN	ROOF	2600	DIRECT	0.4	524 WATTS	1650	120/1#	19.7	COOK		ACRUD-EC	—

NOTES:

1. PROVIDE COMPLETE WITH FUSED DISCONNECT SWITCH, ROOF CURB, CURB SEAL, SPEED CONTROLLER AND ECM. INTERLOCK WITH PRESSURE SENSORS.

TAG NO.	AREA SERVED	UNIT COMPONENTS	SUPPLY FAN DATA						COOLING COIL DATA							ELECTRICAL DATA			BASIS OF DESIGN MANUFACTURER/MODEL#	NOTES		
			SUPPLY AIR CFM	OUTSIDE AIR CFM		E.S.P.	MOTOR		TOTAL MBH	SENSIBLE MBH	AIR TEMP. °F				E.W.T./L.W.T.	G.P.M.	Δ P (FT. H <sub>2</sub> O)	VOLT/PHASE			MCA	WCP
				MIN.	MAX.		HP	R.P.M.			E.D.B.	E.W.B.	L.D.B.	L.W.B.								
AHU-1	BLDG. 700	MB-RF-CC-UV-MA-FS	12,500	1800	3400	2.0	15	1800	651.66	399.03	80.90	68.80	52.00	51.90	44/56	108.23	10	208/3 & 115/1	54.25/1.93	97.65/3.46	TRANE PERFORMANCE CLIMATE CHANGER-25	1-6
NOTES: 1. PROVIDE COMPLETE WITH TRANE TRAQ DAMPER WITH MODULATE WITH CO2 SENSOR. 2. PROVIDE VARIABLE FREQUENCY DRIVE. 3. PROVIDE 6" BASE RAILS. 4. PROVIDE UNIT WITH UV LIGHT. 5. PROVIDE BMS CONTROLLER AND INTERFACE. 6. PROVIDE 4" MERV 14 FILTERS.																						
UNIT COMPONENT LEGEND: MA MEDIUM ACCESS SECTION MB MIXING BOX SECTION WITH TRAQ DAMPER CC COOLING COIL SECTION FS FAN SECTION UV UV/IRA-UV/OLT LIGHT																						

MARK	DESCRIPTION	FACE SIZE	NECK	MATERIAL	BASIS OF DESIGN MANUFACTURER/MODEL #	DAMPER	NOTES
X	EXISTING DIFFUSER, REGISTER, OR GRILLE	SEE PLANS	SEE PLANS	—	—	—	1
A	SUPPLY DIFFUSER	—	—		MATCH EXISTING	Y	2,3,4
B	RETURN GRILLE	SEE PLANS	SEE PLANS	ALUMINUM	METAL AIRE RH	Y	5,6
C	SIDEWALL SINGLE DEFLECTION SUPPLY GRILLE	SEE PLANS	—	ALUMINUM	METAL AIRE H4002	Y	1

NOTES:

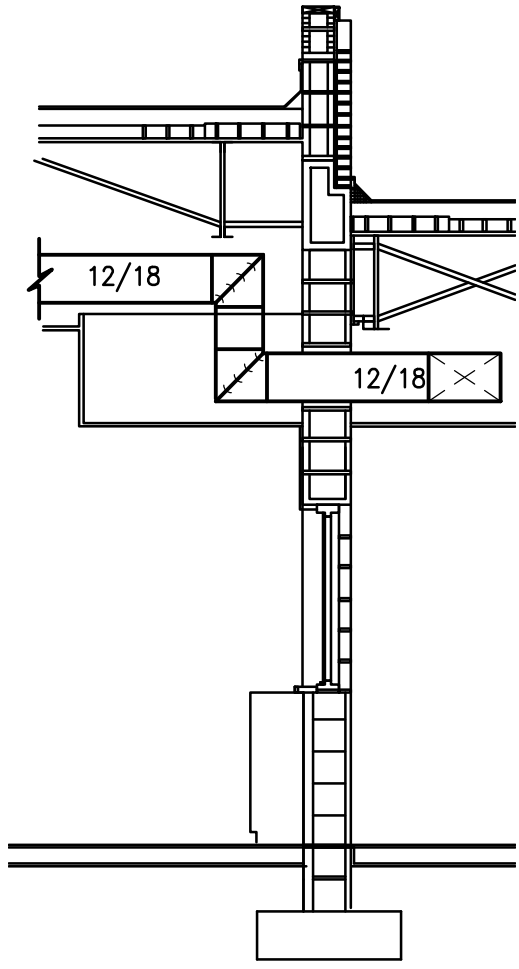
- AIR—BALANCE EXISTING AIR DISTRIBUTION DEVICE TO ACHIEVE AIRFLOW CFM WHERE INDICATED ON FLOOR PLANS.
- COORDINATE COLOR AND SURFACE FINISHES WITH ARCHITECTURAL DRAWINGS.
- PROVIDE RAPID MOUNT T—BAR FRAME FOR PLASTER AND SHEET ROCK CEILINGS.
- SUPPLY COMPLETE WITH FACTORY INSTALLED 1/2" THICK FOIL BACKED INSULATION.
- COORDINATE COLOR AND SURFACE FINISHES WITH ARCHITECTURAL DRAWINGS.
- PROVIDE RAPID MOUNT T—BAR FRAME FOR PLASTER AND SHEET ROCK CEILINGS/WALLS.





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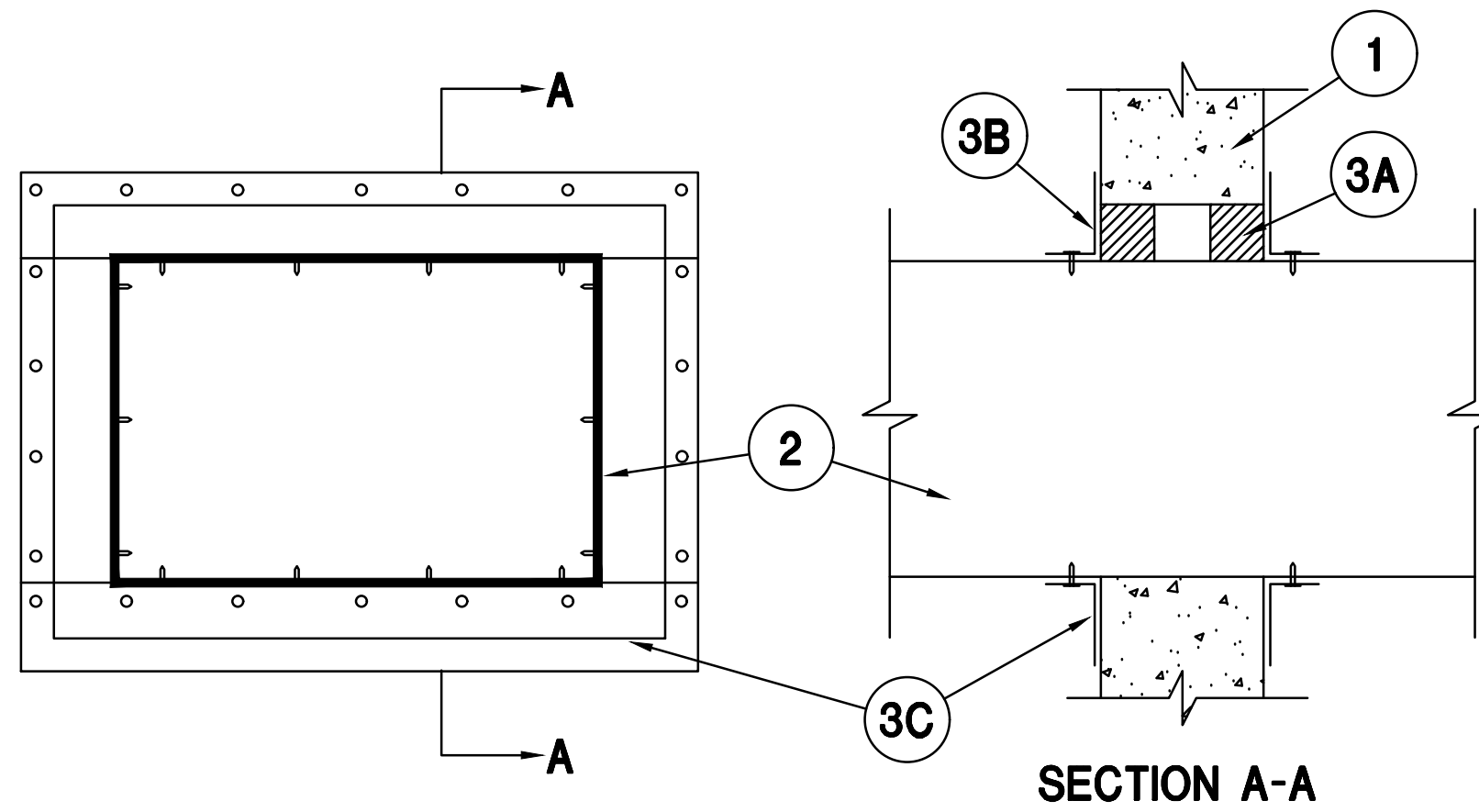




## SECTION - MECHANICAL

scale: N.T.S.

Through-penetration Firestop Systems  
System No. W-J-7006  
September 24, 2004  
F Rating — 2 Hr  
T Rating — 0 Hr



1. Wall Assembly — Min 6 in. (152 mm) thick reinforced lightweight or normal weight (100–150 pcf or 1600–2400 kg/m<sup>3</sup>) concrete. Wall may also be constructed of any UL Classified Concrete Blocks\*. Max area of opening is 322 sq in. (0.21 m<sup>2</sup>) with max dimensions of 23 in. (584 mm).

See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Steel Duct — Max 12 by 20 in. (305 by 508 mm) No. 26 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. The annular space between the steel duct and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Steel duct to be rigidly supported on both sides of the wall assembly.

3. Firestop System — The firestop system shall consist of the following:

A. Packing Material — Min 2 in. (51 mm) thickness of min 4 pcf (64 kg/m<sup>3</sup>) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.

B. Fill, Void or Cavity Material\* — Spray — Min 1/8 in. (3.2 mm) wet thickness (min 1/16 in. or 1.6 mm dry thickness) of fill material spray applied within the annulus, flush with both surfaces of wall. Additional 1/8 in. (3.2 mm) wet thickness (min 1/16 in. or 1.6 mm dry thickness) of fill material shall overlap a min of 2 in. (51 mm) onto the steel duct and a min of 1 in. (25 mm) onto the surface of the concrete on both sides of the wall.

SPECIFIED TECHNOLOGIES INC — SpecSeal AS200 Elastomeric Spray

C. Steel Retaining Angles — Min No. 16 gauge galv steel angles sized to lap steel duct a min of 2 in. (51 mm) and to lap wall surfaces a min of 1 in. (25 mm). Angles attached to steel duct on both sides of wall with min No. 8 by 1/2 in. (13 mm) long steel sheet metal screws located a max of 1 in. (25 mm) from each end of the steel duct and spaced a max of 6 in. (152 mm) OC.

\*Bearing the UL Classification Mark

## THRU PENETRAION DETAIL

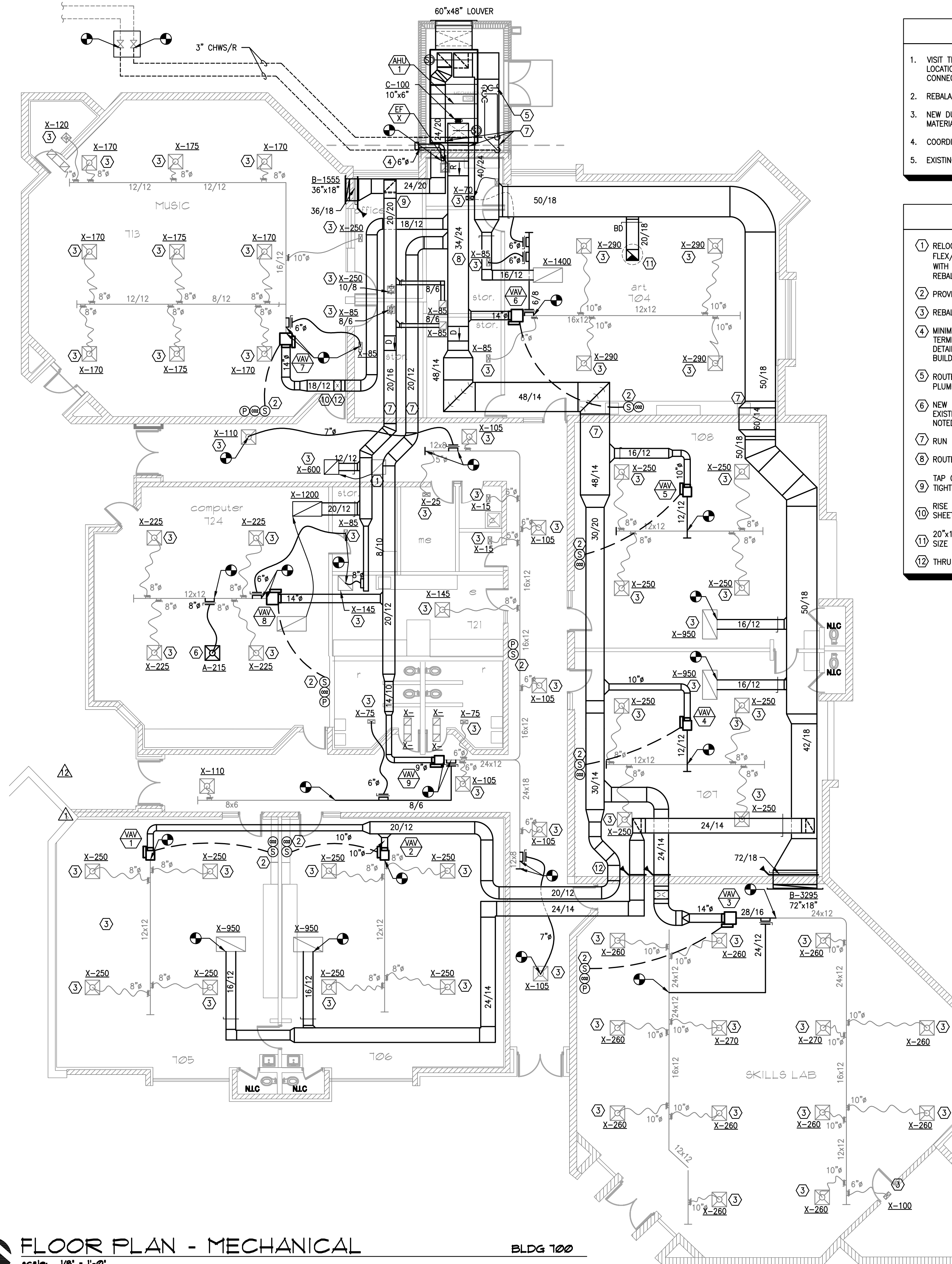
scale: N.T.S.



## FLOOR PLAN - MECHANICAL

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

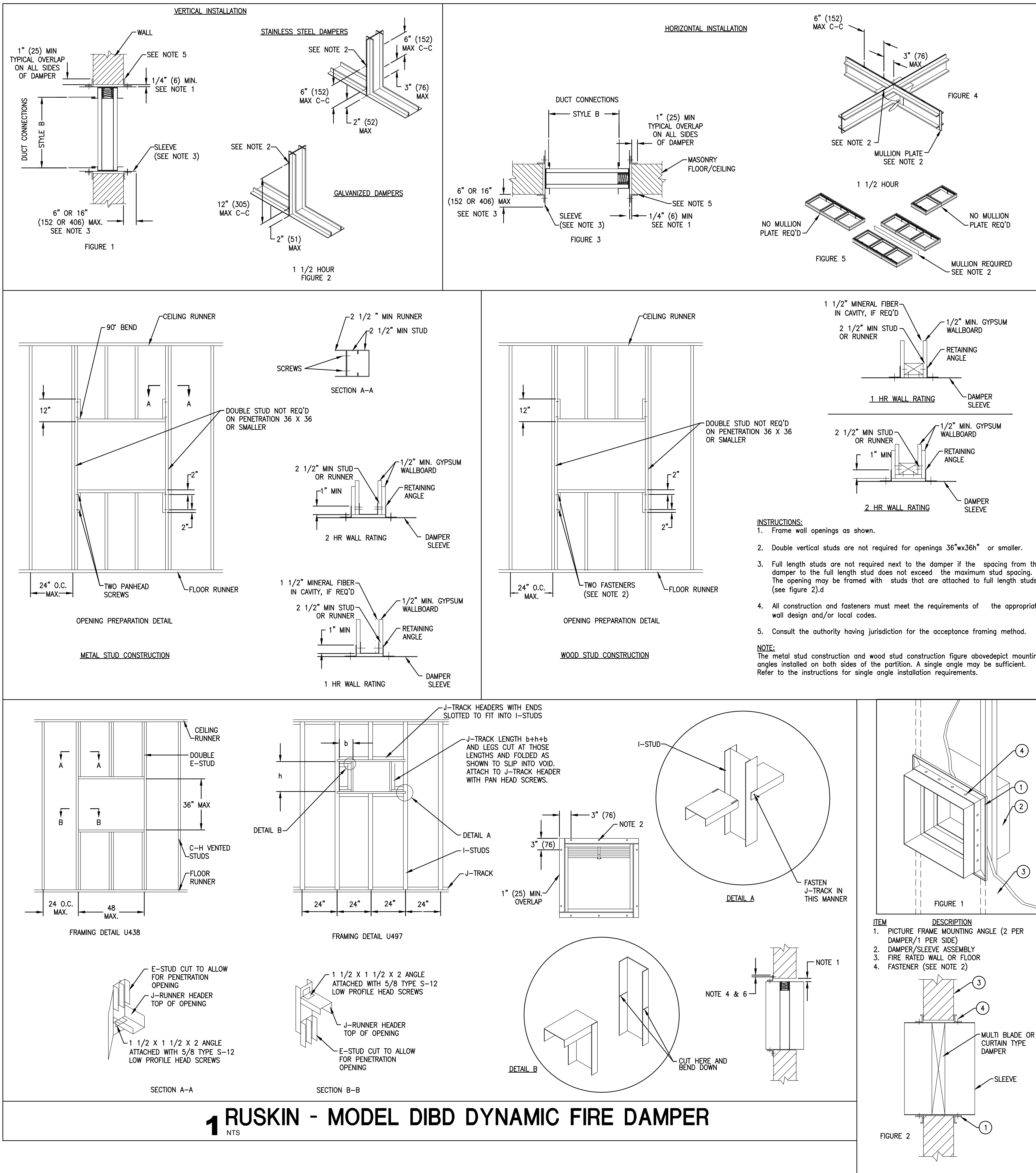
BLDG 700











Project:

## PROPOSED HVAC IMPROVEMENTS BUILDING 700

FELLSMERE  
ELEMENTARY SCHOOL

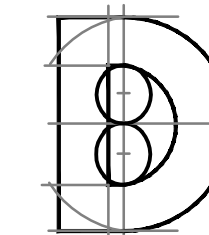
FELLSMERE, FLORIDA



Issues:

No.:	Date:	Description:
	02.13.17	BID SET

Architects:



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Drawing Title:

DETAILS  
MECHANICAL



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BSH	
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Sheet No.:	

Cert. No.: PE No. 52660

Brian S. Hessinger, PE

Date Signed \_\_\_\_\_

M4.00















