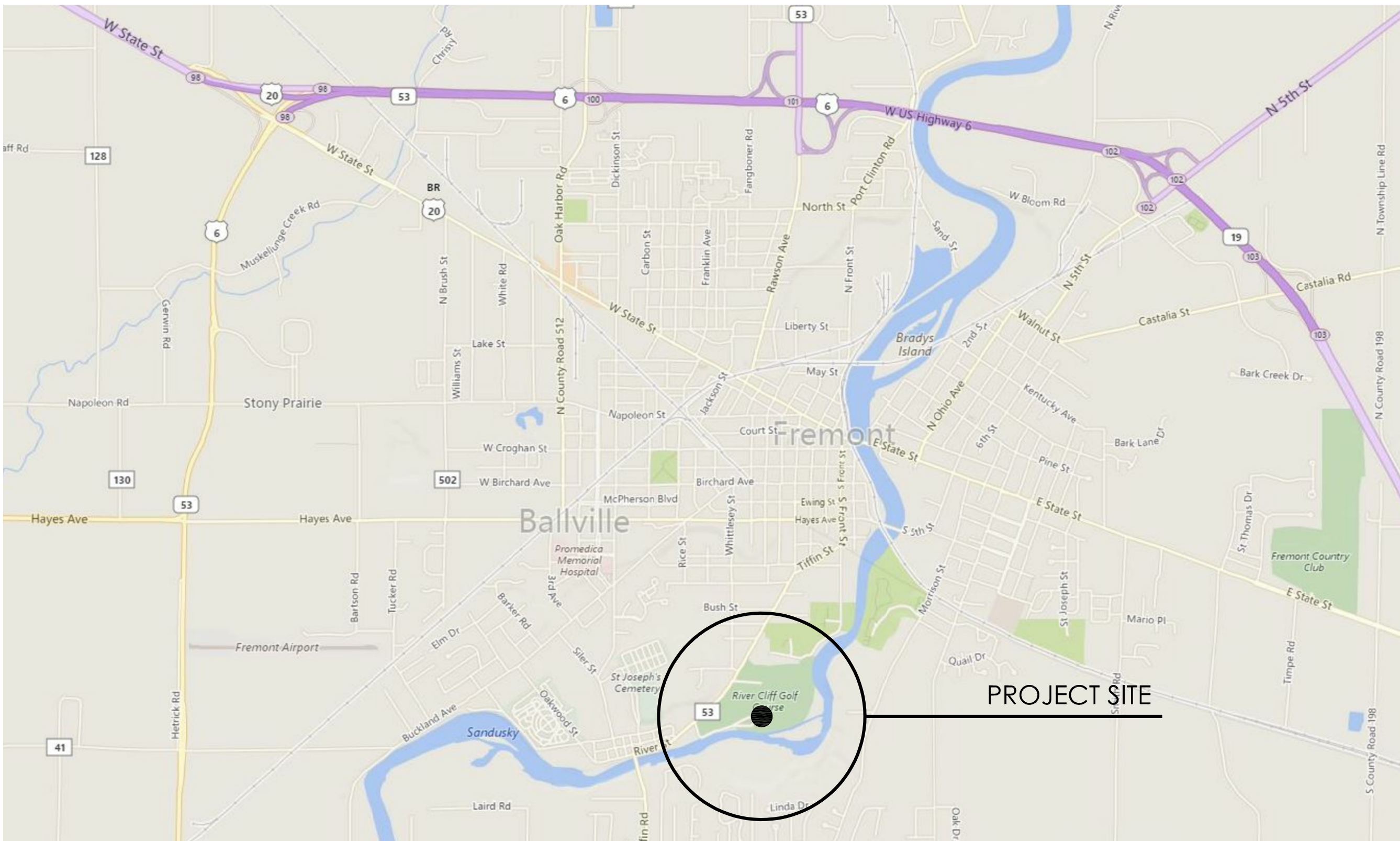


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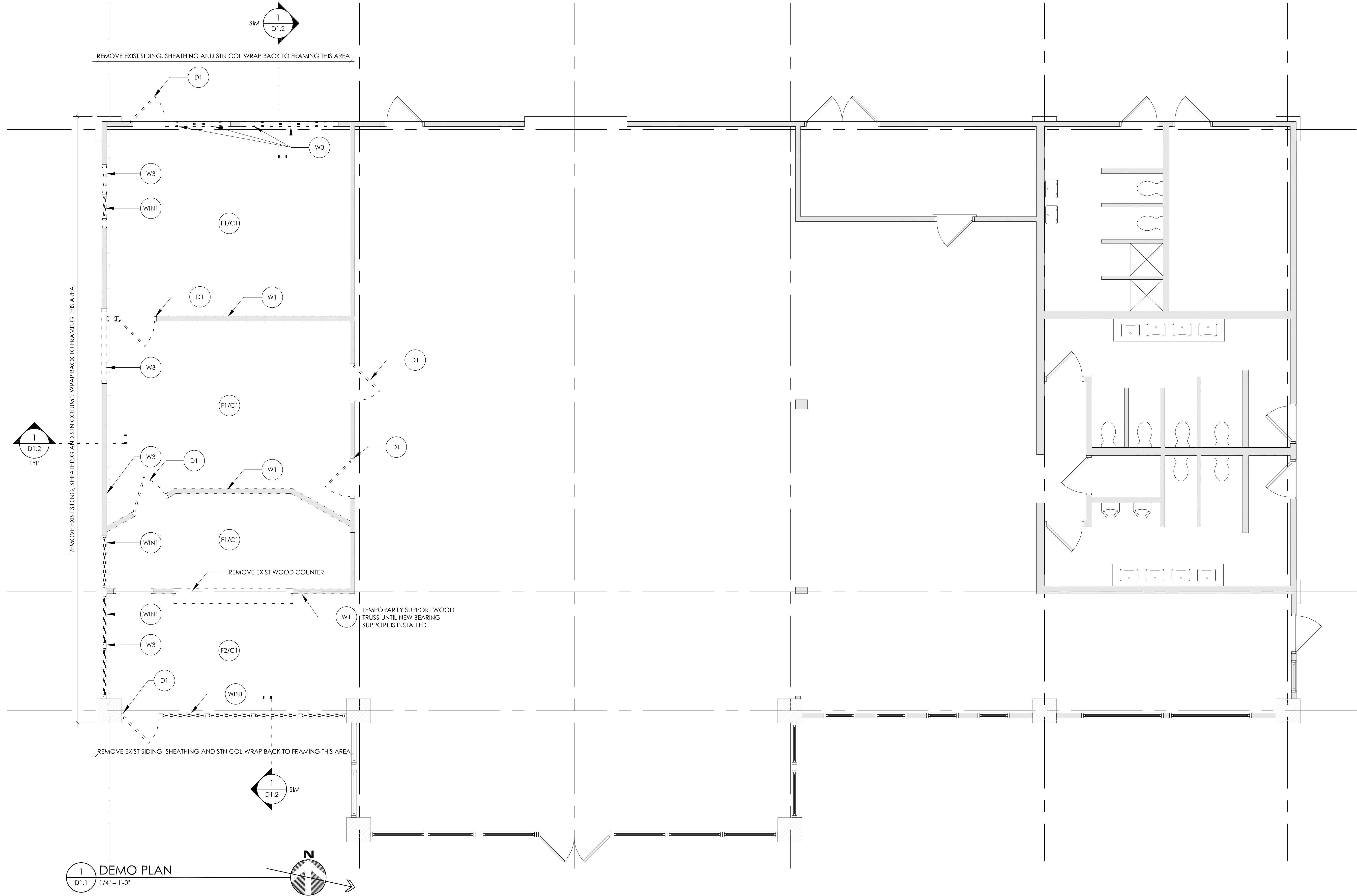
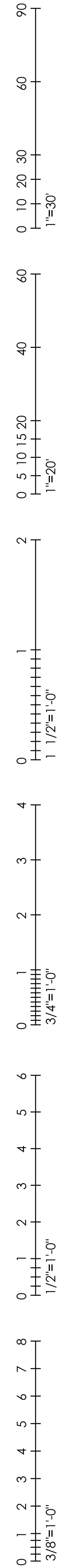
TPA COMMISSION NUMBER: 18051

DRAWING TITLE:

TITLE SHEET
& INDEX

DRAWING NUMBER:

T1.0



1 DEMO PLAN
D1.1
1/4" = 1'-0"

DEMOLITION NOTES

- C1 REMOVE EXISTING GYP BD CEILING
- D1 REMOVE EXISTING DOOR AND FRAME
- F1 REMOVE EXISTING FLOOR FINISH
- F2 REMOVE EXISTING FLOOR FINISH AND SLAB
- W1 REMOVE EXISTING WOOD STUD WALL
- W3 PROVIDE NEW OPENING, COORD W/ DOOR/WINDOW SCHEDULE
- WIN1 REMOVE EXISTING WOOD FRAMED WINDOW SYSTEM, INFILL WITH NEW STUD FRAMING, COORD W/ NEW DOOR AND WINDOW LOCATIONS



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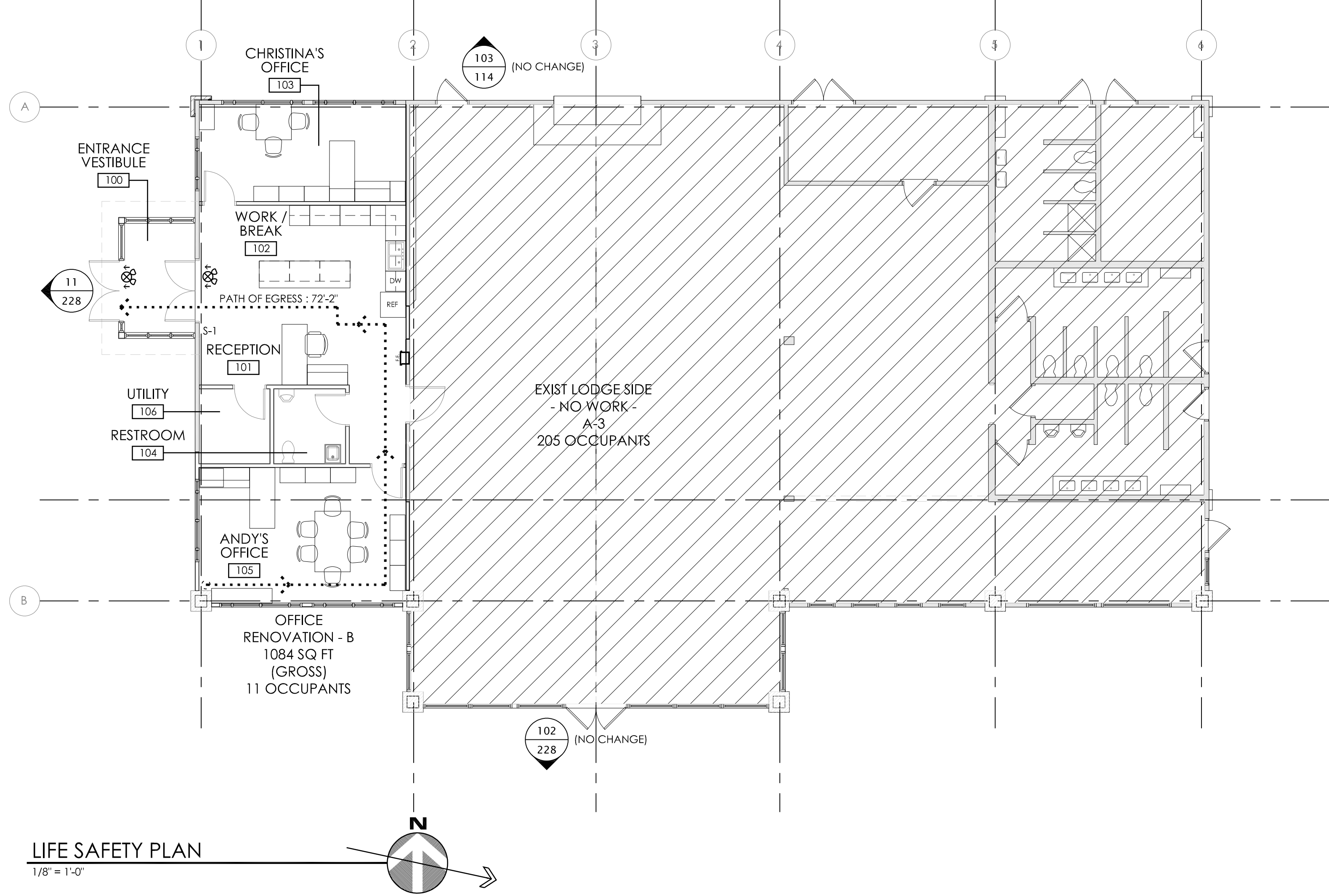
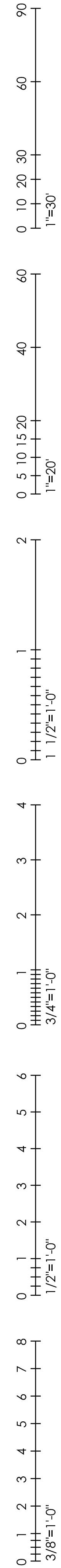
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DEMOLITION PLAN

DRAWING NUMBER:

D1.1

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LIFE SAFETY PLAN
1/8" = 1'-0"

CODE REVIEW

BUILDING OFFICIAL JURISDICTION:
2017 OHIO BUILDING CODE
2017 OHIO MECHANICAL CODE
2017 OHIO PLUMBING CODE
2017 NATIONAL ELECTRICAL CODE
ACCESSIBILITY CODE: ICC/ANSI A117.1-09

PROJECT DESCRIPTION: PROJECT SCOPE OF WORK INVOLVES:
INTERIOR RENOVATIONS, OFFICE SUITE
PROJECT ADDRESS: 1329 TIFFIN ST
FREMONT, OHIO 43420

EXISTING STRUCTURE OBC-CHAPTER 3, SECTIONS 303.304 & 311: USE AND OCCUPANCY
USE GROUP BUSINESS/ASSEMBLY

EXISTING STRUCTURE OBC-CHAPTER 5, TABLE 503: ALLOWABLE HEIGHT AND AREAS
USE GROUP B, CONSTRUCTION TYPE 5B
1 STORY / 6,000 SQUARE FEET

SECTION 506.2 ALLOWABLE AREA MODIFICATION 75% INCREASE FOR BUILDING FRONTAGE
TOTAL ALLOWABLE AREA
6,000 SF + 4,500 SF = 10,500 SF

EXISTING BUILDING DATA: A-2
1 STORY
(FIRST FLOOR) = 5,499 SF
EXISTING BUILDING TOTAL FOOTPRINT = 5,499 SF

PROPOSED RENOVATION OBC-CHAPTER 5, TABLE 503: ALLOWABLE HEIGHT AND AREAS
USE GROUP B / A-3
1 STORY / 6,000 SQUARE FEET

SECTION 506.2 ALLOWABLE AREA MODIFICATION 75% INCREASE FOR BUILDING FRONTAGE
TOTAL ALLOWABLE AREA
6,000 SF + 4,500 SF = 10,500 SF

PROPOSED INTERIOR RENOVATION AREAS: (FIRST FLOOR) = 1,084 SF
PROPOSED RENOVATION HEIGHT 1 STORY

LEGEND

- PATH OF EGRESS
- EGRESS LOAD SPLIT BETWEEN TWO EXIT ROUTES
- EXIT XXX TOTAL OCCUPANT LOAD FROM SPACE
- BRACKET MOUNTED FIRE EXTINGUISHER
- FIRE EXTINGUISHER AND CABINET, EXISTING
- EXIST. BUILDING - NO WORK
- ACTUAL OCCUPANT LOAD FOR THIS EXIT
ALLOWABLE OCCUPANT LOAD FOR THIS EXIT



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LIFE SAFETY
PLAN

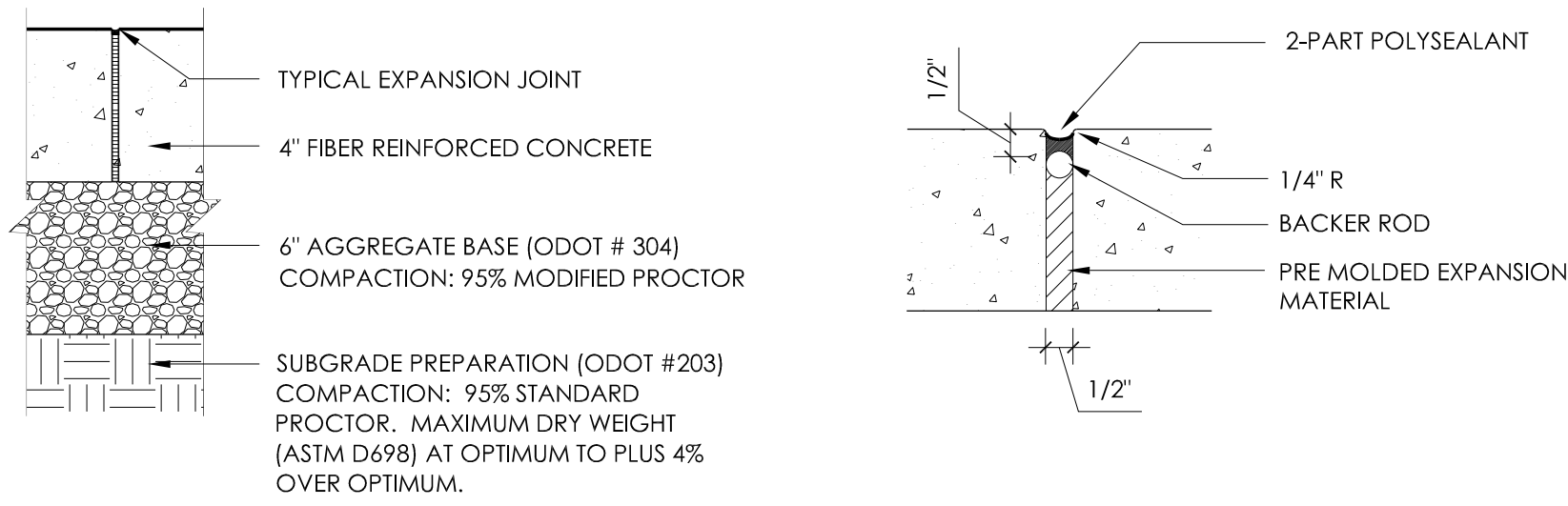
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LS1.0

90
60
30
0 10 20 30
1"=30'
60
40
20
0 5 10 15 20
1"=20'
2
1
0 1 2 3 4
1 1/2"=1'-0"
0 1 2 3 4 5 6
3/4"=1'-0"
0 1 2 3 4 5 6 7 8
1/2"=1'-0"
0 1 2 3 4 5 6 7 8
3/8"=1'-0"

TYPICAL CONCRETE NOTES:

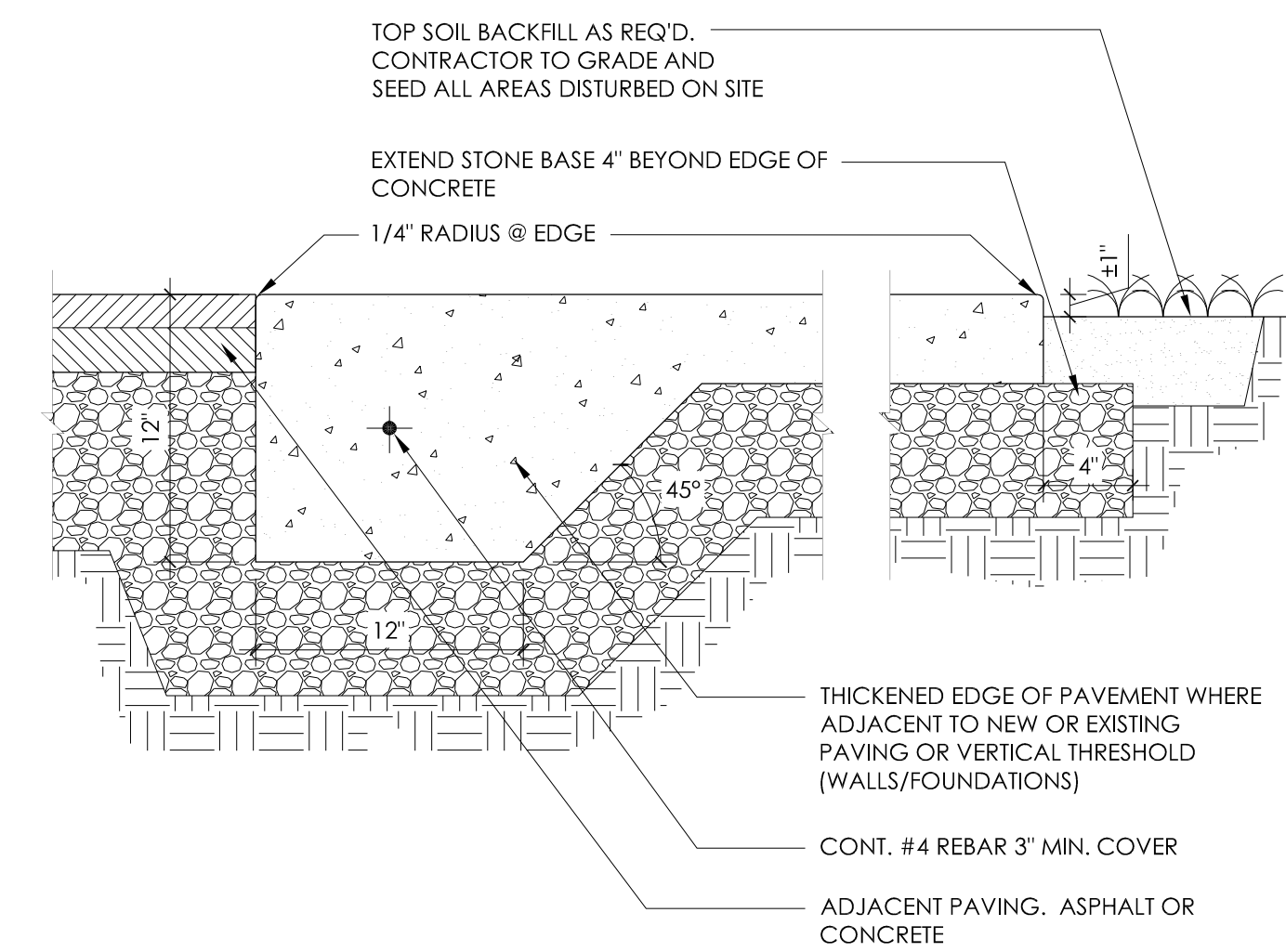
- CONTROL JOINTS ARE TO BE 1/4 DEPTH OF SLAB TOOLED WITH 1/4" RADIUS. CONTROL JOINT METHOD MUST BE UNIFORM THROUGHOUT THE PROJECT.
- EXPANSION JOINTS TO BE 30'-0" O.C., CONTROL JOINTS ARE TO BE 6'-0" O.C. OR AS SHOWN ON PLAN.
- MATCH EXISTING FINISH AFTER JOINT AND EDGETOOLING TO AVOID TOOL MARKS.
- PROVIDE 1/4" RADIUS ON ALL SLAB EDGES UNLESS NOTED OTHERWISE.
- EXPANSION JOINTS SHALL BE PROVIDED WHERE CONCRETE PAVEMENT IS ADJACENT TO VERTICAL THRESHOLDS (BUILDING WALLS/FOUNDATIONS) OR WHERE NEW PAVING MEETS EXISTING PAVING.
- EXPANSION JOINTS ARE TO BE 1/2" THICK. PRE-FORMED FILLER. HOLD FILLER DOWN 1/2" FROM FINISHED SURFACE AND CAULK JOINT WITH SEALANT.



STANDARD DUTY CONCRETE

EXPANSION JOINT DETAIL

2 CONCRETE PAVEMENT TYPICAL DETAILS AND NOTES
A1.0 SCALE: NTS



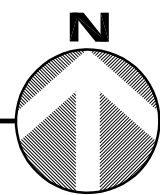
1 TYPICAL STANDARD DUTY CONCRETE SIDEWALK
A1.0 SCALE: 1 1/2" = 1'-0"

SITE PLAN GENERAL NOTES

- ALL SITE FEATURES, PAVING, PARKING, PLANTING, TREES ETC. ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE.

OVERALL SITE PLAN

1" = 30'



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OVERALL
SITE PLAN

DRAWING NUMBER:

A1.0

90
60
30
0 10 20 30
1"=30"

60
40
20
0 5 10 15 20
1"=20"

2
1
0 1 2 3 4
1 1/2"=1'-0"

4
3
2
1
0 1 2 3 4 5 6
3/4"=1'-0"

6
5
4
3
2
1
0 1 2 3 4 5 6
1/2"=1'-0"

8
7
6
5
4
3
2
1
0 1 2 3 4 5 6 7 8
3/8"=1'-0"

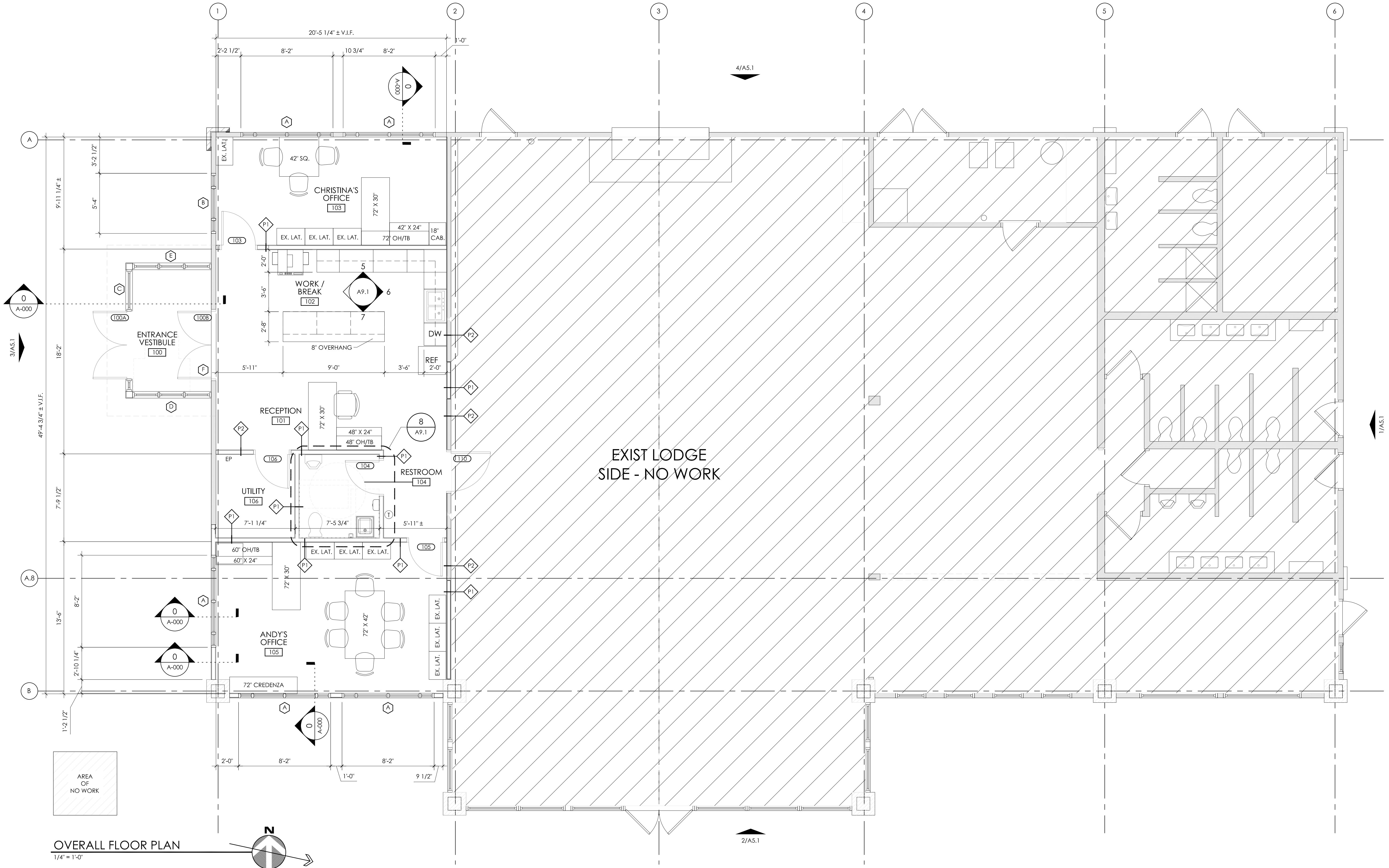
PLAN NOTES:

GENERAL NOTES:

- COORDINATE SIZE AND LOCATION OF ALL ACCESS PANELS WITH TRADE REQUIRING THE SAME. ACCESS PANELS ARE SPECIFIED ARCHITECTURALLY BUT ARE REQUIRED TO BE PROVIDED BY TRADE. ALL LOCATIONS MUST BE COORDINATED AND APPROVED BY THE ARCHITECT'S FIELD REPRESENTATIVE.
- FLOOR PLANS ARE DIMENSIONED TO FACE OF STUD-TYPICAL
- DIMENSIONS FOLLOWED BY ± SHOULD BE REVIEWED AND ALL NECESSARY ADJUSTMENTS MADE PRIOR TO FABRICATION AND/OR INSTALLATION OF AFFECTED WORK. NOTIFY ARCHITECT'S REPRESENTATIVE IF DISCREPANCIES ARISE BEFORE PROCEEDING WITH THE WORK.
- PROVIDE INTERIOR GYP BD CONTROL JOINTS @ 25" O.C. AT LOCATIONS SHOWN ON PLANS AND/OR INTERIOR ELEVATIONS OR AS DIRECTED BY ARCHITECT IN THE FIELD.
- VERIFY QUANTITY, SIZE, AND LOCATION OF ALL FLOOR, ROOF, AND WALL OPENINGS FOR MECHANICAL AND ELECTRICAL WORK WITH THE APPROPRIATE TRADE. PROVIDE ALL OPENINGS SHOWN OR REQUIRED FOR THE COMPLETION OF THE WORK. PROVIDE ALL LINTELS REQUIRED FOR THESE OPENINGS PER SPECIFICATIONS.
- REFER TO A11 SERIES DRAWINGS FOR FLOOR FINISH PATTERNS AND ROOM FINISHES
- SEE REFLECTED CEILING PLANS FOR AREA OF MOTORIZED AND MANUALLY OPERATED WINDOW SHADES. SEE SPECIFICATION FOR ACCEPTABLE MANUFACTURER AND ADDITIONAL INFORMATION.

LIST OF ABBREVIATIONS

- FEC - FIRE EXTINGUISHER CABINET
FE - FIRE EXTINGUISHER (W/ WALL BRACKET)
A - PUNCHED WINDOW TYPE. SEE ENLARGED WINDOW SHEET(S)
◇ - WALL PARTITION TYPE - SEE SHEET A7.0
EP - ELECTRICAL PANEL(S). PAINT SAME COLOR AS WALL SURFACE
CUH - CABINET UNIT HEATER
ADO - AUTOMATIC POWER DOOR OPERATOR PUSH BUTTON. SEE ELEC DWG'S



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DRAWING TITLE:

FLOOR PLAN

DRAWING NUMBER:

A2.0

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DRAWING NUMBER:

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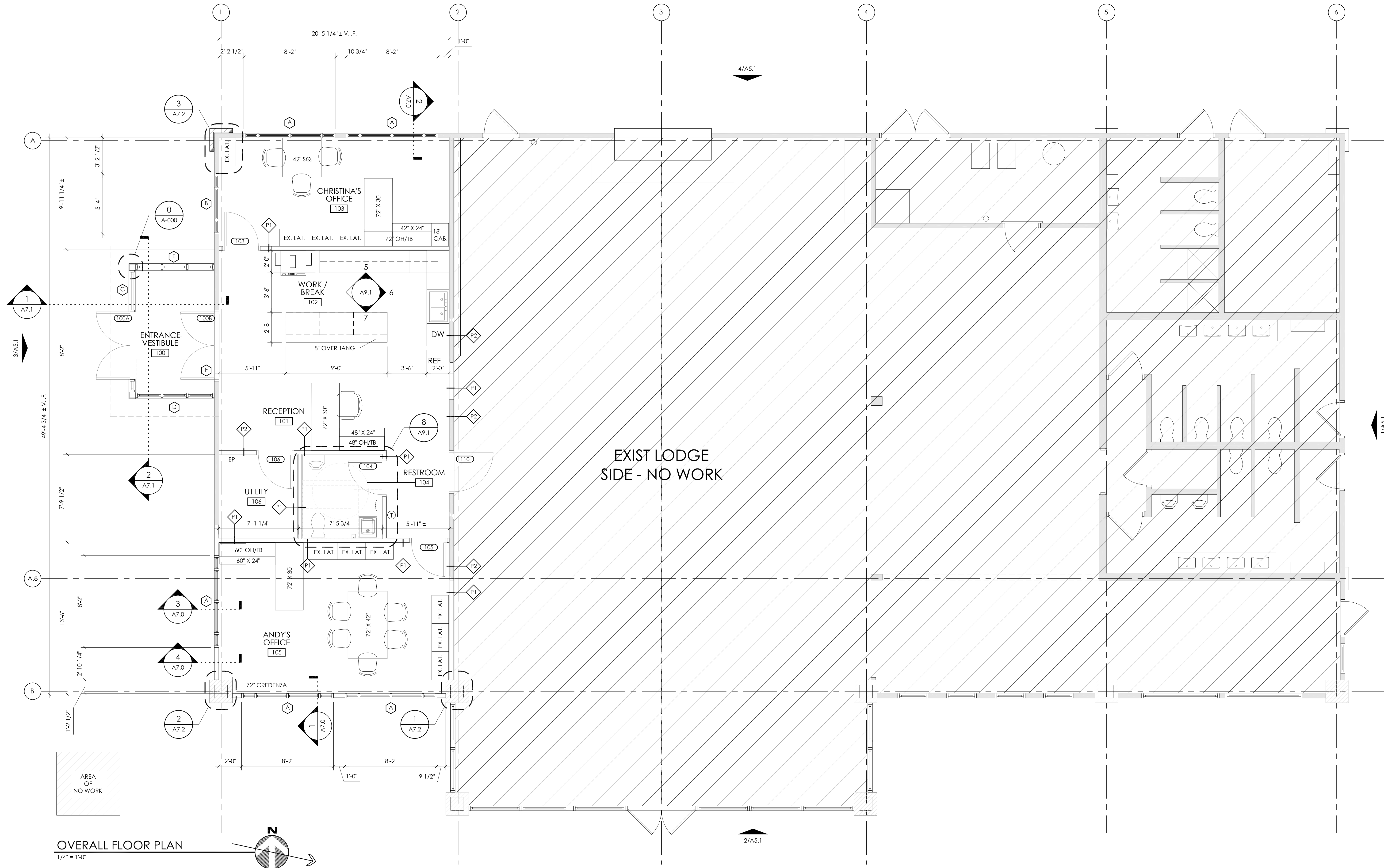
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CUH - CABINET UNIT HEATER
ADO - AUTOMATIC POWER DOOR OPERATOR PUSH BUTTON. SEE ELEC. DWG



OVERALL FLOOR PLAN

1/4" = 1'-0"

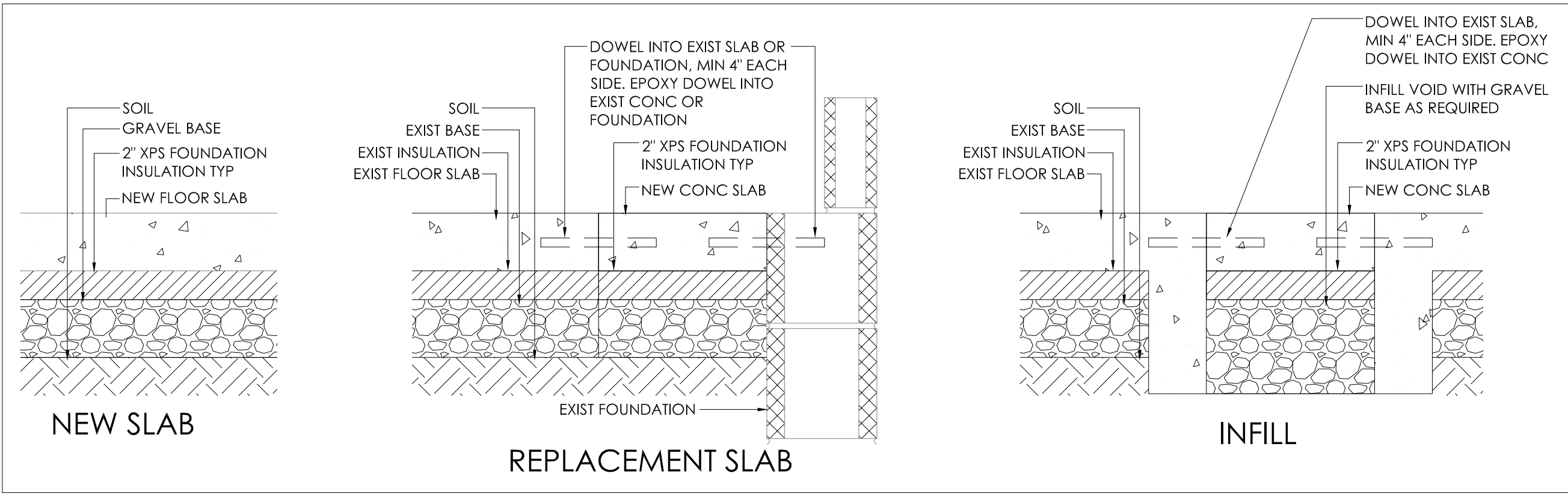
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60
30
0
10
20
30
1"=30'

60
40
20
0
5
10
15
20
1"=20'

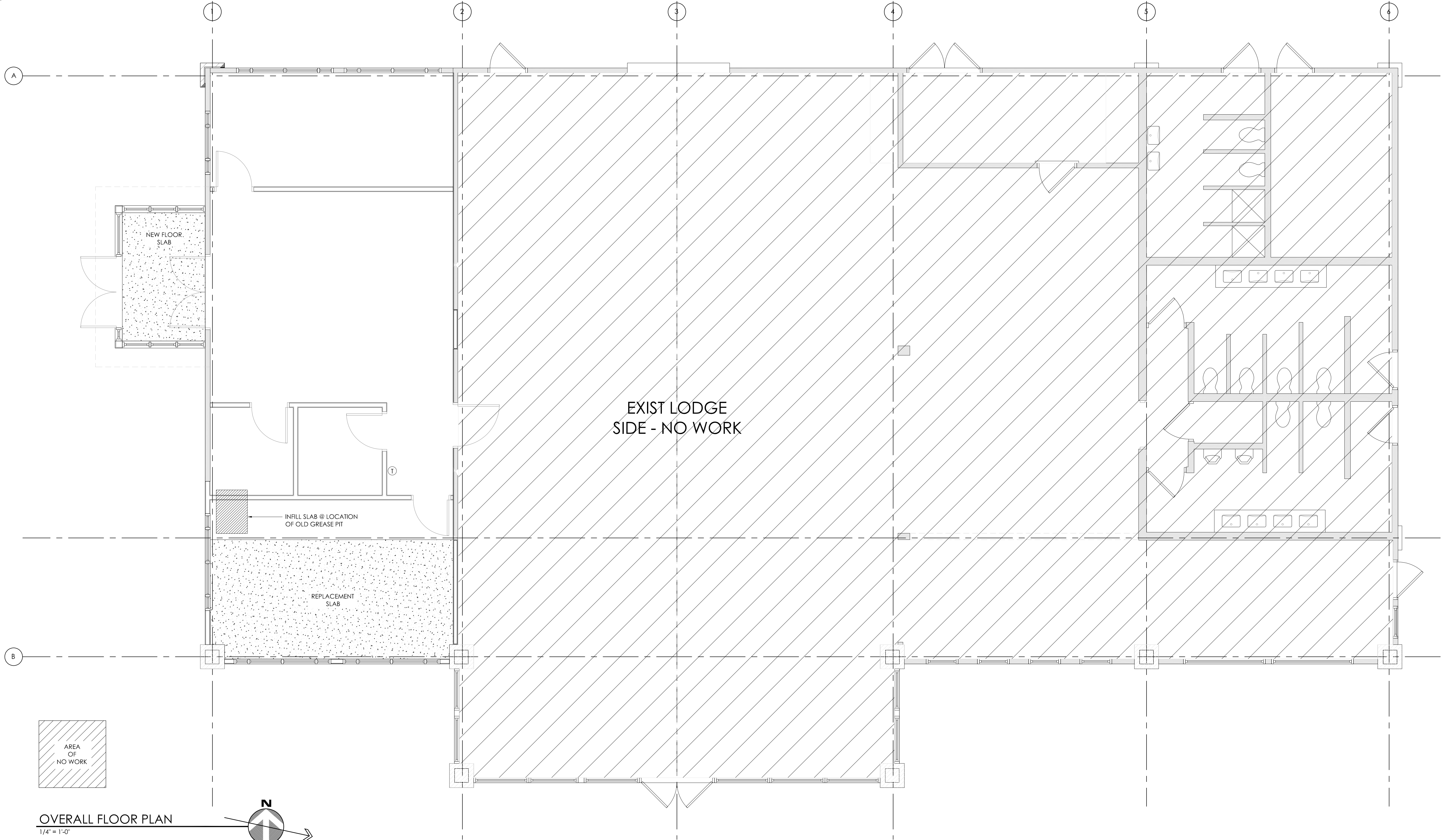
2
1
0
1
2
3
4
1 1/2"=1'-0"

0
1
2
3
4
5
6
1 1/2"=1'-0"

0
1
2
3
4
5
6
7
8
3/8"=1'-0"



1
A2.1
1 1/2" = 1'-0"



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90
60
30
0 10 20 30
1"=30'

60
40
20
0 5 10 15 20
1"=30'

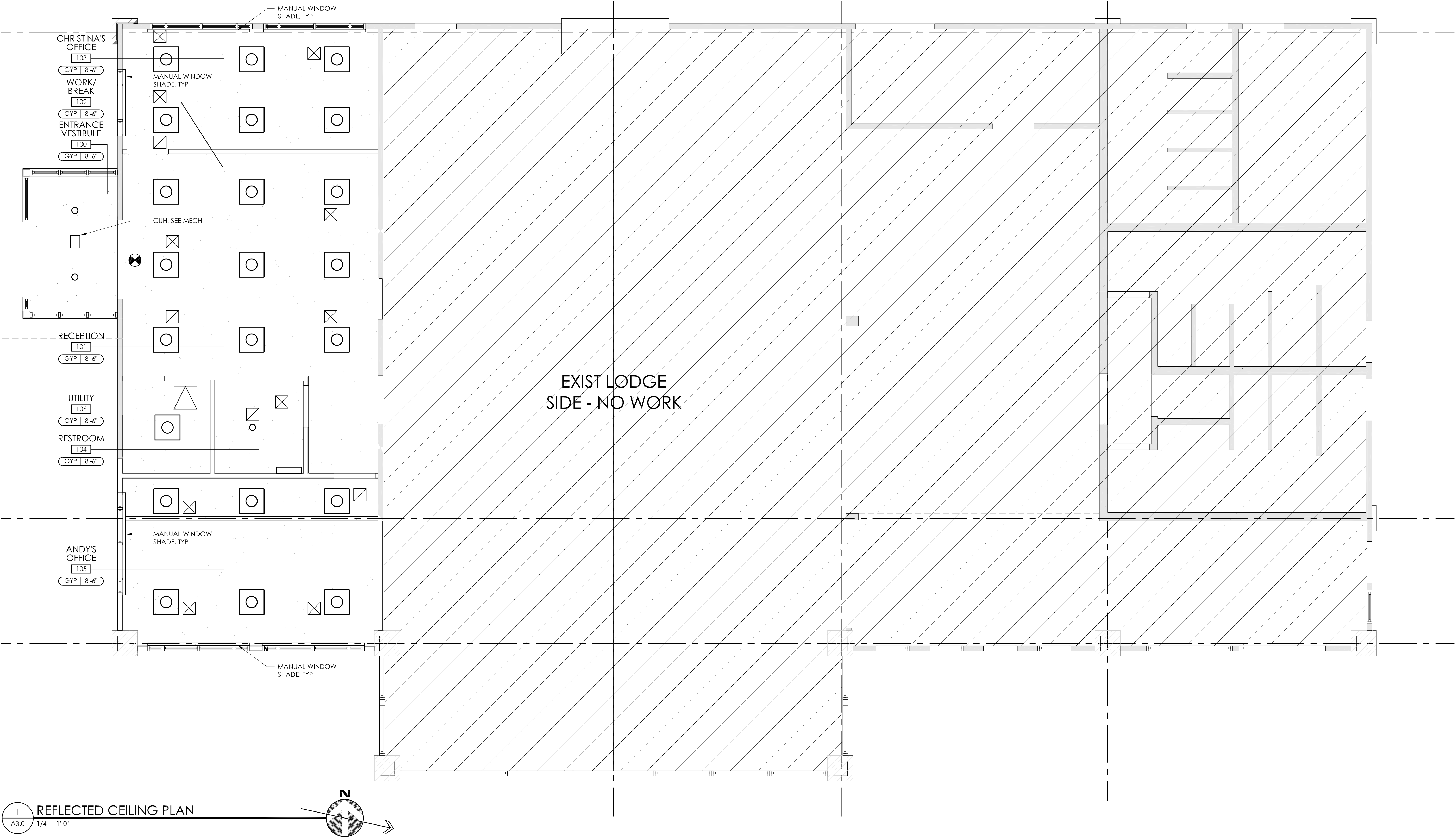
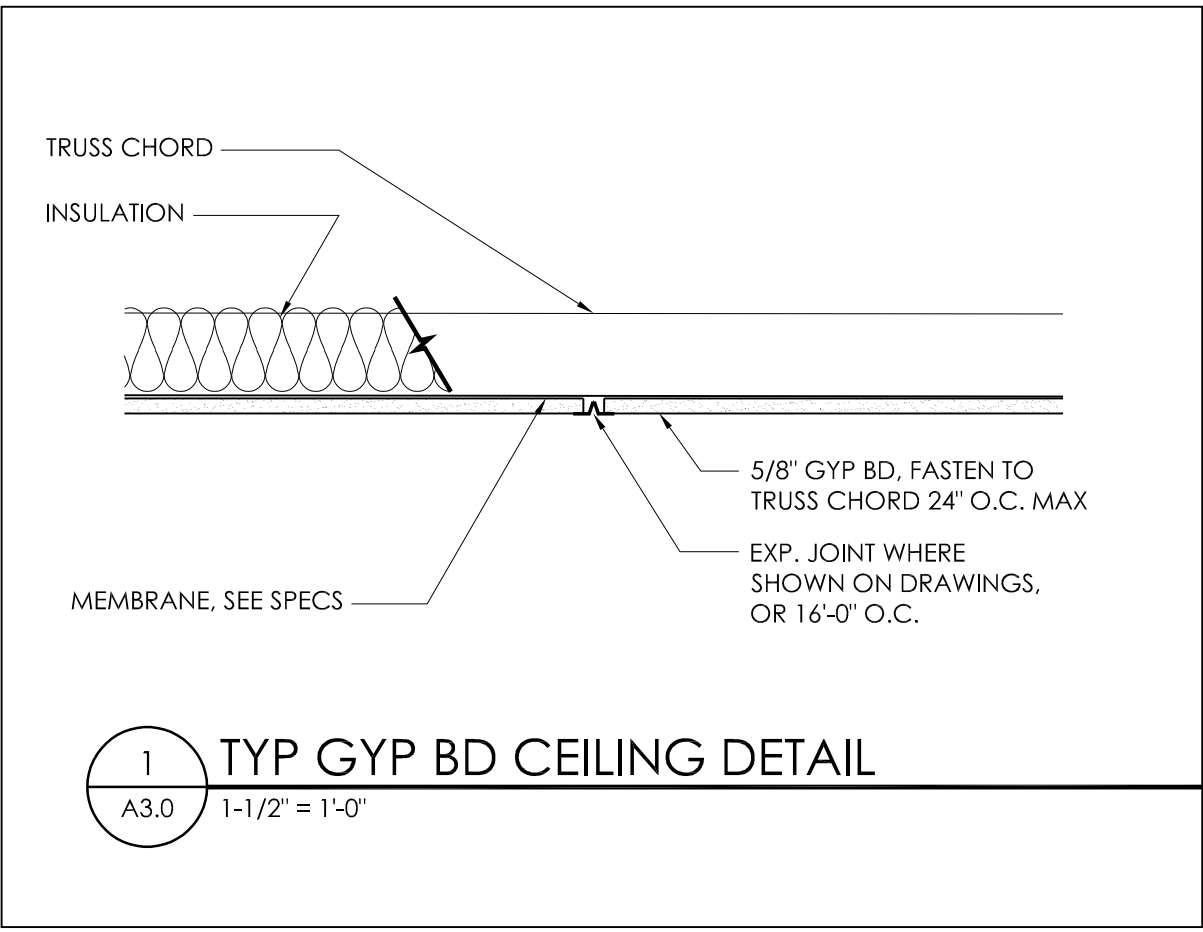
2
0 1 2 3 4
1 1/2"=1'-0"

1
0 1 2 3 4
3/4"=1'-0"

6
5
4
3
2
1
0 1 2 3 4 5 6
1/2"=1'-0"

8
7
6
5
4
3
2
1
0 1 2 3 4 5 6 7 8
3/8"=1'-0"

CEILING LEGEND	
PLAN VIEW	DESCRIPTION
	GYP. BD., CEILING OR SOFFIT, REFER TO CEILING PLAN AND DETAILS
	RECESSED LIGHT FIXTURE, REFER TO ELECTRICAL DRAWINGS
	RETURN GRILLE, REFER TO MECHANICAL DRAWINGS FOR TYPE SUPPLY GRILLE, REFER TO MECHANICAL DRAWINGS FOR TYPE
	EXIT SIGN, REFER TO ELECTRICAL DRAWINGS
	ACCESS PANEL
	2x2 LIGHT FIXTURE, REFER TO ELECTRICAL DRAWINGS FOR TYPE



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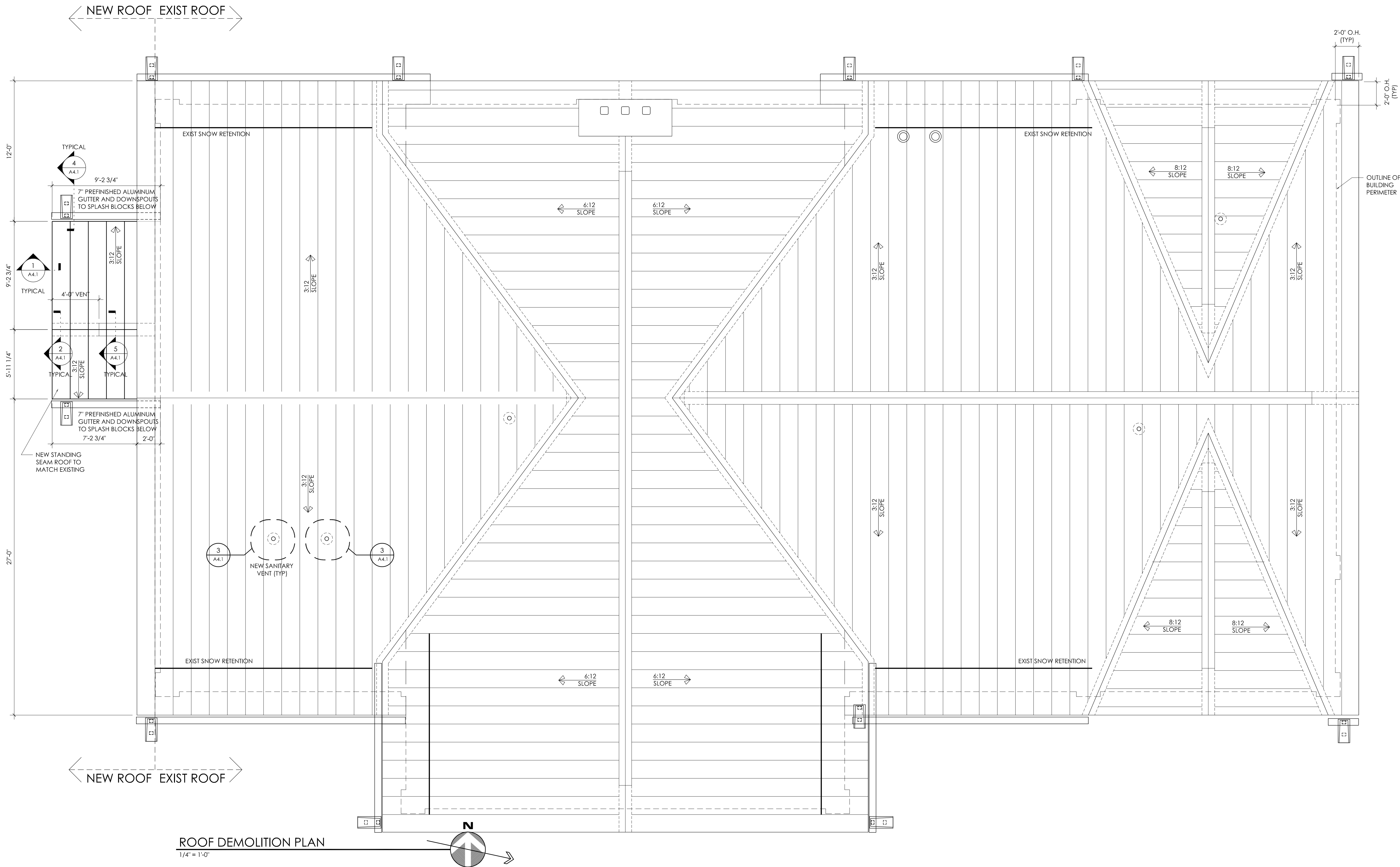
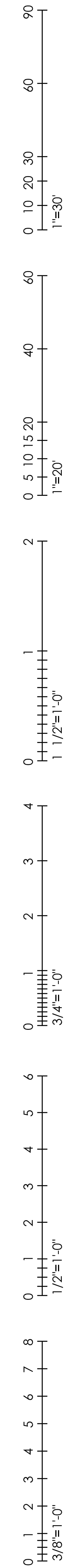
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REFLECTED
CEILING PLAN

DRAWING NUMBER:

A3.0

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ROOF DEMOLITION PLAN
1/4" = 1'-0"

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ROOF
PLAN & NOTES

DRAWING NUMBER:

A4.0

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30
0 10 20 30
1"=30"

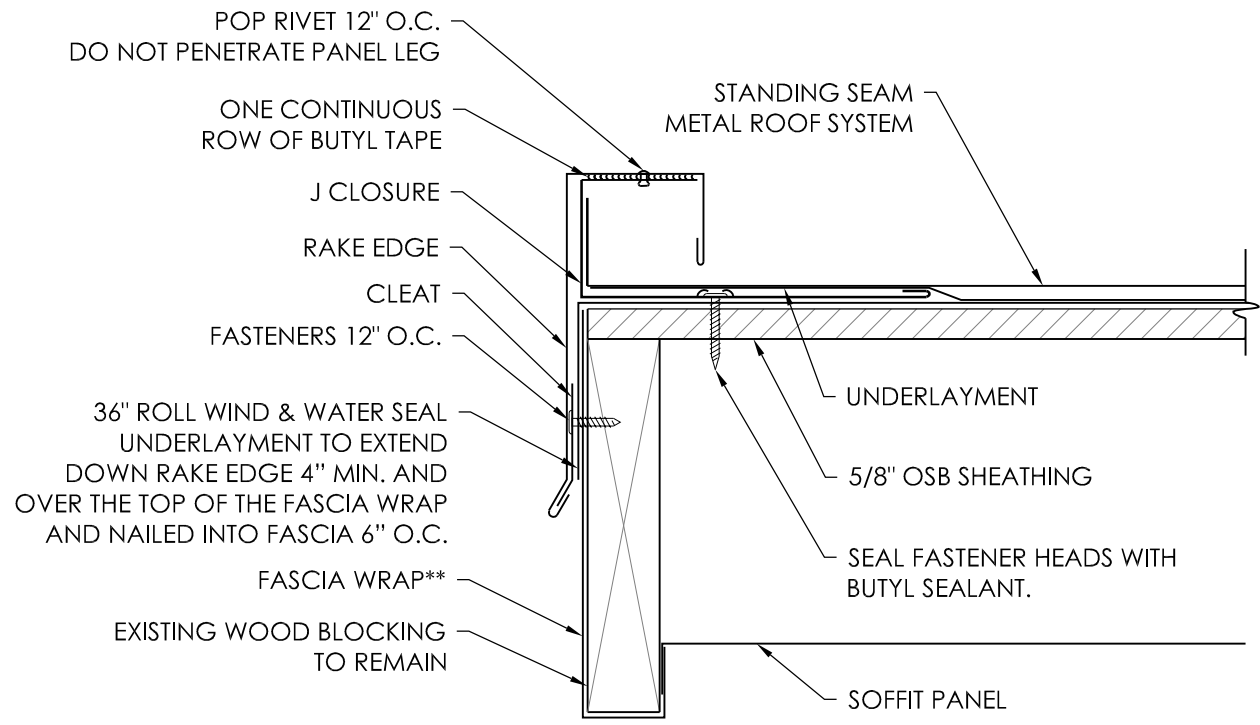
60
40
20
0 5 10 15 20
1"=20"

2
1
0 1 1/2 = 1'-0"

4
3
2
1
0 1/4 = 1'-0"

6
5
4
3
2
1
0 1/2 = 1'-0"

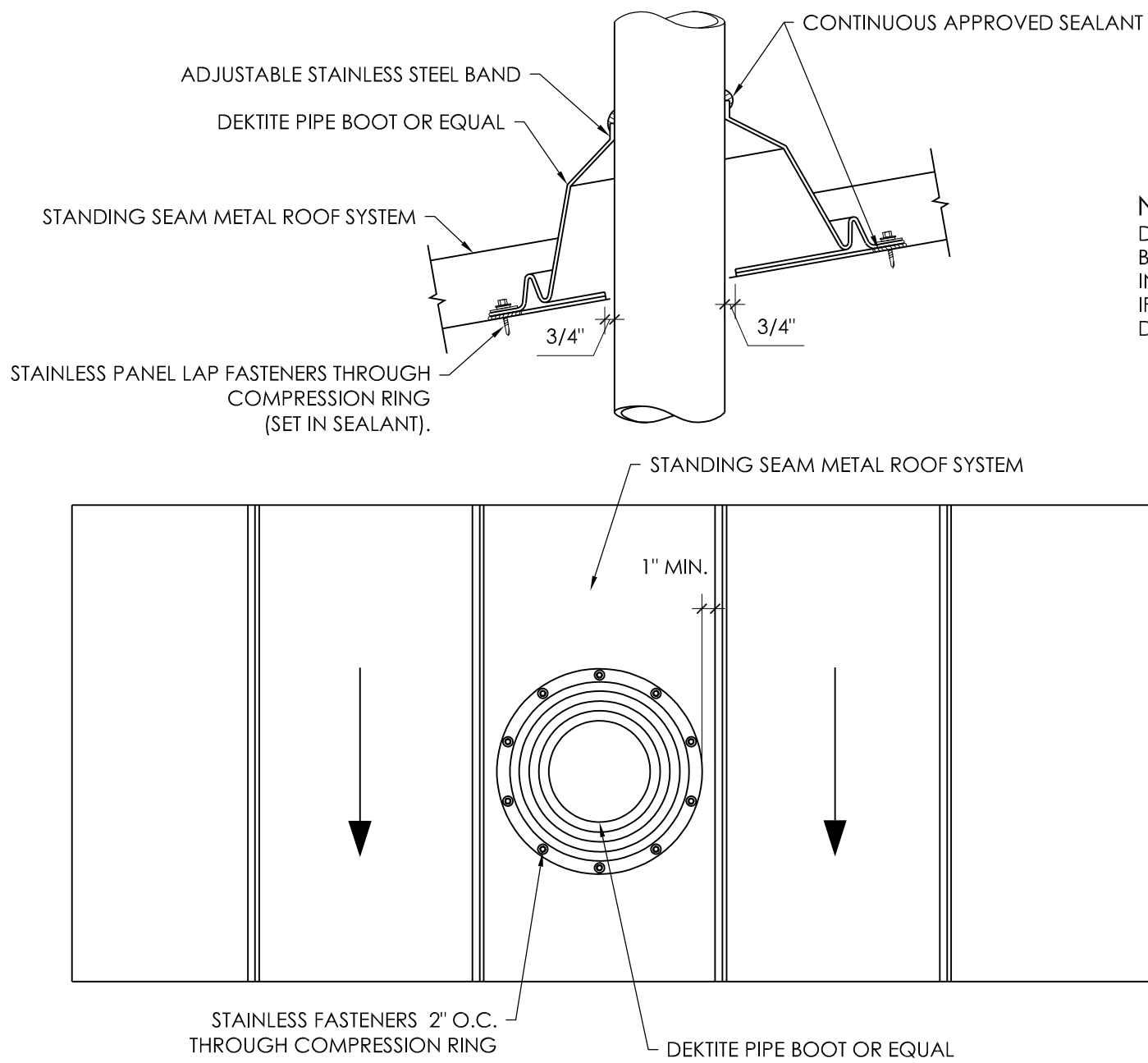
8
7
6
5
4
3
2
1
0 3/8 = 1'-0"



FLASHING LAP NOTE:
LAP RAKE EDGE AND FASCIA 2" MINIMUM WITH 2 ROWS OF BUTYL SEALANT.

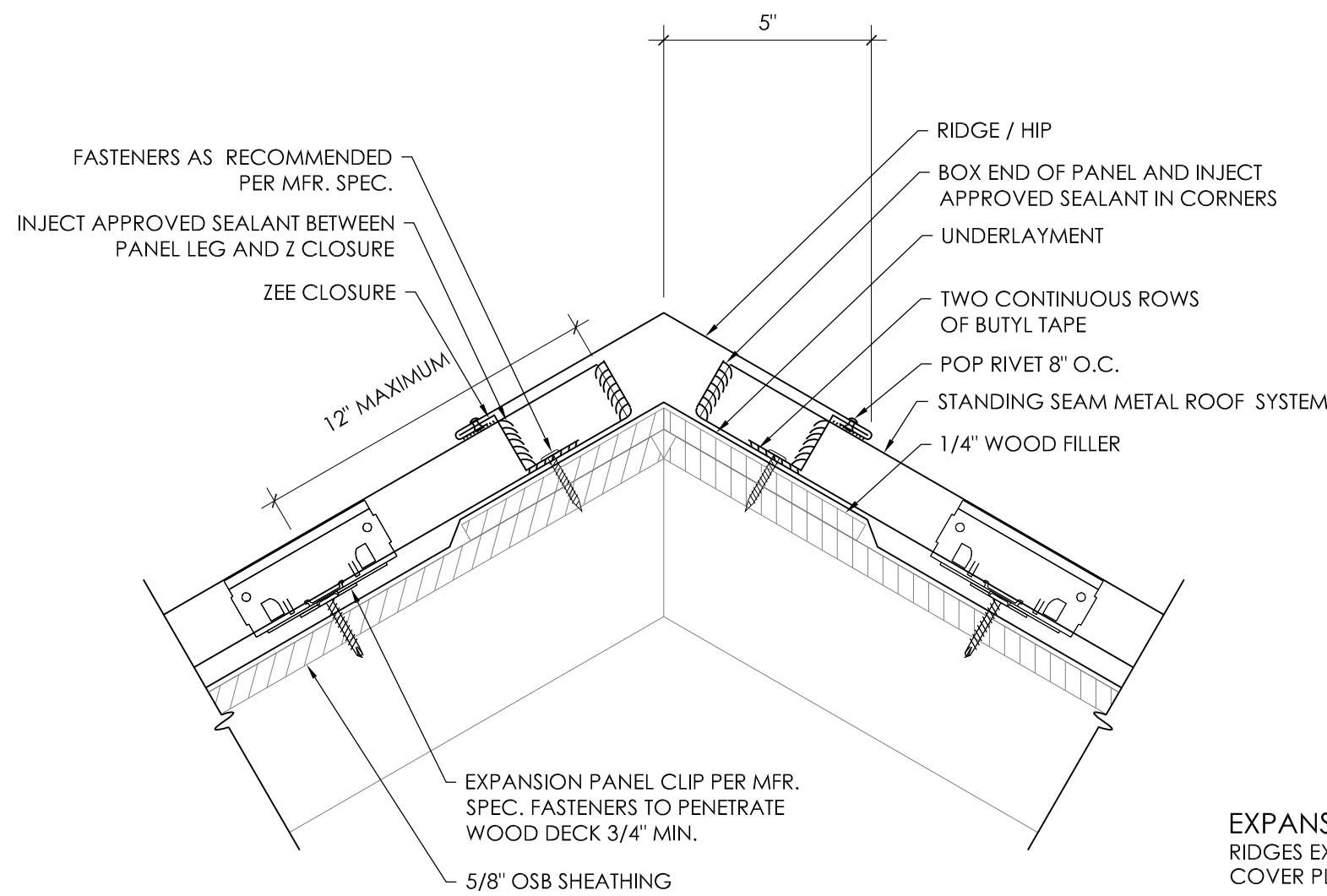
**** PROVIDE A SEPARATE PRICE UNDER ALTERNATE NO.1 TO REMOVE AND REINSTALL FASCIA AND WATERPROOFING COMPONENTS ON RAKE AND EAVE SURFACES AS SHOWN. COLOR TO MATCH ROOF.**

1 RAKE EDGE DETAIL
A4.1 SCALE: 3" = 1'-0"



NOTE:
DO NOT ATTACH INTO SOLID SUBSTRATE BELOW.
BOOT SHALL NOT INTERSECT STANDING SEAM VERTICAL LEG. INSTALL IN CENTER OF FLAT AREA OF PANEL ONLY.
IF USING A SQUARE BOOT DETAIL, BE SURE TO SET BOOT IN A DIAGONAL OR DIAMOND TO ALLOW WATER FLOW.

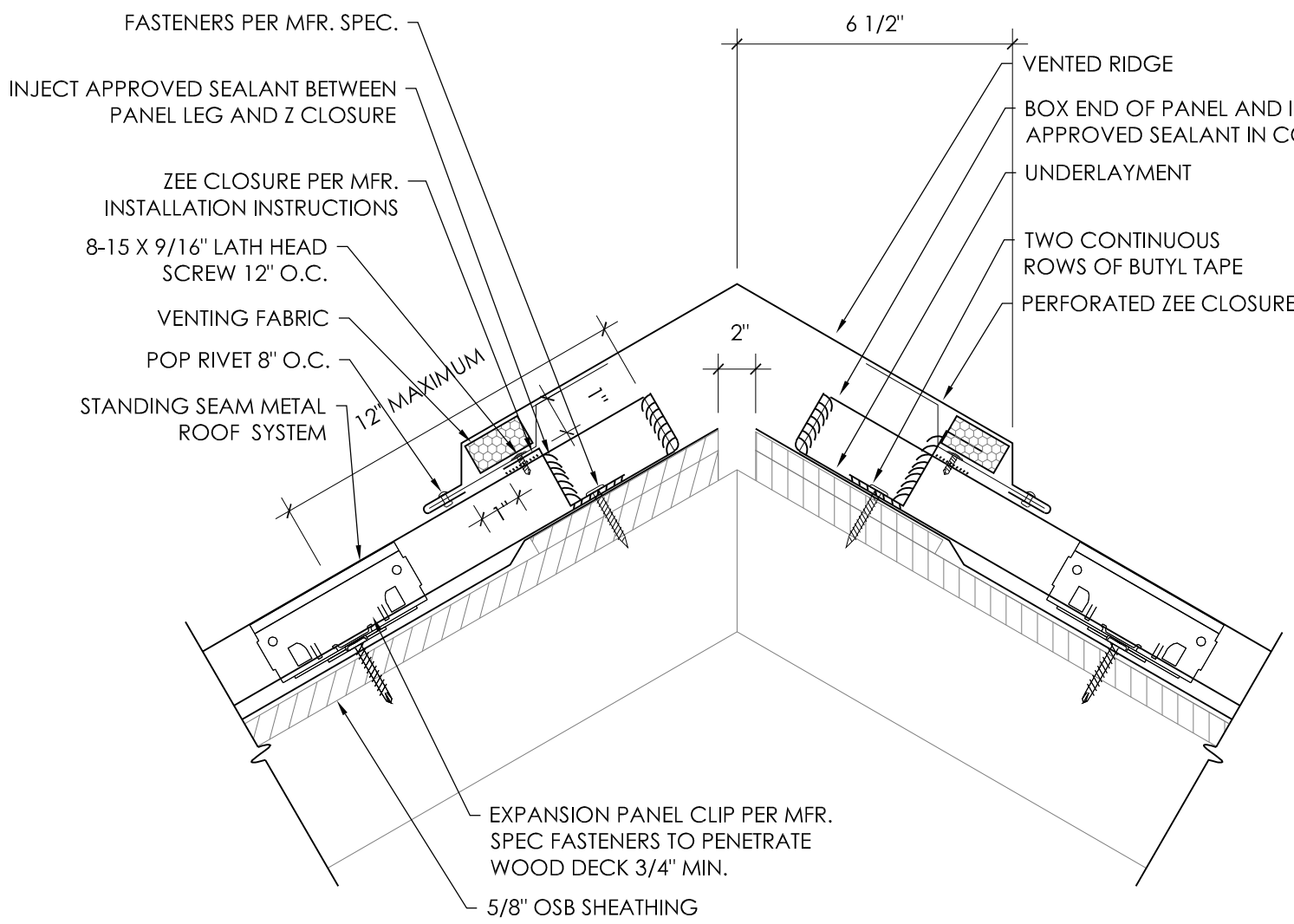
3 PIPE BOOT DETAIL
A4.1 SCALE: 3" = 1'-0"



EXPANSION NOTE:
RIDGES EXCEEDING 100'-0" IN LENGTH REQUIRE THE USE OF A 6" COVER PLATE.

FLASHING LAP NOTE:
LAP RIDGE/HIP 4" MIN W/ 2 ROWS OF BUTYL SEALANT.
DO NOT POP RIVET LAPPED FLASHING.

5 RIDGE / HIP DETAIL
A4.1 SCALE: 3" = 1'-0"

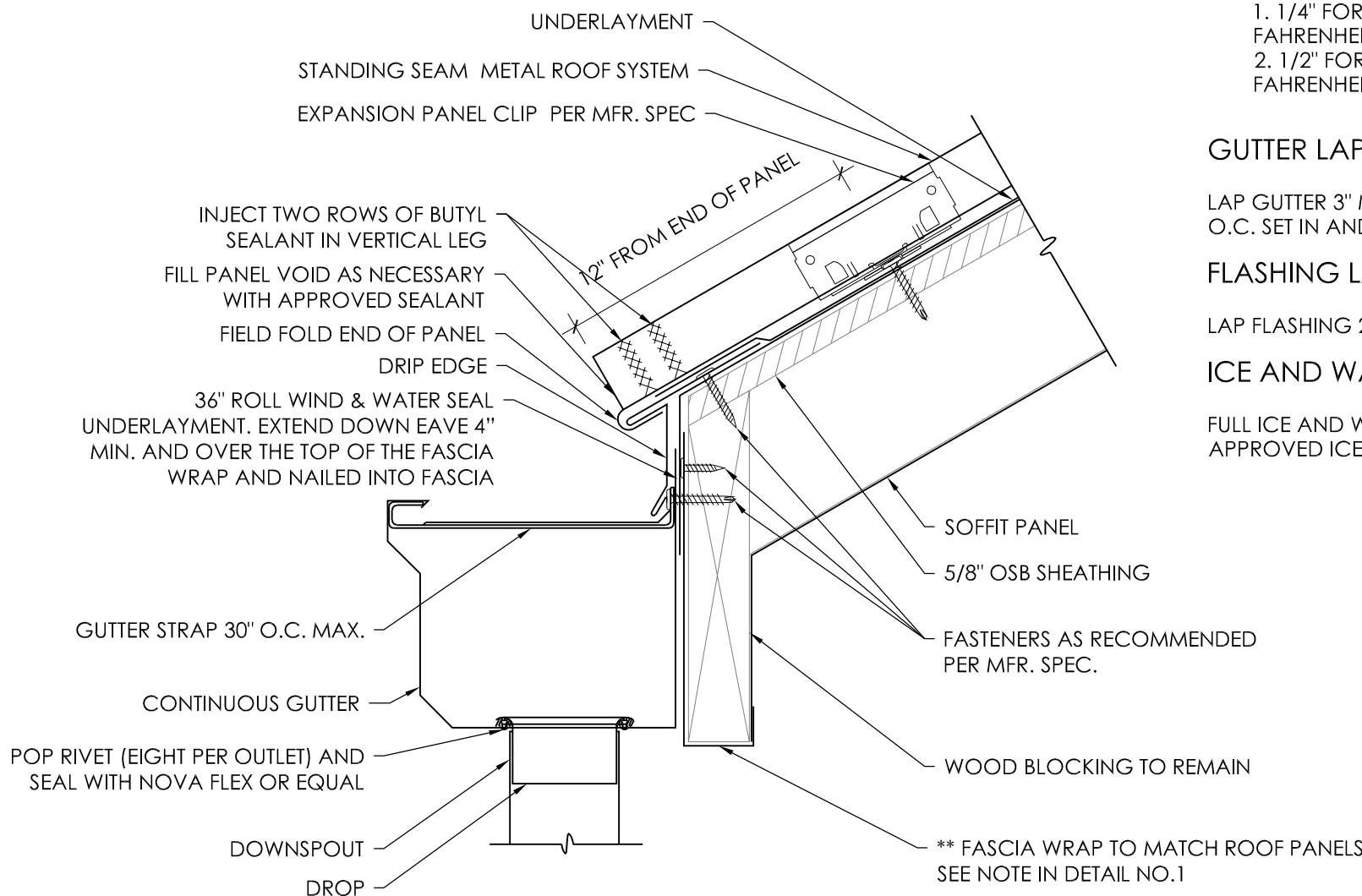


EXPANSION NOTE:
RIDGES EXCEEDING 100'-0" IN LENGTH REQUIRE THE USE OF A 6" COVER PLATE.

FLASHING LAP NOTE:
LAP RIDGE/HIP 4" MIN W/ 2 ROWS OF BUTYL SEALANT.
DO NOT POP RIVET LAPPED FLASHING.

VENTILATION NOTE:
DMI PERFORATED Z CLOSURE PROVIDES 23% NET FREE AIR MOVEMENT.
HIP CONDITIONS CAN NOT BE VENTED.

2 RIDGE VENT DETAIL
A4.1 SCALE: 3" = 1'-0"



PANEL EXPANSION NOTE:

FOR STEEL PANELS < 40' WITH A 1 1/2" TURN DOWN AND 1 1/2" HEM CLEARANCE:
1. 1/4" FOR INSTALLATION TEMPERATURE BELOW 30 DEGREES FAHRENHEIT.
2. 1/2" FOR INSTALLATION TEMPERATURE ABOVE 30 DEGREES FAHRENHEIT.

FOR STEEL PANELS > 40' WITH A 2" TURN DOWN AND 2" HEM CLEARANCE:
1. 1/4" FOR INSTALLATION TEMPERATURE BELOW 30 DEGREES FAHRENHEIT.
2. 1/2" FOR INSTALLATION TEMPERATURE ABOVE 30 DEGREES FAHRENHEIT.

GUTTER LAP NOTE:

LAP GUTTER 3" MIN W/ 2 ROWS OF APPROVED SEALANT AND POP RIVET JOINT 2" O.C. SET IN AND CAP POP RIVETS IN APPROVED SEALANT.

FLASHING LAP NOTE:

LAP FLASHING 2" MIN W/ 1 ROW OF BUTYL SEALANT.

ICE AND WATER UNDERLAYMENT NOTE:

FULL ICE AND WATER UNDERLAYMENT REQUIRED. STRIP IN DRIP EDGE WITH 6" OF APPROVED ICE AND WATER UNDERLAYMENT.

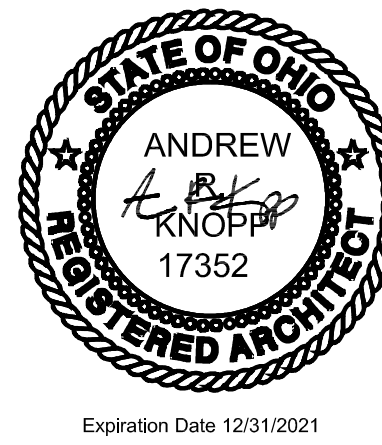
4 EXTERNAL GUTTER DETAIL
A4.1 SCALE: 3" = 1'-0"

GENERAL ROOFING NOTES:

- METAL ROOF DETAILS ARE BASED ON DMI INTER-LOCK I120 WITH 18" O.C. SEAMS (OR ARCHITECT APPROVED EQUAL).
- PROVIDE AND INSTALL ROOFING SYSTEM PANELS WITH UNDERLAYMENT, ICE BARRIER, ALL FLASHING AND ACCESSORIES AS REQUIRED BY THE METAL ROOFING MANUFACTURERS SPECIFICATIONS AND DETAILS. SEE SPECIFICATIONS

CONSULTANTS:

SEAL:



PROJECT TITLE:

ISSUE OR REVISION:

11-06-2020	ISSUED FOR BIDDING
DATE	ISSUE / REVISION
DESIGNED: AK	
DRAWN: DE	
CHECKED: AK	

TPA COMMISSION NUMBER: 18051

DRAWING TITLE:

ROOF DETAILS

DRAWING NUMBER:

A4.1

90
60
30
0 10 20 30
1"=30'

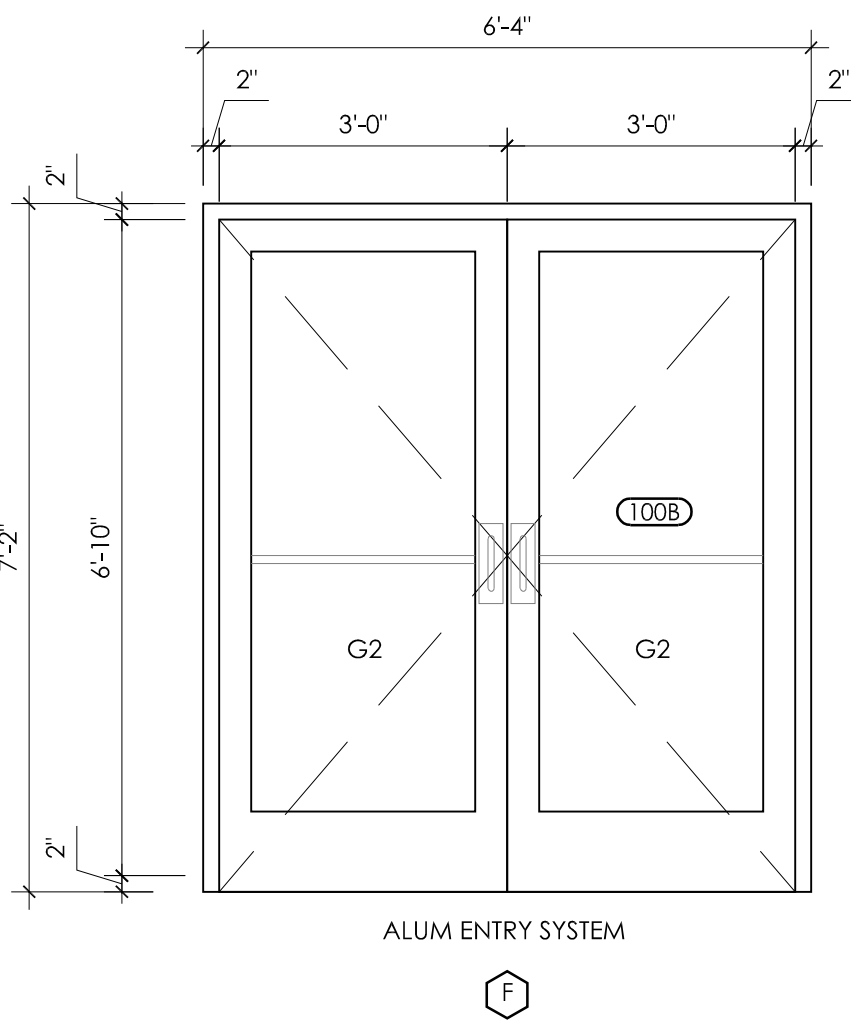
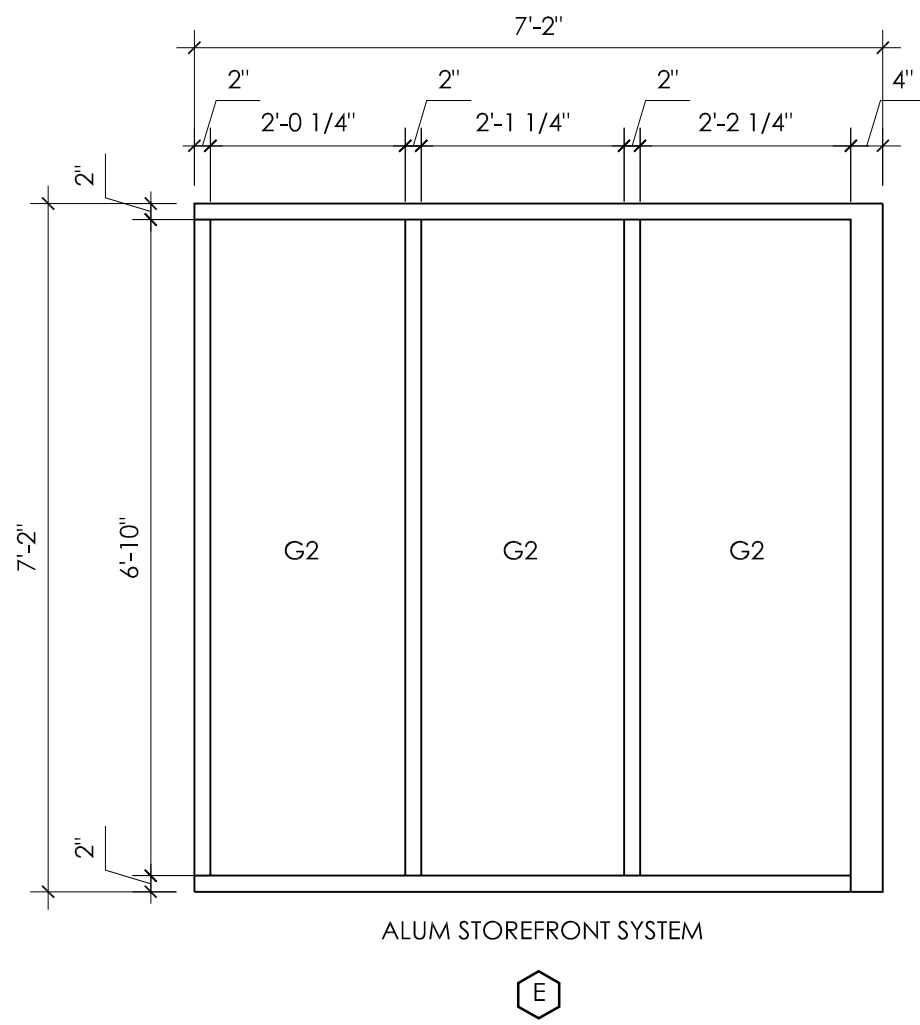
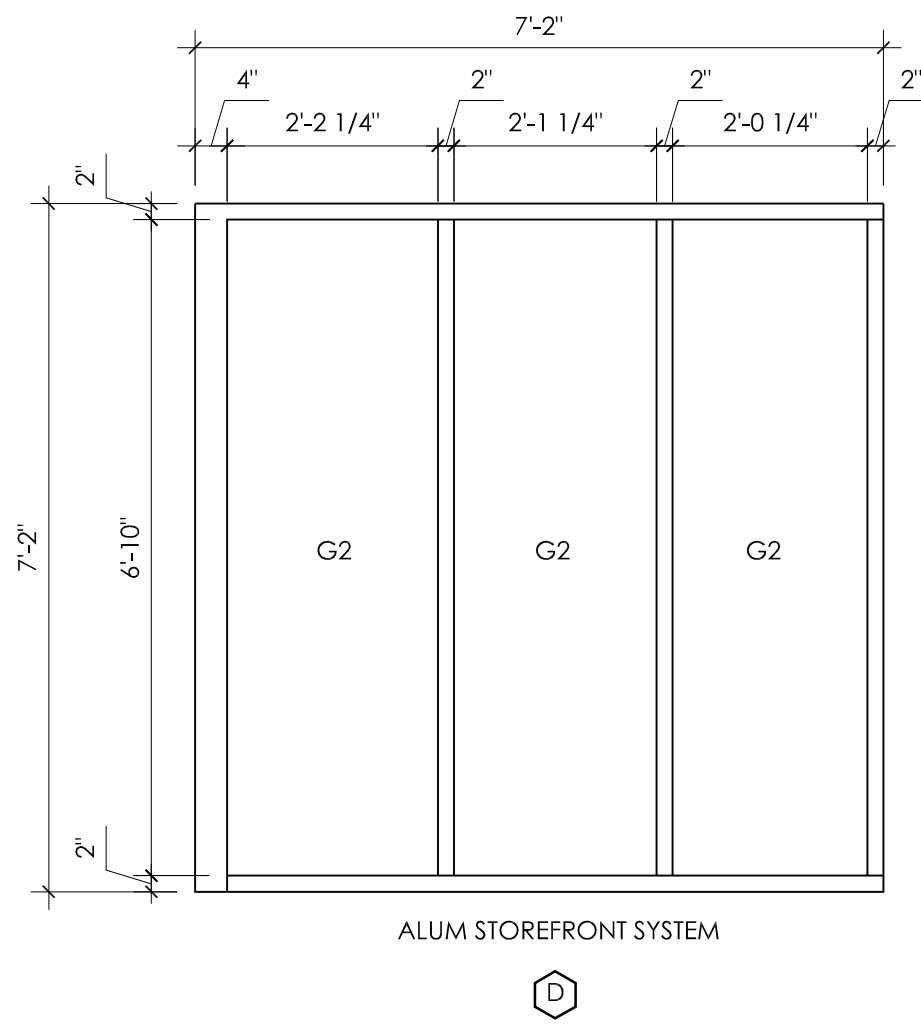
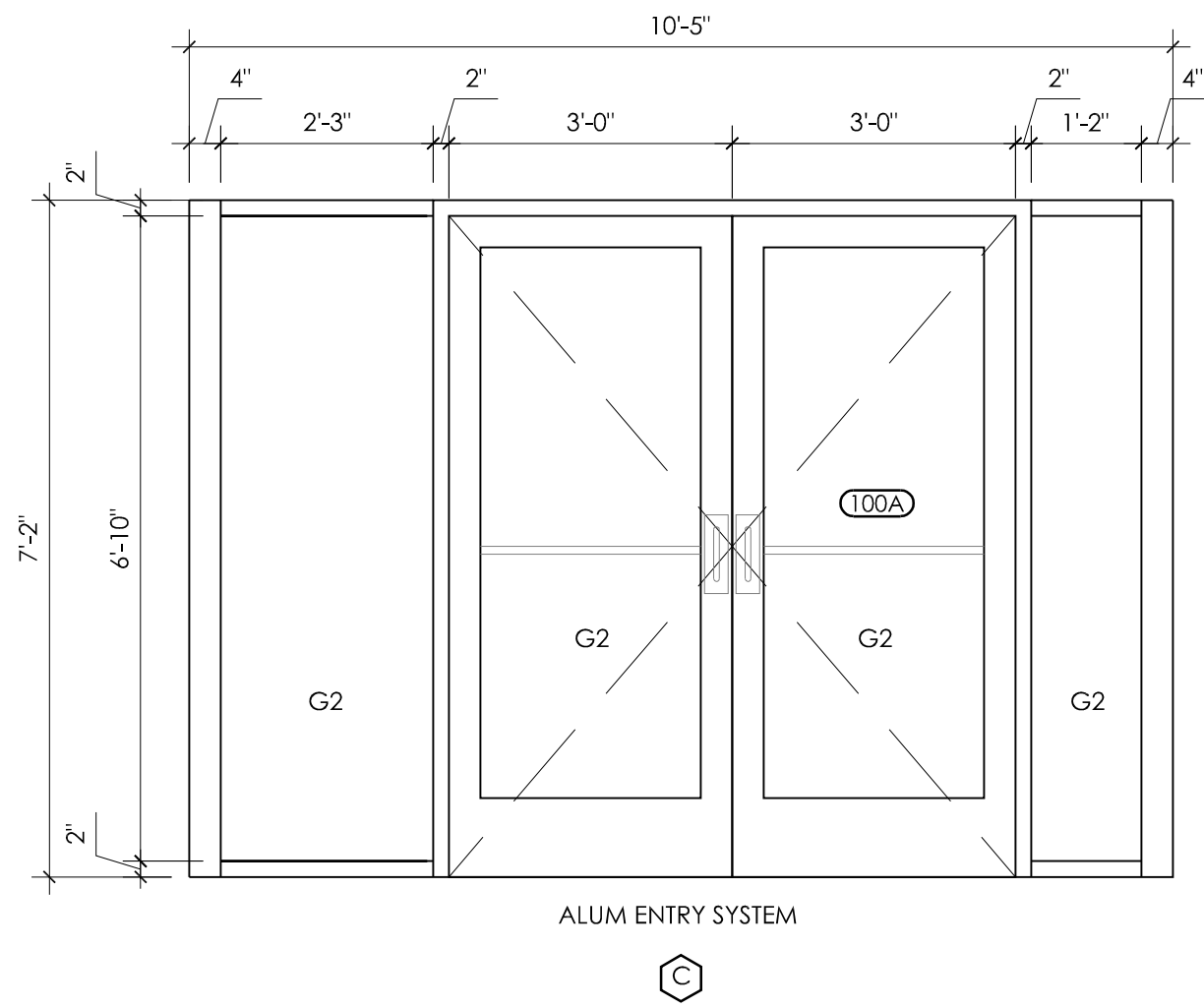
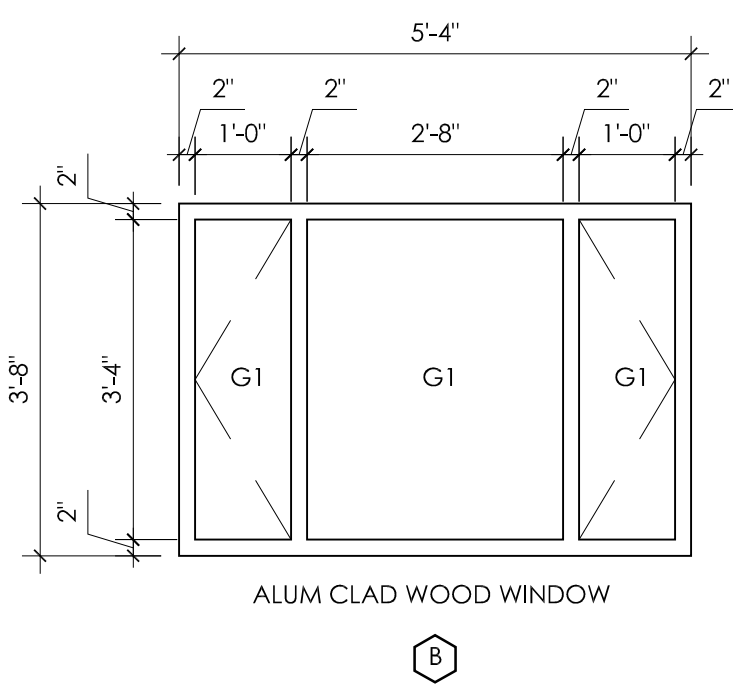
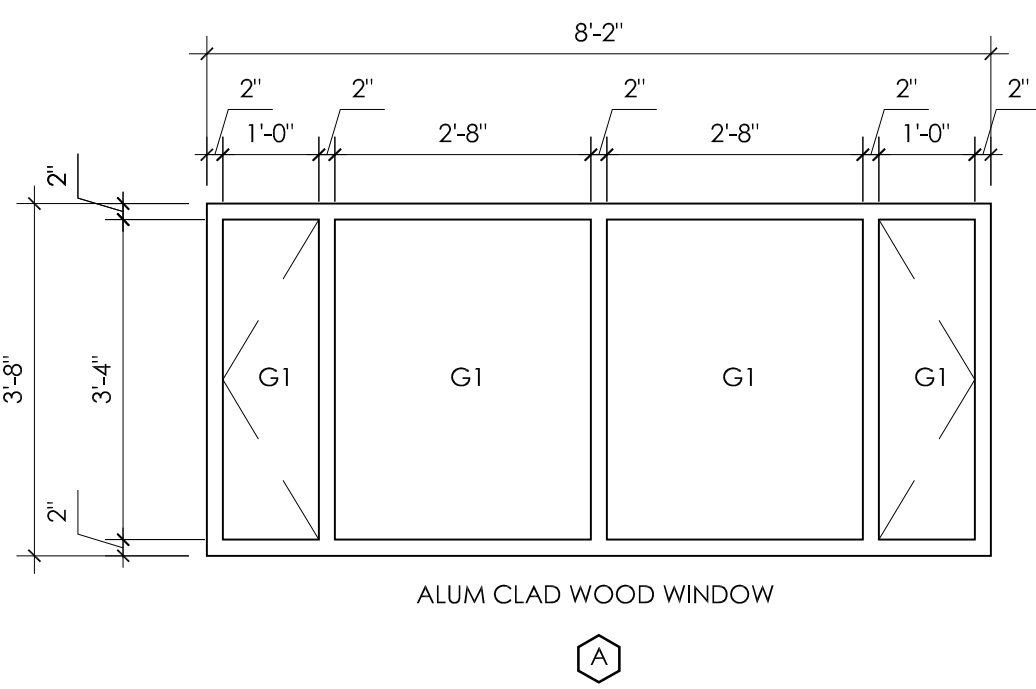
60
40
20
0 5 10 15 20
1"=20'

2
1
0
1 1/2"=1'-0"

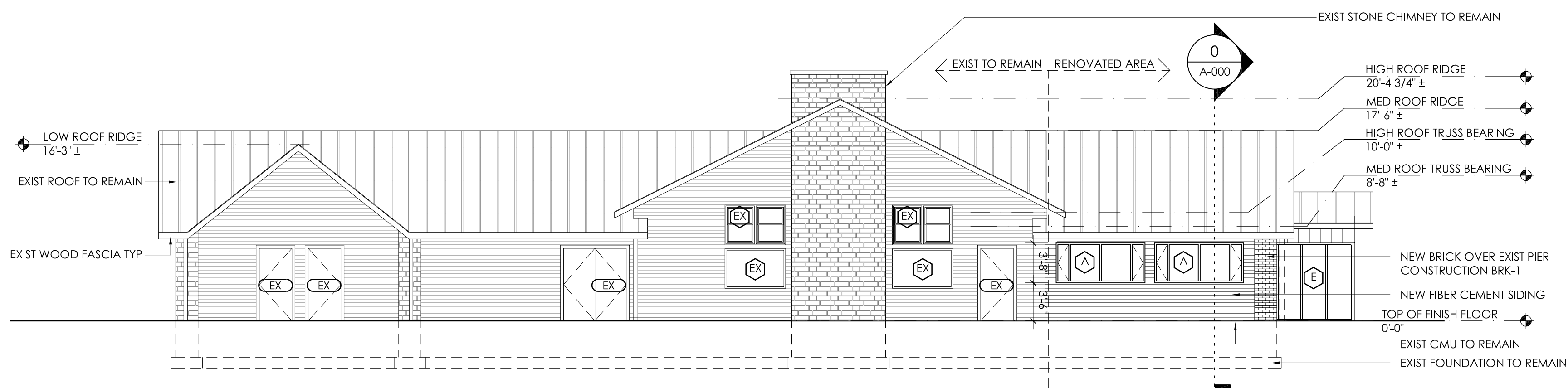
4
3
2
1
0
3/4"=1'-0"

6
5
4
3
2
1
0
1/2"=1'-0"

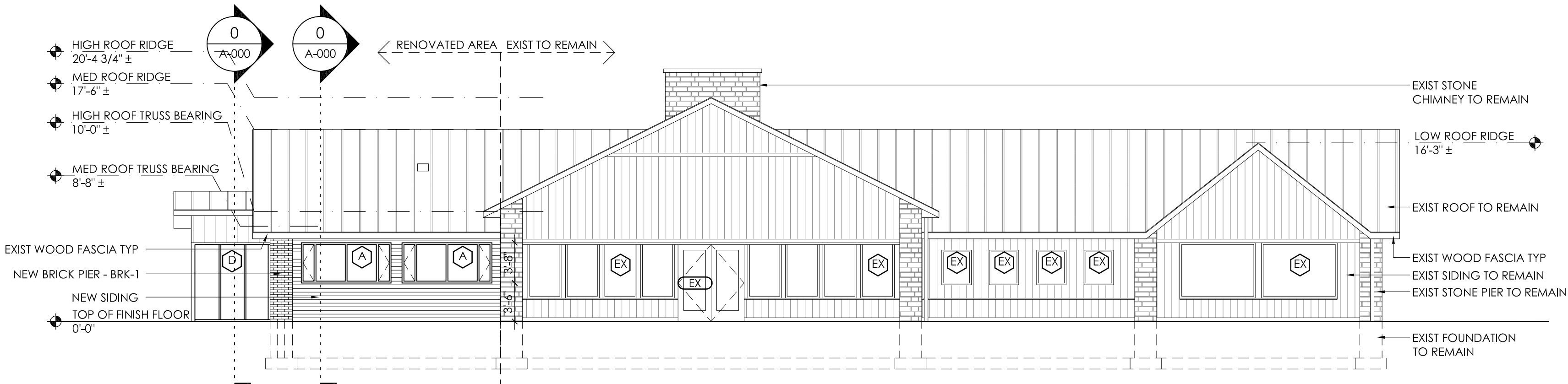
8
7
6
5
4
3
2
1
0
3/8"=1'-0"



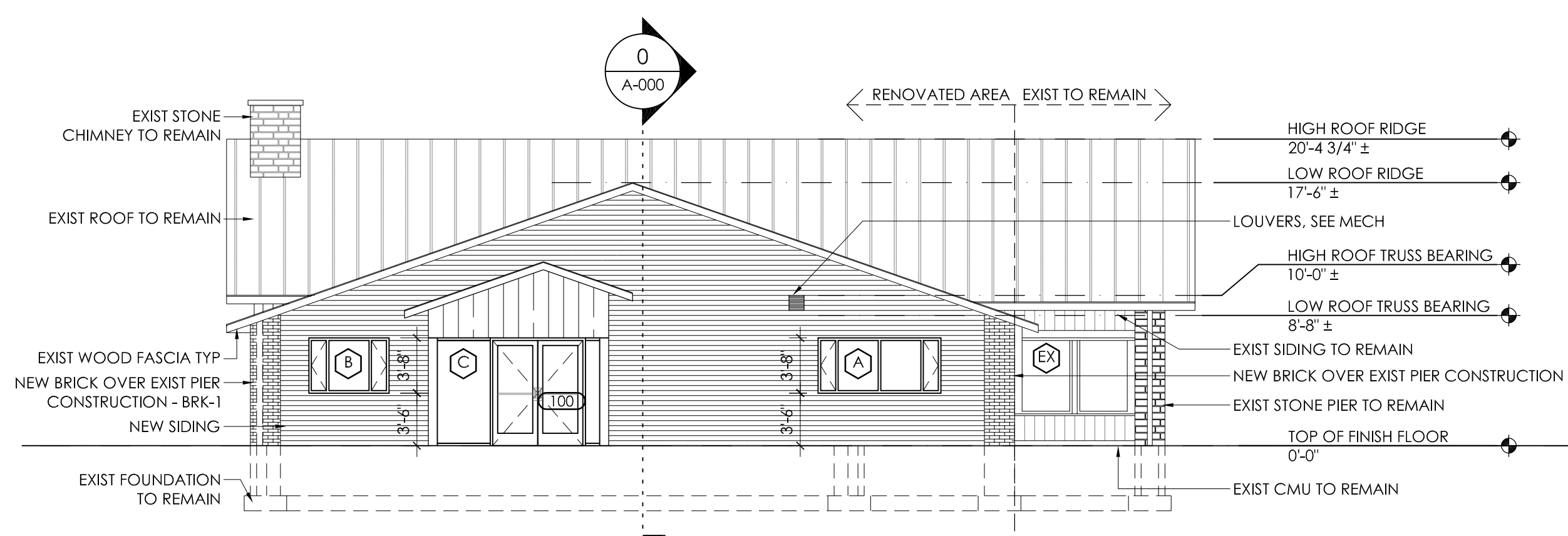
5 WINDOW ELEVATIONS
A5.0 1/2" = 1'-0"



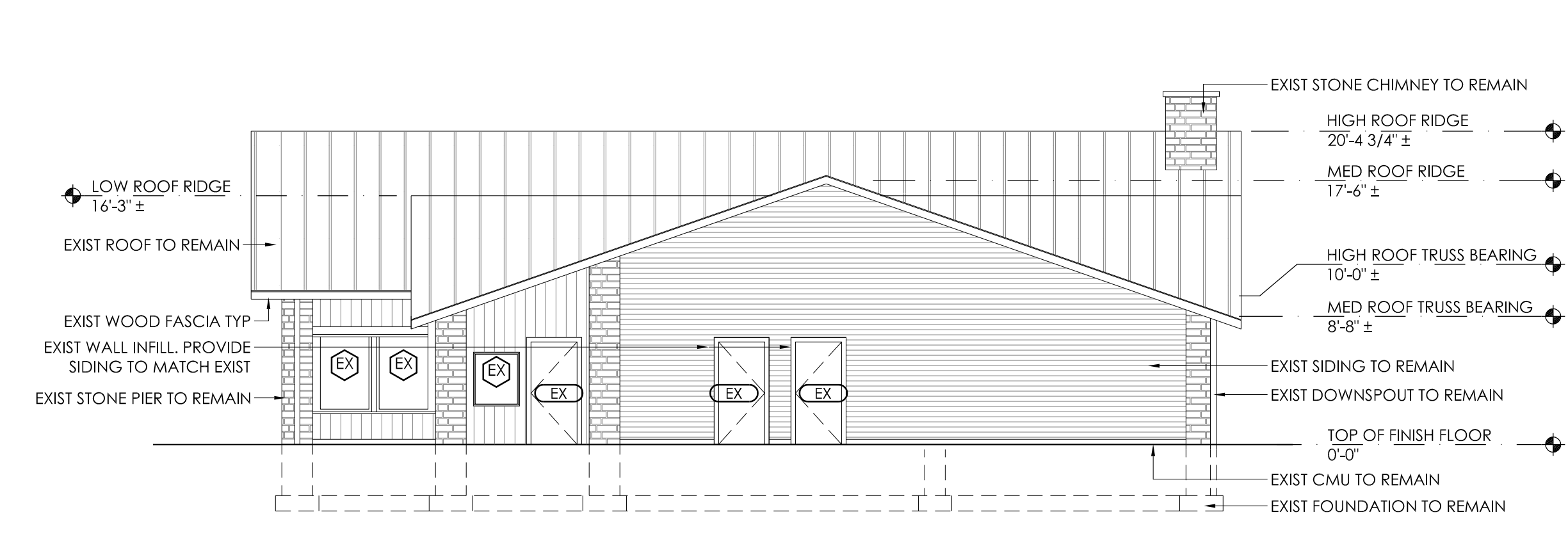
4 WEST ELEVATION
A5.0 1/4" = 1'-0"



2 EAST ELEVATION
A5.0 1/4" = 1'-0"



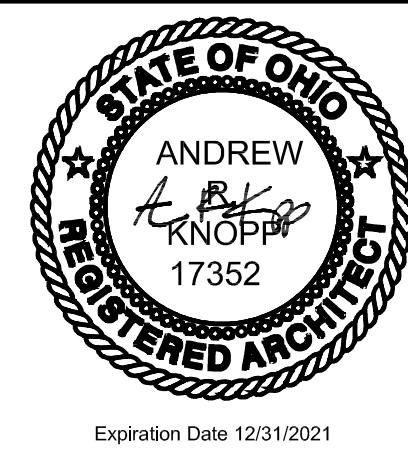
3 SOUTH ELEVATION
A5.0 1/4" = 1'-0"

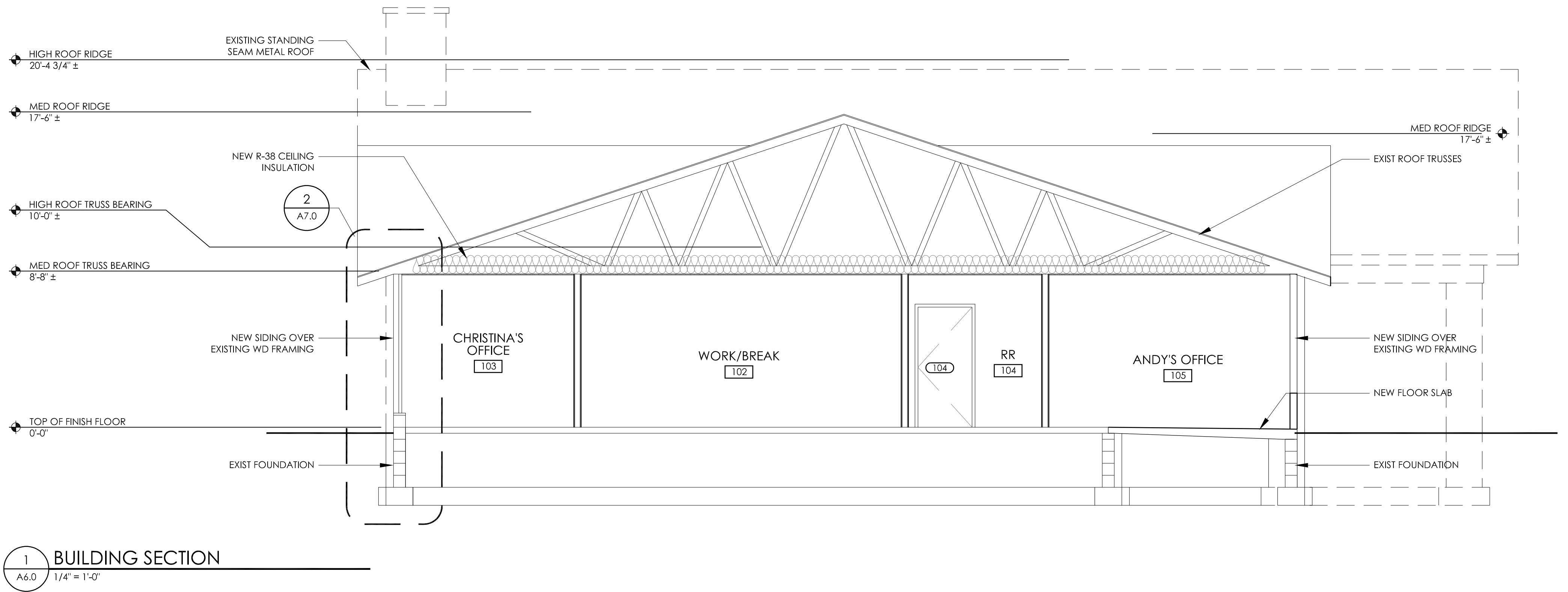
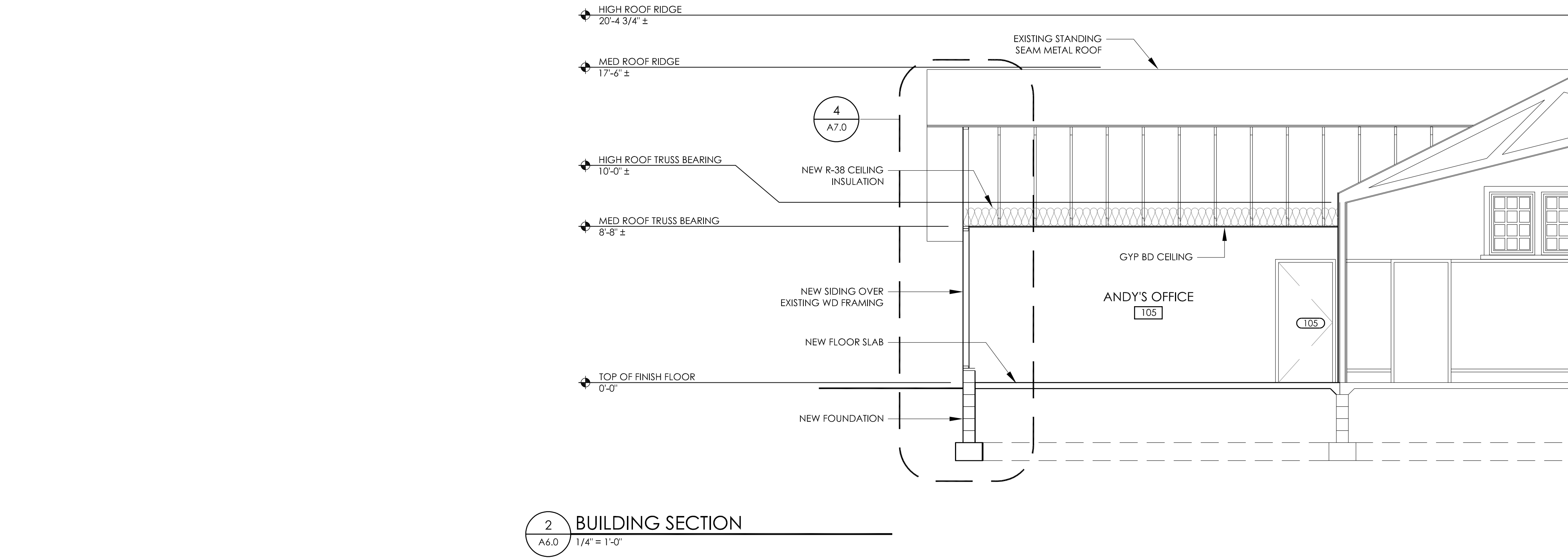
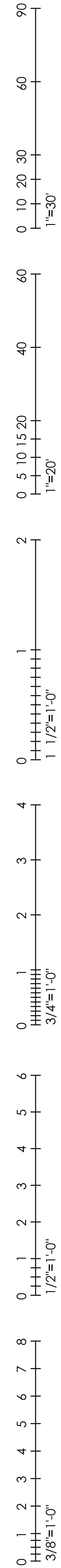


1 NORTH ELEVATION
A5.0 1/4" = 1'-0"

EXTERIOR LEGEND

- MTR-1 MATERIAL TAG
- BRICK BRK-1/BRK-2
- STONE SNF-1
- X SHT. SECTION TAG
- G1 STANDARD GLASS
- G2 TEMPERED GLASS





SANDUSKY PARKS
RIVER CLIFF OFFICE RENOVATION

1329 TIFFIN ST.
FREMONT, OH 43420

11-06-2020	ISSUED FOR BIDDING

BUILDING
SECTIONS

A6.0

90
60
30
0 10 20 30
1"=30"

60
40
20
0 5 10 15 20
1"=20"

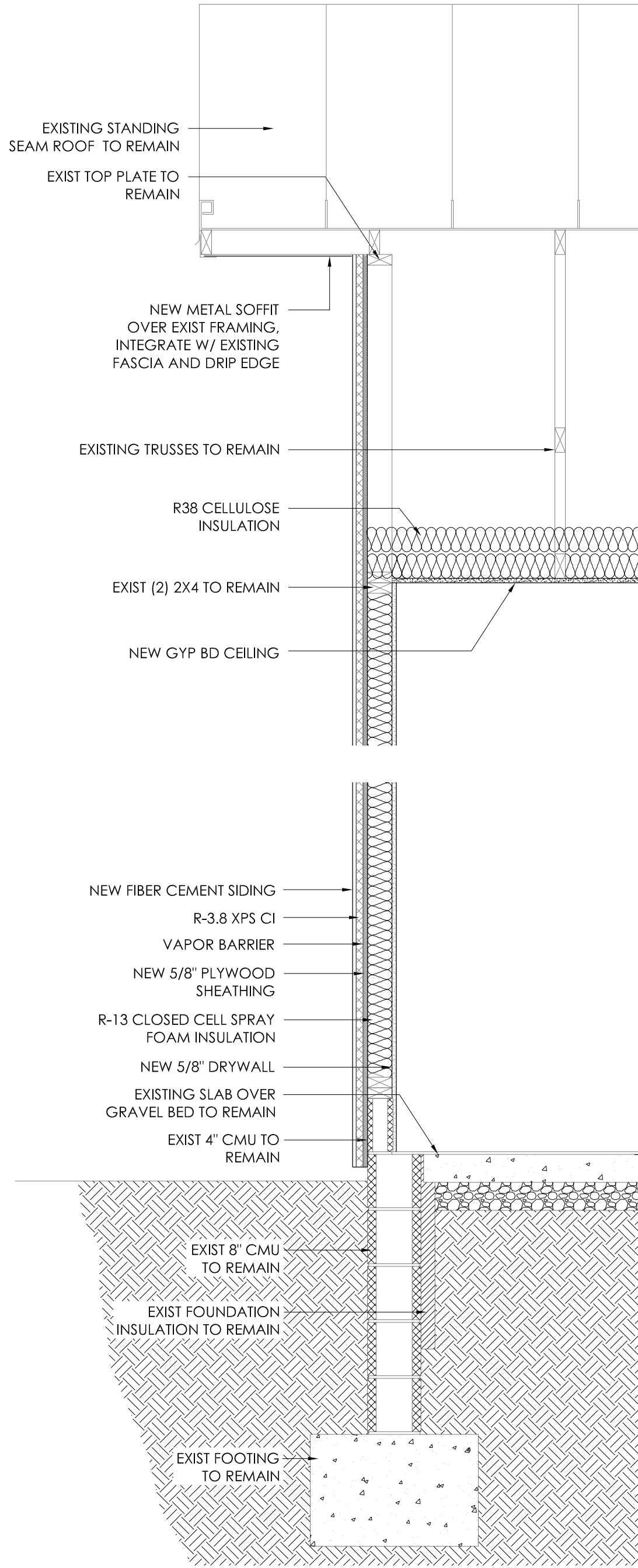
2
1
0
1 1/2"=1'-0"

4
3
2
1
0
1 1/2"=1'-0"

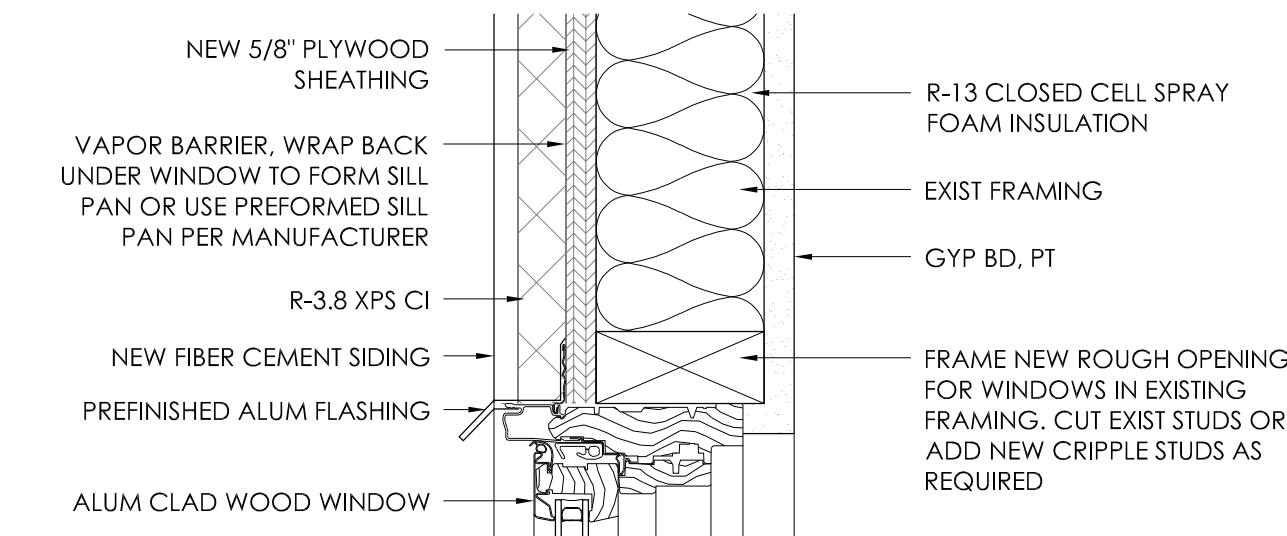
6
5
4
3
2
1
0
1 1/2"=1'-0"

8
7
6
5
4
3
2
1
0
3/8"=1'-0"

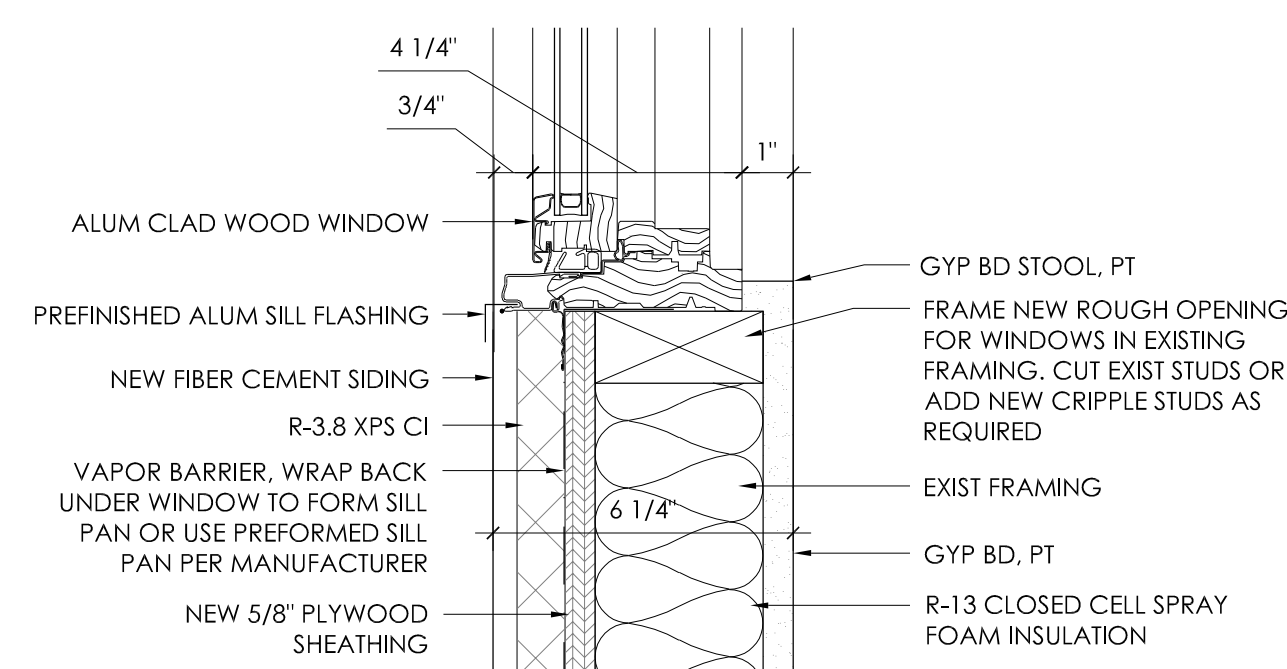
6
5
4
3
2
1
0
3/8"=1'-0"



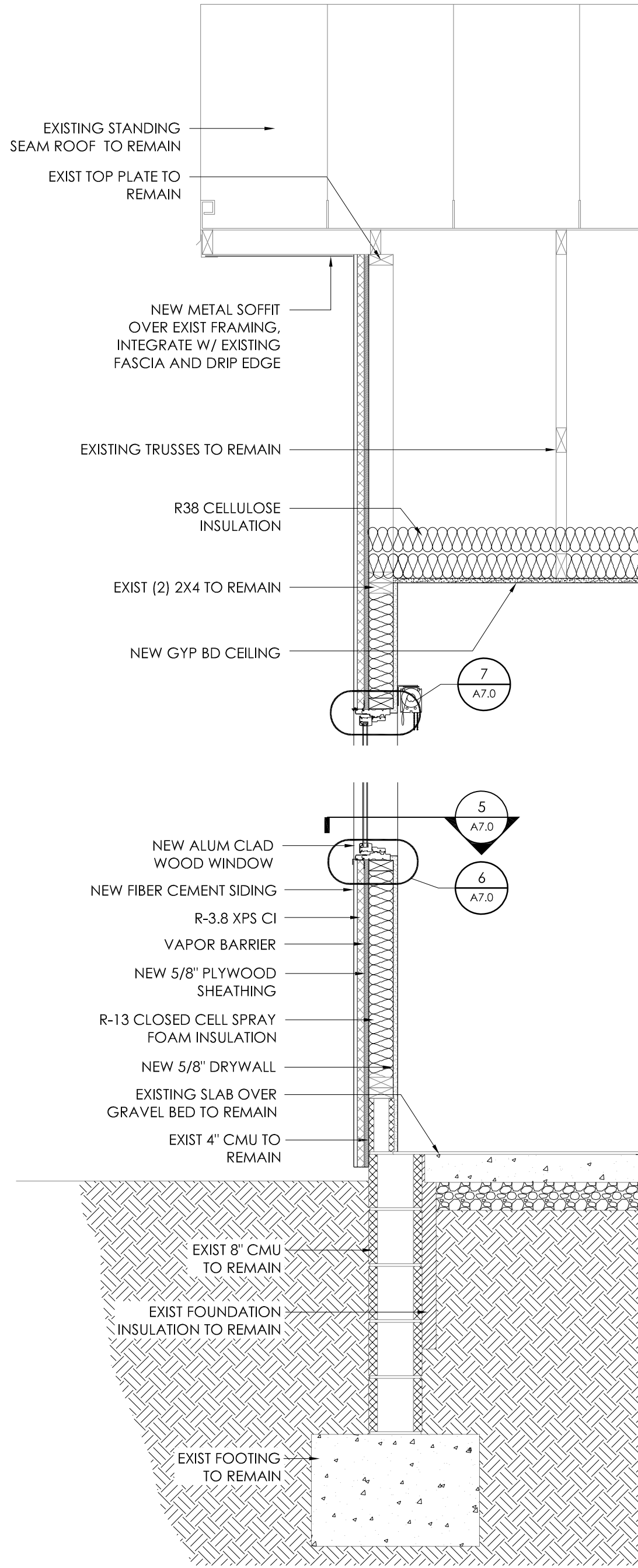
4 WALL SECTION
A7.0 3/4" = 1'-0"



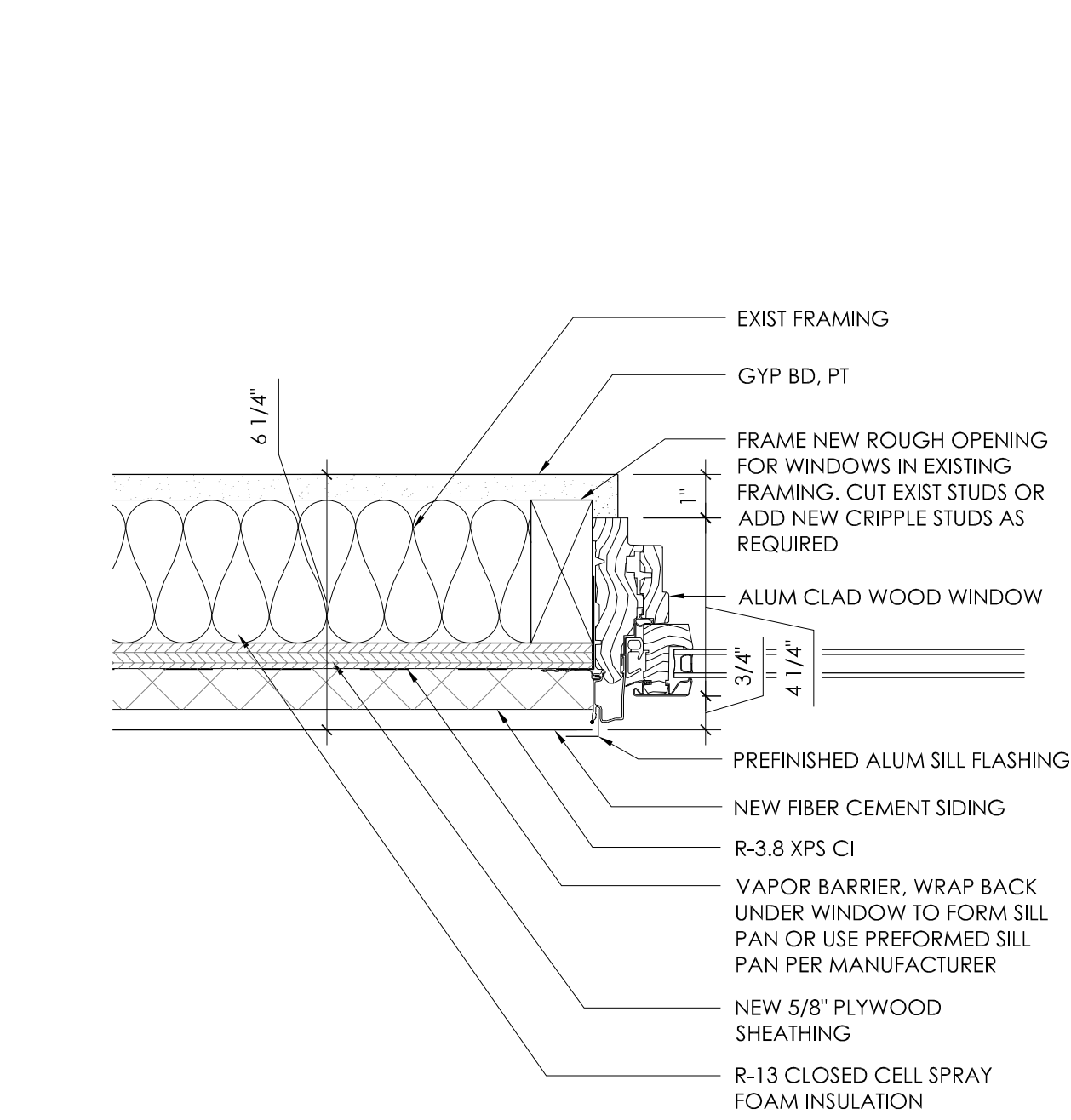
7 DETAIL
A7.0 3" = 1'-0"



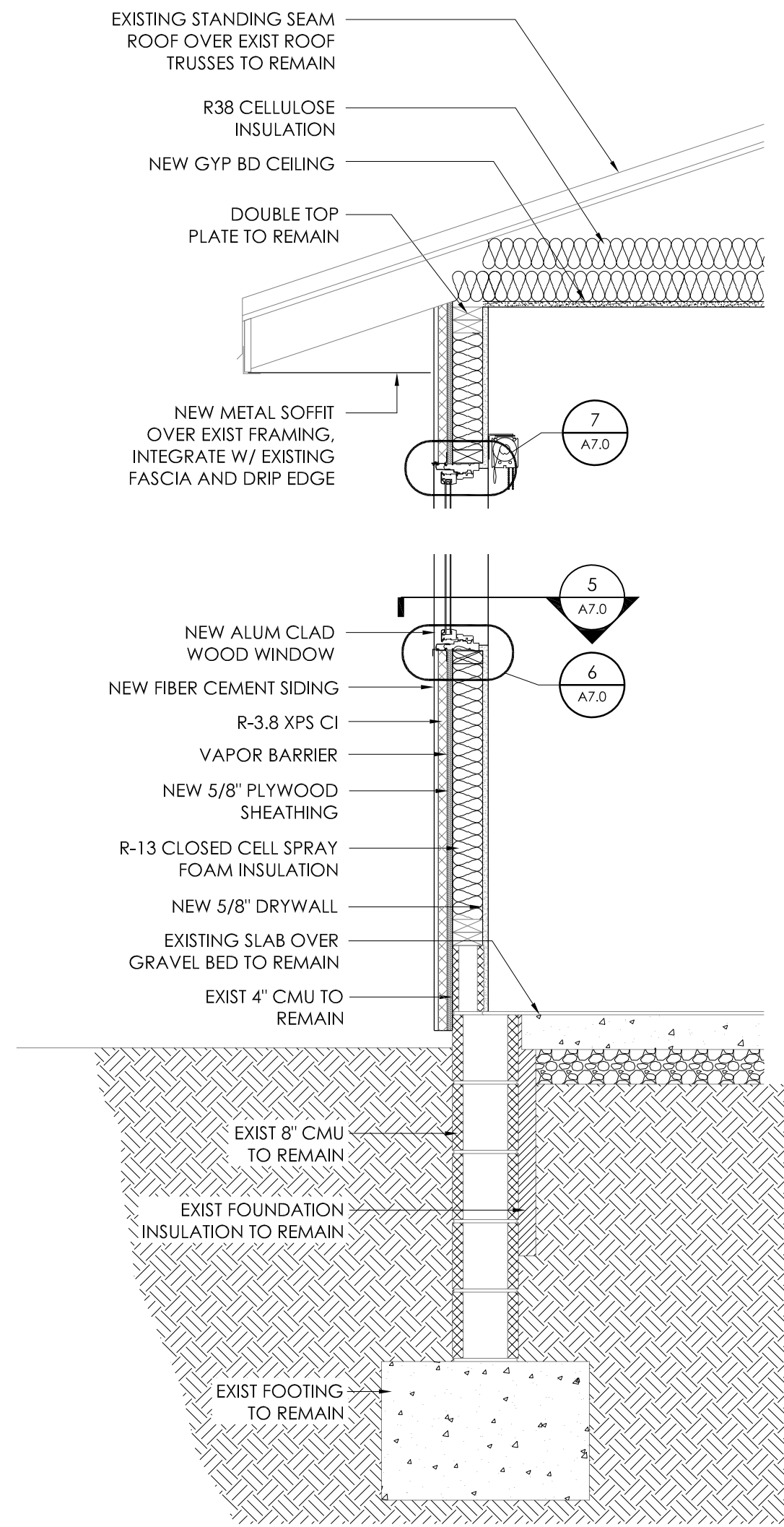
6 DETAIL
A7.0 3" = 1'-0"



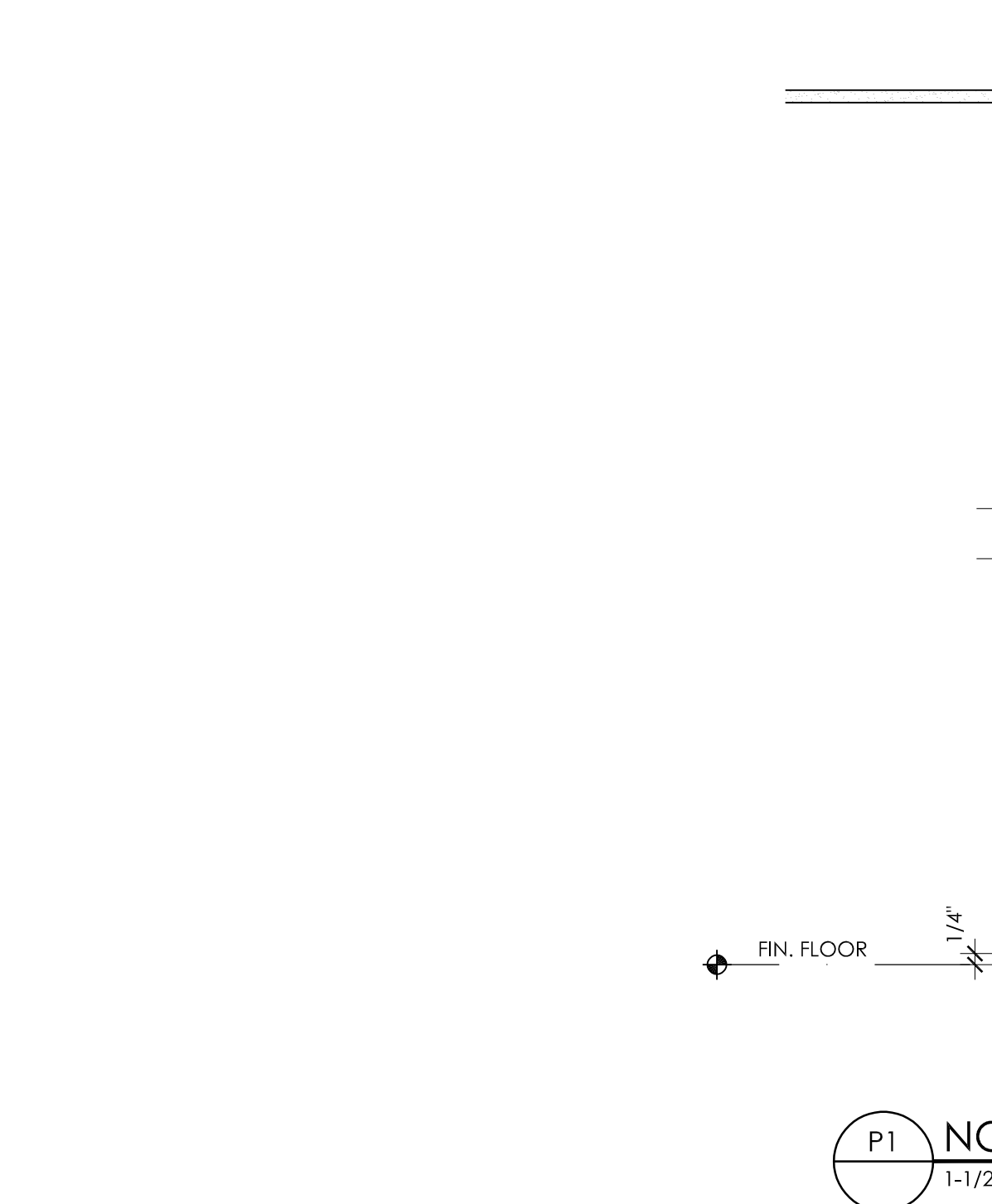
3 WALL SECTION
A7.0 3/4" = 1'-0"



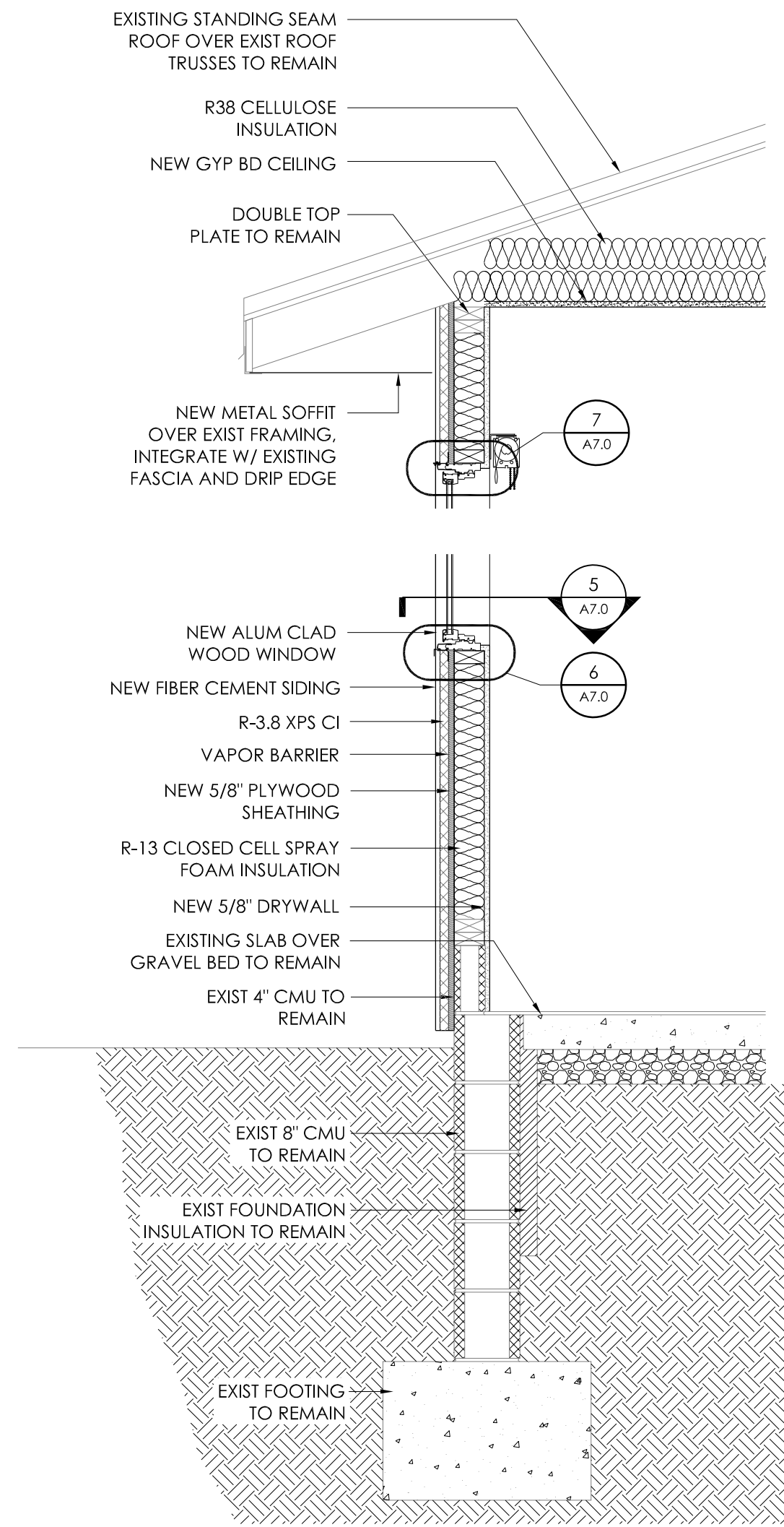
5 DETAIL
A7.0 3" = 1'-0"



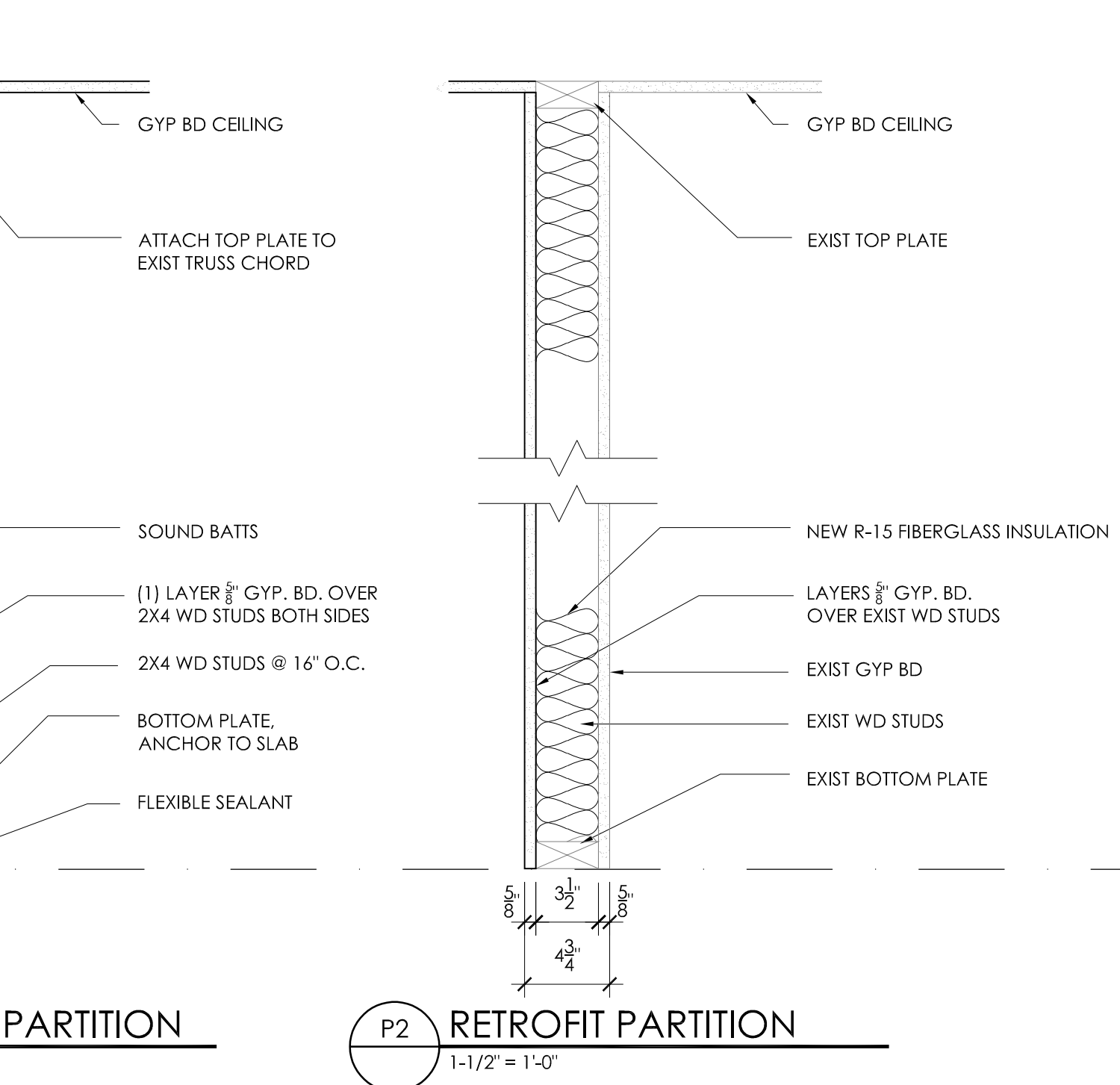
2 WALL SECTION
A7.0 3/4" = 1'-0"



P1 NON-RATED PARTITION
1-1/2" = 1'-0"



1 WALL SECTION
A7.0 3/4" = 1'-0"



P2 RETROFIT PARTITION
1-1/2" = 1'-0"



SANDUSKY PARKS
RIVER CLIFF OFFICE RENOVATION

1329 TIFFIN ST.
FREMONT, OH 43420

PROJECT TITLE:

ISSUE OR REVISION:

11-06-2020 ISSUED FOR BIDDING

DATE ISSUE / REVISION

DESIGNED: AK

DRAWN: DE

CHECKED: AK

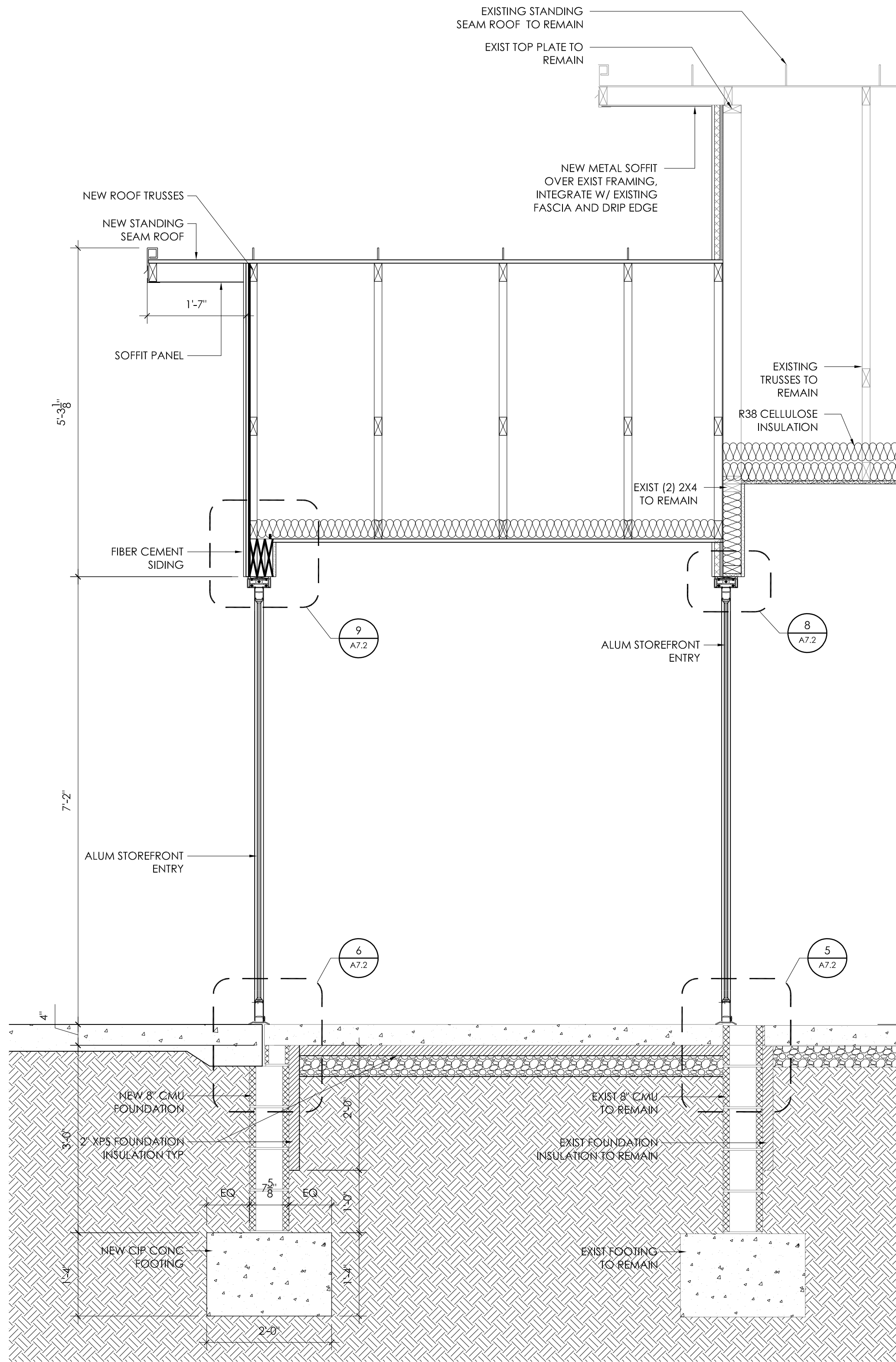
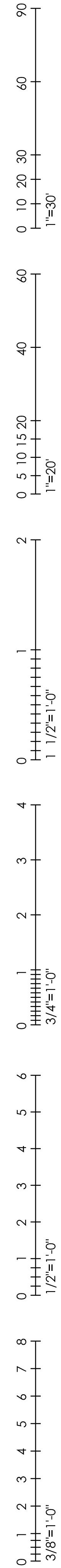
TPA COMMISSION NUMBER: 18051

DRAWING TITLE:

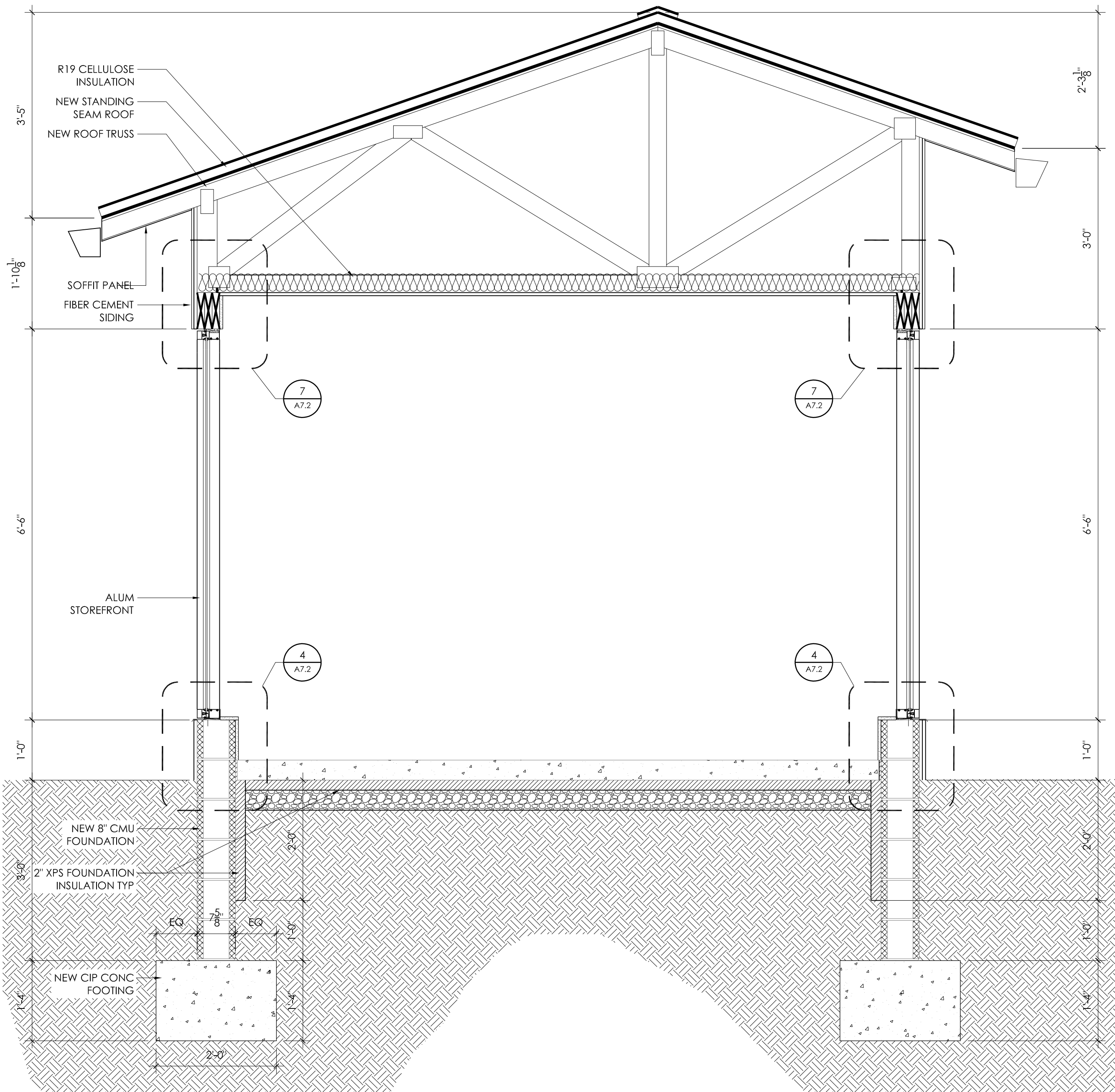
WALL TYPE DETAILS
WALL SECTIONS
AND DETAILS

DRAWING NUMBER:

A7.0



4 WALL SECTION
3/4" = 1'-0"



2 WALL SECTION
3/4" = 1'-0"



SANDUSKY PARKS
RIVER CLIFF OFFICE RENOVATION

1329 TIFFIN ST.
FREMONT, OH 43420

PROJECT TITLE:

ISSUE OR REVISION:

11-06-2020	ISSUED FOR BIDDING
DATE	ISSUE / REVISION

DESIGNED:	AK
DRAWN:	DE
CHECKED:	AK

TPA COMMISSION NUMBER: 18051

DRAWING TITLE:

WALL SECTIONS
AND DETAILS

DRAWING NUMBER:

A7.1

90
60
30
10
0
1"=30"

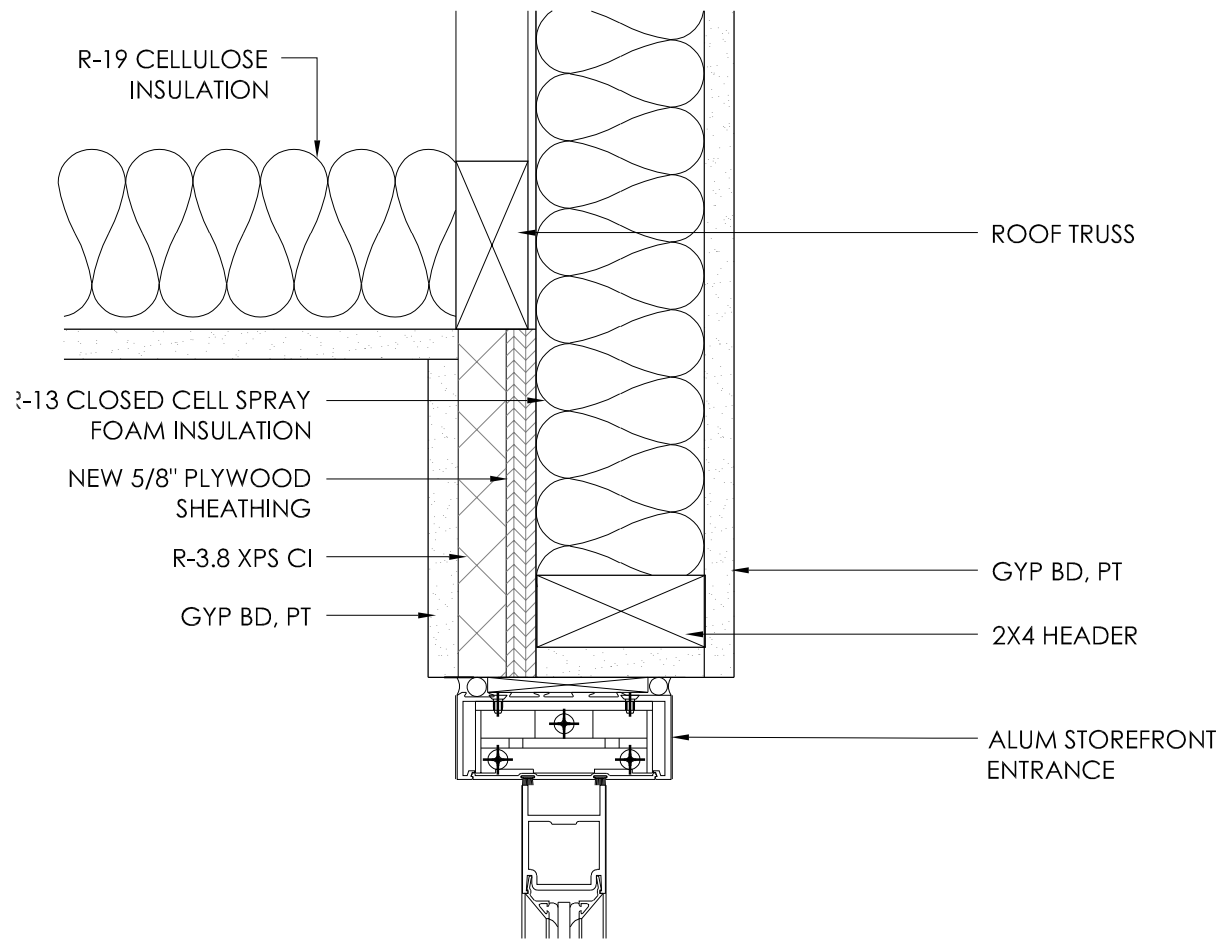
60
40
20
10
5
0
1"=20"

2
1
0
1 1/2"=1'-0"

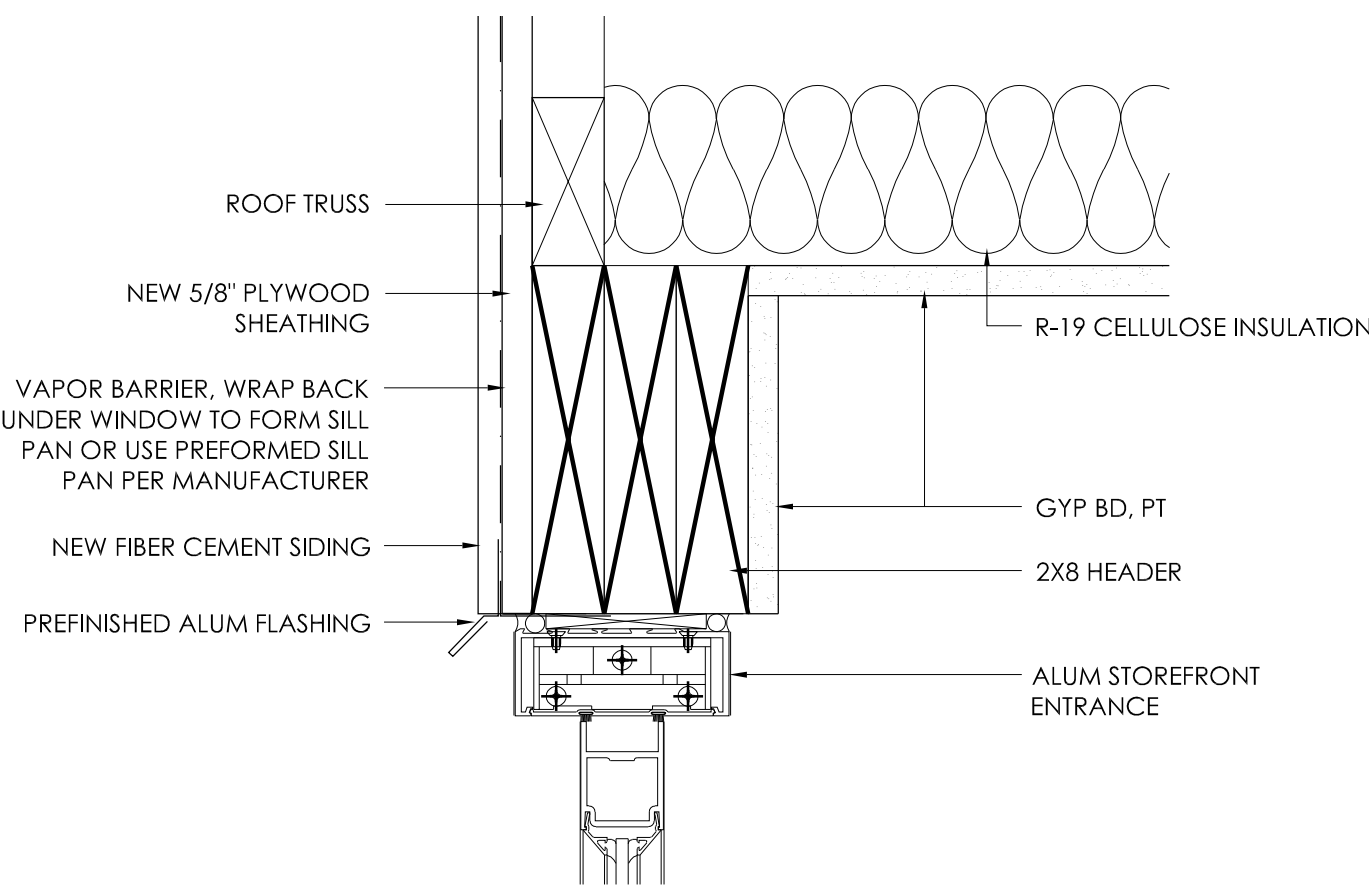
4
3
2
1
0
3/4"=1'-0"

6
5
4
3
2
1
0
1 1/2"=1'-0"

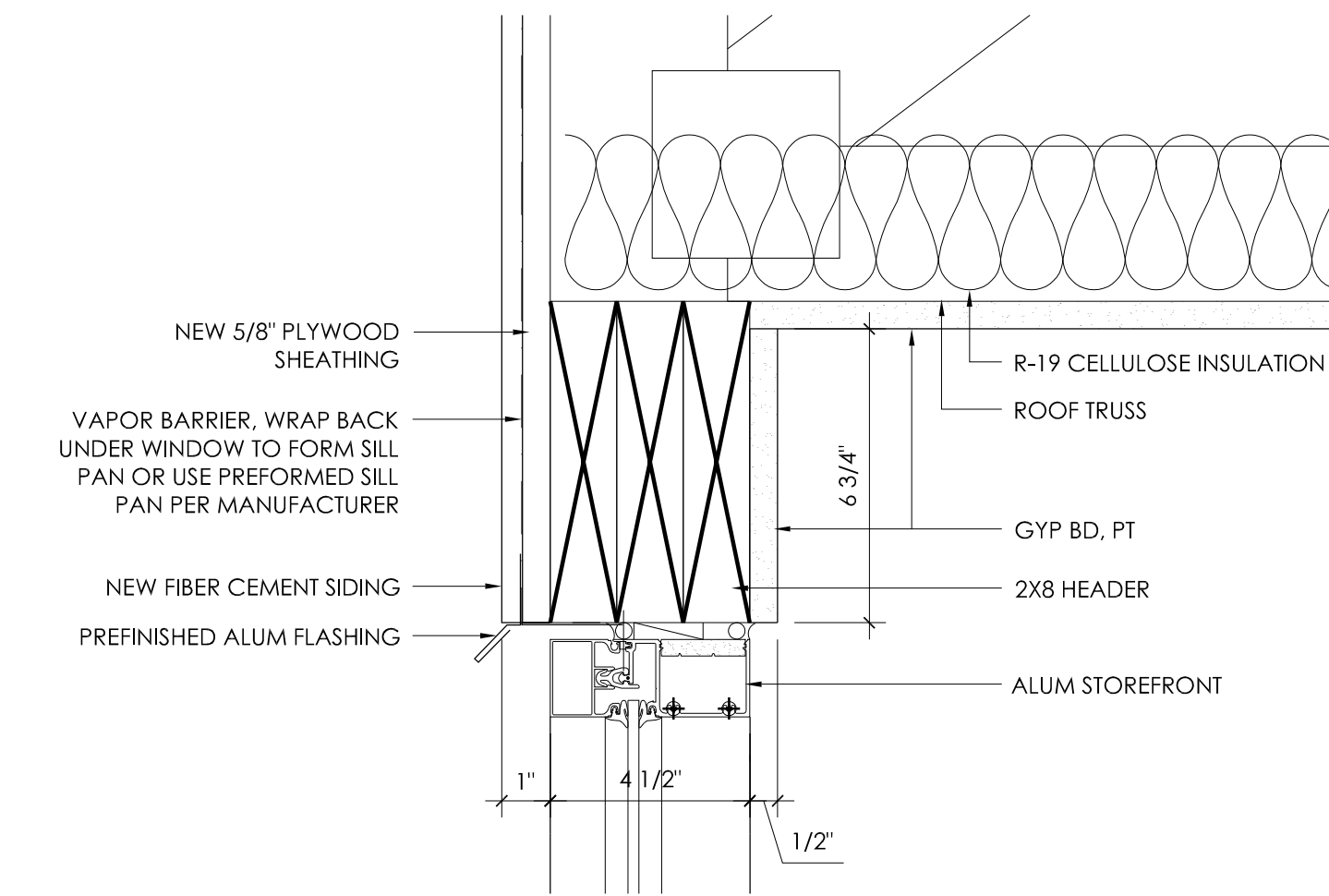
8
7
6
5
4
3
2
1
0
3/8"=1'-0"



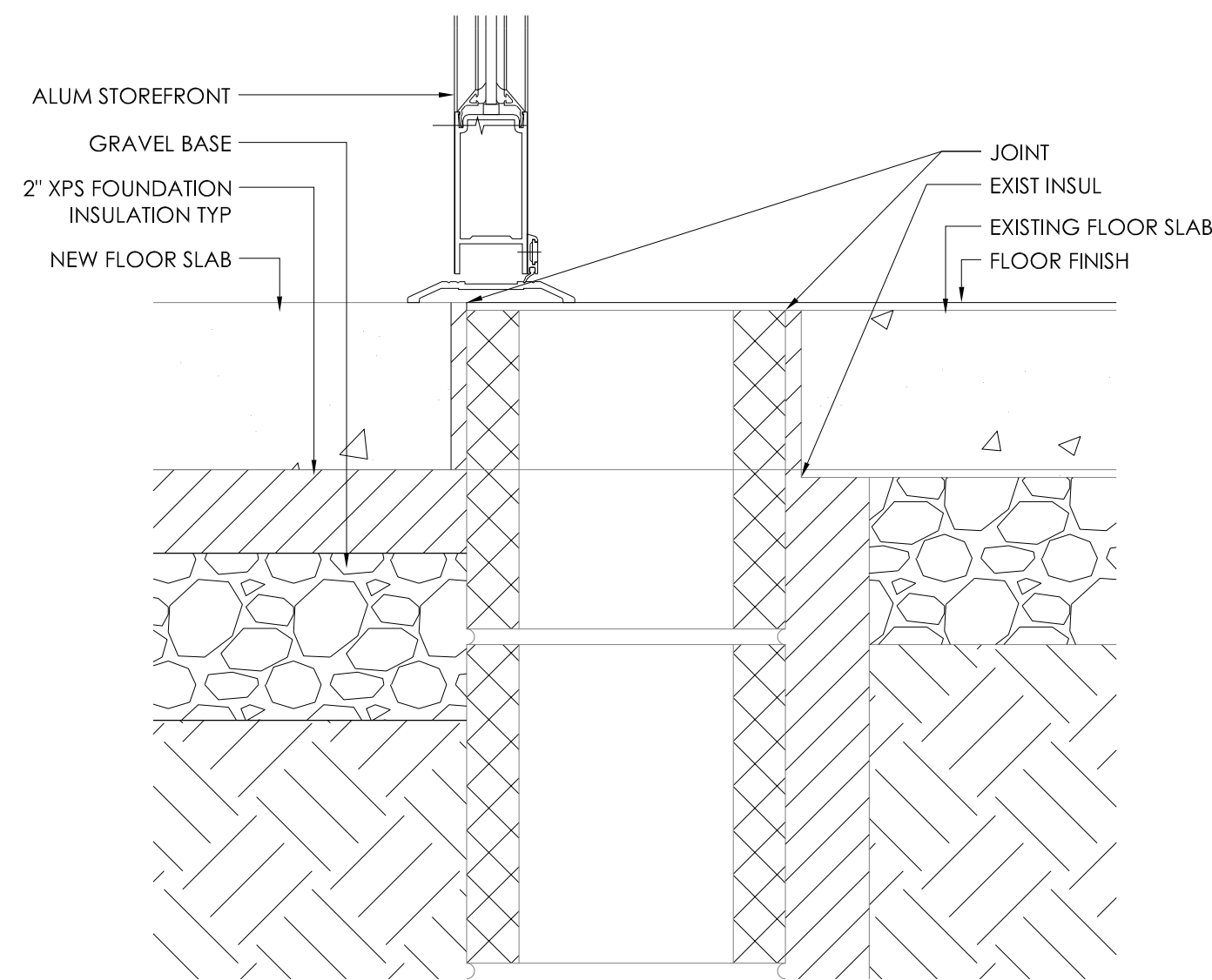
9 DETAIL
A7.2 3" = 1'-0"



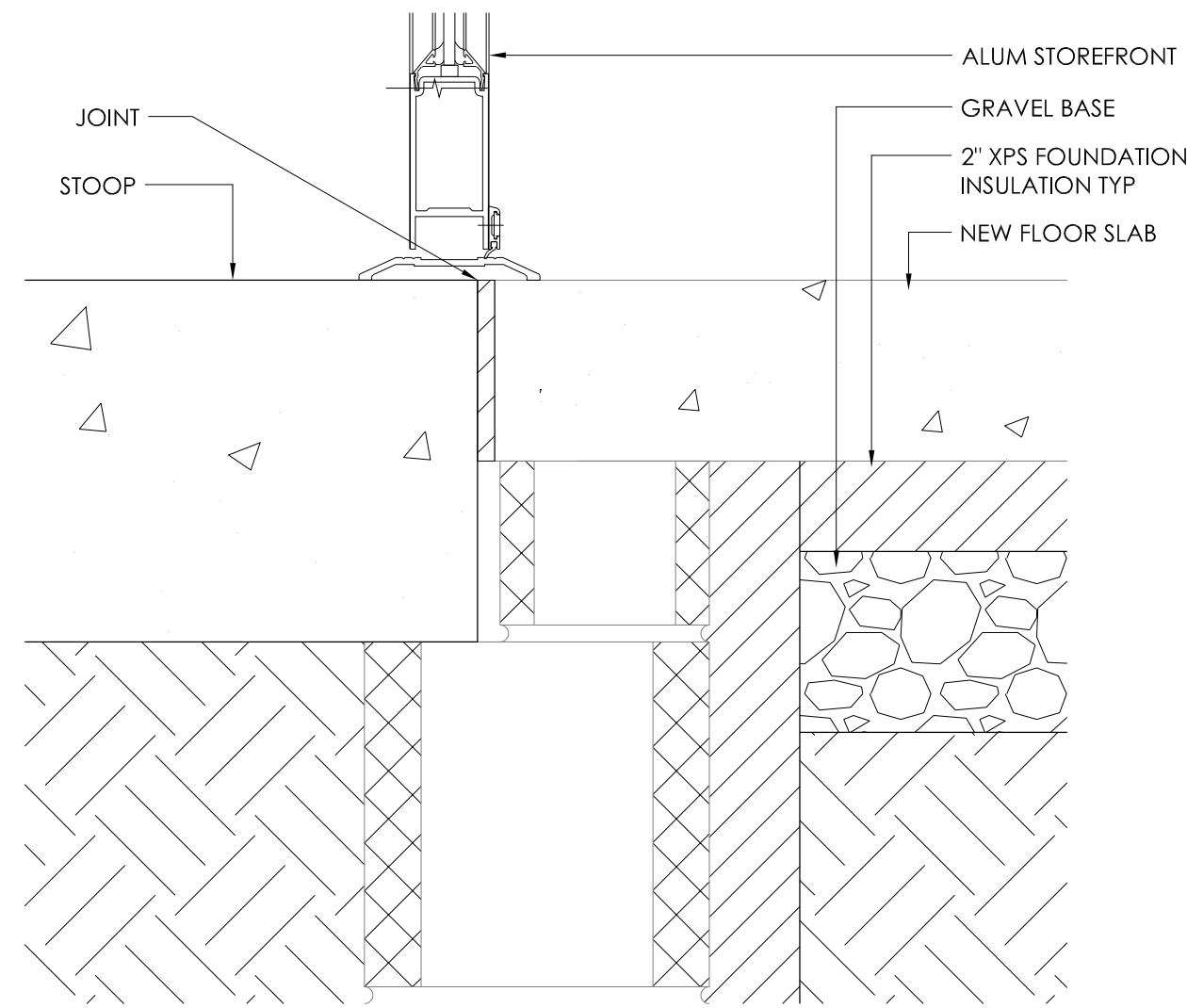
8 DETAIL
A7.2 3" = 1'-0"



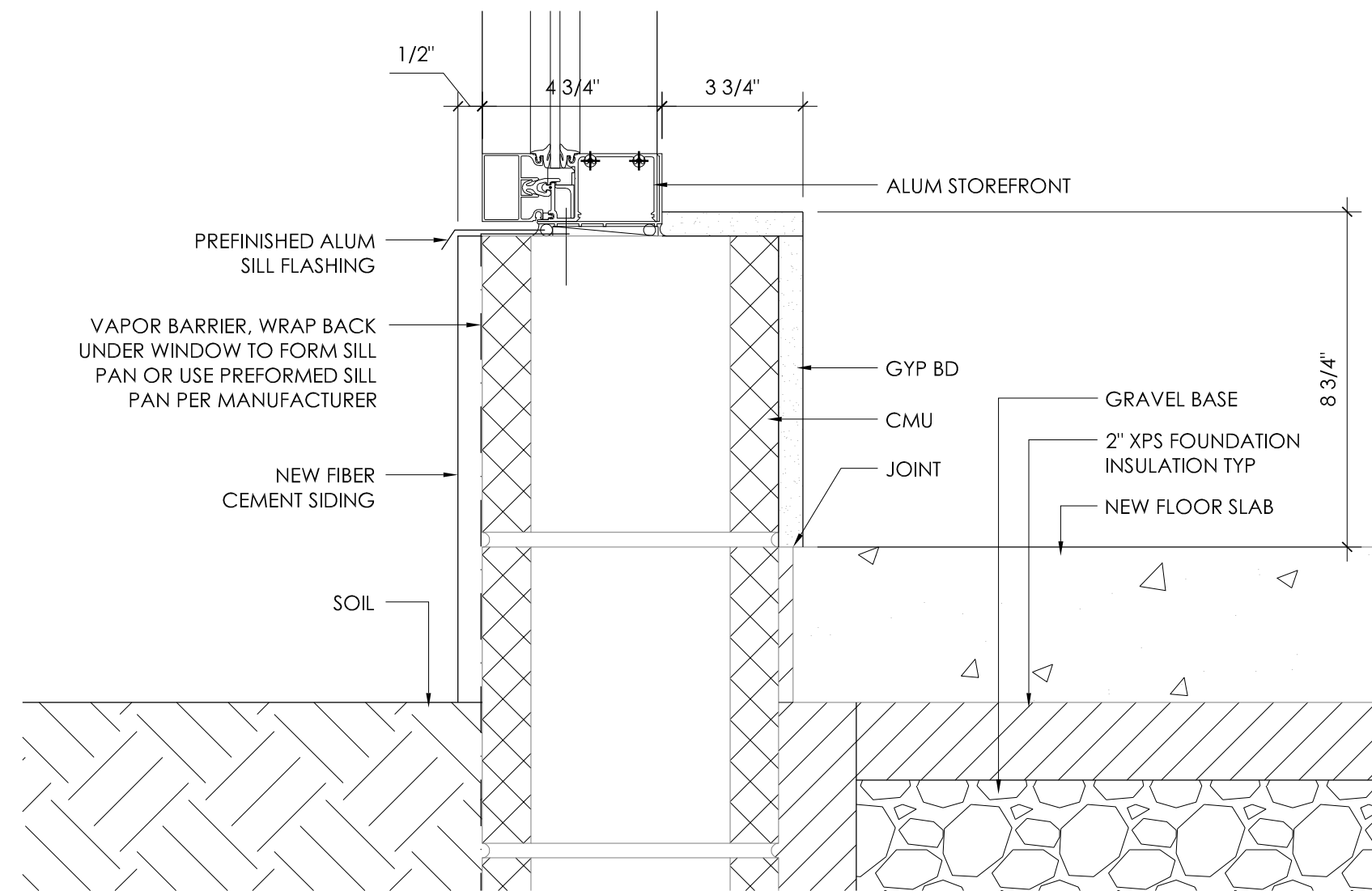
7 DETAIL
A7.2 3" = 1'-0"



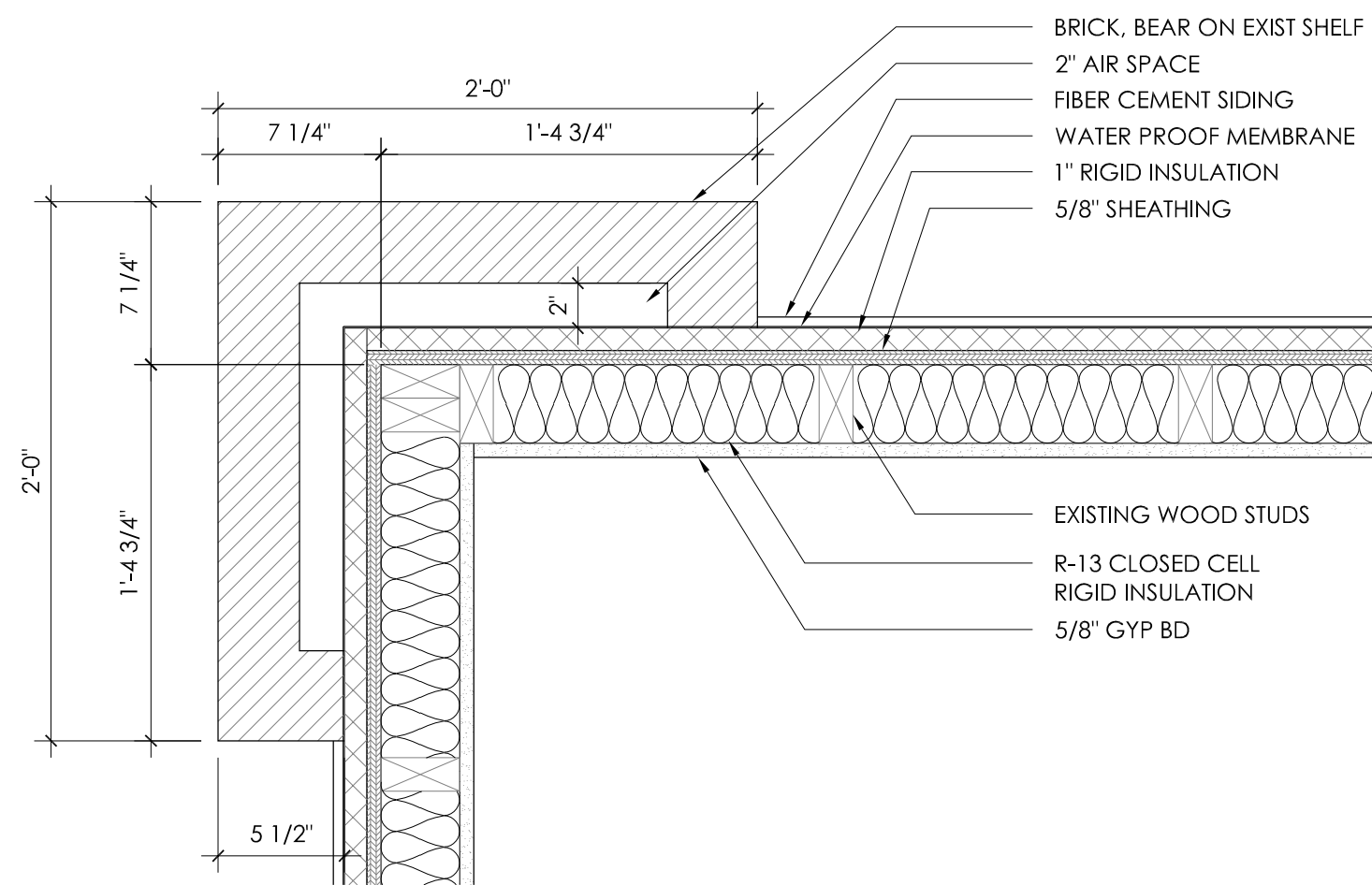
6 DETAIL
A7.2 3" = 1'-0"



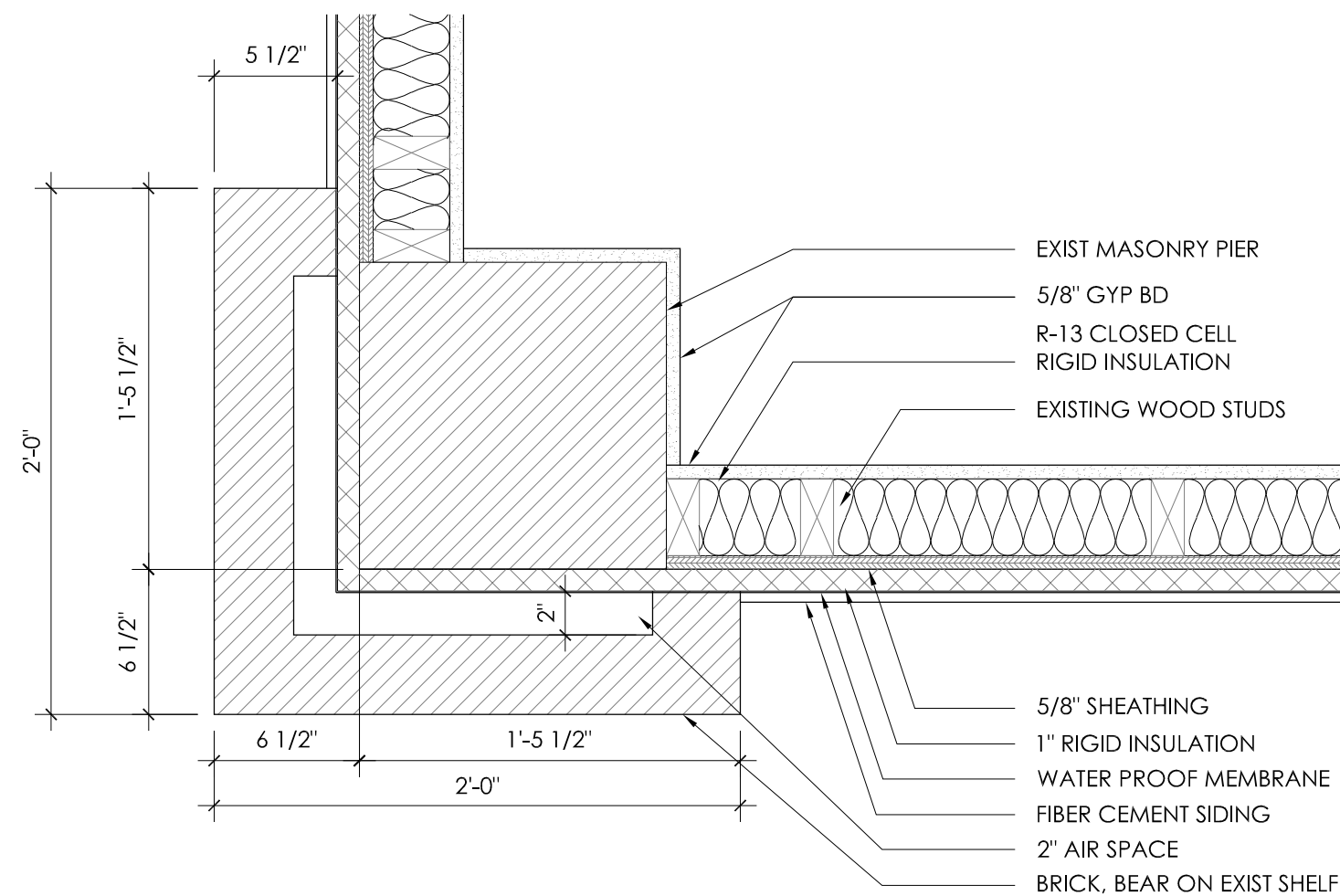
5 DETAIL
A7.2 3" = 1'-0"



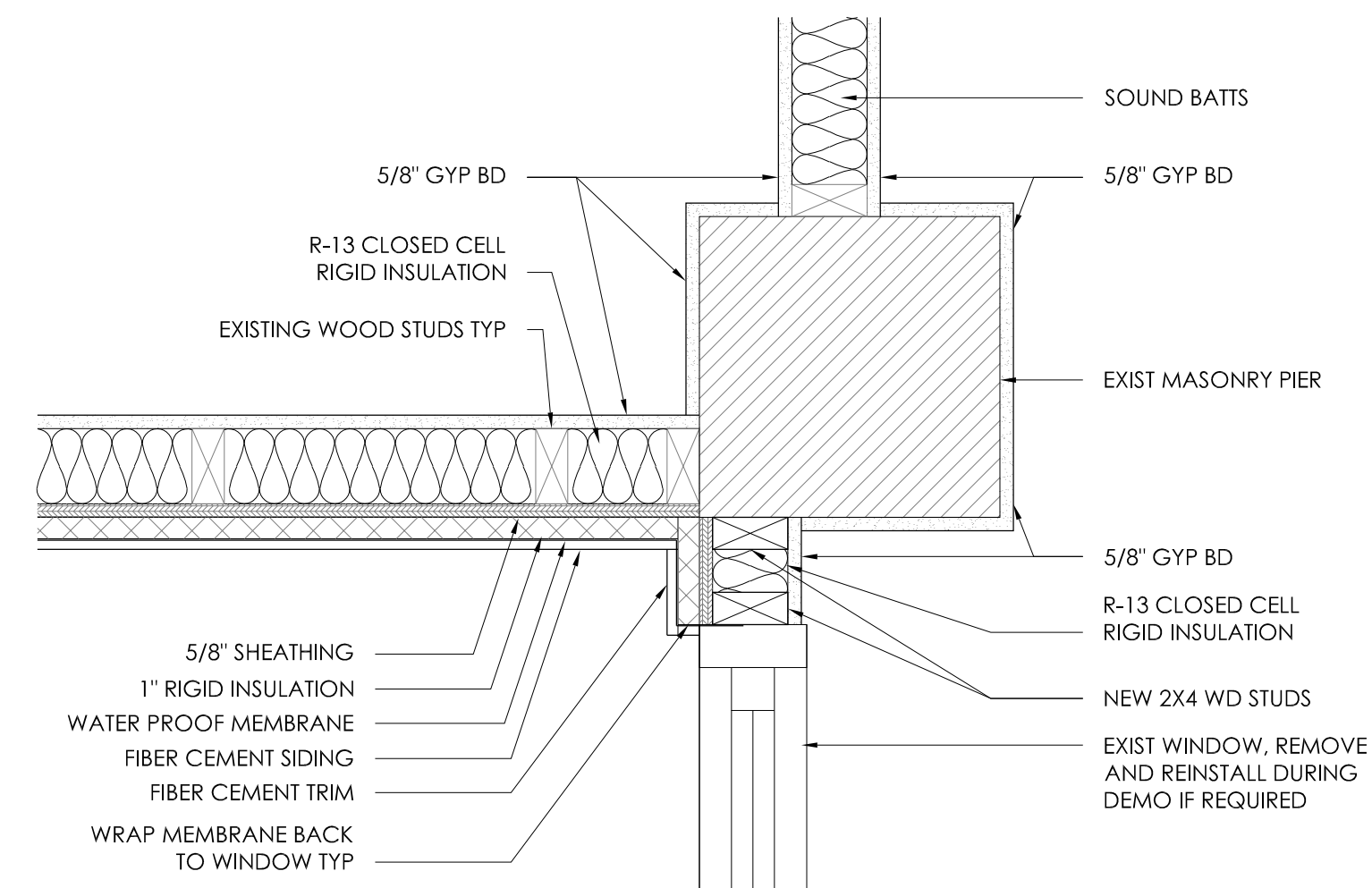
4 DETAIL
A7.2 3" = 1'-0"



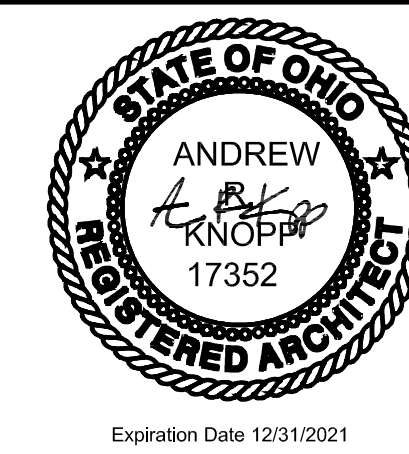
3 PLAN DETAIL
A7.2 3" = 1'-0"



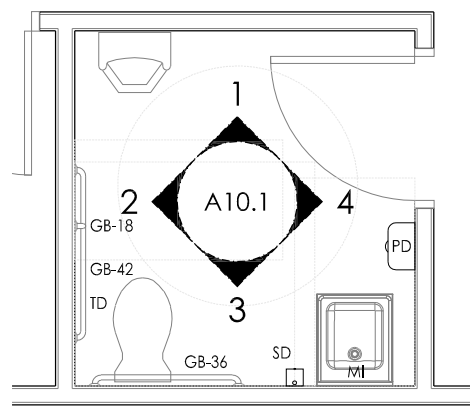
2 PLAN DETAIL
A7.2 3" = 1'-0"



1 PLAN DETAIL
A7.2 3" = 1'-0"



90
60
30
0 10 20 30
1"=30"
60
40
20
0 5 10 15 20
1"=30"
2
2
1
0 1 2 3 4
1 1/2"=1'-0"
0 1 2 3 4 5 6
1/2"=1'-0"
0 1 2 3 4 5 6 7 8
3/8"=1'-0"

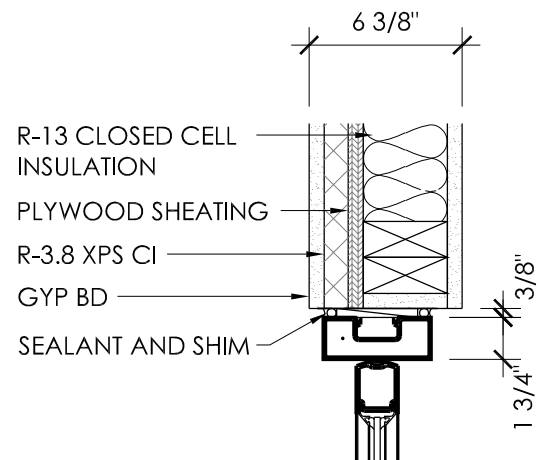


8 BATHROOM PLAN
A9.1 1/4" = 1'-0"

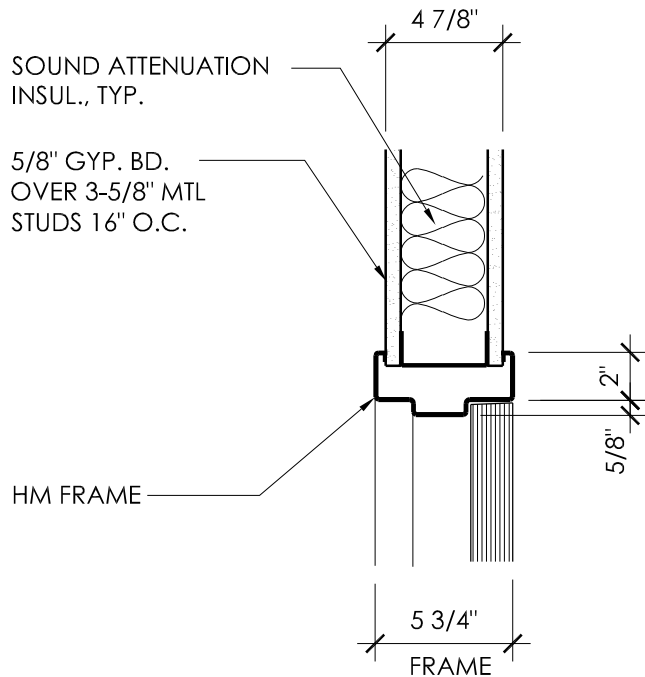
TOILET ROOM ACCESSORIES SCHEDULE					
	ITEM	MANUFACTURER	MODEL #	MOUNTING HEIGHT	NOTES
GB-18	STAINLESS STEEL 18" VERTICAL GRAB BAR	BRADLEY CORP OR EQUAL	#812	REFER TO SHEET G1.0 FOR MOUNTING HEIGHT	PROVIDE IN-WALL BLOCKING
GB-36	STAINLESS STEEL GRAB BAR, 36"	BRADLEY CORP OR EQUAL	#812	34" ABOVE FINISH FLOOR	PROVIDE IN-WALL BLOCKING
GB-42	STAINLESS STEEL GRAB BAR, 42"	BRADLEY CORP OR EQUAL	#812	34" ABOVE FINISH FLOOR	PROVIDE IN-WALL BLOCKING
MI	STAINLESS STEEL FRAMED MIRROR	BRADLEY CORP OR EQUAL	#B-290	REFER TO SHEET G1.0 FOR MOUNTING HEIGHT	PROVIDE IN-WALL BLOCKING
SD	SOAP DISPENSER	OWNER PROVIDED AND INSTALLED		REFER TO SHEET G1.0 FOR MOUNTING HEIGHT	PROVIDE IN-WALL BLOCKING
PD	PAPER TOWEL DISPENSER	OWNER PROVIDED AND INSTALLED		REFER TO SHEET G1.0 FOR MOUNTING HEIGHT	PROVIDE IN-WALL BLOCKING
TD	TOILET PAPER DISPENSER	OWNER PROVIDED AND INSTALLED		REFER TO SHEET G1.0 FOR MOUNTING HEIGHT	PROVIDE IN-WALL BLOCKING

ABBREVIATIONS

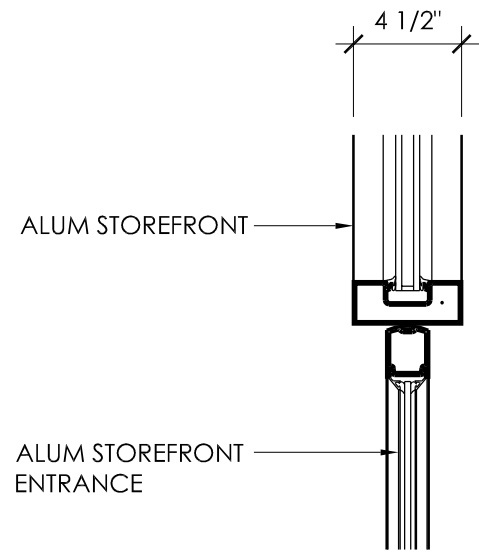
ALUM	ALUMINUM
HM	HOLLOW METAL
IG	INSULATED GLASS
LAM	LAMINATED
P	PAINT
SCO	SOLID CORE OAK
SCB	SOLID CORE BIRCH
SV	STAIN & VARNISH
TEMP	TEMPERED
TIG	TEMPERED INSULATED GLASS
WD	WOOD
W	WIRE GLASS (SQUARE DIAMOND)



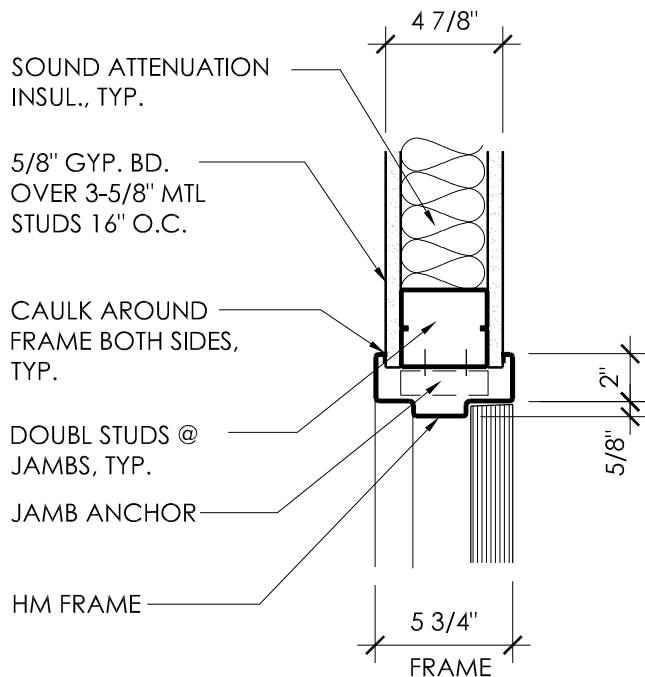
J2 JAMB DETAIL
1-1/2" = 1'-0"



H1 HEAD DETAIL
1-1/2" = 1'-0"



J3 JAMB DETAIL
1-1/2" = 1'-0"

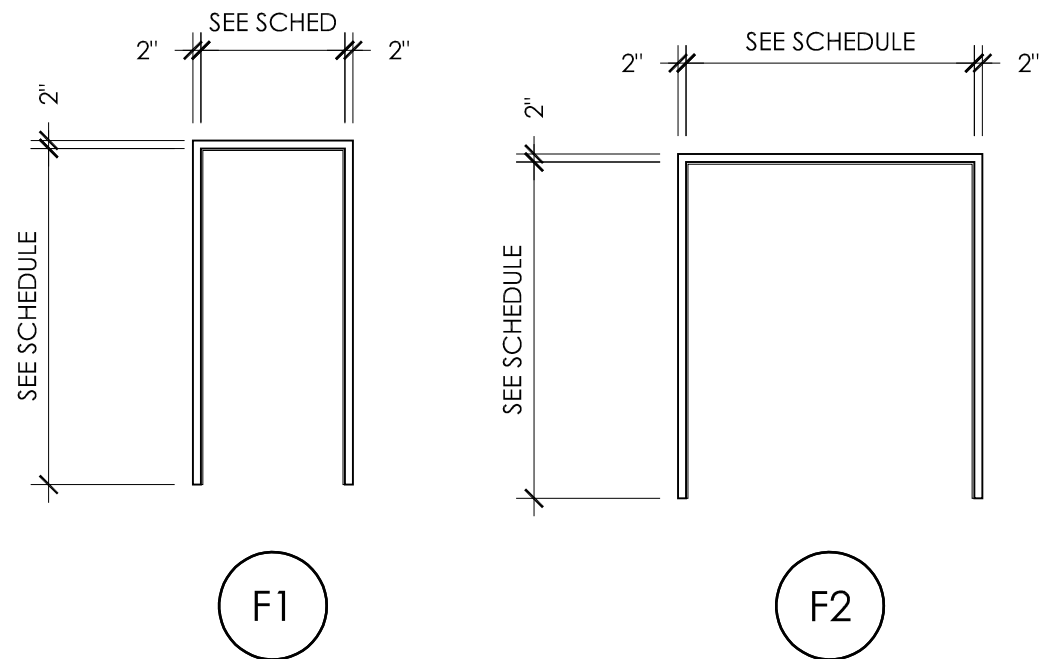


J1 JAMB DETAIL
1-1/2" = 1'-0"

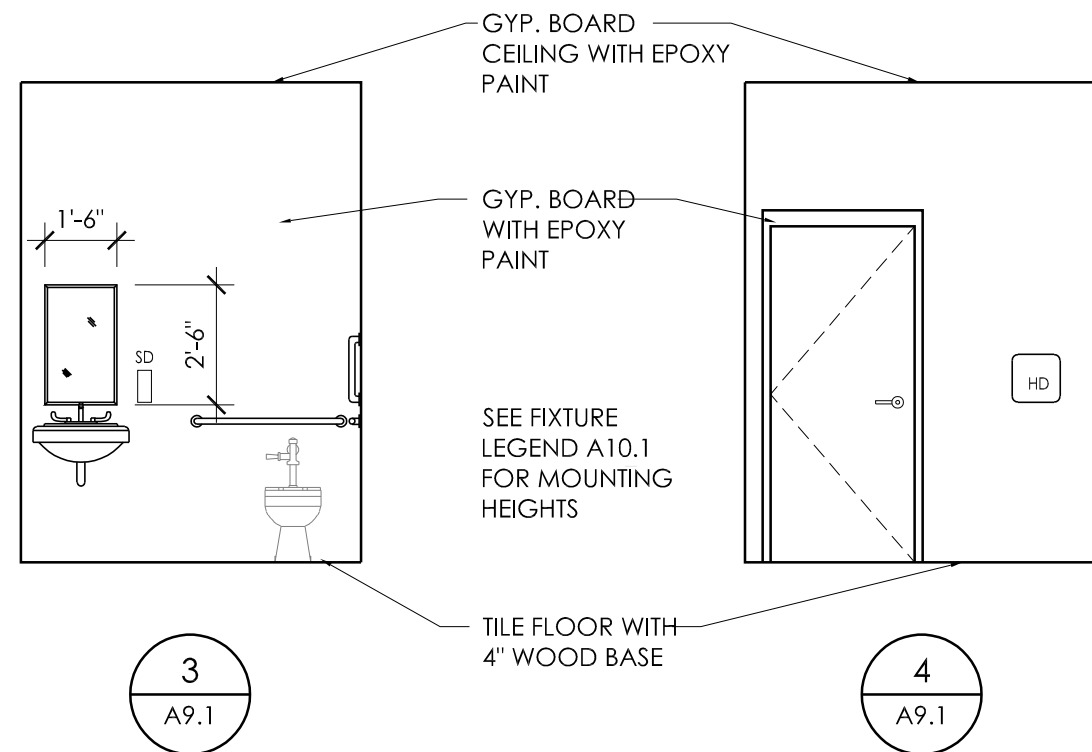
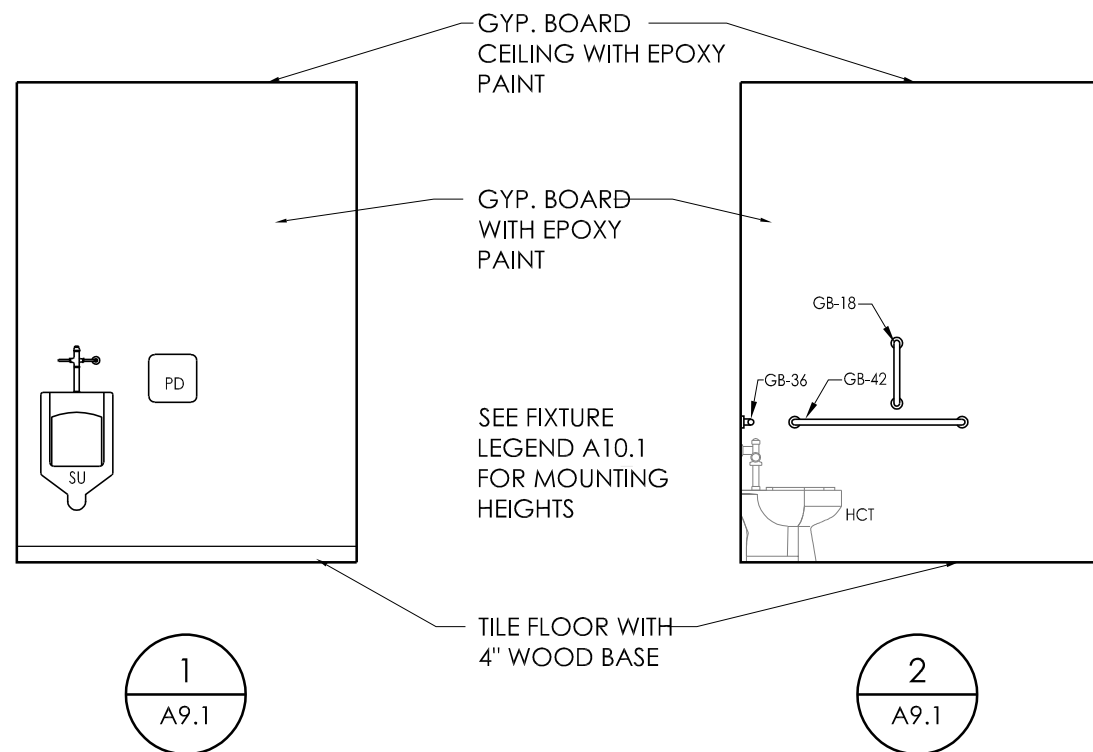
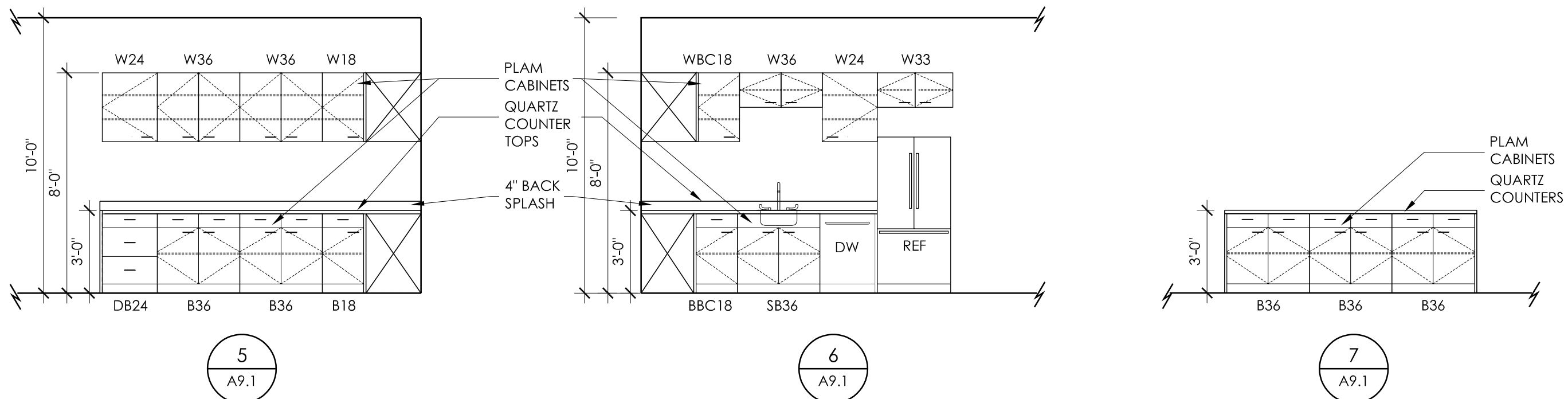
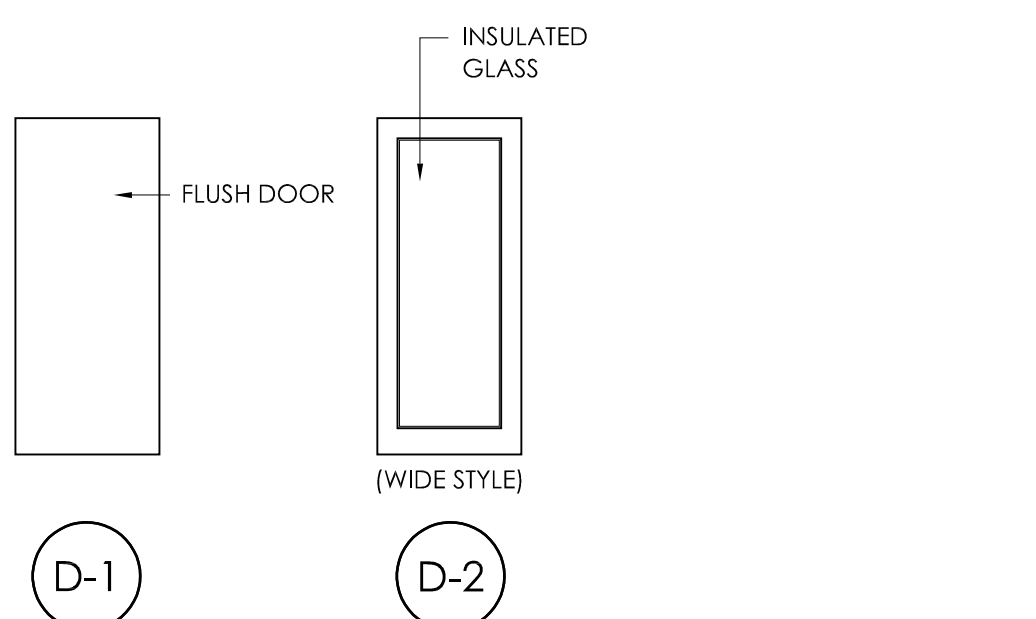
DOOR SCHEDULE

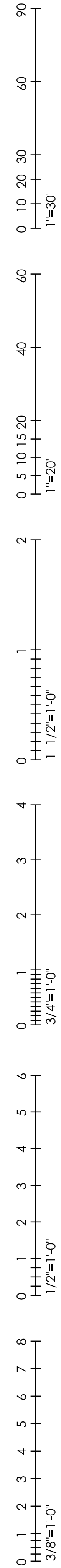
DOOR NO.	SIZE	DOOR					FRAME		DETAIL				REMARKS
		MAT'L	TYPE	FIN.	GLASS TYPE	GLASS SIZE	MAT'L.	TYPE	JAMB	HEAD	RATING	HDW SET	
100A	6'-0" x 7'-0" x 1-3/4"	ALUM	D-2	CLR	TIG	26"X72.5"	ALUM	F-1	J3	8-A7.2	-	1	
100B	6'-0" x 7'-0" x 1-3/4"	ALUM	D-2	CLR	TIG	26"X72.5"	ALUM	F-1	J2	9-A7.2	-	2	ACCESS CONTROL
103	3'-0" x 7'-0" x 1-3/4"	WD	D-1	SV	-	-	WD	F-1	J1	H1	-	3	
104	3'-0" x 7'-0" x 1-3/4"	WD	D-1	SV	-	-	WD	F-1	J1	H1	-	4	
105	3'-0" x 7'-0" x 1-3/4"	WD	D-1	SV	-	-	WD	F-1	J1	H1	-	3	
106	3'-0" x 7'-0" x 1-3/4"	WD	D-1	SV	-	-	WD	F-1	J1	H1	-	5	
110	3'-6" x 7'-0" x 1-3/4"	WD	D-1	SV	-	-	WD	F-2	J1	H1	-	6	ACCESS CONTROL

FRAME TYPES



DOOR TYPES



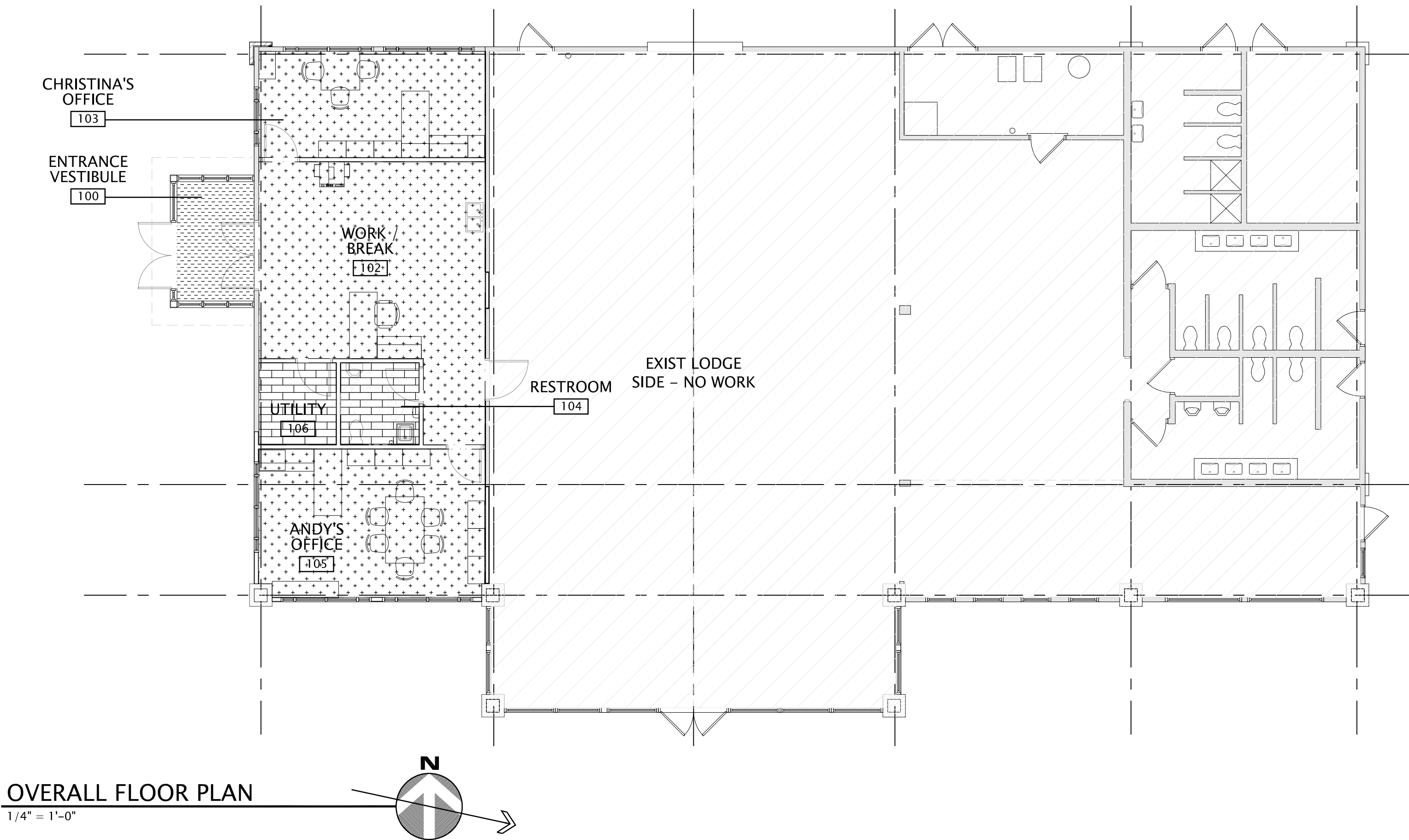


ROOM FINISH SCHEDULE															
NO.	NAME	FLOOR	BASE	WALL								CEILING			REMARKS
				NORTH		EAST		SOUTH		WEST					
				MAT'L	FIN.	MAT'L	FIN.	MAT'L	FIN.	MAT'L	FIN.	MAT'L	FIN.	MAT'L	
ROOM#	ROOM NAME	FLOOR	BASE	MAT'L	FINISH	MAT'L	FINISH	MAT'L	FINISH	MAT'L	FINISH	MAT'L	FINISH	HEIGHT	REMARKS
FIRST FLOOR															
100	ENTRY	CP-2	WB-1	GYP	PT-2	GYP	PT-2	GYP	PT-2	GYP	PT-2	ACT-1	PT-1	8'-8"	
101	RECEPTION	CP-1	WB-1	GYP	PT-2	GYP	PT-2	GYP	PT-2	GYP	PT-2	ACT-1	PT-1	8'-8"	
102	WORK / BREAK	CP-1	WB-1	GYP	PT-2	GYP	PT-2	GYP	PT-2	GYP	PT-2	ACT-1	PT-1	8'-8"	
103	CHRISTINA'S OFFICE	CP-1	WB-1	GYP	PT-2	GYP	PT-2	GYP	PT-3	GYP	PT-2	ACT-1	PT-1	8'-8"	
104	RESTROOM	LVT-1	WB-1	GYP	EPT-2	GYP	EPT-2	GYP	EPT-2	GYP	EPT-2	ACT-1	EPT-1	8'-8"	
105	ANDY'S OFFICE	CP-1	WB-1	GYP	PT-3	GYP	PT-2	GYP	PT-2	GYP	PT-2	ACT-1	PT-1	8'-8"	
106	UTILITY	LVT-1	WB-1	GYP	PT-2	GYP	PT-2	GYP	PT-2	GYP	PT-2	ACT-1	PT-1	8'-8"	

FINISH LEGEND		
FLOORING	CEILINGS	CASEWORK
LUXURY VINYL TILE LVT-1 MFR: INTERFACE STYLE: NATIVE FABRIC COLOR: A00806 TWINE - SIZE: 50CM X 50CM	PAINT EPT-1 / PT-1 MFR: SHERWIN WILLIAMS COLOR: 7056 RESERVED WHITE	LAMINATE FOR VERTICAL SURFACES PLAM-1 MFR: WILSONART COLOR: ASIAN NIGHT 7949K-18
CARPET CP-1 MFR: INTERFACE STYLE: SEW STRAIGHT 1462002500 COLOR: 102407 PURL	WALLS/DOORS/TRIM PAINT EPT-2 / PT-2 MFR: SHERWIN WILLIAMS COLOR: SW 7011 NATURAL CHOICE PT-3 MFR: BENJAMIN MOORE COLOR: 1606 COBBLESTONE PATH	QUARTZ FOR HORIZONTAL SURFACES QZ-1 MFR: CAMBRIA COLOR: BRENTWOOD
WALK-OFF CARPET CP-2 MFR: INTERFACE STYLE: STEP REPEAT / SR699 COLOR: 104912 SABLE		BASE WOOD BASE WB-1 MFR: TBD STYLE: FLATBOARD COLOR: MATCH WD DOORS AND FRAMES SIZE: 4" HIGH
		GENERAL NOTES -

ABBREVIATIONS	
GL	GLASS
WD	WOOD
VCT	VINYL COMPOSITE TILE
SAC	SUSPENDED ACOSUTICAL CEILING
PT	PAINT
RB	RUBBER
WOM	WALK OFF MAT
QZ	QUARTZ
BL	CINDER BLOCK
PL	PLASTER
CT	CERAMIC TILE
CTB	CERAMIC TILE BASE
EPT	EPOXY PAINT
SC	SEALED CONCRETE
GYP	GYP SUM BOARD
CP	CARPET
ACS	ACOUST. CEILING SPRAY
LVT	LUXURY VINYL TILE
SL	SLATE
AWP	ACOUST. WALL PANEL

FLOORING HATCH LEGEND	
	LVT - INTERFACE NATIVE FABRIC
	CARPET - INTERFACE SEW STRAIGHT
	CARPET - INTERFACE STEP REPEAT



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CONSULTANTS:

SEAL:

Expiration Date 12/31/2021

PROJECT TITLE:

SANDUSKY PARKS
RIVER CLIFF OFFICE RENOVATION

1329 TIFFIN ST.
FREMONT, OH 43420

ISSUE OR REVISION:

11-06-2020	ISSUED FOR BIDDING
DATE	ISSUE / REVISION
DESIGNED: AK	
DRAWN: DE	
CHECKED: AK	

TPA COMMISSION NUMBER: 18051

DRAWING TITLE:

FINISH PLAN
AND SCHEDULE

DRAWING NUMBER:

A11.0

PLUMBING FIXTURE SCHEDULE						
DESCRIPTION	SYMBOL	DCW	DHW	SANITARY	VENT	SPECIFICATION
LAVATORY - WALL HUNG	L-1	1/2"	1/2"	1 1/2"	1 1/2"	KOHLER K-2032, WHITE VITREOUS CHINA, 20"x18" WALL MOUNTED LAVATORY. FURNISH COMPLETE WITH KOHLER K-7131-A OFFSET WHEELCHAIR GRID DRAIN, CAST BRASS "P" TRAP, ANGLE SUPPLIES w/LOOSE KEY STOPS, ADA COMBINATION OFFSET TRAP AND SUPPLY WRAP PROTECTOR KIT. PROVIDE ZURN ZB955-XL-S-WP-E BATTERY POWERED FAUCET AND WATTS THERMOSTATIC MIXING VALVE LFUSG-B-SC (SATIN CHROME FINISH), ASSE STANDARD 1070. OUTLET TEMPERATURE TO BE SET AT 105°F MAX. PROVIDE WITH CARRIER EQUAL TO ZURN Z1231. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHT.
SINK - STAINLESS STEEL - DOUBLE COMPARTMENT	SK-1	1/2"	1/2"	1 1/2"	1 1/2"	ELKAY LRA281850, 18 GAUGE TYPE 304 SELF RIMMING STAINLESS STEEL, 28"x18" DOUBLE COMPARTMENT SINK WITH (3)THREE FAUCET HOLES. FURNISH COMPLETE WITH LK-35 BASKET STRAINER, 17-GAUGE TUBULAR BRASS TAILPIECE, CHROME PLATED, CAST BODY "P" TRAP, TUBULAR WALL BEND, ESCUTCHEON, SUPPLY KIT WITH TWO CHROME-PLATED, SOLID BRASS ANGLE STOPS WITH LOOSE KEY, TWO BRAIDED STAINLESS STEEL RISERS, AND ELKAY LK024430 POLISHED CHROME PLATED, CAST BRASS DUAL-HANDLE FAUCET w/SPRAY WITH 8" BENT-RISER SPOUT. PROVIDE WATTS MODEL LFUSG-B THERMOSTATIC MIXING VALVE, ASSE 1070, MOUNTED BELOW SINK, OUTLET TEMPERATURE TO BE SET AT 105 deg F MAX.
URINAL - WALL HUNG	UR-1		3/4"	2"	1 1/2"	KOHLER K-4991-ET-0 HIGH-EFFICIENCY URINAL, WALL-MOUNTED, 0.125 GPF, TOP SPUD WITH ZURN ZTR6203-UFL, BATTERY OPERATED FLUSH VALVE. PROVIDE ZURN Z1221 OR Z1222 CARRIER. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHT.
WATER CLOSET - TANK TYPE - BARRIER FREE	WF-1	1/2"		3"	2"	KOHLER K-3609, WHITE VITREOUS CHINA, 1.6 GALLON AQUA-PISTON FLUSH, 16 1/2" HIGH ELONGATED BOWL WITH Z18" FULLY GLAZED TRAPWAY. FURNISH COMPLETE WITH KOHLER K-4850-A OPEN FRONT PLASTIC SEAT WITH COVER, CLOSET BOLT AND WAX RING KIT, QUARTER-TURN CHROME PLATED BRASS ANGLE STOP w/LOOSE KEY AND CHROME PLATED COPPER SUPPLY TUBE. CONTRACTOR SHALL COORDINATE LOCATION OF FLUSH CONTROL WITH ARCHITECTURAL LAYOUT, AND LOCATE FLUSH CONTROL ON THE "WIDE" SIDE OF THE TANK (KOHLER K-4421-TR TANK COMPLETE WITH RIGHT-HAND TRIP LEVER).

PLUMBING SPECIALTIES SCHEDULE						
DESCRIPTION	SYMBOL	DCW	DHW	WASTE	VENT	SPECIFICATION
FLOOR DRAIN - PUBLIC SPACES	FD-1	-	-	3"	-	ZURN EZ-1-PV3, FLOOR DRAIN WITH PVC BODY, CAST-IRON CLAMP COLLAR, CAST-IRON ADAPTER, 6-INCH ROUND POLISHED NICKEL BRONZE STRAINER AND ROUGH-IN COVER. PROVIDE DRAIN WITH SURESEAL PRE-ASSEMBLED INLINE TRAP SEAL DEVICE. DEVICE TO MEET ASSE 1072.
FLOOR DRAIN - MECHANICAL SPACES	FD-2	-	-	3"	-	ZURN Z551, DURA-COATED CAST IRON BODY WITH BOTTOM OUTLET, 9" ROUND MEDIUM DUTY SLOTTED GRATE. PROVIDE DRAIN WITH SURESEAL PRE-ASSEMBLED INLINE TRAP SEAL DEVICE. DEVICE TO MEET IPC 709.1 AND ASSE 1072.
HUB DRAIN	HD-1	-	-	3"	-	SIOUX CHIEF 832 SERIES FINISHLINE ADJUSTABLE HUB DRAIN. PROVIDE DRAIN WITH SURESEAL PRE-ASSEMBLED INLINE TRAP SEAL DEVICE. DEVICE TO MEET ASSE 1072.

ELECTRICAL WATER HEATER SCHEDULE									
TAG	MAKE	MODEL	INPUT KW	VOLTAGE	TANK VOLUME	FLOW	IWT	LWT	REMARKS
EWH-1	LOCHINVAR	JRA06FS	2.5 kW	240V/160	6.00 gal		50 °F	140 °F	
EWH-2	LOCHINVAR	JRA010FS	2.5 kW	240V/160	10.00 gal		50 °F	140 °F	

INTERIOR INSULATION APPLICATION SCHEDULE					
PIPE SIZES (NPS)	MATERIALS	THICKNESS	VAPOR BARRIER REQ'D	FIELD-APPLIED JACKET	
DOMESTIC HOT AND RECIRCULATED WATER (60° F TO 140° F)					
1/2" TO 1-1/4"	GLASS FIBER	1"	NO	NONE	
1/2" TO 1-1/4"	FLEXIBLE ELASTOMERIC	1/2"	NO	NONE	
1-1/2" TO 4"	GLASS FIBER	1"	NO	NONE	
1-1/2" TO 4"	FLEXIBLE ELASTOMERIC	3/4"	NO	NONE	
DOMESTIC COLD WATER (35° F TO 60° F)					
1/2" TO 1-1/4"	GLASS FIBER	1"	YES	NONE	
1/2" TO 1-1/4"	FLEXIBLE ELASTOMERIC	1/2"	YES	NONE	
1-1/2" TO 4"	GLASS FIBER	1"	YES	NONE	
1-1/2" TO 4"	FLEXIBLE ELASTOMERIC	3/4"	YES	NONE	
EXPOSED SANITARY DRAINS AND DOMESTIC WATER SUPPLIES AND STOPS FOR FIXTURES FOR THE DISABLED					
ALL	PRE-MANUFACTURED PVC-TRAP & SUPPLY COVERS	1/2"	NO	STANDARD	

1" MINIMUM INSULATION THICKNESS REQUIRED PER 2012 IECC, SECTION C404

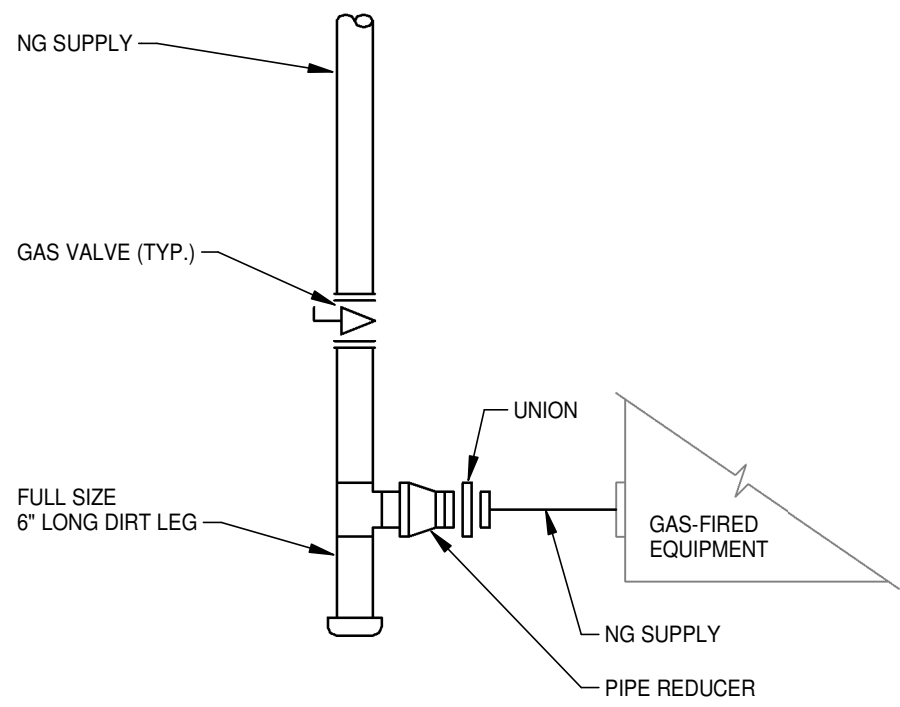
PIPE HANGER APPLICATION SCHEDULE			
NOMINAL PIPE SIZE (INCHES)	STEEL PIPE MAXIMUM SPAN (FT)	COPPER TUBE MAXIMUM SPAN (FT)	MINIMUM ROD SIZE- INCHES
UP TO 3/4"	7	5	3/8
1"	7	6	3/8
1-1/4"	7	7	3/8
1-1/2"	9	8	3/8
2"	10	8	3/8
2-1/2"	11	9	1/2
3"	12	10	1/2
4"	14	12	5/8, 1/2 FOR COPPER
PIPE MATERIAL	HORIZONTAL IN FEET		VERTICAL IN FEET
CAST-IRON SOIL PIPE	5		15
PVC PLASTIC PIPE	4		4

LEGEND AND SYMBOLS		
—DCW—	DOMESTIC COLD WATER PIPING	
—DHW—	DOMESTIC HOT WATER PIPING	
—DHW—	DOMESTIC HOT WATER RETURN PIPING	
—NG—	NATURAL GAS PIPING	
—SAN—	SANITARY WASTE PIPING - BELOW GROUND	
—SAN—	SANITARY WASTE PIPING - ABOVE GROUND	
—V—	SANITARY VENT PIPING	
—ST—	STORM PIPING - BELOW GROUND	
—ST—	STORM PIPING - ABOVE GROUND	
—OD—	STORM OVERFLOW PIPING - ABOVE GROUND	
—FP—	FIRE PROTECTION PIPING	
➔	FLOW DIRECTION	
⊗	FLOOR DRAIN	FD
⬇	WALL CLEANOUT	WCO
⊕	FREEZE PROOF WALL HYDRANT	FWH
○	FLOOR CLEANOUT	FCO
⊕	"P" TRAP	
WHA	WATER HAMMER ARRESTOR w/ PDI SIZE	
VTR	VENT THROUGH ROOF	
I.E.	INVERT ELEVATION	
G.C.	GENERAL CONTRACTOR	
E.C.	ELECTRICAL CONTRACTOR	
F.P.C.	FIRE PROTECTION CONTRACTOR	
M.C.	MECHANICAL CONTRACTOR	
P.C.	PLUMBING CONTRACTOR	
F.F.E.	FINISHED FLOOR ELEVATION	
⊕	BALL VALVE	
⊕	CHECK VALVE	
⊕	GATE VALVE	
⊕	GAS PLUG VALVE	
⊕	"Y" STRAINER	
⊕	UNION	
⊕	THERMOMETER w/RANGE	
⊕	PRESSURE GAUGE w/RANGE	
⊕	TEMPERATURE AND PRESSURE RELIEF VALVE	

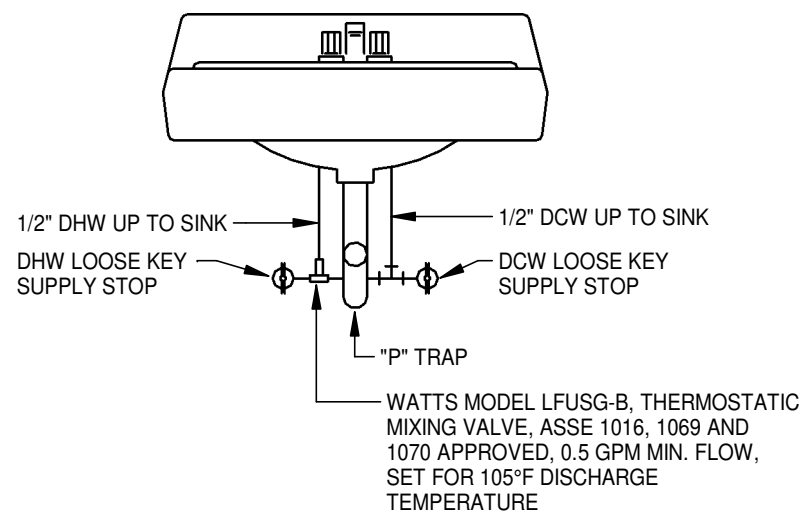
GENERAL NOTES - PLUMBING

- PERFORM ALL WORK IN ACCORDANCE WITH THE CURRENT (STATE/LOCAL) PLUMBING CODE, LATEST EDITION AND ALL APPLICABLE LOCAL CODES AND ORDINANCES.
- CONTRACTOR SHALL VISIT SITE TO VERIFY ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK.
- THE CONTRACTOR SHALL FAMILIARIZE HIM/HERSELF WITH ALL CONDITIONS UNDER WHICH ALL WORK MUST BE PERFORMED AND VERIFY/CHECK ALL ELEVATIONS. REPORT ANY DISCREPANCIES TO THE [ARCHITECT, ENGINEER, CONSTRUCTION MANAGER].
- CONTRACT SHALL INCLUDE ALL MATERIALS, LABOR, TOOLS, ETC., FOR A COMPLETE AND OPERABLE INSTALLATION. ALL MATERIALS SHALL BE NEW, SPECIFICATION GRADE, AND U.L. LISTED PRODUCTS, UNLESS NOTED OTHERWISE.
- COORDINATE ALL WORK AND SCHEDULES WITH OWNER, ARCHITECT, OTHER CONTRACTORS AND APPROPRIATE UTILITY COMPANIES.
- THE CONTRACTOR IS RESPONSIBLE FOR FULLY COORDINATING ALL WORK WITH OTHER TRADES PRIOR TO FABRICATING AND/OR INSTALLING ANY WORK TO ENSURE PROPER CLEARANCES FOR INSTALLATION AND MAINTENANCE ARE MAINTAINED. DRAWING ARE DIAGNOMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS. EXACT LOCATION OF EQUIPMENT, MATERIAL, DEVICE, ETC. MUST BE WORKED OUT IN THE FIELD.
- SCHEDULE ALL WATER, GAS SERVICE, AND SEWER INTERRUPTIONS WITH OWNER AND OTHER CONTRACTORS 72 HOURS PRIOR TO INTERRUPTION.
- MAINTAIN MINIMUM 10'-0" CLEARANCE BETWEEN PLUMBING VENTS AND HVAC EQUIPMENT OUTDOOR AIR INTAKES. COORDINATE LOCATIONS AND REQUIREMENTS WITH MECHANICAL CONTRACTOR.
- SUBMIT FOR APPROVAL DATA ON PROPOSED EQUIPMENT AND MATERIALS. SUBMITTALS SHALL INCLUDE EQUIPMENT SIZES, CAPACITY, MOTOR LOCATIONS, PERFORMANCE CURVES, AND OTHER PERTINENT DATA. EACH SUBMITTAL SHALL INCLUDE IDENTIFICATION TAGS OR SYMBOLS TO MATCH CONTRACT DOCUMENTS.
- ALL EQUIPMENT SHALL BE NEW AND SHALL BE EQUAL IN QUALITY AND TYPE AND HAVE ALL ACCESSORIES AS NOTED ON THE DRAWINGS AND IN THE SPECIFICATIONS. MAKE EQUIPMENT SELECTIONS AND PROVIDE INSTALLATIONS WHICH MEET OR EXCEED THE ENERGY PERFORMANCE AND CAPACITIES NOTED ON THE FLOOR PLANS AND SPECIFICATIONS. ADJUSTMENTS TO CONSTRUCTION AND ACCESSORIES ON SUBMITTED EQUIPMENT MAY BE REQUIRED TO ACHIEVE THIS EQUALITY AND SHALL BE INCLUDED AT NO EXTRA COST TO THE OWNER. MAKE ANY CHANGES IN PIPING, SUPPORTS, FRAMING, ETC., AS REQUIRED TO ACCOMMODATE SUBSTITUTED EQUIPMENT.
- ALL EQUIPMENT SHALL BE NEW AND SHALL BE EQUAL IN QUALITY AND TYPE AND HAVE ALL ACCESSORIES AS NOTED ON THE DRAWINGS AND IN THE SPECIFICATIONS. MAKE EQUIPMENT SELECTIONS AND PROVIDE INSTALLATIONS WHICH MEET OR EXCEED THE ENERGY PERFORMANCE AND CAPACITIES NOTED ON THE FLOOR PLANS AND SPECIFICATIONS. ADJUSTMENTS TO CONSTRUCTION AND ACCESSORIES ON SUBMITTED EQUIPMENT MAY BE REQUIRED TO ACHIEVE THIS EQUALITY AND SHALL BE INCLUDED AT NO EXTRA COST TO THE OWNER. MAKE ANY CHANGES IN PIPING, SUPPORTS, FRAMING, ETC., AS REQUIRED TO ACCOMMODATE SUBSTITUTED EQUIPMENT.
- STORE MATERIALS WHERE DIRECTED. PROTECT STORED MATERIALS AND INSTALLED WORK FROM DAMAGE. REPLACE ALL DAMAGED ITEMS WITH NEW.
- REMOVE DIRT, DEBRIS AND UNUSED MATERIALS FROM SITE REGULARLY AND DISPOSE OF BY PROPER AND LEGAL METHODS.
- PATCH AND FINISH CONSTRUCTION DAMAGED DURING THE COURSE OF PLUMBING INSTALLATIONS.
- PROVIDE PROPER SEALS AT ALL WALL PENETRATIONS. REFER TO ARCHITECTURAL DRAWINGS.
- PERFORM TESTING AND MAKE FINAL ADJUSTMENTS TO VERIFY PROPER PERFORMANCE OF ALL SYSTEMS AND EQUIPMENT.
- PERFORM TESTING AND MAKE FINAL ADJUSTMENTS TO VERIFY PERFORM TESTING AND MAKE FINAL ADJUSTMENTS TO VERIFY.
- MAINTAIN "AS BUILT" RECORDS OF ALL INSTALLED ITEMS AND PROVIDE TO ARCHITECT AT PROJECT COMPLETION.
- MOUNT ALL HANDICAP (BARRIER-FREE) DEVICES AND EQUIPMENT PER FEDERAL ADA GUIDELINES. INDICATED HEIGHTS ARE NOMINAL. WORK TO MASONRY COURSES, WAINSCOTS, COUNTERS, BACK SPLASHES, ETC. FOR ROUGH-INS.
- CONTRACTOR TO INCLUDE REQUIRED EXTENDED WORK HOURS, WEEKEND AND HOLIDAY OVERTIME FOR DISCONNECTION AND/OR TIE-INS OF UTILITIES REQUIRING ISOLATION AND/OR SHUTDOWN OF THE OWNERS SYSTEMS.
- PROTECT ALL EXISTING BUILDING COMPONENTS INCLUDING ALL EXISTING STRUCTURE, FINISHES, AND MATERIALS AT ALL TIMES FROM DAMAGE DUE TO WORK UNDER THIS CONTRACT OR FROM DAMAGE DUE TO EXPOSURE TO THE ELEMENTS. ANY SUCH DAMAGE SHALL BE REPAIRED, PATCHED, OR REPLACED TO MATCH THE ORIGINAL EXISTING CONDITION AT NO COST TO THE OWNER.
- THE CONTRACTOR SHALL COORDINATE ALL ROOF PENETRATIONS WITH THE ROOFING CONTRACTOR. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ROOF PENETRATIONS ASSOCIATED WITH THE INSTALLATION OF NEW WORK. THE ROOF WORK SHALL BE PERFORMED BY A LICENSED AND CERTIFIED CONTRACTOR SO THAT ALL EXISTING ROOF WARRANTIES ARE MAINTAINED.
- REFER TO ARCHITECTURAL LIFE SAFETY PLAN FOR ALL FIREWALL LOCATIONS. SEAL ALL PIPING PENETRATIONS THROUGH WALLS/PARTITIONS/FLOORS AS REQUIRED BY LOCAL CODES.

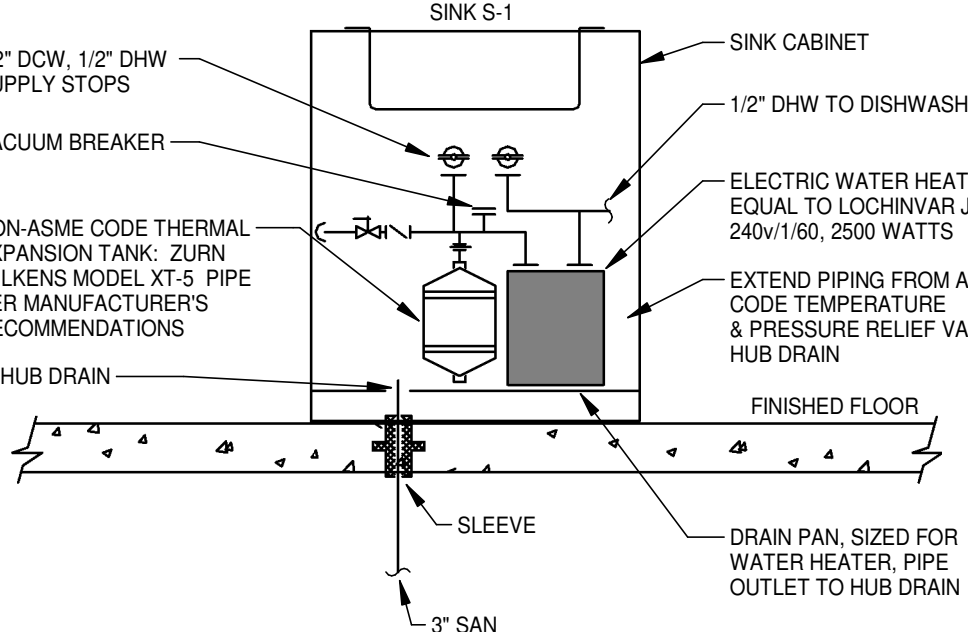
NOTE: THESE NOTES ARE GENERAL IN NATURE. SPECIFIC MEANS, METHODS AND MATERIALS ARE DETAILED IN THE SPECIFICATIONS AND CONTRACTOR IS DIRECTED TO THOROUGHLY REVIEW THE FULL SPECIFICATION BEFORE BEGINNING THE WORK. CONTRACT SPECIFICATIONS SHALL GOVERN IN CASE OF CONFLICT.



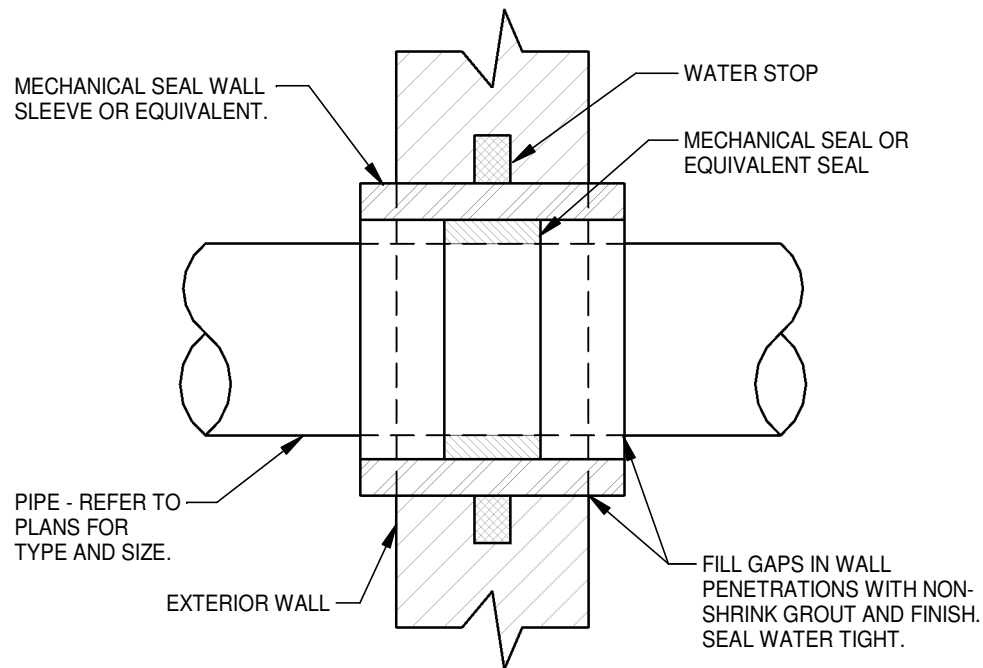
1 P1.0 NATURAL GAS CONNECTION DETAIL
SCALE: NO SCALE



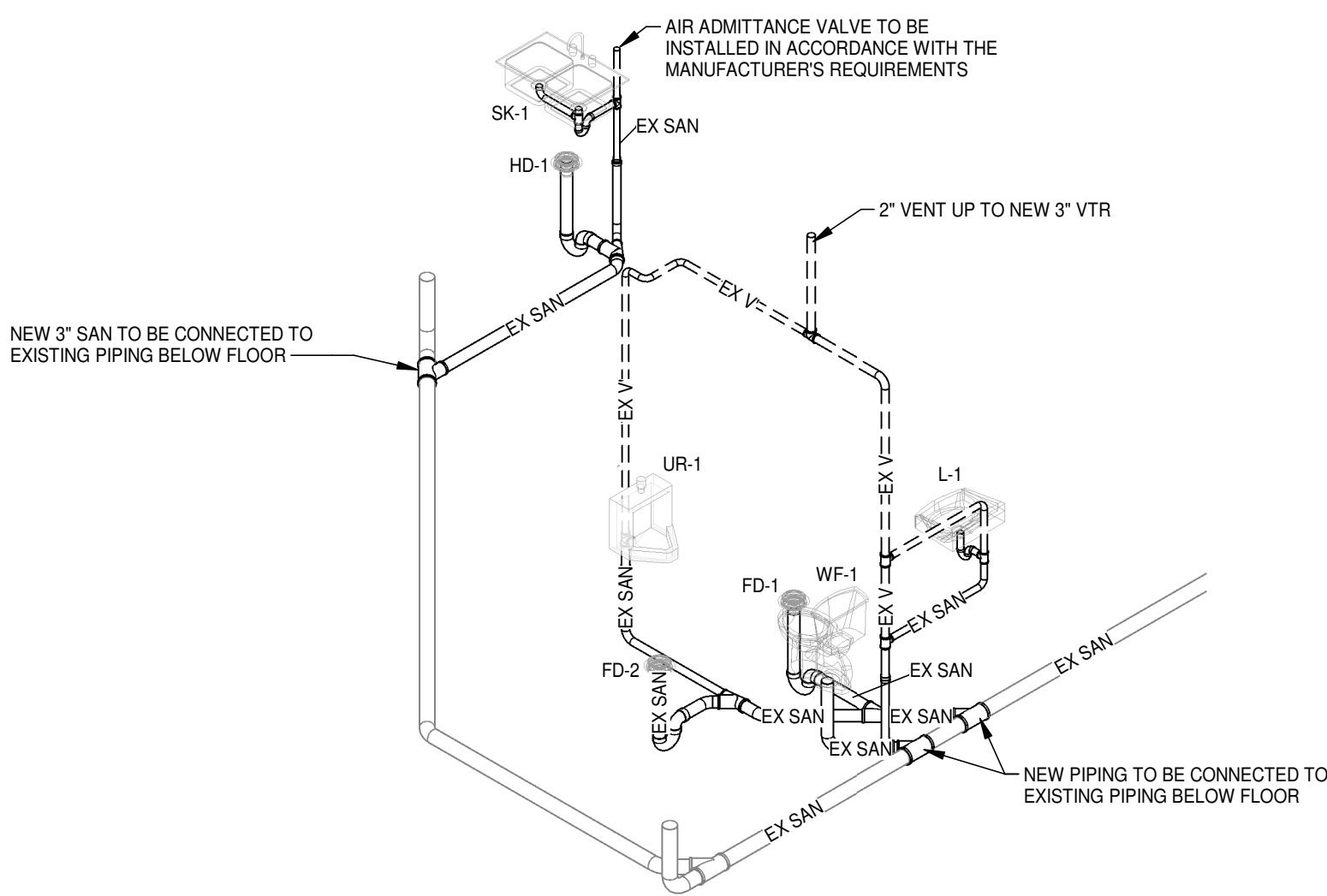
3 P1.0 LAVATORY/SINK TEMPERING DETAIL
SCALE: NO SCALE



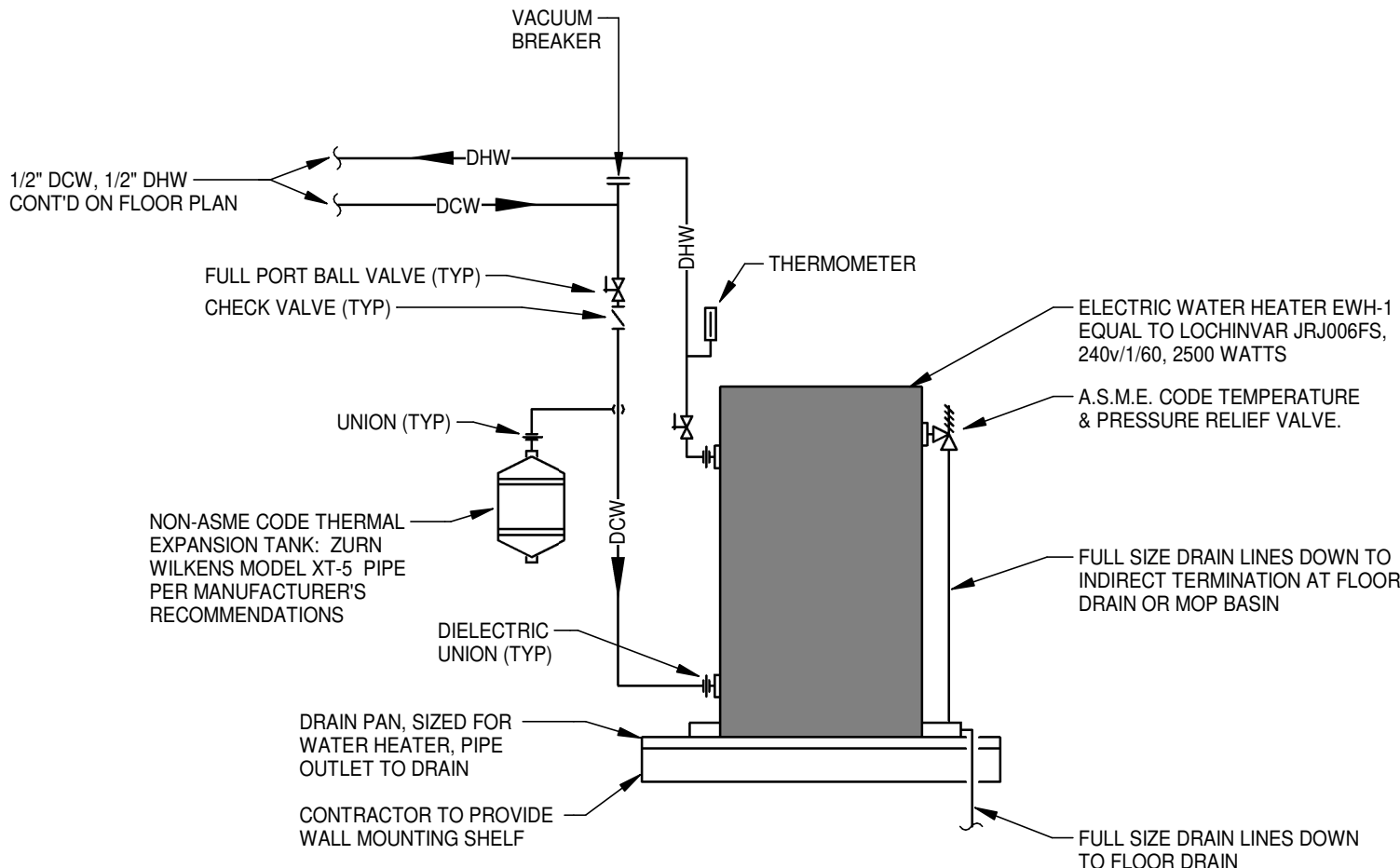
5 P1.0 ELECTRIC WATER HEATER - EWH-2
SCALE: NO SCALE



2 P1.0 EXTERIOR WALL SLEEVE DETAIL
SCALE: NO SCALE



4 P1.0 PLUMBING SCHEMATIC
SCALE: NO SCALE

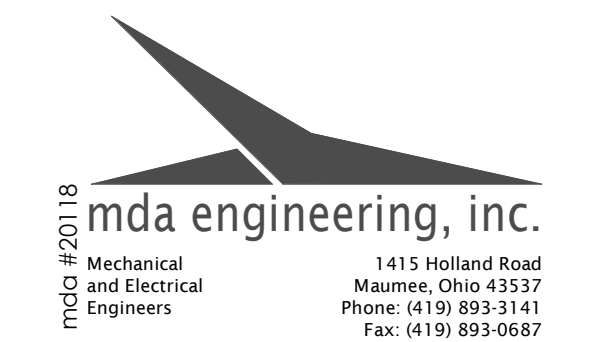


6 P1.0 ELECTRIC WATER HEATER - EWH-1
SCALE: NO SCALE

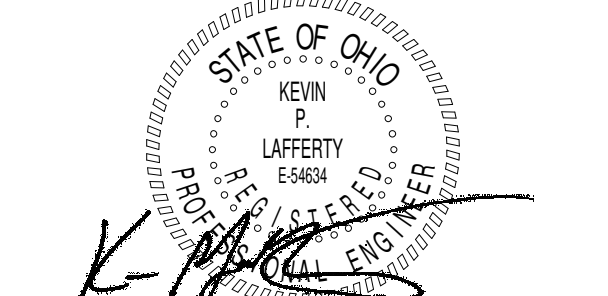


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CONSULTANTS:



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SANDUSKY PARKS
RIVER CLIFF OFFICE RESTORATION

1329 TIFFIN ST.
FREMONT, OH 43420

PROJECT TITLE:

ISSUE OR REVISION:

DATE ISSUE / REVISION

DESIGNED: DDC

DRAWN: DDC

CHECKED: RFY

TPA COMMISSION NUMBER: 18051

DRAWING TITLE:

PLUMBING
SCHEDULES AND
DETAILS

DRAWING NUMBER:

P1.0



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SANDUSKY PARKS
RIVER CLIFF OFFICE RESTORATION

1329 LIFPIN ST.
FREMONT, OH 43420

PROJECT TITLE:

ISSUE OR REVISION:

[illegible]

DATE ISSUE / REVISION

DESIGNED: DDC

DRAWN: DDC

CHECKED: RFY

TPA COMMISSION NUMBER: 18051

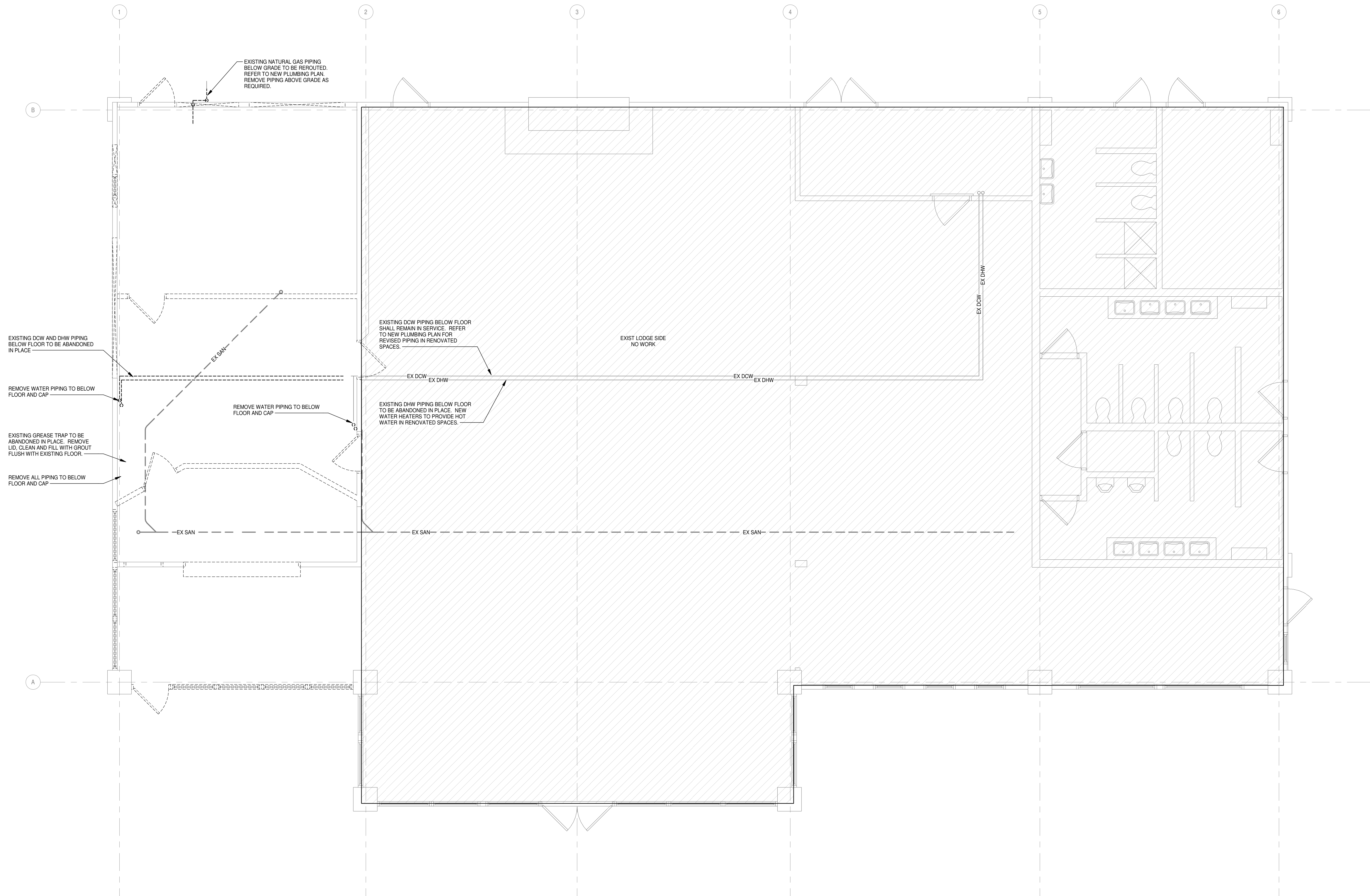
DRAWING TITLE:

FIRST FLOOR DEMOLITION - PLUMBING

DRAWING NUMBER:

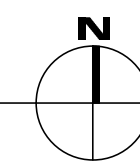
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FIRST FLOOR - PLUMBING DEMOLITION

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





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SANDUSKY PARKS
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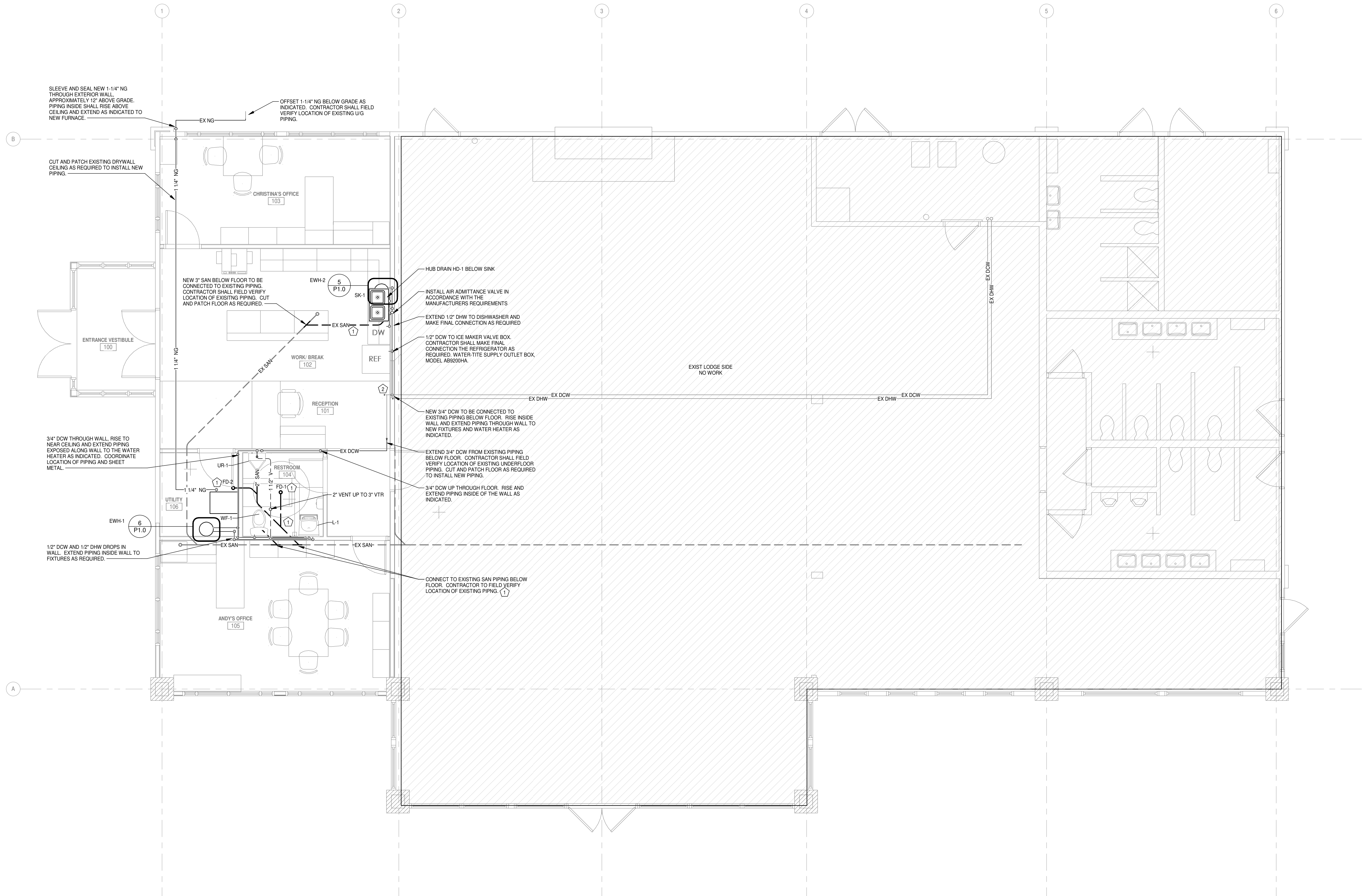
PA COMMISSION NUMBER: 18051

DRAWING TITLE:

FIRST FLOOR PLAN - PLUMBING

DRAWING NUMBER:


P3.0



FIRST FLOOR - PLUMBING

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



PLAN NOTES - PLUMBING 

1. CONTRACTOR SHALL CUT AND PATCH EXISTING FLOOR AS REQUIRED TO INSTALL NEW PIPING FLOOR.
2. NEW PIPING SHALL BE INSTALLED INSIDE OF THE EXISTING WALL. GENERAL TRADES WILL BE REMOVING THE DRYWALL, SO CUTTING AND PATCHING IS NOT REQUIRED.

PLUMBING SPECIFICATION

1.0 GENERAL

1.1 GENERAL SCOPE

- A. The work required under this specification shall include all labor, materials, tools, equipment, power, transportation, hoisting implements, etc., necessary for the completion of the electrical work of the contract. All as specified herein, shown on the drawings or reasonably implied by either, complete in every respect unless specified otherwise herein. The work included in this contract shall consist of the installation, test and guarantee of all work described on the plans and specifications.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including general and supplementary conditions and Division 1 specification sections, apply to this and the other Sections of Division 22. This work shall be conducted as a prime contract.

1.3 PRE-BID QUESTION PROCEDURE

- A. If a Contractor, Subcontractor or Supplier needs an interpretation of the contract documents prior to bid date, he or she must do so in writing by the following procedure:
- Clearly identify the part of the contract documents in question (reference specification section and page, drawing number and plan or section, etc.).
 - Clearly state the question and/or discrepancy.
 - Send via e-mail to the project manager at MDA Engineering, Inc., [KLAFERTY@MDAENGR.COM].
 - A response will be issued to all questions:
 - In writing.
 - In a timely fashion.
 - To all appropriate parties.
 - Response worthy of issuing in the form of addendum will be issued as such.
 - Requests for contract document interpretation may also be made via:
 - Pre-bid meeting (if applicable)
 - Electronic mail
 - Personal delivery to MDA Engineering, Inc. or the Architect's office.
 - Requests for contract document interpretation may not be made verbally (in person, by telephone, etc.).

1.4 DRAWINGS AND SPECIFICATIONS

- A. Drawings indicate general arrangement of system and are to be followed insofar as possible. Deviations from drawings may be necessitated by field conditions. Detailed layouts of proposed departures to be submitted to Architect for approval.
- B. Drawings and specifications to be considered cooperative and anything appearing in specifications, but not on drawings, or vice versa, to be considered part of the contract and to be executed.
- C. Drawings indicate size and approximate location of various parts of work and are to be used as a general guide for installation. However, drawings are, to a considerable extent, diagrammatic and exact locations of piping, ductwork, etc., may appear on the drawings or must be worked out on job. However, no changes in sizes to be made without written approval of architect. Errors or omissions discovered by bidding contractors prior to bid openings, to be called to attention of architect without delay.
- D. If a specific item is specified or on drawings for multiple trades, this contractor shall include all items in the bid regardless of other trades. Resolution will be by addendum or change order.

1.5 PROJECT CLOSEOUT

- A. In order to achieve a complete and commissioned project, each contractor is responsible for the following items:
- Building inspection certificates.
 - As-built drawings.
 - Final payment request.
 - Waiver of liens.
 - Demonstration certificates signed by owner.
 - Delivery of extra materials.
 - Return of borrowed keys and working permits.
 - Letter declaring punch list items completed.
 - Operation and maintenance manuals.
 - Final guarantee and execution of warranties.
 - Other requirements specified in division 1 specifications.

1.6 EQUIPMENT AND SYSTEMS DEMONSTRATION

- A. Each contractor is responsible for verifying the complete operation of the equipment and systems installed as a part of the work. After the contractor is satisfied the work meets the specified intents and sequences of operation, the contractor shall schedule, through the [Architect/Engineer/Construction Manager] a session during which all aspects of the work are explained to the Owner's personnel and/or representatives.

1.7 INSPECTION OF EXISTING AND GENERAL CONDITIONS

- A. The Contractor will be held to have personally inspected the site of the proposed work to arrive at a clear understanding of the conditions under which the work is to be performed, the extent of other Contractor's activities in the area, and to become fully acquainted with the receiving and storage spaces available. The Contractor shall be held to have compared the premises and site with the drawings and specifications, and shall be satisfied as to the conditions of the premises, the actual elevations, and any other conditions affecting the carrying out of the work, before the delivery of this proposal.
- B. No allowances or extra consideration on behalf of the Contractor will subsequently be allowed by reason of the Contractor's failure to have become familiar with site conditions, error or oversight on the part of the Contractor or due to interference's by the owner's or other Contractor's activities.
- C. Items specified on plumbing schedules and plans are the basis of design. Equality of other equipment shall be determined by the Owner and Engineer. Any modification to these documented methods that is made necessary by alternate equipment is the responsibility of the supplier of the alternate equipment.
- D. Contractor is directed to include all necessary over time and premium time (Saturday, Sunday, Holidays) required for the completion of the intended work to meet specified schedules.
- E. Do not scale plumbing drawings. For exact dimensions use dimensioned drawings or actual field conditions.

1.8 CODES, PERMITS AND COMPLIANCE

- A. Contractor shall obtain and pay for all permits, licenses and inspections required by laws of governing bodies. Comply with all applicable codes and ordinances and all legal requirements. No extra compensation will be allowed for any changes necessary for code compliance regardless of the method of installation shown on the drawings or specified.
- B. All plumbing work shall comply with current editions of all applicable state and local codes and ordinances.
- C. All equipment, devices, and materials shall be the latest products of manufacturer and shall conform to the requirements noted on plans.

1.9 WORKMANSHIP

- A. Workmanship shall be of the highest quality conforming to the best plumbing installation practice. Any work or material which is rejected must be removed immediately and replaced. No sub-standard work will be accepted.
- B. The brevity of this specification shall not be construed as relieving the Contractor of his responsibility to perform all work in a first class workmanlike manner.

1.10 SUBMITTALS AND RECORD DRAWINGS

- A. Submit shop drawings and catalog data for approval for all equipment and materials specified for this project prior to ordering or manufacture of such. Shop drawings not stamped with Contractor approval will be rejected.
- B. The Contractor shall keep an accurate record of all deviations from the approved design documents and specifications which may occur in the work as actually constructed and shall submit same to the Engineer or Owner's representative at completion of the job.
- C. Submittals shall be coordinated through the Architect.

1.11 TESTS AND GUARANTEE

- A. All tests for various systems shall be performed as required, consistent with good general practice and in compliance with codes and authorities.
- B. As a condition precedent to the final payment, the Contractor shall execute to the Owner a guarantee in a form approved by the Owner. Guarantee shall warrant that all work included in this division of the specifications will remain in serviceable and perfect condition (Ordinary wear and tear, abuse and causes beyond the control of the Contractor excluded) for a period of one year from date of final completion and acceptance of work, and that the Contractor will make good at his own expense, without cost to the Owner, any imperfections in whole or in part which may develop in this work during the period above specified, including any damage to other work caused by such imperfections or repairing of same.
- C. All plumbing systems, devices and related items shall be tested. Replace any and all defective device items or systems before completion of the project.

1.12 COORDINATION

- A. Field verify exact location of all new equipment with existing conditions and coordinate with the general and other Contractors prior to rough-in and/or installing any of this work.
- B. Field verify all clearances and conditions prior to the start of any piping, fixtures, etc.; Verify locations of all piping, fixtures, equipment, devices, etc., with Architectural, HVAC, Fire Protection, Structural and Electrical drawings prior to rough-in. Report any discrepancies to the Engineer prior to proceeding with work.
- C. All interruptions of services to existing or operable facilities shall be scheduled with the Owner a minimum 72 hours in advance. The Contractor shall not interrupt or restore services without prior consent of the Owner. The interruption shall be only for the specified scheduled time. The Owner or Electrical Contractor will be responsible for disconnecting and start-up of electrical or process systems.
- D. Coordinate all power wiring, safety disconnect means, motor control and control wiring for plumbing equipment with the Electrical Contractor.
- E. Refer to electrical drawings for work involving electrical power supply wiring from power source to unit connection points.
- F. Locate and install all handicap devices as indicated in accordance with Americans with Disabilities Act Guidelines.
- G. Prepare coordination drawings to a scale of one-quarter inch equals one-foot or larger; detailing major elements, components and systems of mechanical equipment and materials in relationship with other systems, installations, elevations, and building components. The Contractor assumes all responsibility for installation of all systems if coordination drawings are not prepared.
- H. Coordinate final invert elevations of all sanitary and storm drainage piping with the Site Contractor/existing conditions prior to installation.

1.13 IDENTIFICATION

- A. Install snap-on plastic or adhesive pipe markers with system identification and direction of flow on all piping systems.
- B. Paint all piping with Owner's system identification color codes.
- C. Install engraved plastic laminate sign or equipment marker on or near each major item of plumbing equipment.
- D. Install valve tag on valves and control devices in piping systems, except check valves, valves within factory-fabricated equipment units, plumbing fixture supply stops, shut-off valves, faucets, convenience and lawn-watering hose bibbs, and similar rough-in connections of end-use fixtures and units. List tagged valves in valve schedule mounted in each major equipment room.

1.14 DEMOLITION, REMOVALS, CLEAN-UP, PROTECTION AND TOUCH-UP

- A. Remove all existing piping, fixtures, equipment, devices, etc., scheduled for removal or not required to remain in service. Contractor shall coordinate removal with Owner and all other trades on the project. All piping, etc., shall be removed back to the point of service. Provide additional piping, etc., to maintain functional systems.
- B. This Contractor shall dispose of all materials generated from removal and installation of this work. Debris shall be removed from the project site weekly. This Contractor shall provide to the Owner any salvagable materials as directed by the Owner or Engineer.
- C. Upon completion of work, this Contractor shall thoroughly clean all apparatus furnished by this contract.
- D. All equipment, fixtures, items, devices and appurtenances shall be protected from debris and damage while stored at the site, and during and after installation.
- E. Scarred factory-finished mechanical equipment shall be touched up with factory furnished paint. Rusted or marred surfaces of plumbing equipment shall be cleaned and primed before painting.
- F. Cracked or chipped vitreous china plumbing fixtures will not be accepted.
- G. Patch finished surfaces and building components using new materials matching existing materials and experienced installers.
- H. All cutting and patching of roof, walls, floors, and slabs, etc. is the responsibility of this contractor unless specifically stated otherwise on the drawings.

1.15 Maintenance Manuals

- A. Prepare Maintenance Manuals. Provide a minimum of four copies to the Engineer for approval. Include the following information for equipment items:
- Complete information on project equipment and services as was submitted during the course of the project. This information is solely intended to provide the Owner with accurate, usable information on how to care for his facility.
 - Description of function, normal operating characteristics and limitations, performance curves, Engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
 - Manufacturer's printed warranties.
 - Manufacturer's printed operating procedures to include start-up, break-in and routing and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; and summer and winter operating instructions.
 - Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
 - Servicing instructions and lubrication charts and schedules.

2.0 BASIC MATERIALS AND METHODS

2.1 PIPE AND EQUIPMENT INSULATION

- A. Fire-Test-Response Characteristics: As determined by testing materials identical to those specified in this section according to ASTM E 84, by a Testing and Inspecting Agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and sealer and cement material containers with appropriate markings of applicable Testing and Inspecting Agency.
- Insulation Installed Indoors: Flame-spread rating of 25 or less, and smoke-developed rating of 50 or less.
- B. Insulation Materials

- Mineral-Fiber Insulation: Glass fibers bonded with a thermosetting resin complying with the following:
 - Prefomed Pipe Insulation: Comply with ASTM C 547, Type I, with factory-applied, all purpose, vapor-retarder jacket.
 - Flexible elastomeric thermal insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials. For concealed piping installations (in walls, below floors, or non-accessible chases only).
 - Adhesive: as recommended by insulation material manufacturer.
 - Prefabricated Thermal Insulating Fitting Covers: Comply with ASTM C 450 for dimensions used in preforming insulation to cover valves, elbows, tees, and flanges.
- C. Field-Applied Jackets
- General: ASTM C 921, Type I unless otherwise indicated.
 - Foil and Paper Jacket: Laminated, glass-fiber-reinforced, flame-retardant Kraft paper and aluminum foil.
 - PVC Jacket: High-impact, ultraviolet-resistant; 20 mil thick; roll stock ready for shop or field cutting and forming.
 - Standard PVC Fitting Covers: Factory-fabricated fitting covers manufactured from 20 mil thick, high-impact, ultraviolet-resistant PVC.
- D. Apply insulation materials, accessories, and finishes according to the manufacturer's written instructions; with smooth, straight, and even surfaces; free of voids throughout the length of piping and equipment, including fittings, valves, and specialties.

2.2 VALVES

- A. Gate Valves
- Gate valves, 2 inches and Smaller: MSS SP-80; Class 125, 200-psi cold working pressure (CWP), or Class 150, 300-psi CWP; ASTM B 62 cast-bronze body and bonnet, solid-bronze wedge, copper-silicon alloy rising stem, Teflon-impregnated packing with bronze packing nut, threaded or soldered end connections; and with aluminum or malleable-iron handwheel.
- B. Ball Valves
- Ball valves, 4 inches and smaller: MSS SP-110, Class 150, 600-psi CWP; ASTM B 584 bronze body and bonnet, 2-piece construction; chrome-plated brass ball, standard port for plumbing applications; full port for HVAC application; blowout proof; bronze or brass stem; Teflon seats and seals; threaded or soldered end connections.
 - Operator: Vinyl-covered steel lever handle.
 - Stem Extensions: For valves installed in insulated piping.
- C. Plug Valves
- Plug valves: MSS SP-78, 175-psi CWP; ASTM A 126 cast-iron body and bonnet, cast-iron plug, BUNA N Vitron, or Teflon packing, flanged or grooved end connections:
 - Operator: Lever.
- D. Check Valves
- Swing Check Valves, 2 inches and Smaller: MSS SP-80; Class 125, 200-psi CWP, or Class 150, 300-psi CWP; horizontal swing, y-pattern; ASTM B 62 cast-bronze body and cap, rotating bronze disc with rubber seal or composition seat, threaded or soldered end connections.
- E. Strainers: Y pattern, except where otherwise indicated, full size of connecting piping. Include type 304 stainless steel screens with 3/64 inch perforations except where other screens are indicated.
- Pressure Rating: 125-psig minimum steam working pressure except where otherwise indicated.
 - Sizes 2 inches and Smaller: Bronze body, with female threaded ends.
 - Sizes 2 1/2 inches and Larger: Cast-iron body, with interior FDA-approved epoxy coating and flanged ends.
 - Y-Type Strainers: Screwed screen retainer with centered blowdown.
 - Drain: Pipe plug.
 - Drain: Factory- or field installed, hose-end drain valve.
- F. Natural Gas Valves

- Gas Valves, 2-inch NPS and Smaller: 125 psig WOG minimum, equivalent to ASME B16.33, lubricated, straightaway pattern, cast-iron or ductile-iron body. Include tapered plug, o-ring seals, square or flat head, and threaded ends conforming to ASME B1.20.1.
- Gas Valves, 2-1/2-inch NPS and Larger: MSS SP-78, Class 125 or Class 175 WOG, lubricated-plug type, semi-steel body, wrench operated, with flanged ends.
- Gas Valves, 3-inch NPS and Smaller: MSS SP-110, 150 psig WOG; ASTM B 584 bronze body, chrome plated brass ball, standard port, 2 piece with threaded ends conforming to ASME B1.20.1.

2.3 PIPING

- A. Regulatory Requirements: Comply with the provisions of the following:
- ASME B 31.9 "Building Services Piping" for materials, products and installation.
 - Safety valves and pressure vessels shall bear the appropriate ASME label.
 - ASME "Boiler and Pressure Vessel Code", Section IX, "Welding and Brazing Qualification" for qualifications for welding processes and operators.
 - (State) Plumbing Code.
 - (Local) Plumbing Code.
 - NFPA 54.
 - International Fuel Gas Code.
 - NFPA Standard: Comply with NSF #1 Annex G, "Drinking Water System Components - Health Effects".
- B. Provide components and installation capable of producing piping systems with the following minimum working pressure ratings, except where indicated otherwise:
- Water Distribution Systems, Below Ground: 150 psig.
 - Water Distribution Systems, Above Ground: 125 Psig.
 - Soil, Waste, and Vent Systems: 10-Foot head of water.
 - Natural Gas Systems, Above Grade: 150 Psig.
- C. Sanitary Waste and Vent Piping Below Floor.
- Poly Vinyl Chloride (PVC) plastic DWV pipe; ASTM D 2665, Schedule 40, plain ends with socket-type DWV fittings.
- D. Sanitary Waste and Vent Piping Above Floor.
- Poly Vinyl Chloride (PVC) plastic DWV pipe; ASTM D 2665, Schedule 40, plain ends with socket-type DWV fittings. (Not permitted in HVAC return air plenums).
 - Hubless cast iron soil pipe; plain ends, CISPI 301, with stainless steel, heavy-duty couplings for hubless cast-iron soil pipe and fittings, ASTM C 564 Neoprene sealing gasket, with Type 304 stainless-steel housing or shield and stainless-steel clamps tightened to 80 inch pounds of torque. Coupling shall be 3 inches wide in sizes 1-1/2 to 4 inches and 4 1/2 inches wide in sizes 5 to 10 inches.
- E. Heavy-Duty, Shielded, Stainless-Steel Couplings: ASTM C 1540, with stainless-steel shield, stainless-steel bands and tightening devices, and ASTM C 564, rubber sleeve.
- Manufacturers:
 - ANACO - Huskey.
 - Clamp-All Corp.
 - Femco.
 - Ideal Div.; Stant Corp.
 - MIFAB.
 - Mission Rubber Co.
- F. Transition Couplings.
- General Requirements: Fitting or device for joining piping with small differences in OD's or of different materials. Include end connections same size as and compatible with pipes to be joined.
 - Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

3. Shielded, Nonpressure Transition Coupling.

- a. Manufacturers:
- ANACO - Huskey.
 - Femco, Inc.
 - Mission Rubber Co.
- b. Standard: ASTM C 1460.
- c. Description: Elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.

G. Domestic Water Supply Below Floor

- Soft Copper Tube: ASTM B 88, Type K, water tube, annealed temper, with wrought copper solder-joint pressure fittings ASME B16.22. Limit joints below floor.
- PEX Tube and Fittings: ASTM F 877, SDR 9 tubing.
 - Fittings for PEX Tube: ASTM F 1807, metal-insert type with copper or stainless-steel crimp rings and matching PEX tube dimensions. No fittings below floor.

H. Domestic Water Supply Above Floor

- Hard Copper Tube: ASTM B 88; Type L, water tube, drawn temper, with wrought copper solder-joint pressure fittings ASME B16.22.
- Copper Pressure-Seal-Joint Fittings:
 - Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - Elkhart Product Corporation; Industrial Division.
 - NIBCO, Inc.
 - Viega; Plumbing and Heating Systems.
 - NPS and Smaller: Wrought-copper fitting with EPDM-rubber O-ring seal in each end.
 - NPS 2-1/2 to NPS 4: Cast-bronze or wrought-copper fitting with EPDM-rubber O-ring seal in each end.

I. Natural Gas Piping

- General: Flanges, unions, transition and special fittings, and valves with pressure ratings same as or higher than system pressure rating may be used in applications below, except where otherwise indicated.
- Low-Pressure, 2.0 psig or less, Natural Gas Systems: Use the following:
 - 2-inch NPS and Smaller: Black steel pipe, ASTM A53, Seamless, Grade B, Schedule 40, black, malleable-iron threaded fittings, and threaded joints.
 - 2-1/2- to 4-inch NPS: Black steel pipe, butt-welding fittings, and welded joints.
- Service-Line Risers: Manufactured PE pipe fitting with PE pipe inlet for heat-fusion connection to underground PE pipe; PE pipe riser section with protective-coated, anodeless, steel casing and threaded outlet for threaded connection to aboveground steel piping.
- Transition Fittings: Manufactured pipe fitting with one PE pipe end for heat-fusion connection to PE pipe and with one ASTM A 53/A, Schedule 40, steel pipe end for threaded connection to steel pipe with a low density polyethylene (LDPE), liner low density polyethylene (LLDPE), or high density polyethylene (HDPE), suitable for direct burial with plastic pipe.
- Exterior steel natural gas piping shall be painted per local gas utility standards.
- Paint exterior, exposed metal piping, valves, service regulators, service meters and meter bars, and piping specialties except units with factory-applied paint or protective coating:
 - Gas piping located on exterior and roof shall be painted with one coat rust inhibitor primer and one coat of finished enamel.
 - Or gas piping located on exterior and roof shall be painted with two (2) coats of alkylid based DTM paint on all areas of the system.
 - Stencil at 40-foot intervals along the main run and at two locations on each service supply before the regulator.
 - Gas piping on face of structure to be painted with color matching Building Architecture.
- Damage and Touchup: Repair marred and damaged factory-applied finishes with materials and by procedures to match original factory finish.
- Inspect, test and purge piping according to IFGC and NFPA 54, Part 4 "Gas Piping Inspection, Testing and Purging" and requirements of authorities having jurisdiction.

J. Miscellaneous Fittings:

- Bronze Flanges: ASME B16.24, Classes 150 and 300.
- Copper Unions: ASME B16.18, Cast-Copper-Alloy body, hexagonal stock, with ball-and-socket joint, metal-to-metal seating surfaces, and solder-joint, threaded, or solder-joint and threaded ends.
 - Threaded Ends: Threads conforming to ASME B1.20.1.
- Malleable-Iron Unions: ASME B16.39, Classes 150 and 300, hexagonal stock, with ball-and-socket joint, metal-to-metal bronze seating surfaces, and female threaded ends having threads conforming to ASME B1.20.1.

- K. Locations and Arrangements: Drawings (plans, schematics and diagrams) indicate the general location and arrangement of piping systems. Locations and arrangements of piping take into consideration pipe sizing and friction loss, expansion, pump sizing, and other design considerations. So far as practical, install piping as indicated.

- L. Conceal all pipe installations in walls, pipe chases, utility spaces, above ceilings, below grade or floors, unless indicated to be exposed to view.

- M. Install drains at low points in mains, risers, and branch lines consisting of a tee fitting, 3/4" ball valve and short 3/4" threaded nipple and cap.

- N. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the design pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Test CPVC systems at maximum 150 psi. Check to verify that stress due to pressure at bottom of vertical runs do not exceed either 90 percent of specified minimum yield strength or 1.7 times "SE" value in Appendix A of ASME B31.9, code for pressure piping, "Building Services Piping." After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by lightening, repairing, or replacing components as appropriate, and repeat hydrostatic test until there are not leaks. Prepare written report of testing.

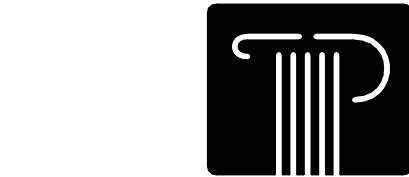
O. Cleaning

- Clean and disinfect water distribution piping as follows:
 - Purge new potable water distribution piping systems and parts of existing potable water systems that have been altered, extended, or repaired prior to use.
 - Use purging and disinfecting procedure prescribed by authority having jurisdiction or, if a method is not prescribed by authority, the procedure described in either AWWA C651 or AWWA C652 or as described below.
 - Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - Fill system or part thereof with water/chlorine solution containing at least 50 parts per million of chlorine. Isolate (valve off) and allow to stand for 24 hours.
 - Drain system or part thereof of previous solution and refill with water/chlorine solution contain at least 200 parts per million of chlorine. Isolate and allow to stand for 3 hours.
 - Flush system with clean, potable water until chlorine does not remain in water coming from system following allowed standing time.
 - Submit water samples in sterile bottles to authority having jurisdiction. Repeat procedure if biological examination made by the authority shows evidence of contamination.
- Prepare and submit reports for purging and disinfecting activities.
- Clean interior of piping system. Remove dirt and debris as work progresses.

3.0 PRODUCTS AND EXECUTION

3.1 WATER TEMPERING VALVES

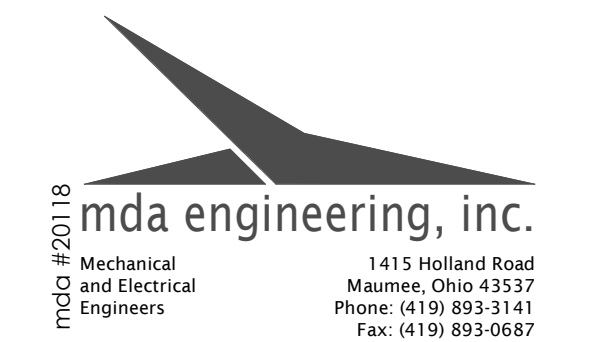
- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following: Apollo; Bradley; Powers Process Controls; Lawler; Leonard; Armstrong; Watts; Zurn Industries.



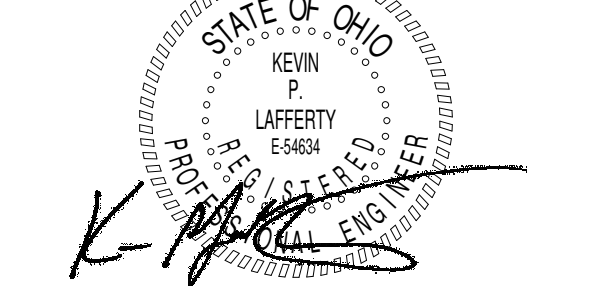
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SEAL:



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PROJECT TITLE:

ISSUE OR REVISION:

DATE ISSUE / REVISION

DESIGNED: DDC

DRAWN: DDC

CHECKED: RFY

TPA COMMISSION NUMBER: 18051

DRAWING TITLE:

PLUMBING
SPECIFICATIONS

DRAWING NUMBER:

P4.0

SANDUSKY PARKS
RIVER CLIFF OFFICE RESTORATION

1329 TIFFIN ST.
FREMONT, OH 43420

MECHANICAL SPECIFICATION	
1.00	GENERAL
1.01	GENERAL SCOPE
A.	THE WORK REQUIRED UNDER THIS SPECIFICATION SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, POWER, TRANSPORTATION, HOISTING IMPLEMENTS, ETC. NECESSARY FOR THE COMPLETION OF THE MECHANICAL WORK OF THE CONTRACT. ALL AS SPECIFIED HEREIN, SHOWN ON THE DRAWINGS OR REASONABLY IMPLIED BY EITHER, COMPLETE IN EVERY RESPECT UNLESS SPECIFIED OTHERWISE HEREIN. THE WORK INCLUDED IN THIS CONTRACT SHALL CONSIST OF THE INSTALLATION, TEST AND GUARANTEE OF ALL WORK DESCRIBED ON THE PLANS AND SPECIFICATIONS.
1.02	RELATED DOCUMENTS
A.	DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO THIS AND THE OTHER SECTIONS OF DIVISION 23. THIS WORK SHALL BE CONDUCTED AS A PRIME CONTRACT.
1.03	DRAWINGS AND SPECIFICATIONS
A.	DRAWINGS INDICATE GENERAL ARRANGEMENT OF SYSTEM AND ARE TO BE FOLLOWED INsofar AS POSSIBLE. DEVIATIONS FROM DRAWINGS MAY BE NECESSITATED BY FIELD CONDITIONS. DETAILED LAYOUTS OF PROPOSED DEPARTURES TO BE SUBMITTED TO ARCHITECT/ENGINEER FOR APPROVAL.
B.	DRAWINGS AND SPECIFICATIONS TO BE CONSIDERED COOPERATIVE AND ANYTHING APPEARING IN SPECIFICATIONS, BUT NOT ON DRAWINGS, OR VICE VERSA, TO BE CONSIDERED PART OF THE CONTRACT AND TO BE EXECUTED.
C.	DRAWINGS INDICATE SIZE AND APPROXIMATE LOCATION OF VARIOUS PARTS OF WORK AND ARE TO BE USED AS A GENERAL GUIDE FOR INSTALLATION. HOWEVER, DRAWINGS ARE, TO A CONSIDERABLE EXTENT, DIAGRAMMATIC AND EXACT LOCATIONS OF PIPING, DUCTWORK, ETC., MAY APPEAR ON THE DRAWINGS OR MUST BE WORKED OUT ON JOB. HOWEVER, NO CHANGES IN SIZES TO BE MADE WITHOUT WRITTEN APPROVAL OF ARCHITECT/ENGINEER. ERRORS OR OMISSIONS DISCOVERED BY BIDDING CONTRACTORS PRIOR TO BID OPENINGS, TO BE CALLED TO ATTENTION OF ARCHITECT/ENGINEER WITHOUT DELAY.
D.	IF A SPECIFIC ITEM IS SPECIFIED OR ON DRAWINGS FOR MULTIPLE TRADES, THIS CONTRACTOR SHALL INCLUDE ALL ITEMS IN THE BID REGARDLESS OF OTHER TRADES. RESOLUTION WILL BE BY ADDENDUM OR CHANGE ORDER.
E.	SHOULD A CONFLICT IN REQUIREMENTS OF THE CONTRACT DOCUMENTS, TECHNICAL SPECIFICATIONS AND/OR DRAWINGS OCCUR, THE MORE STRINGENT REQUIREMENT SHALL APPLY AND BE INCLUDED IN THE BASE BID.
1.04	ALTERNATES
A.	REFER TO ARCHITECTURAL DRAWINGS AND FRONT END SPECIFICATIONS FOR LISTS OF ALTERNATES AND WORK ASSOCIATED WITH SUCH ALTERNATES.
1.05	EQUIPMENT AND SYSTEMS DEMONSTRATION
A.	EACH CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE COMPLETE OPERATION OF THE EQUIPMENT AND SYSTEMS INSTALLED AS PART OF THE WORK. AFTER THE CONTRACTOR IS SATISFIED THE WORK MEETS THE SPECIFIED INTENTS AND SEQUENCES OF OPERATION, THE CONTRACTOR SHALL SCHEDULE, THROUGH THE ARCHITECT/ENGINEER SESSION DURING WHICH ALL ASPECTS OF THE WORK ARE EXPLAINED TO THE OWNER'S PERSONNEL AND/OR REPRESENTATIVES.
1.06	INSPECTION OF EXISTING AND GENERAL CONDITIONS
A.	THE CONTRACTOR WILL BE HELD TO HAVE PERSONALLY INSPECTED THE SITE OF THE PROPOSED WORK TO ARRIVE AT A CLEAR UNDERSTANDING OF THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED, THE EXTENT OF OTHER CONTRACTOR'S ACTIVITIES IN THE AREA, AND TO BECOME FULLY ACQUAINTED WITH THE RECEIVING AND STORAGE SPACES AVAILABLE. THE CONTRACTOR SHALL BE HELD TO HAVE COMPARED THE PREMISES AND SITE WITH THE DRAWINGS AND SPECIFICATIONS, AND SHALL BE SATISFIED AS TO THE CONDITIONS OF THE PREMISES, THE ACTUAL ELEVATIONS, AND ANY OTHER CONDITIONS AFFECTING THE CARRYING OUT OF THE WORK, BEFORE THE DELIVERY OF THIS PROPOSAL.
B.	NO ALLOWANCES OR EXTRA CONSIDERATION ON BEHALF OF THE CONTRACTOR WILL SUBSEQUENTLY BE ALLOWED BY REASON OF THE CONTRACTOR'S FAILURE TO HAVE BECOME FAMILIAR WITH SITE CONDITIONS, ERROR OR OVSIGHT ON THE PART OF THE CONTRACTOR OR DUE TO INTERFERENCES BY THE OWNER'S OR OTHER CONTRACTOR'S ACTIVITIES.
C.	ITEMS SPECIFIED ON MECHANICAL EQUIPMENT SCHEDULES AND PLANS ARE THE BASIS OF DESIGN. EQUALITY OF OTHER EQUIPMENT SHALL BE DETERMINED BY THE OWNER AND ARCHITECT/ENGINEER. ANY MODIFICATION TO THESE DOCUMENTED METHODS THAT IS MADE NECESSARY BY ALTERNATE EQUIPMENT IS THE RESPONSIBILITY OF THE SUPPLIER OF THE ALTERNATE EQUIPMENT.
D.	CONTRACTOR IS DIRECTED TO INCLUDE ALL NECESSARY OVERTIME AND PREMIUM TIME (SATURDAY, SUNDAY, HOLIDAYS) REQUIRED FOR THE COMPLETION OF THE INTENDED WORK TO MEET SPECIFIED SCHEDULES.
E.	DO NOT SCALE MECHANICAL DRAWINGS, FOR EXACT DIMENSIONS, USE DIMENSIONED DRAWINGS OR ACTUAL FIELD CONDITIONS.
1.07	CODES, PERMITS AND COMPLIANCE
A.	CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND INSPECTIONS REQUIRED BY LAWS OF GOVERNING BODIES. COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES AND ALL LEGAL REQUIREMENTS. NO EXTRA COMPENSATION WILL BE ALLOWED FOR ANY CHANGES NECESSARY FOR CODE COMPLIANCE REGARDLESS OF THE METHOD OF INSTALLATION SHOWN ON THE DRAWINGS OR SPECIFIED.
B.	ALL MECHANICAL WORK SHALL COMPLY WITH CURRENT EDITIONS OF ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.
C.	ALL EQUIPMENT, DEVICES AND MATERIALS SHALL BE THE LATEST PRODUCTS OF MANUFACTURER AND SHALL CONFORM TO THE REQUIREMENTS NOTED ON PLANS.
1.08	WORKMANSHIP
A.	WORKMANSHIP SHALL BE OF THE HIGHEST QUALITY CONFORMING TO THE BEST MECHANICAL INSTALLATION PRACTICE. ANY WORK OR MATERIAL WHICH IS REJECTED MUST BE REMOVED IMMEDIATELY AND REPLACED. NO SUB-STANDARD WORK WILL BE ACCEPTED.
B.	THE BREVITY OF THIS SPECIFICATION SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF HIS RESPONSIBILITY TO PERFORM ALL WORK IN A FIRST CLASS WORKMAN LIKE MANNER.
1.09	SUBMITTALS AND RECORD DRAWINGS
A.	SUBMIT SHOP DRAWINGS AND CATALOG DATA FOR APPROVAL FOR ALL EQUIPMENT AND MATERIALS SPECIFIED FOR THIS PROJECT PRIOR TO ORDERING OR MANUFACTURE OF SUCH. SHOP DRAWINGS NOT STAMPED WITH CONTRACTOR APPROVAL WILL BE REJECTED.
B.	THE CONTRACTOR SHALL KEEP AN ACCURATE RECORD OF ALL DEVIATIONS FROM THE APPROVED DESIGN DOCUMENTS AND SPECIFICATIONS WHICH MAY OCCUR IN THE WORK AS ACTUALLY CONSTRUCTED AND SHALL SUBMIT SAME TO THE ENGINEER OR OWNER'S REPRESENTATIVE AT COMPLETION OF THE JOB.
C.	SUBMITTALS SHALL BE COORDINATED THROUGH THE ARCHITECT.
1.10	TESTS AND GUARANTEES
A.	ALL TESTS FOR VARIOUS SYSTEMS SHALL BE PERFORMED AS REQUIRED, CONSISTENT WITH GOOD GENERAL PRACTICE AND IN COMPLIANCE WITH CODES AND AUTHORITIES.

1.11	COORDINATION	B.	AS A CONDITION PRECEDENT TO THE FINAL PAYMENT, THE CONTRACTOR SHALL EXECUTE TO THE OWNER A GUARANTEE IN A FORM APPROVED BY THE OWNER. GUARANTEE SHALL WARRANT THAT ALL WORK INCLUDED IN THIS DIVISION OF THE SPECIFICATIONS WILL REMAIN IN SERVICEABLE AND PERFECT CONDITION (ORDINARY WEAR AND TEAR, ABUSE AND CAUSES BEYOND THE CONTROL OF THE CONTRACTOR EXCLUDED) FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL COMPLETION AND ACCEPTANCE OF WORK AND THAT THE CONTRACTOR WILL MAKE GOOD AT HIS OWN EXPENSE, WITHOUT COST TO THE OWNER, ANY IMPERFECTIONS IN WHOLE OR IN PART WHICH MAY DEVELOP IN THIS WORK DURING THE PERIOD ABOVE SPECIFIED INCLUDING ANY DAMAGE TO OTHER WORK CAUSED BY SUCH IMPERFECTIONS OR REPAIRING OF SAME.
		C.	ALL MECHANICAL SYSTEMS, DEVICES AND RELATED ITEMS SHALL BE TESTED, REPLACE ANY AND ALL DEFECTIVE DEVICE ITEMS OR SYSTEMS BEFORE COMPLETION OF THE PROJECT.
1.12	IDENTIFICATION	A.	FIELD VERIFY EXACT LOCATION OF ALL NEW EQUIPMENT WITH EXISTING CONDITIONS AND COORDINATE WITH THE GENERAL AND OTHER CONTRACTORS PRIOR TO ROUGH-IN AND/OR INSTALLING ANY OF THIS WORK.
		B.	FIELD VERIFY ALL CLEARANCES AND CONDITIONS PRIOR TO THE START OF ANY PIPING, DUCTWORK, ETC.. VERIFY LOCATIONS OF ALL PIPING, DUCTWORK, EQUIPMENT, DEVICES, ETC., WITH ARCHITECTURAL, PLUMBING, FIRE PROTECTION STRUCTURAL AND ELECTRICAL DRAWINGS PRIOR TO ROUGH-IN. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO PROCEEDING WITH WORK.
		C.	ALL INTERRUPTIONS OF SERVICES TO EXISTING OR OPERABLE FACILITIES SHALL BE SCHEDULED WITH THE OWNER A MINIMUM OF 72 HOURS IN ADVANCE. THE CONTRACTOR SHALL NOT INTERRUPT OR RESTORE SERVICES WITHOUT PRIOR CONSENT OF THE OWNER. THE INTERRUPTION SHALL BE ONLY FOR THE SPECIFIC SCHEDULED TIME. THE OWNER OR ELECTRICAL CONTRACTOR ABOVE SPECIFIED FOR SHUTDOWN AND START-UP OF ELECTRICAL SYSTEMS.
		D.	COORDINATE ALL POWER WIRING, SAFETY DISCONNECT MEANS, MOTOR CONTROL AND CONTROL WIRING FOR MECHANICAL EQUIPMENT WITH THE ELECTRICAL CONTRACTOR.
		E.	REFER TO ELECTRICAL DRAWINGS FOR WORK INVOLVING ELECTRICAL POWER SUPPLY WIRING FROM POWER SOURCE TO UNIT CONNECTION POINTS.
		F.	LOCATE AND INSTALL ALL REQUIRED DEVICES IN ACCORDANCE WITH AMERICAN DISABILITIES ACT GUIDELINES.
		G.	PREPARE COORDINATION DRAWINGS TO A SCALE OF ONE QUARTER INCH EQUALS ONE FOOT OR LARGER, DETAILING MAJOR ELEMENTS, COMPONENTS AND SYSTEMS OF MECHANICAL EQUIPMENT AND MATERIALS IN RELATIONSHIP WITH OTHER SYSTEMS, INSTALLATIONS, ELEVATIONS, AND BUILDING COMPONENTS. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR INSTALLATION OF ALL SYSTEMS IF COORDINATION DRAWINGS ARE NOT PREPARED.
1.13	CLEAN-UP, PROTECTION AND TOUCH-UP	A.	INSTALL ENGRAVED PLASTIC LAMINATE SIGN OR EQUIPMENT MARKER ON OR NEAR EACH MAJOR ITEM OF MECHANICAL EQUIPMENT.
		B.	ALL EQUIPMENT, ITEMS, DEVICES AND APPURTENANCES SHALL BE PROTECTED FROM DEBRIS AND DAMAGE WHILE STORED AT THE SITE AND DURING AND AFTER INSTALLATION.
1.14	PROJECT CLOSEOUT	C.	SCARRED FACTORY-FINISHED MECHANICAL EQUIPMENT SHALL BE TOUCHED UP WITH FACTORY FURNISHED PAINT. RUSTED OR MARRED SURFACES OF MECHANICAL EQUIPMENT SHALL BE CLEANED AND PRIMED BEFORE PAINTING.
		D.	PATCH FINISHED SURFACES AND BUILDING COMPONENTS USING NEW MATERIALS MATCHING EXISTING MATERIALS AND EXPERIENCED INSTALLERS.
		E.	ALL CUTTING AND PATCHING OF ROOF, WALLS, FLOORS, AND SLABS, ETC. IS THE RESPONSIBILITY OF THIS CONTRACTOR UNLESS SPECIFICALLY STATED OTHERWISE ON THE DRAWINGS.
		F.	THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ROOF PENETRATIONS ASSOCIATED WITH INSTALLATION OF WORK ON EXISTING ROOF SYSTEMS. ALL ROOF WORK SHALL BE PERFORMED BY A LICENSED AND CERTIFIED CONTRACTOR SO THAT ALL EXISTING ROOF WARRANTIES ARE MAINTAINED.
		G.	REMOVE ALL DEBRIS AND MATERIALS FROM THE PROJECT SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF ALL DEBRIS AND MATERIALS.
		H.	REMOVE ALL EXCESS MATERIALS AND EQUIPMENT FROM THE PROJECT SITE.
		I.	REMOVE ALL EXCESS MATERIALS AND EQUIPMENT FROM THE PROJECT SITE.
1.15	MAINTENANCE MANUALS	A.	IN ORDER TO ACHIEVE A COMPLETE AND COMMISSIONED PROJECT, EACH CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING ITEMS:
		B.	1. BUILDING INSPECTION CERTIFICATES. 2. AS-BUILT DRAWINGS. 3. FINAL PAYMENT REQUEST. 4. WAIVER OF LIENS. 5. DEMONSTRATION CERTIFICATES SIGNED BY OWNER. 6. DELIVERY OF EXTRA MATERIALS AND SUPPLIES. 7. RETURN OF BORROWED KEYS AND WORKING PERMITS. 8. LETTER DECLARING PUNCH LIST ITEMS COMPLETED. 9. OPERATION AND MAINTENANCE MANUALS. 10. FINAL GUARANTEE AND EXECUTION OF WARRANTIES. 11. OTHER REQUIREMENTS SPECIFIED IN DIVISION 1 SPECIFICATIONS.
2.00	BASIC MATERIALS AND METHODS	A.	PREPARE MAINTENANCE MANUALS. PROVIDE A MINIMUM OF FOUR COPIES WITH A SINGLE COPY SENT TO THE ENGINEER FOR APPROVAL. INCLUDE THE FOLLOWING INFORMATION FOR EQUIPMENT ITEMS:
		B.	1. COMPLETE INFORMATION ON PROJECT EQUIPMENT AND SERVICES AS WAS SUBMITTED DURING THE COURSE OF THE PROJECT. THIS INFORMATION IS SOLELY INTENDED TO PROVIDE THE OWNER WITH ACCURATE, USABLE INFORMATION ON HOW TO CARE FOR HIS FACILITY. 2. DESCRIPTION OF FUNCTION, NORMAL OPERATING CHARACTERISTICS AND LIMITATIONS, PERFORMANCE CURVES, ENGINEERING DATA AND TESTS, AND COMPLETE NOMENCLATURE AND COMMERCIAL NUMBERS OF REPLACEMENT PARTS. 3. MANUFACTURER'S PRINTED OPERATING PROCEDURES TO INCLUDE START-UP, BREAK-IN AND ROUTING AND NORMAL OPERATING INSTRUCTIONS; REGULATION, CONTROL, STOPPING, SHUTDOWN AND EMERGENCY INSTRUCTIONS, AND SUMMER AND WINTER OPERATING INSTRUCTIONS. 4. MAINTENANCE PROCEDURES FOR ROUTINE PREVENTATIVE MAINTENANCE AND TROUBLESHOOTING, DISASSEMBLY, REPAIR AND RE-ASSEMBLY, ALIGNING AND ADJUSTING INSTRUCTIONS. 5. SERVICING INSTRUCTIONS AND LUBRICATION CHARTS AND SCHEDULES.
2.01	DUCT INSULATION	A.	FIRE-TEST-RESPONSE CHARACTERISTICS: AS DETERMINED BY TESTING MATERIALS IDENTICAL TO THOSE SPECIFIED IN THIS SECTION ACCORDING TO ASTM E 84, BY A TESTING AND INSPECTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION. FACTORY LABEL INSULATION AND JACKET MATERIALS AND SEALER AND CEMENT MATERIALS CONTAINERS WITH APPROPRIATE MARKINGS OF APPLICABLE TESTING AND INSPECTING AGENCY.
		B.	1. INSULATION INSTALLED INDOORS: FLAME-SPREAD RATING OF 25 OR LESS, AND SMOKE-DEVELOPED RATING OF 50 OR LESS. 2. INSULATION INSTALLED OUTDOORS: FLAME-SPREAD RATING OF 75 OR LESS, AND SMOKE-DEVELOPED RATING OF 150 OR LESS.
2.02	INSULATION MATERIALS	A.	MINERAL-FIBER BLANKET THERMAL INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 563, TYPE II, WITHOUT FACING AND WITH ALL-SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCIRM, ALUMINUM FOIL AND VINYL FILM.
		B.	MINERAL-FIBER BLANKET THERMAL INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 563, TYPE II, WITHOUT FACING AND WITH ALL-SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCIRM, ALUMINUM FOIL AND VINYL FILM.

C.

FIELD-APPLIED JACKETS

1.

FOIL AND PAPER JACKET: LAMINATED, GLASS-FIBER-REINFORCED, FLAME-RETARDANT KRAFT PAPER AND ALUMINUM FOIL.

D.

APPLY INSULATION MATERIALS, ACCESSORIES AND FINISHES ACCORDING TO THE MANUFACTURER'S WRITTEN INSTRUCTIONS, WITH SMOOTH, STRAIGHT, AND EVEN SURFACES, AND FREE OF VOIDS THROUGHOUT THE LENGTH OF DUCTS AND FITTINGS.

E.

INDOOR DUCT AND PLENUM APPLICATION SCHEDULE:

1.

SERVICE: RECTANGULAR AND ROUND SUPPLY-AIR DUCTS: INSTALL MINERAL-FIBER BLANKET INSULATION, 1 1/2 INCHES THICK, SINGLE LAYER WITH FOIL AND PAPER JACKET AND VAPOR RETARDER.

2.

SERVICE: ROUND OUTSIDE-AIR DUCTS: INSTALL MINERAL FIBER BLANKET INSULATION, 2 INCHES THICK, SINGLE LAYER WITH FOIL AND PAPER JACKET AND VAPOR RETARDER.

3.

SERVICE: EXHAUST-AIR DUCTS (BETWEEN FAN OUTLET AND WALL LOUVER): INSTALL MINERAL FIBER BLANKET INSULATION, 2 INCHES THICK, SINGLE LAYER WITH FOIL AND PAPER JACKET AND VAPOR RETARDER.

F.

INDOOR DUCT IN UNCONDITIONED SPACES (ATTIC) SHALL MEET MINIMUM REQUIREMENTS OF ANSI/ASHRAE/IES STANDARD 90.1.

1.

SERVICE: RECTANGULAR AND ROUND SUPPLY-AIR: INSTALL MINERAL FIBER BLANKET INSULATION, 2 INCHES THICK, SINGLE LAYER WITH FOIL AND PAPER JACKET WITH VAPOR RETARDER.

2.

SERVICE: RECTANGULAR RETURN DUCTS: INSTALL MINERAL FIBER BLANKET INSULATION, 2 INCHES THICK, SINGLE LAYER WITH FOIL AND PAPER JACKET WITH VAPOR RETARDER, THIS IN ADDITION TO 1" LINER ON ALL RETURN AIR DUCTS.

3.

SERVICE: ROUND OUTSIDE-AIR DUCTS: INSTALL MINERAL FIBER BLANKET INSULATION, 2 INCHES THICK, SINGLE LAYER WITH FOIL AND PAPER JACKET AND VAPOR RETARDER.

4.

SERVICE: EXHAUST-AIR DUCTS: INSTALL MINERAL FIBER BLANKET INSULATION, 2 INCHES THICK, SINGLE LAYER WITH FOIL AND PAPER JACKET AND VAPOR RETARDER.

2.02

PIPE INSULATION

A.

FIRE-TEST-RESPONSE CHARACTERISTICS: AS DETERMINED BY TESTING MATERIALS IDENTICAL TO THOSE SPECIFIED IN THIS SECTION ACCORDING TO ASTM E 84, BY A TESTING AND INSPECTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION. FACTORY LABEL INSULATION AND JACKET MATERIALS AND SEALER AND CEMENT MATERIAL CONTAINERS WITH APPROPRIATE MARKINGS OF APPLICABLE TESTING AND INSPECTING AGENCY.

1.

INSULATION INSTALLED INDOORS: FLAME-SPREAD RATING OF 25 OR LESS, AND SMOKE-DEVELOPED RATING OF 50 OR LESS.

2.

INSULATION INSTALLED OUTDOORS: FLAME-SPREAD RATING OF 75 OR LESS, AND SMOKE-DEVELOPED RATING OF 150 OR LESS.

B.

INSULATION MATERIALS

1.

MINERAL-FIBER INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN COMPLYING WITH THE FOLLOWING:

a.

PRE-FORMED PIPE INSULATION: COMPLY WITH ASTM C 547, TYPE I, WITH FACTORY-APPLIED, ALL PURPOSE, VAPOR-RETARDER JACKET.

b.

BLANKET INSULATION: COMPLY WITH ASTM C 533, TYPE II, WITHOUT FACING.

2.

FLEXIBLE ELASTOMERIC THERMAL INSULATION: CLOSED-CELL, SPONGE-OR EXPANDED-RUBBER MATERIALS. COMPLY WITH ASTM C 534, TYPE I FOR TUBULAR MATERIALS AND TYPE II FOR SHEET MATERIALS.

a.

ADHESIVE: AS RECOMMENDED BY INSULATION MATERIAL MANUFACTURER.

b.

ULTRAVIOLET-PROTECTIVE COATING: AS RECOMMENDED BY INSULATION MANUFACTURER.

3.

PREFABRICATED THERMAL INSULATING FITTING COVERS: COMPLY WITH ASTM C 450 FOR DIMENSIONS USED IN PRE-FORMING INSULATION TO COVER VALVES, ELBOWS, TEES, AND FLANGES.

C.

FIELD-APPLIED JACKETS

1.

GENERAL: ASTM C 921, TYPE I, UNLESS OTHERWISE INDICATED.

2.

PVC JACKET: HIGH-IMPACT, ULTRAVIOLET-RESISTANT; 20 MIL THICK; ROLL STOCK READY FOR SHOP OR FIELD CUTTING AND FORMING.

D.

APPLY INSULATION MATERIALS, ACCESSORIES, AND FINISHES ACCORDING TO THE MANUFACTURER'S WRITTEN INSTRUCTIONS, WITH SMOOTH, STRAIGHT, AND EVEN SURFACES, FREE OF VOIDS THROUGHOUT THE LENGTH OF PIPING AND EQUIPMENT, INCLUDING FITTINGS, VALVES AND SPECIALTIES.

E.

HANGERS AND ANCHORS: WHERE VAPOR RETARDER IS REQUIRED, SEAL PENETRATIONS IN INSULATION AT HANGERS, SUPPORTS, ANCHORS AND OTHER PROJECTIONS WITH VAPOR-RETARDER MASTIC TO PREVENT CONDENSATION ON ALL SURFACES.

1.

APPLY INSULATION CONTINUOUSLY THROUGH HANGERS AND AROUND ANCHOR ATTACHMENTS.

F.

INTERIOR INSULATION APPLICATION SCHEDULE

1.

THESE APPLICATION SCHEDULES ARE FOR ABOVE GROUND INSULATION OF PIPING AND EQUIPMENT SYSTEMS INSIDE THE BUILDING.

2.

SERVICE: CONDENSATE DRAIN PIPING, 35 TO 75 DEG. F.

CONDENSATE DRAIN PIPING (35 TO 75 DEG. F.)

PIPE SIZES (NPS)	MATERIALS	THICKNESS IN INCHES	VAPOR BARRIER REQ'D	FIELD-APPLIED JACKET
1/2 TO 1-1/4	GLASS FIBER	1	YES	NONE
1/2 TO 1-1/4	FLEXIBLE ELASTOMERIC	3/8	YES	NONE

3.

SERVICE: REFRIGERANT SUCTION AND HOT-GAS PIPING, 35 TO 50 DEG. F.

G.

EXTERIOR INSULATION APPLICATION SCHEDULE

1.

THESE APPLICATION SCHEDULES ARE FOR ABOVE GROUND INSULATION OF PIPING AND EQUIPMENT SYSTEMS OUTSIDE THE BUILDING.

REFRIGERANT SUCTION (35 TO 50 DEG. F.)

PIPE SIZES (NPS)	MATERIALS	THICKNESS IN INCHES	VAPOR BARRIER REQ'D	FIELD-APPLIED JACKET
3/8 TO 1-1/8	AEROCCELL EPDM RUBBER	3/4	NO	NONE

2.

SERVICE: REFRIGERANT SUCTION, 35 TO 50 DEG. F.

2.03

PIPING

A.

REGULATORY REQUIREMENTS: COMPLY WITH THE PROVISIONS OF THE FOLLOWING:</div>

REFRIGERANT SUCTION (35 TO 50 DEG. F.)

PIPE SIZES (NPS)	MATERIALS	THICKNESS IN INCHES	VAPOR BARRIER REQ'D	FIELD-APPLIED JACKET
3/8 TO 1-1/8	FLEXIBLE ELASTOMERIC	3/4	YES	NONE

1.

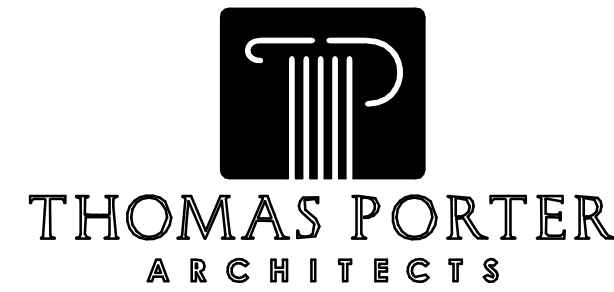
ASME B 31.9 "BUILDING SERVICES PIPING," ASME B 31.1 "POWER PIPING" AND ASME B 31.5 "REFRIGERANT PIPING" FOR MATERIALS, PRODUCTS AND INSTALLATION.

2.

SAFETY VALVES AND PRESSURE VESSELS SHALL BEAR THE APPROPRIATE ASME LABEL.

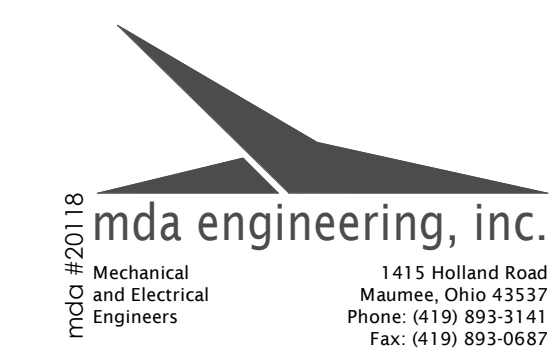
3.

ASME "BOILER AND PRESSURE VESSEL CODE," SECTION IX, "WELDING AND BRAZING QUALIFICATION" FOR QUALIFICATIONS FOR WELDING PROCESSES AND OPERATORS.

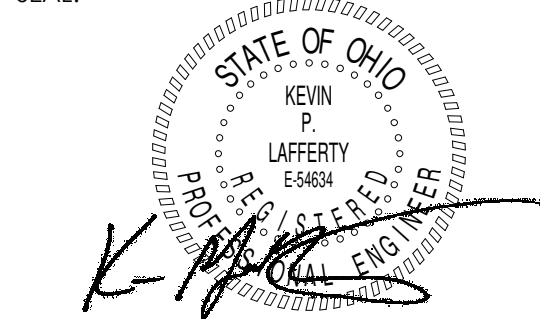


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SANDUSKY PARKS
RIVER CLIFF OFFICE RESTORATION

1329 TIFFIN ST.
FREMONT OH 43420

PROJECT TITLE:

ISSUE OR REVISION:

11/06/2020	ISSUED FOR BIDDING
DATE	ISSUE / REVISION

DESIGNED D. HORVAT

DRAWN: D.HORVAT

CHECKED:K.LAFFERTY

TPA COMMISSION NUMBER: 18051

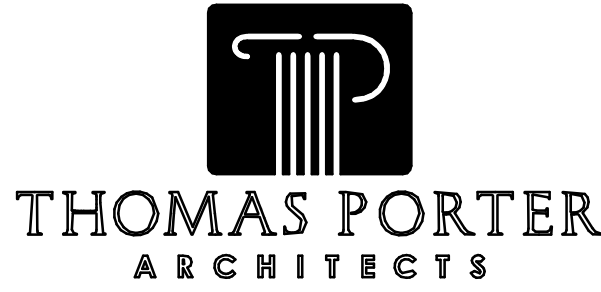
DRAWING TITLE

MECHANICAL SPECIFICATIONS

DRAWING NUMBER

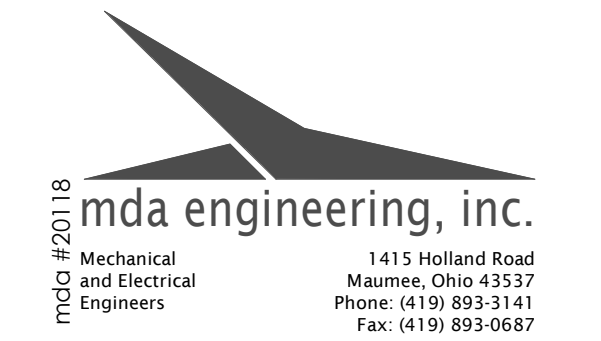
M1.1

	4.	OHIO AND LOCAL BUILDING CODES.		1.	HEAD PRESSURE CONTROL TO MODULATE CONDENSER FAN MOTOR SPEED FOR LOW AMBIENT CONDITIONS.		B.	PROVIDE THE SERVICES OF ONE OF THE FOLLOWING TEST AND BALANCE CONTRACTORS:
B.		REFRIGERANT PIPE APPLICATIONS		2.	HARD START KIT (SINGLE PHASE UNIT ONLY).			
		1. ABOVEGROUND, WITHIN BUILDING: ASTM B 280 TYPE ACR DRAWN-COPPER TUBING WITH COPPER FITTINGS AND BRAZED JOINTS.		3.	ANTI-SHORT CYCLE TIMER.			1. DUNBAR MECHANICAL, INC.
		2. INSTALL REFRIGERANT PIPING ACCORDING TO ASHRAE 15.	E.		INSTALL CONDENSING UNITS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL UNITS PLUMB AND LEVEL, FIRMLY ANCHORED IN LOCATIONS INDICATED, AND MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES.			3. INTERNATIONAL TEST AND BALANCE.
2.04		FURNACE FLUE AND COMBUSTION AIR PIPING	3.03		AIR INLETS AND OUTLETS		C.	TEST, ADJUST, AND BALANCE THE FOLLOWING MECHANICAL SYSTEMS:
	A.	INSTALL ASTM D1785, SCHEDULE 40 PVC PLASTIC PIPE WITH SOLVENT CEMENTED JOINTS AND SOCKET TYPE FITTINGS FOR FURNACE COMBUSTION AIR AND FLUE PIPING. PIPING, FITTING, PRIMER, AND CEMENT SHALL BE LISTED FOR VENTING APPLICATIONS. PRIMER SHALL BE OF CONTRASTING COLOR. PROVIDE CONCENTRIC VENT KIT FOR SINGLE EXTERIOR TERMINATION OF FLUE AND COMBUSTION AIR PIPING.		A.	MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE AIR OUTLETS AND INLETS OF ONE OF THE FOLLOWING:			1. SUPPLY AIR SYSTEMS;
				1.	DIFFUSERS, REGISTERS AND GRILLES: ANEMOSTAT PRODUCTS, CARNES, KRUEGER, METAL AIRE, PRICE, TITUS PRODUCTS AND TUTTLE & BAILEY.			2. RETURN AIR SYSTEMS;
				2.	LOUVERS: AIR BALANCE INC., AROCLITE, AMERICAN WARMING AND VENTILATING INC., ARROW UNITED INDUSTRIES, INC., CESCO, GREENHECK, LOUVERS AND DAMPERS, INC., PENN VENTILATOR CO., INC., AND RUSKIN MFG. CO.			4. VERIFY TEMPERATURE CONTROL SYSTEM OPERATION.
2.05		DUCTWORK AND DUCT ACCESSORIES		B.	EXCEPT AS OTHERWISE INDICATED, PROVIDE MANUFACTURER'S STANDARD GRILLES, REGISTER AND DIFFUSERS AND LOUVERS WHERE SHOWN, OF SIZE, SHAPE, CAPACITY AND TYPE INDICATED. CONSTRUCTED OF MATERIALS AND COMPONENTS AS INDICATED, AND AS REQUIRED FOR COMPLETE INSTALLATION.			
	B.	EXCEPT AS OTHERWISE INDICATED, FABRICATE RECTANGULAR DUCTS WITH GALVANIZED SHEET STEEL, IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," TABLES 1-3 THROUGH 1-18, INCLUDING THEIR ASSOCIATED DETAILS. CONFORM TO THE REQUIREMENTS IN THE REFERENCED STANDARD FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE ROD APPLICATIONS, AND JOINT TYPES AND INTERVALS.		1.	FINISHES:			
				a.	GRILLES, REGISTERS AND DIFFUSERS: OFF-WHITE, UNLESS OTHERWISE INDICATED.			
				b.	LOUVERS: BAKED ENAMEL FINISH WITH COLOR SELECTED BY ARCHITECT.			
	C.	STATIC PRESSURE CLASSIFICATIONS: UNLESS OTHERWISE INDICATED, CONSTRUCT DUCTS TO THE FOLLOWING:		C.	INSTALL AIR OUTLETS AND INLETS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PRODUCTS SERVE INTENDED FUNCTION.			
		1. LOW PRESSURE SUPPLY DUCTS: 2-INCHES WG.		3.04	CONTROL EQUIPMENT AND SYSTEMS			
		2. RETURN DUCTS: 2-INCHES WG. NEGATIVE PRESSURE.		A.	CONTROL SYSTEM CONSISTS OF SENSORS, INDICATORS, ACTUATORS, ZONE CONTROL PANEL, FINAL CONTROL ELEMENTS, INTERFACE EQUIPMENT, OTHER APPARATUS AND ACCESSORIES CONNECTED TO CONTROLLERS TO OPERATE MECHANICAL SYSTEMS ACCORDING TO SEQUENCES OF OPERATION INDICATED OR SPECIFIED, AND TO PROVIDE COMPLETE, FUNCTIONAL SYSTEMS.			
		3. EXHAUST DUCTS: 2-INCHES WG. NEGATIVE OR POSITIVE PRESSURE.		B.	CODES AND STANDARDS: COMPLY WITH THE FOLLOWING: NFPA 90A, NATIONAL ELECTRIC CODE, UNDERWRITERS LABORATORIES, NEMA FEDERAL COMMUNICATIONS COMMISSION, ELECTRONICS INDUSTRIES ASSOCIATION STD. RS-232, IEEE, ANSI.			
	D.	FABRICATE ROUND DUCTS WITH SPIRAL LOCKSEAM CONSTRUCTION. COMPLY WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," TABLE 3-2 FOR GALVANIZED STEEL GAGES.		C.	MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:			
	E.	PROVIDE 1 INCH THICK, 3 POUND DENSITY, INTERNAL LINER ON ALL RECTANGULAR SUPPLY AND RETURN AIR DUCTWORK, COMPLETE WITH ALL APPROPRIATE ADHESIVES AND OTHER MATERIALS. ALL DUCT SIZES INDICATED ARE NET FREE AREAS.		1.	THERMOSTATS			
	F.	SEAL DUCT JOINTS AND SEAMS WITH DUCT SEALANT, TAPE OR MASTICS.			a. HONEYWELL.			
					b. JOHNSON CONTROLS.			
					c. TRANE.			
					d. WHITE RODGERS.			
	G.	WHERE INDICATED, PROVIDE FACTORY-FABRICATED, INSULATED, ROUND FLEXIBLE DUCT, WITH AN OUTER JACKET ENCLOSING 1-1/2 INCHES THICK, GLASS FIBER INSULATION AROUND A CONTINUOUS INNER LINER, STEEL-WIRE HELIX REINFORCEMENT ENCAPSULATED IN THE INNER LINER, AND POLYETHYLENE FILM INNER AND OUTER JACKET. MAXIMUM LENGTH: 5 FEET.		2.	DAMPER ACTUATORS			
					a. BARBER-COLMAN.			
					b. HONEYWELL.			
					c. JOHNSON CONTROLS.			
					d. BELIMO.			
	H.	PROVIDE STANDARD GALVANIZED VOLUME CONTROL DAMPERS, MULTIPLE (FOR DAMPERS 12 INCHES IN HEIGHT AND GREATER) OR SINGLE-BLADE (FOR DAMPERS UNDER 12 INCHES IN HEIGHT) OPPOSED BLADE DESIGN, STANDARD LEAKAGE RATING, WITH LINKAGE OUTSIDE OF AIR STREAM, AND SUITABLE FOR HORIZONTAL OR VERTICAL APPLICATIONS. FURNISH WITH LOCKING QUADRANTS.		3.	ELECTRIC CONTROL SYSTEM AND COMPONENTS:			
					a. SIEBE/BARBER-COLMAN.			
					b. HONEYWELL.			
					c. JOHNSON CONTROLS.			
					d. LANDIS & GYR POWERS.			
					e. ROBERTSHAW.			
					f. TOUR & ANDERSON.			
	I.	PROVIDE LOW-LEAKAGE STANDARD GALVANIZED VOLUME CONTROL DAMPERS, MULTIPLE (FOR DAMPERS 12 INCHES IN HEIGHT AND GREATER) OR SINGLE-BLADE (FOR DAMPERS UNDER 12 INCHES IN HEIGHT), OPPOSED BLADE DESIGN, LOW-LEAKAGE RATING, WITH LINKAGE OUTSIDE OF AIR STREAM AND SUITABLE FOR HORIZONTAL OR VERTICAL APPLICATIONS. FURNISH WITH NEOPRENE BLADE SEALS AND ALUMINUM JAMB SEALS.		D.	CONTROL WIRING REQUIREMENTS:			
	J.	PROVIDE BALANCING DAMPERS AT ALL BRANCH TAKE-OFFS IN ALL SUPPLY AIR, RETURN AIR AND EXHAUST AIR SYSTEMS AND WHERE REQUIRED TO FACILITATE PROPER BALANCING OF AIR SYSTEMS.		1.	ALL CONDUIT AND CABLE TO RUN PARALLEL TO BUILDING STEEL.			
	K.	CONSTRUCT ALL RECTANGULAR ELBOWS WITH TURNING VANES. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" FOR VANES AND VANE RUNNERS. VANE RUNNERS SHALL AUTOMATICALLY ALIGN VANES.		2.	PROVIDE SUFFICIENT SLACK AND FLEXIBLE CONNECTIONS TO ALLOW FOR VIBRATION OF EQUIPMENT.			
	L.	FLEXIBLE CONNECTORS: FLAME-RETARDANT NONCOMBUSTIBLE FABRICS, COATINGS, AND ADHESIVES COMPLYING WITH UL181, CLASS 1, FACTORY FABRICATED WITH 3-1/2 INCH WIDE FABRIC STRIP ATTACHED TO TWO STRIPS OF GALVANIZED SHEET STEEL. FABRIC SHALL BE DOUBLE COATED WITH NEOPRENE AND RATED FOR SERVICE TEMPERATURE RANGE OF MINUS 40 TO PLUS 200 DEG. F.		3.	ALL CONTROL CABLE INSTALLED ABOVE ACCESSIBLE CEILINGS MAY BE INSTALLED WITH J-HOOKS OR ON OPEN CABLE TRAY.			
3.00		PRODUCTS AND EXECUTION		4.	ALL CONTROL CABLE INSTALLED IN EXPOSED LOCATION OR INACCESSIBLE LOCATION TO BE INSTALLED IN CONDUIT. PROVIDE PULL LINE IN ALL CONDUITS FOR FUTURE CABLE INSTALLATION.			
3.01		FURNACES		5.	ALL WIRES MUST BE PLENUM RATED, EVEN WHEN INSTALLING IN CONDUIT.			
	A.	PROVIDE COMPONENTS THAT COMPLY WITH NFPA 70 AND THAT ARE LISTED AND LABELED BY UL WHERE AVAILABLE. COMPLY WITH AGA Z21.47, "GAS-FIRED CENTRAL FURNACES"; AND NFPA 54, "NATIONAL FIRE GAS CODE." ENERGY STAR CERTIFIED.		6.	ALL WIRING SHALL BE LABELED AT EACH END, INDICATE WHAT LOCATION/DEVICE WIRE IS COMING FROM AND WHERE IT IS GOING.			
	B.	MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: BRYANT, CARRIER, GOODMAN, LENNOX, TRANE AND YORK.		7.	WIRING SHALL BE CONTINUOUS, WITHOUT SPLICES.			
	C.	GAS-FIRED HIGH EFFICIENCY FURNACES: ENERGY STAR CERTIFIED, MINIMUM 97 PERCENT AFUE EFFICIENCY, FACTORY ASSEMBLED, PIPED WIRED AND TESTED WITH INDICATED CONFIGURATION, STEEL CABINET WITH GLASS-FIBER INTERIOR INSULATION AND BAKED ENAMEL FINISH ON EXTERNAL SURFACES. PROVIDE CENTRIFUGAL FAN WITH ECM FAN MOTOR, ALUMINIZED STEEL PRIMARY HEAT EXCHANGER AND STAINLESS STEEL SECONDARY HEAT EXCHANGER. PROVIDE 24 VOLT AUTOMATIC ELECTRIC GAS VALVE, ELECTRONIC PILOT IGNITION, WITH SPARK IGNITER, BURNER SAFETY CONTROLS, POWER VENTING AND SOLID-STATE BOARD AUTOMATIC CONTROLS. PROVIDE 2 SETS OF 1 INCH THICK PLEATED FILTERS.		8.	DO NOT RUN LOW VOLTAGE WIRE IN THE SAME CONDUIT OR BUNDLES AS LINE VOLTAGE OR POWER WIRING.			
				9.	A TRUE EARTH GROUND MUST BE PROVIDED AT CONTROLLERS AND CONTROL PANELS.			
				10.	ALL CONDUCTORS INSTALLED EXPOSED TO VIEW SHALL BE ROUTED IN ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS UTILIZING CAST METAL BOXES.			
	D.	THERMOSTAT: 24 VAC, SOLID-STATE, PROGRAMMABLE, MICROPROCESSOR-BASED, WALL MOUNTING UNIT WITH AUTOMATIC SWITCHING FROM HEATING TO COOLING, PREFERENTIAL RATE CONTROL, MULTIPLE TEMPERATURE PRESETS SELECTABLE BY DAY AND TIME, AND BATTERY BACK-UP PROTECTION OF PROGRAM SETTINGS AGAINST POWER FAILURE.		E.	PROVIDE PERMANENT LABEL ON EACH CONTROL DEVICE INCLUDING ROOM SENSORS. LABEL WIRING AND CABLING WITH SYSTEM ADDRESS AND TERMINATION NUMBER.			
	E.	EVAPORATOR COIL: CONFORM TO ARI 210/240, "UNITARY AIR CONDITIONING AND AIR SOURCE HEAT PUMP EQUIPMENT." MATCH SIZE WITH FURNACE AND REMOTE CONDENSING UNIT. INCLUDE CONDENSATE DRAIN PAN WITH ACCESSIBLE DRAIN OUTLET.		F.	INSTALL CONTROL EQUIPMENT AND SYSTEMS AS REQUIRED, IN ACCORDANCE WITH SYSTEM MANUFACTURER'S WRITTEN INSTRUCTIONS, AND WITH RECOGNIZED INDUSTRY PRACTICES, AND ENSURE THAT EQUIPMENT COMPLIES WITH REQUIREMENTS. COMPLY WITH REQUIREMENTS OF NEC, AND APPLICABLE PORTIONS OF NECA'S "STANDARD OF INSTALLATION" PERTAINING TO GENERAL ELECTRICAL INSTALLATION PRACTICES.			
	F.	EVAPORATOR COIL ENCLOSURE: AS REQUIRED TO SUIT FURNACE AND COOLING COIL. STEEL CABINET WITH ACCESS PANEL AND FLANGES FOR INTEGRAL MOUNTING AT OR ON FURNACE CABINET.		G.	INSTALL ALL RACEWAY AND WIRING IN ACCORDANCE WITH ALL REQUIREMENTS OF DIVISION 26, ELECTRICAL SPECIFICATIONS.			
	G.	REFRIGERANT LINE KITS: ANNEALED-COPPER SUCTION AND LIQUID LINES FACTORY CLEANED, DRIED, AND SEALED, WITH INSULATED SUCTION LINE AND FLARED FITTINGS AT EVAPORATOR END; NO FITTING AT CONDENSER END, LENGTH AS REQUIRED.	3.05		SEQUENCES OF OPERATION			
	H.	INSTALL FURNACES AND ACCESSORIES ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.		A.	FURNACE SYSTEMS			
3.02		CONDENSING UNITS		1.	OCCUPIED COOLING CONTROL: FURNACE AND CONDENSING UNIT SHALL OPERATE OFF PACKAGED CONTROLS TO MAINTAIN A 75 DEG. F. SET POINT. FAN OPERATION SHALL BE CONTINUOUS.			
	A.	CODES AND STANDARDS: ARI STANDARD 360, ASHRAE STANDARD 15, ASHRAE 90A, U.L. ENERGY STAR CERTIFIED.		2.	UNOCCUPIED COOLING CONTROL: FURNACE AND CONDENSING UNIT SHALL OPERATE OFF PACKAGED CONTROLS TO MAINTAIN AN 85 DEG. F. SET POINT FAN SHALL CYCLE ON/OFF ON A CALL FOR COOLING.			
	B.	MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: BRYANT, CARRIER, GOODMAN, LENNOX, TRANE, AND YORK.		3.	OCCUPIED HEATING CONTROL: FURNACE SHALL OPERATE OFF ITS PACKAGED CONTROLS TO MAINTAIN A 72 DEG. F. SET POINT. FAN OPERATION SHALL BE CONTINUOUS.			
	C.	GENERAL: FACTORY-ASSEMBLED AND TESTED AIR-COOLED CONDENSING UNITS, CONSISTING OF COMPRESSOR, CONDENSER COIL, FAN, MOTOR, REFRIGERANT RESERVOIR, AND OPERATING CONTROLS. SEE SCHEDULE FOR CAPACITY AND ELECTRICAL CHARACTERISTICS.		4.	UNOCCUPIED HEATING CONTROL: FURNACE SHALL OPERATE OFF ITS PACKAGED CONTROLS TO MAINTAIN A 68 DEG. F. SET POINT. FAN SHALL CYCLE ON/OFF ON CALL FOR HEAT.			
				5.	PROVIDE 24 V A.C. SOLID-STATE, PROGRAMMABLE, MICROPROCESSOR-BASED WALL MOUNTED ZONE CONTROL PANEL WITH AUTOMATIC SWITCHING FROM HEATING TO COOLING, PREFERENTIAL RATE CONTROL, MULTIPLE TEMPERATURE PRESETS SELECTABLE BY DAY AND TIME, AND BATTERY BACKUP PROTECTION OF PROGRAM SETTINGS AGAINST POWER FAILURE.			
				6.	PROVIDE INTERLOCK CONTROLS BETWEEN THE INDOOR SUPPLY AIR FAN AND THE CONDENSING UNIT TO ENABLE THE CONDENSING UNIT TO OPERATE ONLY AFTER PROOF OF AIRFLOW FROM INDOOR SUPPLY AIR FAN.			
				7.	FURNACES SHALL BE INTERLOCKED WITH OUTSIDE AIR LOUVER 24 VOLT DAMPER MOTORS. DAMPER SHALL OPEN WHEN FURNACE FAN IS OPERATING AND SHALL CLOSE ON SHUTDOWN OF FURNACE FAN.			
	D.	ACCESSORIES:	3.06		TESTING, ADJUSTING AND BALANCING			
				A.	EMPLOY THE SERVICES OF AN INDEPENDENT TESTING, ADJUSTING AND BALANCING AGENCY CERTIFIED BY THE ASSOCIATED AIR BALANCE COUNCIL TO TEST AND BALANCE THE INDICATED SYSTEMS. SUBMIT A COPY OF THE REPORT TO THE ENGINEER FOR REVIEW.			

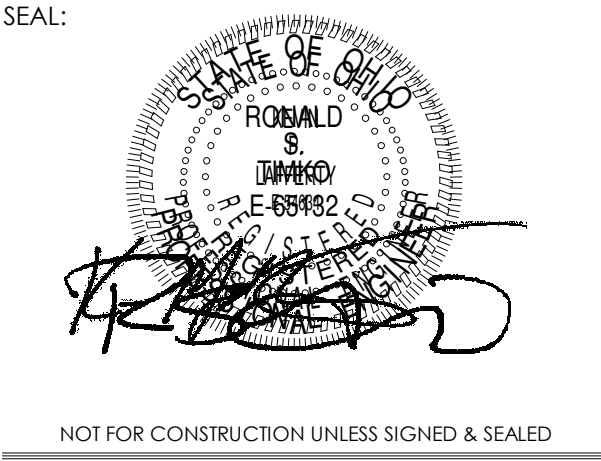


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PROJECT TITLE:

SANDUSKY PARKS
RIVER CLIFF OFFICE RESTORATION

1329 TIFFIN ST.
FREMONT, OH 43420

ISSUE OR REVISION:

11/06/2020	ISSUED FOR BIDDING
DATE	ISSUE / REVISION

DESIGNED: D. HORVAT

DRAWN: D. HORVAT

CHECKED: K. LAFFERTY

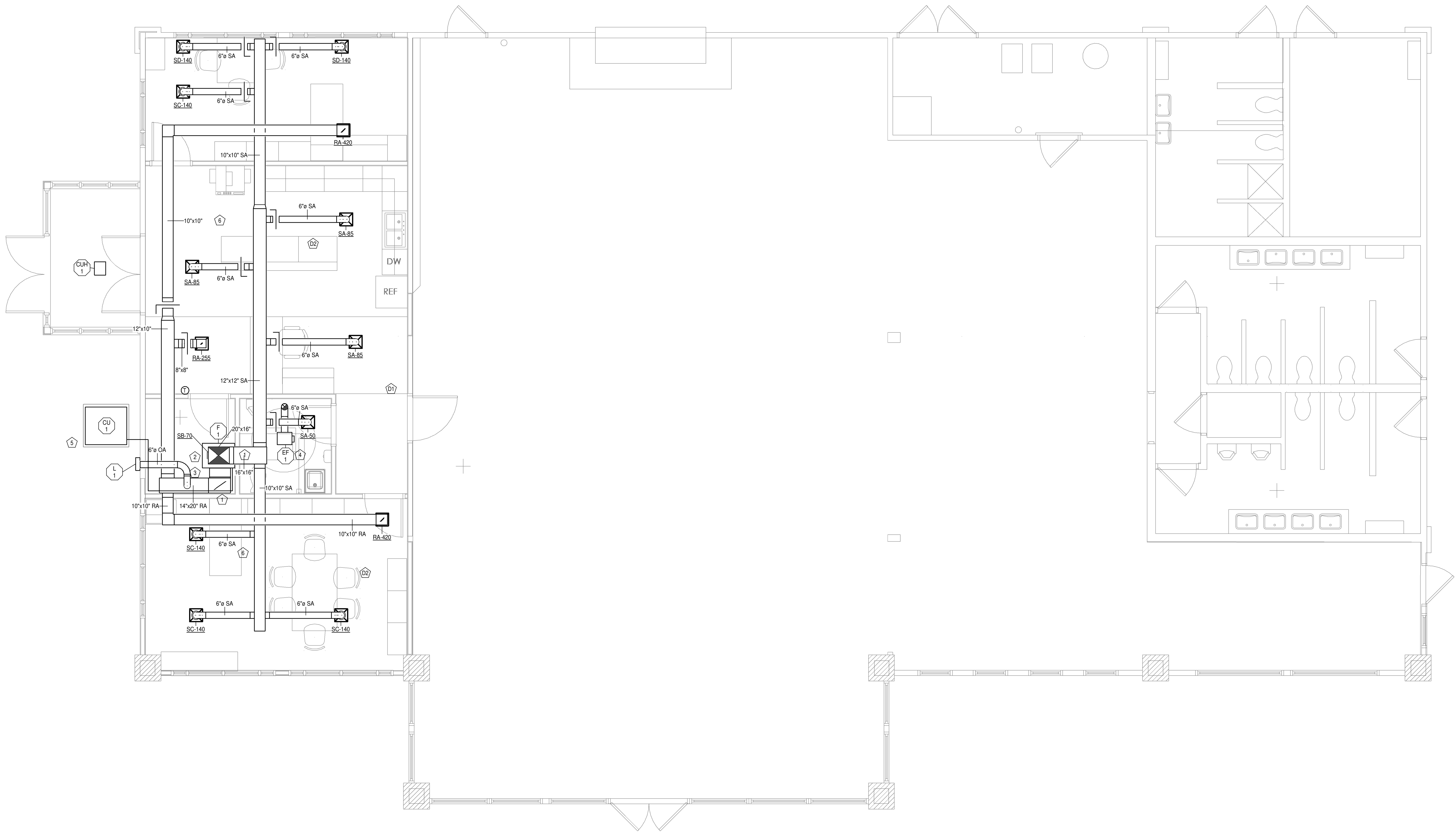
TPA COMMISSION NUMBER: 18051

DRAWING TITLE:

MECHANICAL
SPECIFICATIONS

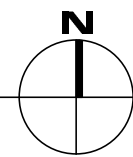
DRAWING NUMBER:

M1.2



FIRST FLOOR PLAN - MECHANICAL

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



PLAN DEMOLITION NOTES

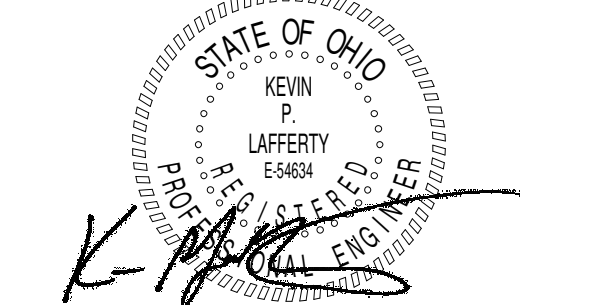
1. REMOVE EXISTING HOT WATER UNIT HEATER, PIPING AND CONTROLS. CAP PIPING WATER TIGHT, BELOW FLOOR.
2. REMOVE EXISTING GRILLES, REGISTERS, DIFFUSERS AND BRANCH DUCTS. CAP AND INSULATE EXISTING SUPPLY DUCTS STILL IN USE.

MECHANICAL PLAN NOTES - GENERAL

1. SUPPLY AIR AND RETURN AIR DUCTWORK UP TO ATTIC. PROVIDE AIRTIGHT SEAL AT CEILING PENETRATION.
2. UPFLOW FURNACE. ROUTE CONDENSATE DRAIN PIPE TO FLOOR DRAIN. ROUTE 2" FLUE AND 2" COMBUSTION PVC TO CONCENTRIC VENT KIT PROVIDED WITH UNIT. COORDINATE LOCATION ON ROOF WITH ARCHITECT.
3. PROVIDE 5" PLEATED MERV 13 FILTER RACK.
4. AT FAN DISCHARGE, TRANSITION TO 6" DIA. OR EQUIVALENT DUCT. ROUTE DUCTWORK THROUGH ROOF AND CONNECT TO ROOF CAP. INSULATE ALL DUCTWORK.
5. CONDENSING UNIT LOCATED ON 4" CONCRETE PAD. ROUTE REFRIGERANT LINES TO EXTERIOR WALL. PROVIDE SLEEVE AND WATERPROOF SEAL AT WALL. PIPING DESIGN TO BE PER EQUIPMENT MANUFACTURER REQUIREMENTS. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
6. LOCATE SUPPLY AND RETURN AIR DUCT IN ATTIC. PROVIDE DUCT LINER AN EXTERNAL INSULATION PER SPECIFICATIONS. COORDINATE DUCTS WITH ROOF FRAMING AND MODIFY AS REQUIRED.

CONSULTANTS:

SEAL:



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DESIGNED: D. HORVAT

DRAWN: D. HORVAT

CHECKED: K. LAFFERTY

TPA COMMISSION NUMBER: 18051

DRAWING TITLE:

FIRST FLOOR PLAN
- HVAC

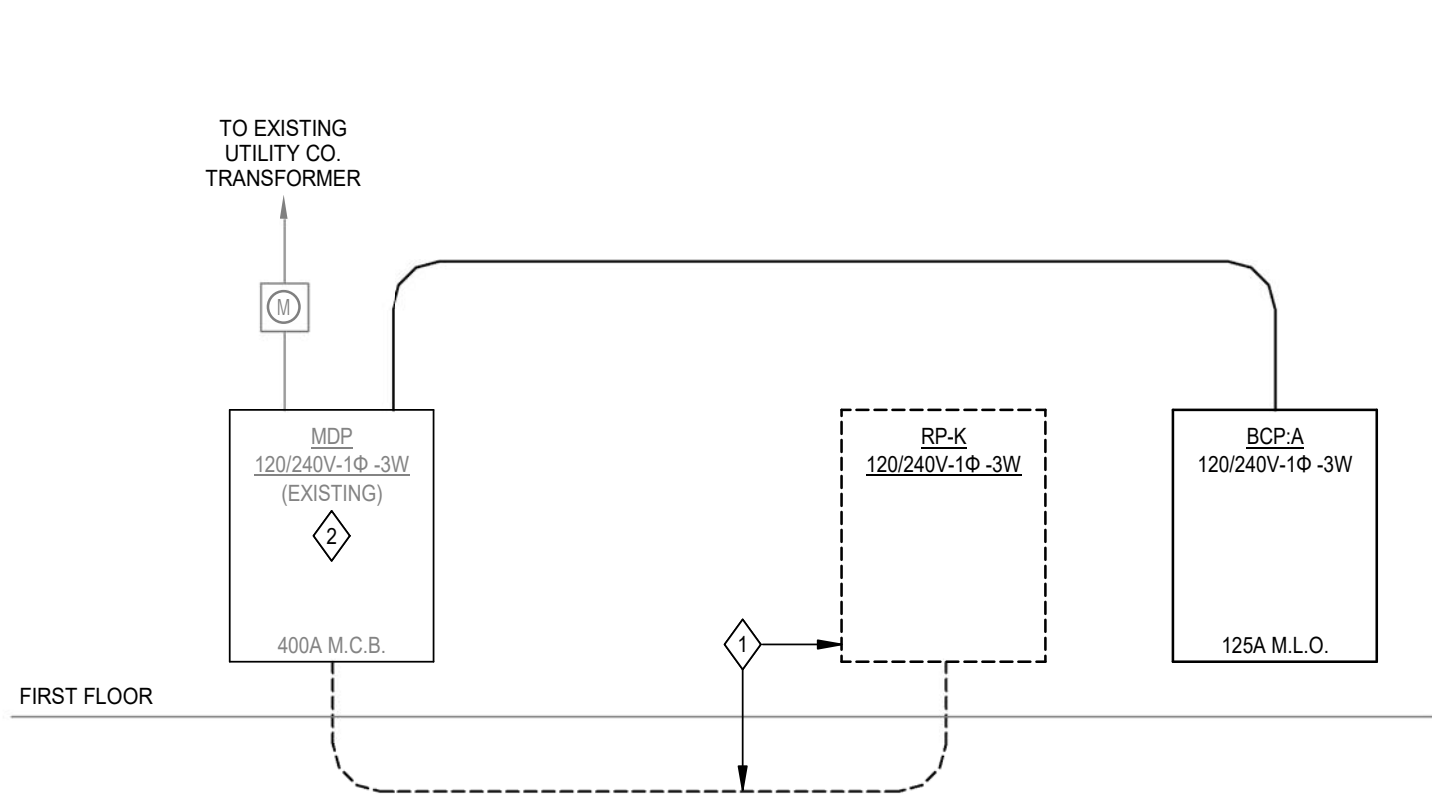
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M2.0

WIRING DEVICE SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	DUPLEX OR DOUBLE DUPLEX RECEPTACLE, GROUNDING TYPE, NEMA 5-20R, 20A-120V.
	WIRING DEVICE FOR OWNER FURNISHED EQUIPMENT OR EQUIPMENT FURNISHED BY OTHER TRADES. MATCH DEVICE TO PLUG CONNECTOR FOR EQUIPMENT.
	GROUND FAULT INTERRUPTER, BLANK FACE WITH INDICATOR LED AND TEST / RESET PUSH BUTTONS, 20A-120V.
	TELECOMMUNICATIONS OUTLET, 2 1/2" DEEP x 4 11/16" SQUARE BOX WITH 1-GANG PLASTER RING. STUB 1 1/4" TO ABOVE ACCESSIBLE CEILING OR INTO BUILDING STEEL JOIST SPACE WITH 90° ELBOW AND INSULATED BUSHING. INSTALL BLANK COVER PLATES ON ALL UNUSED OPENINGS TO MATCH WIRING DEVICE COVER PLATES.
	BRANCH CIRCUIT BREAKER PANELBOARD, 120/240V-1Ø-3W. SEE PANELBOARD SCHEDULE.
	MOTOR, HORSEPOWER AND VOLTAGE AS SCHEDULED.
	MANUAL MOTOR SAFETY TOGGLE SWITCH, HORSEPOWER RATED WITH LOCKING HASP.
	OUTDOOR SAFETY DISCONNECT SWITCH WITH SIZE AS INDICATED, NON-FUSED UNLESS NOTED OTHERWISE. FUSED UNITS WILL SHOW FUSE SIZE AS INDICATED WITH REJECTION STYLE FUSE CLIPS

MISCELLANEOUS SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	EQUIPMENT SCHEDULE ITEM, SEE SCHEDULE.
	TELECOMMUNICATIONS CONNECTIVITY, SEE SCHEDULE.
	FEEDER SCHEDULE ITEM, SEE SCHEDULE.
	PLAN NOTE ITEM.
	RISER NOTE ITEM.
	KITCHEN EQUIPMENT SCHEDULE ITEM, SEE SCHEDULE.
	REVISION CALLOUT
	EXISTING DEVICE OR ITEM TO REMAIN
	EXISTING DEVICE OR ITEM TO BE REMOVED
	FUTURE DEVICE OR ITEM
	EXISTING DEVICE OR ITEM TO BE RELOCATED / RELOCATED ITEM.

SECURITY/ACCESS CONTROL SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	ACCESS CONTROL SYSTEM PANEL FURNISHED AND INSTALLED BY OWNER. E.C. TO PROVIDE 120V CIRCUIT.
	SECURITY SYSTEM/ACCESS CONTROL DOOR MONITORING CONTACT, FURNISHED BY OTHERS. INTEGRAL TO DOOR/HARDWARE. E.C. SHALL STUB 1/2" FROM TOP OF DOOR FRAME TO ABOVE ACCESSIBLE CEILING WITH 90° ELBOW AND INSULATED BUSHING.
	ACCESS CONTROL SYSTEM CARD READER, FURNISHED BY OTHERS. E.C. SHALL PROVIDE 1-GANG BOX AND STUB 3/4" TO ABOVE ACCESSIBLE CEILING WITH 90° ELBOW AND INSULATED BUSHING.
	ACCESS CONTROL SYSTEM ELECTRIC STRIKE LATCH, FURNISHED BY OTHERS. INTEGRAL TO DOOR/HARDWARE. E.C. TO STUB 3/4"FROM TOP OF DOOR FRAME TO ABOVE ACCESSIBLE CEILING WITH 90° ELBOW AND INSULATED BUSHING.
	CRASH BAR PANIC EXIT DEVICE ALLOW EXIT WHEN SECURITY DOORS ARE LOCKED, MOTOR DRIVEN LATCHING ACTUATOR FOR ACCESS CONTROL, STUB 1/2" TO CONDUIT JUNCTION BOX ON THE CONTROLLED SIDE OF THE DOOR. ELECTRIC POWER TRANSFER F.B.G.C.
	SECURITY SYSTEM KEY PAD; FLUSH MOUNTED, 44" A.F.F. FURNISHED BY OTHERS. E.C. SHALL PROVIDE 1-GANG BOX AND STUB 3/4" TO ABOVE ACCESSIBLE CEILING WITH 90° ELBOW AND INSULATED BUSHING.
	VIDEO SURVEILLANCE CAMERA; FURNISHED AND INSTALLED BY OTHERS.



ELECTRICAL RISER DIAGRAM

SCALE: NO SCALE

RISER DIAGRAM NOTES:

- REMOVE EXISTING PANELBOARD AND ASSOCIATED FEEDER/ BRANCH CIRCUIT CONDUCTORS BACK TO MDP.
- INSTALL 125A2P BREAKER IN EXISTING MDP SPACE FOR NEW BCP-A FEEDER. MATCH EXISTING BREAKER TYPE AND INTERRUPTING RATING.

ABBREVIATIONS			
ABBREVIATIONS ARE FOR REFERENCE ONLY AND MAY OR MAY NOT BE USED ELSEWHERE IN CONSTRUCTION DOCUMENTS			
A	AMPERE	I.L.	INTERLOCK
AC	ALTERNATING CURRENT	I.M.C.	INTERMEDIATE-GRADE RIGID METAL CONDUIT
A.C.T.	ACOUSTICAL CEILING TILE	KVA	KILOVOLT-AMPERE
A.F.C.I.	ARC-FAULT CIRCUIT INTERRUPTER (ARC-FAULT PROTECTION)	L.A.D.	LOCATE AS DIRECTED
		L.F.M.C.	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
A.F.F.	MOUNTING HEIGHT ABOVE FINISHED FLOOR	L.R.A.	LOCK ROTOR AMPS
A.F.G.	MOUNTING HEIGHT ABOVE FINISHED GRADE	LTG.	LIGHTING
A.H.J.	AUTHORITY HAVING JURISDICTION	L.V.	LOW VOLTAGE
A.I.C.	AMP INTERRUPTING CIRCUIT	M.C.	MECHANICAL CONTRACTOR
AL	ALUMINUM	M.C.B.	MAIN CIRCUIT BREAKER
AWG	AMERICAN WIRE GAUGE	M.C.C.	MOTOR CONTROL CENTER
B.M.S.	BUILDING MANAGEMENT SYSTEM	M.H.	MOUNTING HEIGHT, FLOOR TO BOTTOM OF ITEM
C	CONDUIT	MIN	MINIMUM
CATV	COMMUNITY ACCESS TELEVISION	MISC	MISCELLANEOUS
CKT.	CIRCUIT	M.L.O.	MAIN LUGS ONLY
C.L.	CENTERLINE	N	NEUTRAL
C.M.	CONSTRUCTION MANAGER	NEC	NATIONAL ELECTRICAL CODE (NFPA 70)
CU	COPPER		
D.D.C.	DIRECT DIGITAL CONTROL	N.F.	NON-FUSED SAFETY DISCONNECT AND/OR COMBINATION STARTER
D.E.S.	DOOR EQUIPMENT SUPPLIER	N.I.C.	WORK NOT IN CONTRACT
DW	DISHWASHER	N.L.	NIGHT LIGHT CIRCUIT FOR CONTINUOUS OPERATION; PROVIDE BREAKER LOCKING STRAP IN 'ON' POSITION
DWG	DRAWING		
D.T.D.T.	DRY TYPE DISTRIBUTION TRANSFORMER	OCPD	OVERCURRENT PROTECTION DEVICE
EA.	EACH	P.C.	PLUMBING CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR	PNL.	PANELBOARD OR PANEL
		P.O.S.	POINT OF SALE
E.M.	EMERGENCY CIRCUIT FOR CONTINUOUS OPERATION; PROVIDE BREAKER LOCKING STRAP IN 'ON' POSITION	REC	RECEPTACLE
E.M.T.	ELECTRICAL METALLIC TUBING.	REF	REFRIGERATOR
E.N.T.	ELECTRICAL NON-METALLIC TUBING.	R.G.S.	RIGID GALVANIZED STEEL
E.W.C.	ELECTRIC WATER COOLER	R.N.C.	RIGID NON-METALLIC CONDUIT
EX.	EXISTING	S.E.	SERVICE ENTRANCE
FACP	FIRE ALARM CONTROL PANEL	S.E.S.	SERVICE ENTRANCE SWITCH / SWITCHBOARD
		S.M.R.	SURFACE MOUNTED RACEWAY
F.B.O.	FURNISHED BY OWNER, INSTALLED BY ELECTRICAL CONTRACTOR	SQFT.	SQUARE FOOT
		STD.	STANDARD
F.B.X.X.	FURNISHED BY 'XX' INSTALLED BY ELECTRICAL CONTRACTOR	STP	SHIELDED TWISTED PAIR
FLA	FULL LOAD AMPS	SUSP. CLG.	SUSPENDED CEILING
FLUOR.	FLUORESCENT	T.C.	TELECOMMUNICATIONS CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR	T.C.C.	TEMPERATURE CONTROL CONTRACTOR
FRZ	FREEZER	TV	TELEVISION
G	GROUND	U.G.	BELOW GRADE (UNDERGROUND)
GD	GARBAGE DISPOSAL	U.N.O.	UNLESS NOTED OTHERWISE
G.C.	GENERAL CONTRACTOR	UPS	UNINTERRUPTED POWER SUPPLY
		UTP	UNSHIELDED TWISTED PAIR
G.F.I.C.	GROUND FAULT INTERRUPTER CIRCUIT (GROUND FAULT PROTECTION)	V	VOLTS
G.W.B.	GYPSUM WALL BOARD	VA	VOLT-AMPERE
G.R.C.	GALVANIZED RIGID CONDUIT	V.L.	VERIFY LOCATION WITH OWNER
HP	HORSEPOWER	W	WATTS
HVAC	HEATING, VENTILATING, AIR CONDITIONING	W.I.C.	WORK IN CONTRACT
HZ.	HERTZ	W.P.	WEATHERPROOF ITEM OR DEVICE
I.G.	ISOLATED GROUND	XFMR	TRANSFORMER

PANELBOARD: BCP-A

MOUNTING: SURFACE		SUPPLY FROM: MDP		A.I.C. RATING: 10 kA							
ENCLOSURE: NEMA TYPE 1		VOLTAGE: 120/240V-1Ø-3W		MAINS RATING: 125 A							
FEEDER: 3Ø1 & 1Ø6Ø -1 1/4"				MAINS TYPE: M.L.O.							
NOTE	CKT	LOAD DESCRIPTION	BREAKER	A	B	A	B	BREAKER	LOAD DESCRIPTION	CKT	NOTE
	A-1	LTG ROOM 102, 101, 103	20 A1P	579		720		20 A1P	REC CHRISTINA'S OFFICE 103	A-2	
	A-3	LTG ROOM 104, 106, 105, 100	20 A1P		467		900	20 A1P	REC CHRISTINA'S OFFICE 103	A-4	
	A-5	REC ROOM 102 (COPIER)	20 A1P	1000		500		20 A1P	REC WORK/ BREAK 102	A-6	
	A-7	REC WORK/ BREAK 102	20 A1P		500		500	20 A1P	REC WORK/ BREAK 102	A-8	
	A-9	REC WORK/ BREAK 102	20 A1P	500		1200		20 A1P	REC - GARBAGE DISPOSAL	A-10	
	A-11	REC WORK/ BREAK 102 (DW)	20 A1P		1200		500	20 A1P	REC WORK/ BREAK 102	A-12	
	A-13	REC WORK/ BREAK 102	20 A1P	500		500		20 A1P	REC WORK/ BREAK 102 (REFRIG)	A-14	
	A-15	REC RESTROOM 104/ EF-1	20 A1P		180		1040	20 A1P	REC RECEPTION 101	A-16	
	A-17	REC ANDY'S OFFICE 105, EXTERIOR	20 A1P		720		360	20 A1P	REC UTILITY 106, EXTERIOR	A-18	
	A-19	REC ENTRANCE VESTIBULE 100	20 A1P		180		540	20 A1P	REC ANDY'S OFFICE 105	A-20	
	A-21	SPARE	20 A1P	0	0	0		20 A1P	SPARE	A-22	
	A-23	SPARE	20 A1P		0	0	0	20 A1P	SPARE	A-24	
	A-25	SPARE	20 A1P	0	0	0		20 A1P	SPARE	A-26	
	A-27	SPARE	20 A1P		0	0	0	20 A1P	SPARE	A-28	
--	A-29	SPACE	--	0	0	0	--		SPACE	A-30	--
	A-31	SPACE	--		0	0	--		SPACE	A-32	--
--	A-33	SPACE	--	0		920		15 A1P	HVAC - F-1	A-34	
	A-35				1955					A-36	
	A-37	AC - CU-1	3Ø A2P	1955						A-38	
	A-39				1008					A-40	
	A-41	HTG - CUH-1	2Ø A2P	1008						A-42	
SUB-TOTAL PER Ø (KVA):				ØA		ØB		PANELBOARD OPTIONS:			
				10462 VA		8970 VA					
				87 A		75 A					
LOAD CLASSIFICATION		CONNECTED		DEMAND FACTOR		ESTIMATED		PANEL TOTALS			
HVAC		1040 VA		80.00%		832 VA		TOTAL CONNECTED LOAD:		19432 VA	
LTG		926 VA		125.00%		1158 VA		TOTAL ESTIMATED LOAD:		17500 VA	
REC		11540 VA		93.33%		10770 VA		TOTAL CONNECTED:		81 A	
AC		3910 VA		80.00%		3128 VA		TOTAL ESTIMATED DEMAND:		73 A	
HTG		2016 VA		80.00%		1613 VA					

BRANCH CIRCUIT PANELBOARD KEY NOTES

BLANK = STANDARD BREAKER

L = LOCKING STRAP

G = GFCI

S = SHUNT TRIP

A = AFCI

H = HACR

X = EXISTING BREAKER

R = REMOVE AND REPLACE EXISTING BREAKER

N = INSTALL NEW BREAKER IN EXISTING PANEL SPACE. MATCH EXISTING TYPE AND INTERRUPTING RATING.

PANELBOARD OPTIONS

- NEMA 250 ENCLOSURE RATING:
 - FOR TYPE 1: INDOOR DRY AND CLEAN LOCATION.
 - FOR TYPE 3R: OUTDOOR LOCATION.
 - FOR TYPE 4X: STAINLESS STEEL - WET OR DAMP INDOOR AND OUTDOOR LOCATIONS.
 - FOR TYPE 4: WET OR DAMP INDOOR AND OUTDOOR LOCATIONS.
 - FOR TYPE 12: INDOOR LOCATION SUBJECT TO DUST, FALLING DIRT, AND DRIPPING NONCORROSIVE LIQUIDS.
- PANELBOARD AND BRANCH BREAKERS SHALL BE U.L. SERIES LISTED WITH THE UPSTREAM O.C.P.D. TO ACHIEVE THE SPECIFIED INTERRUPTING RATING WITH A COMBINATION RATING EQUAL TO OR GREATER THAN THE AVAILABLE FAULT CURRENT AT THE ELECTRICAL SERVICE; PROVIDE PANELBOARD MAIN BREAKER IF REQUIRED.

RECEPTACLE TYPE ABBREVIATIONS

C	CEILING MOUNTED OUTLET.
G	GFIC OUTLET OR GFIC PROTECTED OUTLET.
P	PLUG LOAD AUTOMATICALLY CONTROLLED DUPLEX RECEPTACLE, HALF OF RECEPTACLE (1-OUTLET) TO BE RELAY CONTROLLED BY AUTOMATIC PLUG LOAD CONTROLLER.
S	OUTLET WIRED FOR BOTTOM HALF RECEPTACLE OF DUPLEX SWITCHED WITH WALL SWITCH.
T	TAMPER RESISTANT OUTLET.
U	DUPLEX RECEPTACLE WITH USB TYPE A AND C CHARGING PORT OUTLETS; HUBBELL #USB15X2xx OR EQUAL.
WP	WEATHERPROOF GROUND FAULT INTERRUPTER OUTLET, LISTED WEATHER RESISTANT, (POLYCARBONITE) (CAST) "WHILE IN USE" COVER, FLUSH MOUNTED WITH RECESSED BOX IN THE BUILDING EXTERIOR FINISH.
WP1	WEATHERPROOF GROUND FAULT INTERRUPTER OUTLET, LISTED WEATHER RESISTANT DIE-CAST GASKETED SELF CLOSING COVER; FLUSH MOUNTED WITH RECESSED BOX IN THE BUILDING EXTERIOR FINISH.

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

MARK	DESCRIPTION	LOCATION	LOAD CLASS	VOLTAGE	KW	HP	FLA	MCA	MOP	LOAD	FED FROM	FEEDER SIZE	NOTE
CU-1	CONDENSING UNIT	OUTSIDE	AC	240-1Ø			17	24	30	3910 VA	BCP-A	2#10 & 1#10G - 3/4"	
CUH-1	CEILING UNIT HEATER	ENTRANCE VESTIBULE 100	HTG	240-1Ø	2					2016 VA	BCP-A	2#12 & 1#12G - 3/4"	
EF-1	EXHAUST FAN	RESTROOM 104	HVAC	120-1Ø			1			120 VA	BCP-A	2#12 & 1#12G - 3/4"	1
F-1	FURNACE	UTILITY 106	HVAC	120-1Ø		1/2	9.8		15	920 VA	BCP-A	2#12 & 1#12G - 3/4"	

MECHANICAL EQUIPMENT SCHEDULE NOTES - GENERAL

A. DISCONNECTS/STARTERS FURNISHED WITH EQUIPMENT UNLESS NOTED/SHOWN ON FLOOR PLANS / OTHERWISE.

B. COORDINATE FINAL CONNECTION / ROUGH-IN REQUIREMENTS WITH M.C.

C. PROVIDE WIRING CONNECTIONS BETWEEN THE DISCONNECT SWITCH / VFD / CONTROLLER AND THE ASSOCIATED EQUIPMENT.

D. ALL CONNECTIONS TO MECHANICAL EQUIPMENT SHALL BE MADE WITH FLEXIBLE CONDUIT (WP WHERE REQUIRED), MAXIMUM 3' IN LENGTH, TO PREVENT SOUND AND VIBRATION TRANSMISSION TO THE STRUCTURE.

MECHANICAL EQUIPMENT SCHEDULE NOTES - SPECIFIC

1. EXHAUST FAN TO BE CONTROLLED WITH LIGHT FIXTURES IN SPACE. PROVIDE AUXILIARY HORSEPOWER RATED RELAY WITH AUTOMATIC LIGHTING CONTROLS AS REQUIRED.

BRANCH CIRCUIT WIRE SIZING TABLE

LOAD CURRENT	SUPPLY VOLTAGE	MAXIMUM LENGTH FOR 3% VOLTAGE DROP FOR COPPER CONDUCTORS					LOAD CURRENT	SUPPLY VOLTAGE	MAXIMUM LENGTH FOR 3% VOLTAGE DROP FOR COPPER CONDUCTORS				
AMPS	VOLTS	FEET					AMPS	VOLTS	FEET				
3	120	10	15	20	30	6	15	120	60	96	154	244	
		AWG	AWG	AWG	AWG	AWG			AWG	AWG	AWG	AWG	AWG
		120	303	483	771	1222			208	105	167	267	423
		240	606	967	1542	2443			240	121	193	308	488
		277	699	1116	1780	2820			277	139	223	356	564
6	120	10	15	20	30	6	20	120	45	72	115	183	
		AWG	AWG	AWG	AWG	AWG			AWG	AWG	AWG	AWG	AWG
		120	303	483	771	1222			208	78	125	200	317
		240	606	967	1542	2443			240	90	145	231	366
		277	349	558	890	1410			277	104	167	267	423
9	120	10	15	20	30	6	25	120	45	72	115	183	
		AWG	AWG	AWG	AWG	AWG			AWG	AWG	AWG	AWG	AWG
		120	303	483	771	1222			208	104	167	267	423
		240	606	967	1542	2443			480	181	290	462	733
		277	349	558	890	1410			277	104	167	267	423
12	120	10	15	20	30	6	30	120	45	72	115	183	
		AWG	AWG	AWG	AWG	AWG			AWG	AWG	AWG	AWG	AWG
		120	303	483	771	1222			208	104	167	267	423
		240	606	967	1542	2443			277	104	167	267	423
		277	349	558	890	1410			480	181	290	462	733
15	120	10	15	20	30	6	30	120	45	72	115	183	
		AWG	AWG	AWG	AWG	AWG			AWG	AWG	AWG	AWG	AWG
		120	303	483	771	1222			208	104	167	267	423
		240	606	967	1542	2443			277	104	167	267	423
		277	349	558	890	1410			480	181	290	462	733
20	120	10	15	20	30	6	30	120	45	72	115	183	
		AWG	AWG	AWG	AWG	AWG			AWG	AWG	AWG	AWG	AWG
		120	303	483	771	1222			208	104	167	267	423
		240	606	967	1542	2443			277	104	167	267	423
		277	349	558	890	1410			480	181	290	462	733
25	120	10	15	20	30	6	30	120	45	72	115	183	
		AWG	AWG	AWG	AWG	AWG			AWG	AWG	AWG	AWG	AWG
		120	303	483	771	1222			208	104	167	267	423
		240	606	967	1542	2443			277	104	167	267	423
		277	349	558	890	1410			480	181	290	462	733
30	120	10	15	20	30	6	30	120	45	72	115	183	
		AWG	AWG	AWG	AWG	AWG			AWG	AWG	AWG	AWG	AWG
		120	303	483	771	1222			208	104	167	267	423
		240	606	967	1542	2443			277	104	167	267	423
		277	349	558	890	1410			480	181	290	462	733
40	120	10	15	20	30	6	30	120	45	72	115	183	
		AWG	AWG	AWG	AWG	AWG			AWG	AWG	AWG	AWG	AWG
		120	303	483	771	1222			208	104	167	267	423
		240	606	967	1542	2443			277	104	167	267	423
		277	349	558	890	1410			480	181	290	462	733
60	120	10	15	20	30	6	30	120	45	72	115	183	
		AWG	AWG	AWG	AWG	AWG			AWG	AWG	AWG	AWG	AWG
		120	303	483	771	1222			208	104	167	267	423
		240	606	967	1542	2443			277	104	167	267	423
		277	349	558	890	1410			480	181	290	462	733
100	120	10	15	20	30	6	30	120	45	72	115	183	
		AWG	AWG	AWG	AWG	AWG			AWG	AWG	AWG	AWG	AWG
		120	303	483	771	1222			208	104	167	267	423
		240	606	967	1542	2443			277	104	167	267	423
		277	349	558	890	1410			480	181	290	462	733

LIGHTING CONTROLS SYMBOL LEGEND	
LOAD CONTROLLERS	
<div>RPD</div>	LIGHTING LOAD CONTROLLER, RELAY POWER PACK DIMMING, RELAY POWER PACK, 16 AMP - 120/277 VOLT, 0 - 10 VOLT DIMMING, MOUNT ABOVE ACCESSIBLE CEILING, NETWORKABLE, CONNECT TO LIGHTING CONTROL SYSTEM, MOUNT IN JUNCTION BOX WERE EXPOSED CEILING, NLIGHT #NPP16-D OR EQUAL
DAYLIGHT SENSORS	
<div>DL</div>	DAYLIGHT SENSOR, LOW VOLTAGE, [CEILING MOUNT / RECESS MOUNT], [ON / OFF], [AUTOMATIC DIMMING CONTROL], [NETWORKABLE], [CONNECT TO LIGHTING CONTROL SYSTEM], [NLIGHT #NCM-XX OR EQUAL]
OCCUPANCY SENSORS	
<div>VS</div>	VACANCY SENSOR, LOW VOLTAGE, CEILING MOUNTED, DUAL TECHNOLOGY, STANDARD / EXTENDED RANGE, MANUAL ON, AUTOMATIC TIME DELAY OFF SET AT 15 MINUTES, PROVIDE SENSOR TYPE APPROPRIATE FOR THE APPLICATION / MOUNTING HEIGHTS, INCREASE THE QUANTITY AND REVISE THE LAYOUT TO INSURE PROPER COVERAGE, LOCATE AS REQUIRED PER MANUFACTURER, NETWORKABLE, CONNECT TO LIGHTING CONTROL SYSTEM, NLIGHT #NCM-XX OR EQUAL
USER INTERFACE	
<div>□</div>	WALL SWITCH OCCUPANCY SENSOR, LINE VOLTAGE 120/277V, DUAL TECHNOLOGY, AUTOMATIC ON, AUTOMATIC TIME DELAY OFF SET AT 15 MINUTES, SINGLE RELAY, SENSOR SWITCH #WSX-XX OR EQUAL
WALL PODS	
<div>N</div>	LIGHTING CONTROL WALL STATION, LOW VOLTAGE, CONNECT TO LIGHTING CONTROL SYSTEM, NLIGHT #NPODM-XX OR EQUAL
<div>LC1</div> <div>N</div>	LC1 - TYPE 1 - SINGLE CHANNEL, TWO BUTTON, ON/OFF
<div>LC2</div> <div>N</div>	LC2 - TYPE 2 - SINGLE CHANNEL, THREE BUTTON, ON/OFF AND RAISE/LOWER
LINE VOLTAGE WALL SWITCHES	
<div>\$</div>	SINGLE POLE WALL SWITCH, 20 AMP - 120/277 VOLT.

LUMINAIRE SCHEDULE - GENERAL												
TYPE MARK	DESCRIPTION	LED DATA			INPUT WATTS	VOLTAGE	MOUNTING	Model	APPROVED EQUAL	APPROVED EQUAL	NOTES	
		CRI	TEMP.	LUMENS								
D1	7" SURFACE SLIM DOWNLIGHT	90	3500 K	1000 lm	13 VA	120 V	SURFACE	JUNO # JSF-7IN10LM-35K-90CRI-MVOLT-ZT-WH	LIGHTOLIER	PORTFOLIO		
L1	2x2 LED PANEL - SURFACE KIT - 34"	80	3500 K	3800 lm	35 VA	120 V	SURFACE	LAUREN ILLUMINATION #LGM2235W-WH (PANEL) & #SM22075W (SURFACE KIT)			1	
S1	LED, EXTERIOR, WALL PACK	80	3000 K	3000 lm	23 VA	120 V	SURFACE	LITHONIA #WDS24LED-P3-30K-80CRI-VW-MVOLT-XX-E20WC-PE-XX	GARDCO	LUMARK	2, 3	
W1	2" VANITY LIGHT	90	3000 K	1302 lm	26 VA	120 V	WALL	LITHONIA #FMV1SL-24IN-MVOLT-30K-90CRI-BN	DAY-BRITE	METALLUX		

LUMINAIRE SCHEDULE NOTES - GENERAL

- A. SPECIFICATION NUMBERS ARE MANUFACTURERS SERIES NUMBER AND MAY NOT BE COMPLETE. IT IS THE RESPONSIBILITY OF THE SUPPLIER/CONTRACTOR TO COMPLETE CATALOG NUMBERS TO MATCH THE LUMINAIRE DESCRIPTION, COMPLIANCE WITH SPECIFICATIONS AND INSTALLATION REQUIREMENTS.
- B. LUMINAIRE SUPPLIER/CONTRACTOR SHALL COORDINATE ALL LUMINAIRE DRIVER CONFIGURATIONS WITH THE CONTROLS AND PROVIDE ADEQUATE SHOP DRAWING SUBMITTALS CONFIRMING LUMINAIRE AND CONTROL COMPATIBILITY FOR ALL APPLICATIONS FOR THE PROJECT.
- C. LED DRIVERS TO BE FLICKER FREE 0-10V DIMMING TO 1% MINIMUM UNLESS NOTED OTHERWISE.
- D. LUMINARIES OF EACH TYPE SHALL BE OF THE SAME MANUFACTURER AND SERIES.
- E. LUMINARIES SHALL BEAR THE LABEL OF APPROVAL OF THE UNDERWRITERS LABORATORIES, INC (UL).
- F. LUMINARIES TO BE LISTED 'ENERGY STAR AND/OR DLC LISTED AND LABELED.
- G. CONFIRM CEILING TYPES WITH ARCHITECTURAL REFLECTED CEILING PLANS AND ROOM FINISH SCHEDULES PRIOR TO ORDERING TRIM AND MOUNTING HARDWARE.
- H. REVIEW ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION ON FIXTURE LOCATIONS, ARRANGEMENTS AND MOUNTING HEIGHTS.
- I. VERIFY FINAL LUMINAIRE COLORS AND EXPOSED FINISH WITH THE ARCHITECT PRIOR TO ORDERING.
- J. VERIFY FINAL LUMINAIRE OUTPUT COLOR CORRECTED (CCT) TEMPERATURE AND EXPOSED FINISHES WITH THE ARCHITECT PRIOR TO ORDERING.
- K. RECESSED FIXTURES SHALL BE SECURELY FASTENED TO THE CEILING FRAMING MEMBER BY MEANS IDENTIFIED PER NEC 410.36.
- L. FIXTURES SHALL BE LISTED AND LABELED FOR USE IN AIR HANDLING PLENUM SPACES.
- M. ENGINEER WILL PROVIDE BASIS OF DESIGN LIGHT LEVEL CALCULATIONS TO CONTRACTOR/LIGHTING FIXTURE SUPPLIER WHO SHALL IN TURN PROVIDE DETAILED LIGHT LEVEL CALCULATION PLAN SHEETS TO ENGINEER PRIOR TO FINAL FIXTURE SUBMITTALS UTILIZING PROPOSED FIXTURES; INCLUDE SEPARATE CALCULATION SHEET FOR EMERGENCY LIGHTING FOR SUBMISSION TO PLAN EXAMINER. POINT FOOT-CANDLE CALCULATIONS SHALL BE PLACED AT 2'-0" O.C. AT EITHER DESKTOP HEIGHT (OFFICES SIMILAR) OR AT THE FLOOR (CORRIDORS AND GENERAL CIRCULATION) AS APPLICABLE.

LUMINAIRE SCHEDULE NOTES - SPECIFIC

1. PROVIDE NECESSARY DRIVERS AND LOW VOLTAGE CONNECTOR CABLES FOR A COMPLETE INSTALLATION. DRIVERS TO BE 0-10V DIMMING.
2. PROVIDE 90-MINUTE EMERGENCY/EGRESS BATTERY PACK. WIRE ENTIRE LUMINAIRE FOR NORMAL SWITCHED / DIMMED OPERATION AND EMERGENCY OPERATION UPON LOSS OF POWER. PROVIDE ADDITIONAL UNSWITCHED PHASE CONDUCTOR FOR VOLTAGE SENSING.
3. PROVIDE INTEGRAL PHOTOCCELL.

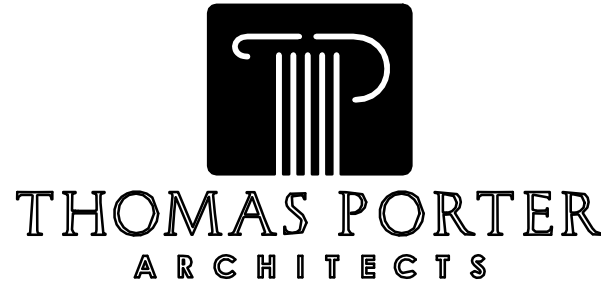
LUMINAIRE SCHEDULE - EMERGENCY EXIT / UNIT								
TYPE MARK	DESCRIPTION	INPUT WATTS	VOLTS	MOUNTING	BASE SPECIFICATION	APPROVED EQUAL	APPROVED EQUAL	NOTES
E1	THERMOPLASTIC EXIT SIGN W/ HEADS, WHITE HOUSING, RED LETTERS, SINGLE FACE, BATTERY	5 VA	120 V	WALL	LITHONIA #LHQM-LED-R-SD	CHLORIDE	SURE-LITES	1, 2
E2	THERMOPLASTIC, EMERGENCY LIGHTING UNIT	7 VA	120 V	WALL	LITHONIA - #ELMML	CHLORIDE	SURE-LITES	1, 2

EMERGENCY EXIT / UNIT SCHEDULE NOTES - GENERAL

- A. SPECIFICATION NUMBERS ARE MANUFACTURERS SERIES NUMBER AND MAY NOT BE COMPLETE. IT IS THE RESPONSIBILITY OF THE SUPPLIER/CONTRACTOR TO COMPLETE CATALOG NUMBERS TO MATCH THE LUMINAIRE DESCRIPTION, COMPLIANCE WITH SPECIFICATIONS AND INSTALLATION REQUIREMENTS.
- B. VERIFY FINAL LUMINAIRE COLORS AND FINISH WITH THE ARCHITECT PRIOR TO ORDERING.
- C. LUMINARIES SHALL BEAR THE LABEL OF APPROVAL OF THE UNDERWRITERS LABORATORIES, INC (UL).
- D. REVIEW ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION ON FIXTURE LOCATIONS, ARRANGEMENTS AND MOUNTING HEIGHTS.

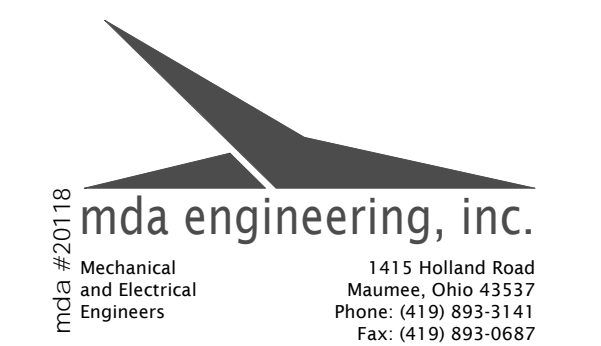
EMERGENCY EXIT / UNIT SCHEDULE NOTES - SPECIFIC

1. PROVIDE 90-MINUTE EMERGENCY/EGRESS BATTERY PACK. WIRE ENTIRE LUMINAIRE TO LOCAL LIGHTING OR NIGHT LIGHT (NL) CIRCUIT AHEAD OF ALL SWITCHING FOR CONTINUOUS ILLUMINATION AND EMERGENCY OPERATION UPON LOSS OF POWER. PROVIDE HIGH-OUTPUT BATTERY WHERE CONNECTED TO REMOTE EGRESS HEAD.
2. EMERGENCY BATTERY UNITS SHALL BE NICKLE-CADMIUM WITH SELF-DIAGNOSTICS.



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CONSULTANTS:



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PROJECT TITLE:

SANDUSKY PARKS
RIVER CLIFF OFFICE RENOVATION

1329 TIFFIN ST.
FREMONT, OH 43420

ISSUE OR REVISION:

11/06/2020	ISSUED FOR BIDDING

DATE ISSUE / REVISION

DESIGNED: RST

DRAWN: JRWM

CHECKED: RST

TPA COMMISSION NUMBER: 18051

DRAWING TITLE:

LIGHTING DETAILS
& SCHEDULES

DRAWING NUMBER:

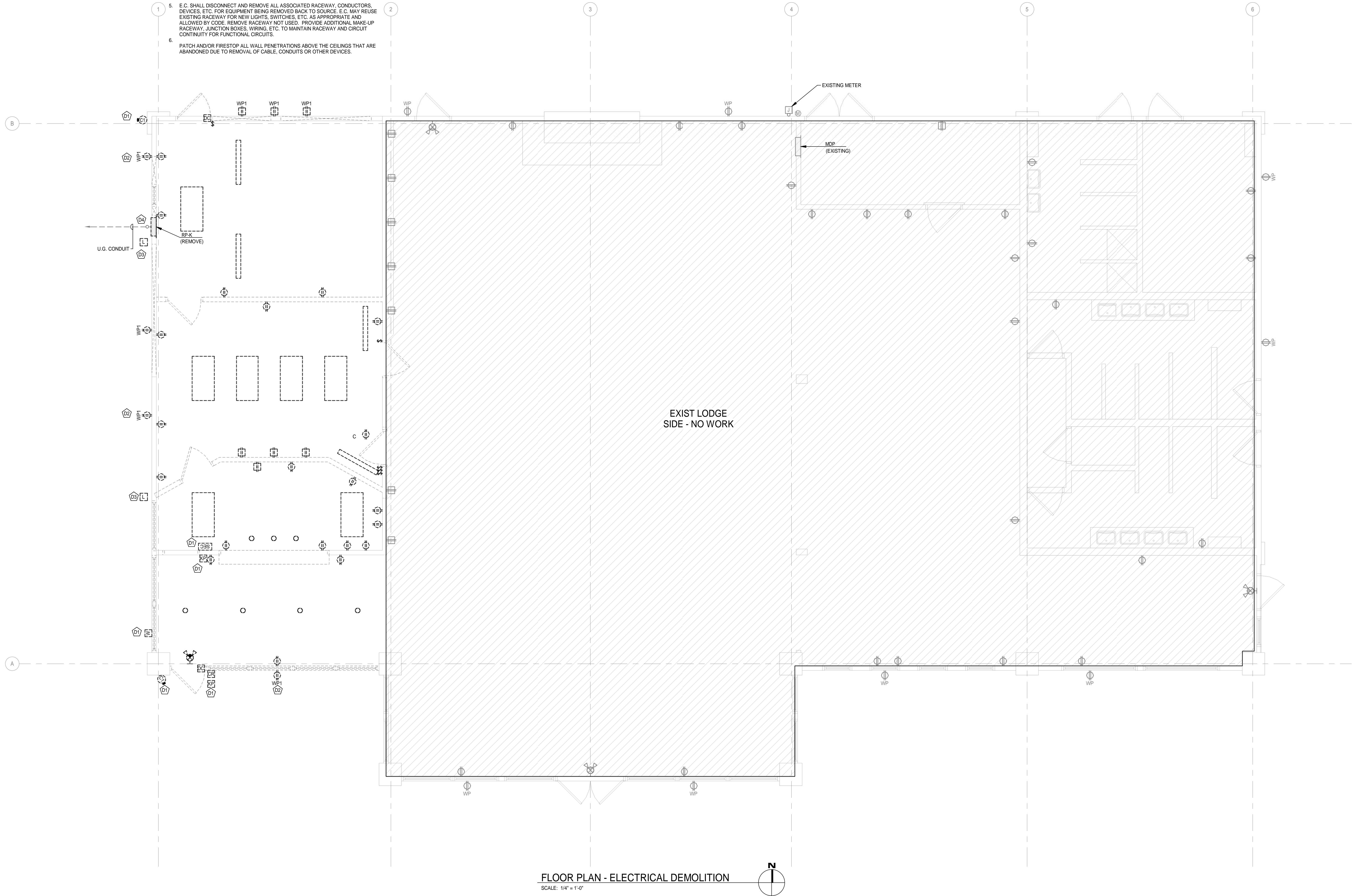
E1.1

DEMOLITION NOTES - GENERAL:

1. DISCONNECT AND REMOVE ALL DEVICES, FIXTURES, JUNCTION BOXES, ETC. SHOWN WITH A DARK DASHED LINE WITHIN THE AREA OF PROPOSED DEMOLITION WORK.
2. ITEMS SHOWN ON THE DRAWINGS ARE A COMPOSITE FROM SEVERAL DRAWINGS OF PREVIOUS PROJECTS AND FIELD INVESTIGATIONS. IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW EACH AND EVERY ITEM INVOLVED IN THE DEMOLITION. IT HAS BEEN PREPARED TO ASSIST THE CONTRACTOR IN ESTIMATING THE COST OF THE PROJECT.
3. THE INTENT OF THIS PROJECT IS TO REMOVE ALL EQUIPMENT, WIRING, RACEWAY, ETC. NO LONGER IN SERVICE AND NOT REQUIRED FOR THE ULTIMATE INSTALLATION WITHIN THE CONFINES OF THE PROPOSED WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INVESTIGATE THE SITE.
4. WHERE DEMOLITION OF EXISTING SYSTEMS OR EQUIPMENT CAUSES RELATED AND ANCILLARY DAMAGE TO OTHER ITEMS INCLUDING THE ADJACENT STRUCTURE, CEILING OR FINISHES, THESE DAMAGED ITEMS SHALL BE FULLY REPAIRED OR REPLACED TO RETURN THE FACILITY TO THE CONDITIONS BEFORE THE DEMOLITION WORK.
5. E.C. SHALL DISCONNECT AND REMOVE ALL ASSOCIATED RACEWAY, CONDUCTORS, DEVICES, ETC. FOR EQUIPMENT BEING REMOVED BACK TO SOURCE. E.C. MAY REUSE EXISTING RACEWAY FOR NEW LIGHTS, SWITCHES, ETC. AS APPROPRIATE AND ALLOWED BY CODE. REMOVE RACEWAY NOT USED. PROVIDE ADDITIONAL MAKE-UP RACEWAY, JUNCTION BOXES, WIRING, ETC. TO MAINTAIN RACEWAY AND CIRCUIT CONTINUITY FOR FUNCTIONAL CIRCUITS.
6. PATCH AND/OR FIRESTOP ALL WALL PENETRATIONS ABOVE THE CEILINGS THAT ARE ABANDONED DUE TO REMOVAL OF CABLE, CONDUITS OR OTHER DEVICES.

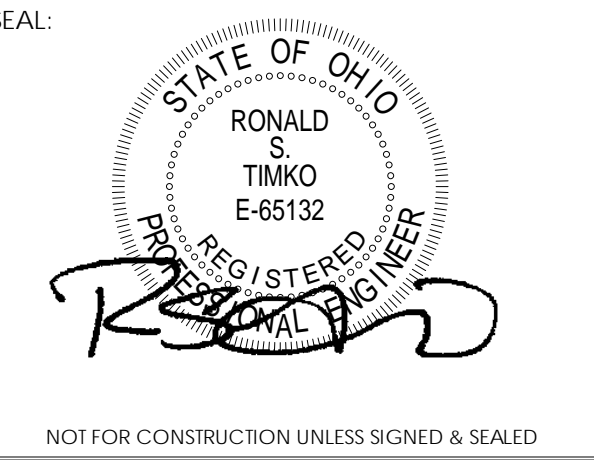
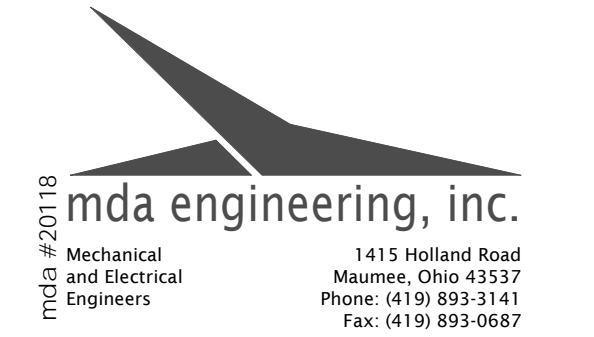
DEMOLITION NOTES - SPECIFIC:

1. EXISTING SECURITY SYSTEM DEVICES TO BE REMOVED BY OWNERS SECURITY VENDOR. E.C. TO COORDINATE REMOVALS WITH OWNER/ VENDOR.
2. PROVIDE NEW WP RECEPTACLE AND CIRCUIT PER NEW FLOOR PLAN.
3. REMOVE EXISTING SURFACE SOFFIT LIGHT.
4. REMOVE EXTERIOR LB FITTING AND CONDUIT TO BELOW GRADE.



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11/06/2020 ISSUED FOR BIDDING
DATE ISSUE / REVISION
DESIGNED: RST
DRAWN: JRWM
CHECKED: RST
TPA COMMISSION NUMBER: 18051
DRAWING TITLE:
**FLOOR PLAN -
ELECTRICAL
DEMOLITION**

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FREMONT, OH 43420

DRAWING NUMBER:
E2.0



B

A

1

2

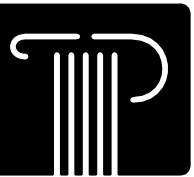
3

4

5

6

FLOOR PLAN - LIGHTING
SCALE: 1/4" = 1'-0"



THOMAS PORTER
ARCHITECTS

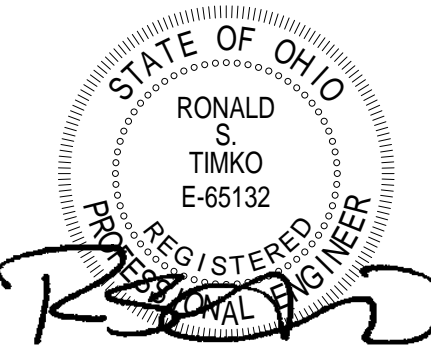
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mda engineering, inc.
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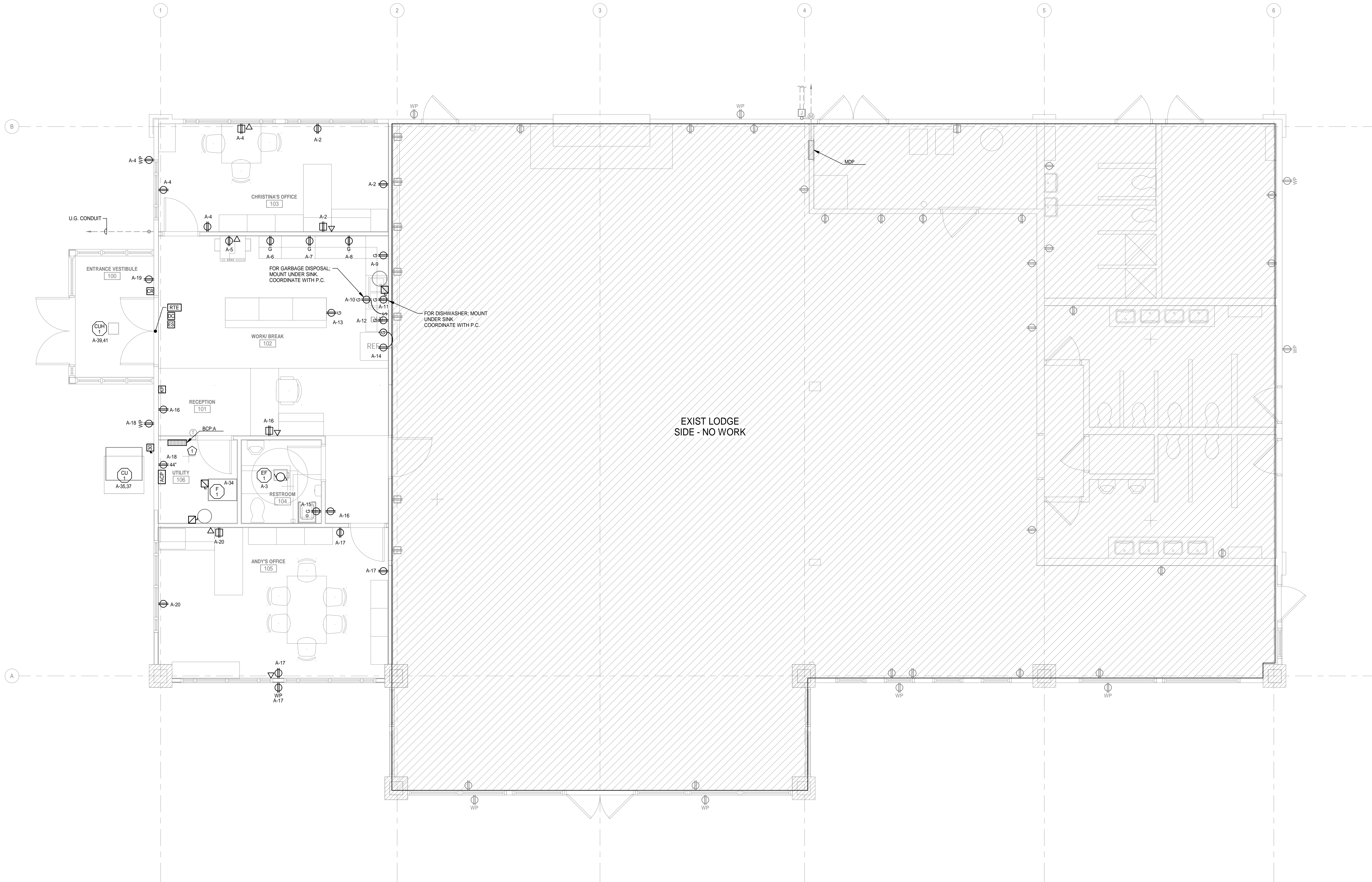
DRAWING TITLE:

FLOOR PLAN -
LIGHTING

DRAWING NUMBER:

E3.0

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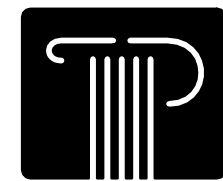
FLOOR PLAN - POWER AND SYSTEMS

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



KEYED PLAN NOTES:

1. FEED RP-A FROM PANEL MDP. ROUTE CABLE IN SPACE BETWEEN CEILING AND ROOF UTILIZING ACCESS HATCHES AND ATTIC SPACES. COORDINATE WITH C.M. AND OWNER.



THOMAS PORTER
ARCHITECTS

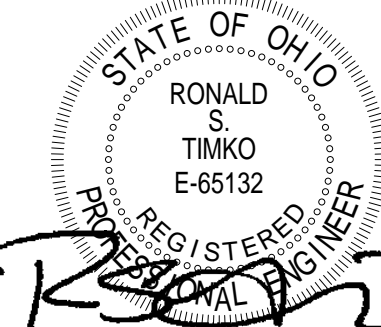
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FLOOR PLAN -
POWER AND
SYSTEMS

DRAWING NUMBER:

E4.0

ELECTRICAL SPECIFICATIONS

1.00 GENERAL

1.01 GENERAL SCOPE

A. THE WORK REQUIRED UNDER THIS SPECIFICATION SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, POWER, TRANSPORTATION, HOISTING IMPLEMENTS, ETC., NECESSARY FOR THE COMPLETION OF THE ELECTRICAL WORK OF THE CONTRACT; ALL AS SPECIFIED HEREIN, SHOWN ON THE DRAWINGS OR REASONABLY IMPLIED BY EITHER, COMPLETE IN EVERY RESPECT UNLESS SPECIFIED OTHERWISE HEREIN. THE WORK INCLUDED IN THIS CONTRACT SHALL CONSIST OF THE INSTALLATION, TEST AND GUARANTEE OF ALL WORK DESCRIBED ON THE PLANS AND SPECIFICATIONS.

1.02 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING SUPPLEMENTAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO THIS AND THE OTHER SECTIONS OF DIVISION 26.

1.04 DRAWINGS AND SPECIFICATIONS

A. DRAWINGS INDICATE GENERAL ARRANGEMENT OF SYSTEM AND ARE TO BE FOLLOWED INsofar AS POSSIBLE. DEVIATIONS FROM DRAWINGS MAY BE NECESSITATED BY FIELD CONDITIONS. DETAILED LAYOUTS OF PROPOSED DEPARTURES TO BE SUBMITTED TO ARCHITECT FOR APPROVAL.

B. DRAWINGS AND SPECIFICATIONS TO BE CONSIDERED COOPERATIVE AND ANYTHING APPEARING IN SPECIFICATIONS, BUT NOT ON DRAWINGS, OR VICE VERSA, TO BE CONSIDERED PART OF THE CONTRACT AND TO BE EXECUTED.

C. DRAWINGS INDICATE SIZE AND APPROXIMATE LOCATION OF VARIOUS PARTS OF WORK AND ARE TO BE USED AS A GENERAL GUIDE FOR INSTALLATION. HOWEVER, DRAWINGS ARE, TO A CONSIDERABLE EXTENT, DIAGRAMMATIC AND EXACT LOCATIONS OF CONDUIT, CABLE TRAY, OUTLET BOXES, SURFACE RACEWAY, ETC., MAY APPEAR ON THE DRAWINGS OR MUST BE WORKED OUT ON JOB. HOWEVER, NO CHANGES IN SIZE TO BE MADE WITHOUT WRITTEN APPROVAL OF ARCHITECT/ENGINEER. ERRORS OR OMISSIONS DISCOVERED BY BIDDING CONTRACTORS PRIOR TO BID OPENINGS, TO BE CALLED TO ATTENTION OF ARCHITECT/ENGINEER WITHOUT DELAY.

D. IF A SPECIFIC ITEM IS SPECIFIED OR ON DRAWINGS FOR MULTIPLE TRADES, THIS CONTRACTOR SHALL INCLUDE ALL ITEMS IN THE BID REGARDLESS OF OTHER TRADES. RESOLUTION WILL BE BY ADDENDUM OR CHANGE ORDER.

1.05 PROJECT CLOSEOUT

A. IN ORDER TO ACHIEVE A COMPLETE AND COMMISSIONED PROJECT, EACH CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING ITEMS:

1. BUILDING INSPECTION CERTIFICATES.
2. AS-BUILT DRAWINGS.
3. FINAL PAYMENT REQUEST.
4. WAIVER OF LIENS.
5. DEMONSTRATION CERTIFICATES SIGNED BY OWNER.
6. DELIVERY OF EXTRA MATERIALS.
7. RETURN OF BORROWED KEYS AND WORKING PERMITS.
8. LETTER DECLARING PUNCH LIST ITEMS COMPLETED.
9. OPERATION AND MAINTENANCE MANUALS.
10. FINAL GUARANTEE AND EXECUTION OF WARRANTIES.
11. OTHER REQUIREMENTS SPECIFIED IN DIVISION 1 SPECIFICATIONS.

1.06 RECORD DOCUMENTS

A. PREPARE RECORD DOCUMENTS IN ACCORDANCE WITH THE REQUIREMENTS IN DIVISION 1.

1.07 EQUIPMENT AND SYSTEMS DEMONSTRATION

A. EACH CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE COMPLETE OPERATION OF THE EQUIPMENT AND SYSTEMS INSTALLED AS A PART OF THE WORK. AFTER THE CONTRACTOR IS SATISFIED THE WORK MEETS THE SPECIFIED INTENTS AND SEQUENCES OF OPERATION, THE CONTRACTOR SHALL SCHEDULE, THROUGH THE ARCHITECT/ENGINEER, A SESSION DURING WHICH ALL ASPECTS OF THE WORK ARE EXPLAINED TO THE OWNER'S PERSONNEL AND/OR REPRESENTATIVES.

1.08 INSPECTION OF EXISTING AND GENERAL CONDITIONS

A. THE CONTRACTOR WILL BE HELD TO HAVE PERSONALLY INSPECTED THE SITE OF THE PROPOSED WORK TO ARRIVE AT A CLEAR UNDERSTANDING OF THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. THE EXTENT OF OTHER CONTRACTOR'S ACTIVITIES IN THE AREA, AND TO BECOME FULLY ACQUAINTED WITH THE RECEIVING AND STORAGE SPACES AVAILABLE. THE CONTRACTOR SHALL COMPARE THE PREMISES AND SITE WITH THE DRAWINGS AND SPECIFICATIONS, AND SHALL BE SATISFIED AS TO THE CONDITIONS OF THE PREMISES, THE ACTUAL ELEVATIONS, AND ANY OTHER CONDITIONS AFFECTING THE SCOPE OR COMPLETION PERFORMANCE OF THE WORK, BEFORE THE DELIVERY OF THIS PROPOSAL.

B. NO ALLOWANCES OR EXTRA CONSIDERATION ON BEHALF OF THE CONTRACTOR WILL BE ALLOWED BY REASON OF THE CONTRACTOR'S FAILURE TO BECOME FAMILIAR WITH SITE CONDITIONS. ERROR OR OVERSIGHT ON THE PART OF THE CONTRACTOR OR DUE TO INTERFERENCE'S BY THE OWNER'S OR OTHER CONTRACTOR'S ACTIVITIES.

C. ITEMS SPECIFIED ON ELECTRICAL EQUIPMENT SCHEDULES AND PLANS ARE THE BASIS OF DESIGN. EQUALITY OF OTHER EQUIPMENT SHALL BE DETERMINED BY THE OWNER AND ENGINEER. ANY MODIFICATION TO THESE DOCUMENTED METHODS THAT IS MADE NECESSARY BY ALTERNATE EQUIPMENT IS THE RESPONSIBILITY OF THE SUPPLIER OF THE ALTERNATE EQUIPMENT.

D. CONTRACTOR IS DIRECTED TO INCLUDE ALL NECESSARY OVERTIME AND PREMIUM TIME (SATURDAY, SUNDAY, HOLIDAYS) REQUIRED FOR THE COMPLETION OF THE INTENDED WORK TO MEET SPECIFIED SCHEDULES.

E. DO NOT SCALE ELECTRICAL DRAWINGS. FOR EXACT DIMENSIONS, USE DIMENSIONED DRAWINGS OR ACTUAL FIELD CONDITIONS.

1.09 CODES, PERMITS, AND COMPLIANCE

A. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND INSPECTIONS REQUIRED BY LAWS OF GOVERNING BODIES. COMPLY WITH ALL APPLICABLE CODES, ORDINANCES AND ALL LEGAL REQUIREMENTS. NO EXTRA COMPENSATION WILL BE ALLOWED FOR ANY CHANGES NECESSARY FOR CODE COMPLIANCE REGARDLESS OF THE METHOD OF INSTALLATION SHOWN ON THE DRAWINGS OR SPECIFIED.

B. ALL ELECTRICAL WORK SHALL COMPLY WITH CURRENT ADOPTED EDITIONS OF NATIONAL ELECTRICAL CODE, NFPA, THE LIFE SAFETY CODE AND ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.

C. ALL ELECTRICAL EQUIPMENT SHALL BE NEW AND SHALL BE LABELED OR LISTED BY U.L. OR A QUALIFIED TESTING ORGANIZATION.

D. ALL EQUIPMENT, DEVICES, AND MATERIALS SHALL BE THE LATEST PRODUCTS OF MANUFACTURER AND SHALL CONFORM TO THE REQUIREMENTS NOTED ON PLANS.

1.10 WORKMANSHIP

A. WORKMANSHIP SHALL BE OF THE HIGHEST QUALITY CONFORMING TO THE BEST ELECTRICAL INSTALLATION PRACTICE. ANY WORK OR MATERIAL, WHICH IS REJECTED, MUST BE REMOVED IMMEDIATELY AND REPLACED. NO SUB-STANDARD WORK WILL BE ACCEPTED.

B. THE BREVITY OF THIS SPECIFICATION SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF HIS RESPONSIBILITY TO PERFORM ALL WORK IN A FIRST CLASS WORKMANLIKE MANNER.

1.11 SUBMITTALS AND RECORD DRAWINGS

A. SUBMIT SHOP DRAWINGS AND CATALOG DATA FOR APPROVAL FOR ALL NEW EQUIPMENT AND MATERIALS SPECIFIED FOR THIS PROJECT PRIOR TO ORDERING OR MANUFACTURE OF SUCH. SHOP DRAWINGS NOT STAMPED WITH CONTRACTORS APPROVAL WILL NOT BE REVIEWED.

B. THE CONTRACTOR SHALL KEEP AN ACCURATE RECORD OF ALL DEVIATIONS FROM THE APPROVED DESIGN AND SPECIFICATIONS WHICH MAY OCCUR IN THE WORK AS ACTUALLY CONSTRUCTED, AND SHALL SUBMIT SAME TO THE ENGINEER OR OWNER'S REPRESENTATIVE AT COMPLETION OF THE JOB.

C. SUBMITTALS SHALL BE COORDINATED THROUGH THE ARCHITECT.

1.12 TESTS AND GUARANTEE

A. ALL TESTS FOR VARIOUS SYSTEMS SHALL BE PERFORMED AS REQUIRED, CONSISTENT WITH GOOD GENERAL PRACTICE AND IN COMPLIANCE WITH CODES AND AUTHORITIES.

B. AS A CONDITION PRECEDENT TO FINAL PAYMENT, THE CONTRACTOR SHALL EXECUTE TO THE OWNER A GUARANTEE IN A FORM APPROVED BY THE OWNER. GUARANTEE SHALL WARRANT THAT ALL WORK INCLUDED IN THIS SPECIFICATION WILL REMAIN IN SERVICEABLE CONDITION (ORDINARY WEAR, ABUSE AND CAUSES BEYOND THE CONTROL OF THE CONTRACTOR EXCLUDED) FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL COMPLETION AND ACCEPTANCE OF WORK. THE CONTRACTOR AGREES TO CORRECT, WITHOUT COST TO THE OWNER, ANY IMPERFECTIONS IN WHOLE OR IN PART WHICH MAY DEVELOP IN THIS WORK, INCLUDING ANY DAMAGE TO OTHER WORK CAUSED BY SUCH IMPERFECTIONS OR REPAIRING OF SAME.

C. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROPER DIRECTION OF MOTOR ROTATION. DAMAGE TO MOTORS, EQUIPMENT, OR SYSTEMS DUE TO IMPROPER ROTATION SHALL BE CORRECTED AT THIS CONTRACTOR'S EXPENSE.

D. ALL ELECTRICAL SYSTEMS, DEVICES AND RELATED ITEMS SHALL BE TESTED. REPLACE ANY AND ALL DEFECTIVE DEVICE ITEMS OR SYSTEMS BEFORE COMPLETION OF THE PROJECT.

1.13 COORDINATION

A. FIELD VERIFY EXACT LOCATION OF ALL NEW EQUIPMENT WITH EXISTING CONDITIONS AND COORDINATE WITH THE GENERAL AND OTHER CONTRACTORS PRIOR TO ROUGH-IN AND/OR INSTALLING ANY OF THIS WORK.

B. FIELD VERIFY ALL CLEARANCES AND CONDITIONS PRIOR TO THE INSTALLATION OF ANY CONDUIT, CABLE TRAY, RACEWAY, ETC.; VERIFY LOCATIONS OF ALL OUTLET BOXES, SURFACE MOUNTED DEVICES, PANELBOARD ENCLOSURES, FIXTURE LOCATIONS, ETC., WITH CIVIL, ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS PRIOR TO ROUGH-IN. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO PROCEEDING WITH WORK.

C. ALL POWER OUTAGES TO EXISTING OR OPERABLE FACILITIES SHALL BE SCHEDULED WITH THE OWNER A MINIMUM TWO (2) WEEKS IN ADVANCE. THE CONTRACTOR SHALL NOT INTERRUPT OR RESTORE POWER WITHOUT PRIOR CONSENT TO THE OWNER. ANY INTERRUPTION SHALL BE ONLY FOR THE SPECIFIC SCHEDULED TIME.

D. COORDINATE ALL POWER WIRING, SAFETY DISCONNECT MEANS, MOTOR CONTROL AND CONTROL WIRING FOR MECHANICAL EQUIPMENT WITH THE MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL WIRING TO MOTOR OR EQUIPMENT THROUGH STARTERS AND SAFETY SWITCH.

E. THE MECHANICAL CONTRACTOR, MECHANICAL EQUIPMENT SUPPLIER OR TEMPERATURE CONTROL CONTRACTOR WILL BE RESPONSIBLE FOR ALL LOW VOLTAGE TEMPERATURE CONTROL WIRING REQUIRED FOR THE PROJECT. THIS ELECTRICAL CONTRACTOR SHALL INSTALL, TERMINATE AND LABEL ALL POWER, CONTROL AND INTERLOCK WIRING DETAILED ON THESE PLANS.

F. LOCATE AND INSTALL ALL NEW DEVICES AND FIXTURES IN ACCORDANCE WITH AMERICAN DISABILITY ACT GUIDELINES.

1.14 IDENTIFICATION

A. FURNISH AND INSTALL SELF-ADHESIVE VINYL LABELS WITH ½ INCH LETTERS INDICATING PANEL NAME AND VOLTAGE ON ALL PANELS AND CABINETS. STARTERS, PUSHBUTTONS AND DISCONNECT SWITCHES SHALL HAVE PHENOLIC LABELS WITH 3/8 INCH HIGH LETTERS INDICATING NAME OR ITEM CONTROLLED. ALL LABELS SHALL BE WHITE SURFACE WITH BLACK LETTERS AND BE UV, WATER AND ABRASION RESISTANT.

B. INSTALL CLEAR ADHESIVE TAPE WITH 1/4 INCH HIGH BLACK LETTERING ON WIRING DEVICE OUTLETS DEFINING SOURCE (PANEL) AND CIRCUIT NUMBER IDENTIFICATION.

C. PROVIDE AN ARC FLASH HAZARD LABEL FOR ALL ELECTRICAL EQUIPMENT INCLUDING BUT NOT LIMITED TO SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKET ENCLOSURES, DISCONNECTS AND MOTOR CONTROL CENTERS. LABELING TO BE IN ACCORDANCE WITH NEC 110.16 (FLASH PROTECTION). LABELS TO BE BRADY #99452 OR EQUAL.

D. PROVIDE NEW TYPED PANEL DIRECTORIES FOR ALL NEW AND EXISTING PANELBOARDS AFFECTED BY THIS WORK.

E. CONDUCTOR IDENTIFICATION

1. COMPLY WITH NFPA 70.
2. COLOR-CODING FOR PHASE- AND VOLTAGE-LEVEL IDENTIFICATION, 600V OR LESS: USE COLORS LISTED BELOW FOR UNGROUNDED FEEDER AND BRANCH-CIRCUIT CONDUCTORS AND SHALL BE FACTORY APPLIED.
 - a. COLORS FOR 240/120-V CIRCUITS:
 1. PHASE A: BLACK.
 2. PHASE B: RED.
 - b. COLOR FOR NEUTRAL: WHITE.
 - c. COLOR FOR EQUIPMENT GROUNDS: GREEN.

1.15 DEMOLITION, REMOVALS, CLEAN-UP, PROTECTION AND TOUCH-UP

A. REMOVE ALL EXISTING RACEWAY, WIRING, FIXTURES, DEVICES, CONTROLLERS, ETC., SCHEDULED FOR REMOVAL OR NOT REQUIRED TO REMAIN IN SERVICE. CONTRACTOR SHALL COORDINATE REMOVAL WITH OWNER AND ALL OTHER TRADES ON THE PROJECT. ALL RACEWAY AND WIRE SHALL BE REMOVED BACK TO THE POINT OF SERVICE. PROVIDE ADDITIONAL MAKE-UP RACEWAY, JUNCTION BOXES, WIRING, ETC., TO MAINTAIN RACEWAY AND CIRCUIT CONTINUITY FOR FUNCTIONAL CIRCUITS.

B. THIS CONTRACTOR SHALL DISPOSE OF ALL MATERIALS GENERATED FROM REMOVAL AND INSTALLATION OF THIS WORK. DEBRIS SHALL BE REMOVED FROM THE PROJECT SITE WEEKLY. THIS CONTRACTOR SHALL PROVIDE TO THE OWNER ANY SALVAGEABLE MATERIALS AS DIRECTED BY THE OWNER OR ENGINEER.

C. DEPOSIT ALL PCB OR OTHER HAZARDOUS CLASSIFIED MATERIALS (INCLUDING FLUORESCENT LAMPS AND BALLASTS) FROM REMOVALS IN APPROVED CONTAINERS AT A LOCATION DIRECTED BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF ALL PCB OR OTHER HAZARDOUS CLASSIFIED MATERIAL.

D. ALL EQUIPMENT, ITEMS, DEVICES AND APPURTENANCES SHALL BE PROTECTED FROM DEBRIS AND DAMAGE WHILE STORED AT THE SITE AND DURING AND AFTER INSTALLATION.

E. UPON COMPLETION OF WORK THIS CONTRACTOR SHALL THOROUGHLY CLEAN ALL APPARATUS FURNISHED BY THIS CONTRACT.

F. SCARRED FACTORY-FINISHED ELECTRICAL EQUIPMENT SHALL BE TOUCHED UP WITH FACTORY FURNISHED PAINT. RUSTED OR MARRED SURFACES OF ELECTRICAL EQUIPMENT SHALL BE CLEANED AND PRIMED BEFORE PAINTING.

G. PATCH FINISHED SURFACES AND BUILDING COMPONENTS USING NEW MATERIALS MATCHING EXISTING MATERIALS AND EXPERIENCED INSTALLERS.

1.16 MAINTENANCE MANUALS

A. PREPARE MAINTENANCE MANUALS. PROVIDE A MINIMUM OF THREE COPIES WITH A SINGLE COPY SENT TO THE ENGINEER FOR APPROVAL. INCLUDE THE FOLLOWING INFORMATION FOR EQUIPMENT ITEMS:

1. COMPLETE INFORMATION ON PROJECT EQUIPMENT, TRANSFORMERS, ETC., PROCESS MACHINERY AND INSTRUMENTATION DEVICES SHALL BE VIA FLEXIBLE, "SEAL TITE" CONDUIT, MINIMUM 24 INCHES AND A MAXIMUM OF 42 INCHES IN LENGTH. PROVIDE FLEXIBLE METAL CONDUIT CONNECTIONS TO RECESSED LIGHT FIXTURES, MAXIMUM LENGTH 72 INCHES, ½ INCH DIAMETER TRADE SIZE MINIMUM. OUTDOOR CONNECTIONS SHALL ORGATE A DRIP LOOP TO PREVENT RAIN WATER FROM ENTERING THE BUILDING AND EQUIPMENT ENCLOSURES.
2. DESCRIPTION OF FUNCTION, NORMAL OPERATING CHARACTERISTICS AND LIMITATIONS, PERFORMANCE CURVES, ENGINEERING DATA AND TESTS, AND COMPLETE NOMENCLATURE AND COMMERCIAL NUMBERS OF REPLACEMENT PARTS.
3. MANUFACTURER'S PRINTED OPERATING PROCEDURES.
4. MAINTENANCE PROCEDURES FOR ROUTINE PREVENTATIVE MAINTENANCE AND TROUBLESHOOTING.

1.17 ELECTRONIC FILES

A. IF THE CONTRACTOR REQUESTS, MDA ENGINEERING, INC. WILL PROVIDE ELECTRONIC FILES FOR THE CONTRACTORS SOLE CONVENIENCE AND USE IN PREPARATION OF SHOP DRAWINGS RELATED TO THE PROJECT SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:

1. MDA ENGINEERING, INC. WILL PROVIDE ELECTRONIC FILES OF DRAWING SHEETS SPECIFICALLY REQUESTED IN WRITING BY THE CONTRACTOR. THE REFERENCE BACKGROUND FILES OR PERMISSION TO DISTRIBUTE SUCH MUST BE OBTAINED FROM THE ARCHITECT OR OTHER APPLICABLE PARTY.
2. A CADD CONTRACT PROVIDED BY MDA ENGINEERING, INC. SHALL BE SIGNED BY AN OFFICER OF THE CONTRACTING COMPANY PRIOR TO DELIVERY OF THE ELECTRONIC FILES. THE CONTRACTORS' SHALL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS MDA ENGINEERING, INC. FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES, INCLUDING ATTORNEY'S FEES ARISING OUT OF OR RESULTING FROM THE USE OF THESE ELECTRONIC FILES.
3. MDA ENGINEERING, INC. RESERVES THE RIGHT TO REMOVE ALL INDICATIONS OF OWNERSHIP AND/OR INVOLVEMENT FROM EACH ELECTRONIC DISPLAY.
5. ANY OTHER USE OR RE-USE BY THE CONTRACTOR OR BY OTHERS WILL BE AT THE CONTRACTOR'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO MDA ENGINEERING, INC. AND OWNER.

2.00 BASIC MATERIALS AND METHODS

2.01 FASTENING AND SUPPORTS

A. ALL CONDUITS AND EQUIPMENT SHALL BE ADEQUATELY SUPPORTED, EITHER SUSPENDED FROM THE CONSTRUCTION ABOVE OR BY MEANS OF STRUTS TO THE CONSTRUCTION BELOW. CONDUIT, TRAY, FIXTURES, ETC., SHALL NOT SPAN FLEXIBLE CONNECTIONS OF AIR HANDLING EQUIPMENT, ETC., AND SHALL NOT BE SUPPORTED FROM DUCTWORK OR OTHER TRADES' SUPPORTS.

2.02 RACEWAYS

A. ALL CONDUCTORS SHALL BE INSTALLED IN RACEWAY UNLESS SPECIFICALLY NOTED OTHERWISE.

B. UNLESS OTHERWISE NOTED, CONDUIT SHALL BE ELECTRICAL METALLIC TUBING (EMT) WITH STEEL COMPRESSION OR SET SCREW FITTINGS 3/4 INCH TRADE SIZE MINIMUM. CAST METAL FITTINGS ARE NOT ACCEPTABLE.

C. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE USED IN EXTERIOR APPLICATIONS WITH THREADED AND CAST FITTINGS, MINIMUM 3/4 INCH TRADE SIZE.

D. CONDUIT BELOW GRADE SHALL BE SCHEDULE 40 PVC WITH RIGID STEEL ELBOWS (GREATER THAN 30 DEGREES) AND RISERS, CONCRETE ENCASED WHERE INDICATED. BURY THE GREATER OF 18 INCHES BELOW GRADE OR PER NEC MINIMUM DEPTH AND INSTALL RED MARKER WARNING TAPE 6" BELOW FINISHED GRADE.

E. MARKER TAPE FOR BELOW GRADE COMMUNICATIONS OR OTHER LOW VOLTAGE SYSTEMS CONDUITS SHALL INCLUDE A TRACER WIRE.

F. ALL CONDUIT AND WIRING IN FINISHED AREAS SHALL BE CONCEALED IN THE CONSTRUCTION WHERE PRACTICABLE.

G. ALL RACEWAYS SHALL BE ROUTED WITHIN STRUCTURAL FRAMING AND FURRED SPACES UTILIZING FACTORY MADE ELBOWS AS GOOD PRACTICE AND WORKMANSHIP ALLOWS. INSTALL SLEEVES THROUGH STRUCTURAL CONCRETE WHERE PENETRATING STRUCTURAL FLOOR DECKS.

H. RACEWAYS SHALL BE CAPPED UNTIL CONDUCTORS ARE INSTALLED. EMPTY RACEWAYS SHALL EACH BE TAGGED AND INCLUDE PULL WIRE.

I. RACEWAYS 1 ½ INCH TRADE SIZE AND SMALLER SHALL BE SECURED WITH ONE HOLE MALLEABLE STRAPS OR WALL BRACKETS. TRAPEZE SUPPORTS SHALL BE USED FOR GROUPS OF PARALLEL RACEWAYS WITH EACH SECURED TO TRAPEZE WITH PROPER CLAMPS. INDIVIDUAL RUNS OF RACEWAY 2 INCHES AND LARGER SHALL BE SUPPORTED WITH MALLEABLE IRON HANGERS. WHERE SURFACE CONDUITS ARE INSTALLED BELOW THE BOTTOM CHORD OF STEEL USE OF "MINERALLACS" FOR SUPPORTS ARE PROHIBITED.

J. ALL FEEDER AND BRANCH CIRCUIT RACEWAYS SHALL INCLUDE AN INSULATED EQUIPMENT GROUNDING CONDUCTOR. REFER TO GROUNDING SECTION.

K. INSTALL FIRE STOPPING WHERE REQUIRED BY THE BUILDING CONSTRUCTION; REFER TO ARCHITECTURAL DRAWINGS FOR FIRE BARRIERS.

L. FINAL CONNECTIONS TO VIBRATING EQUIPMENT (MOTORS, TRANSFORMERS, ETC.), PROCESS MACHINERY AND INSTRUMENTATION DEVICES SHALL BE VIA FLEXIBLE, "SEAL TITE" CONDUIT, MINIMUM 24 INCHES AND A MAXIMUM OF 42 INCHES IN LENGTH. PROVIDE FLEXIBLE METAL CONDUIT CONNECTIONS TO RECESSED LIGHT FIXTURES, MAXIMUM LENGTH 72 INCHES, ½ INCH DIAMETER TRADE SIZE MINIMUM. OUTDOOR CONNECTIONS SHALL ORGATE A DRIP LOOP TO PREVENT RAIN WATER FROM ENTERING THE BUILDING AND EQUIPMENT ENCLOSURES.

M. SEE CONDUCTORS SECTION FOR APPLICATION OF METALCLAD (MC) CABLE APPLICATION; MC CABLE SHALL BE USED ONLY IN DRY, ABOVE GRADE APPLICATIONS.

2.03 OUTLET AND JUNCTION BOXES

A. FLUSH MOUNTED OUTLET DEVICE BOXES AND JUNCTION BOXES IN CONCEALED OR PROTECTED SPACES SHALL BE GALVANIZED PRESSED STEEL WITH KNOCK-OUTS.

B. OUTLET AND DEVICE BOXES FOR EXTERIOR APPLICATIONS AND USE WITH RGS CONDUIT SHALL BE CAST FS/FD TYPE WITH GALVANIZED, STAMPED STEEL COVER PLATES.

C. SURFACE MOUNTED OUTLET DEVICE BOXES AND JUNCTION BOXES IN UTILITY ROOMS AND SERVICE AREAS SHALL BE ROUNDED EDGE PRESS FORMED GALVANIZED STEEL WITH KNOCK-OUTS AND MATCHING GALVANIZED STAMPED STEEL COVER PLATES.

D. SURFACE TYPE BOXES FOR SPECIAL SYSTEMS SUCH AS FIRE ALARM, PAGING, SECURITY, ETC., SHALL BE PROPERLY SIZED BACKBOXES FOR THE DEVICE AS PROVIDED BY THE SYSTEM VENDOR.

2.04 SURFACE METAL WIREWAY/RACEWAY

A. FURNISH AND INSTALL SURFACE MOUNTED, METAL WIREWAYS AND RACEWAYS WHERE NOTED ON THE PLANS OR SPECIFICALLY PERMITTED BY THE ARCHITECT (SURFACE RACEWAY IN FINISHED SPACES WILL NOT BE PERMITTED WITHOUT THE EXPRESSED CONSENT OF THE ARCHITECT) FOR POWER AND/OR TELECOMMUNICATION WIRING.

B. SURFACE METAL WIREWAY INSTALLED PER NEC ARTICLE 376 MAY BE USED WITH PROPER COVERS, TEES, ELBOWS, ETC., FOR FEEDER TAPS, EXTENSIONS, ETC. WIREWAYS SHALL BE SQUARE D SQUARE DUCT OR EQUAL.

C. SURFACE METAL RACEWAY FOR NECESSARY CIRCUIT EXTENSIONS, WHERE CONCEALED WIRING IS NOT PRACTICAL, SHALL BE NOMINAL 5/8 INCHES DEEP BY ¾ INCHES WIDE, WIREMOLD 700 SERIES OR EQUAL.

D. MOUNT ALL RACEWAY STRAIGHT, TRUE AND LEVEL AND ROUTE AS INCONSPICUOUSLY AS POSSIBLE. WHERE RUNS ARE HORIZONTAL, MOUNT TO CLEAR COUNTERTOPS, BACKSPLASH, BASE MOLDINGS, ETC.

2.05 FEEDER AND BRANCH CIRCUIT CONDUCTORS

A. UNDERGROUND FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE WET LOCATION LISTED AND LABELED TYPE THWN; SERVICE ENTRANCE CONDUCTORS SHALL BE LISTED AND LABELED FOR SERVICE ENTRANCE USE.

B. FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE STRANDED COPPER WITH 600V THHN/THWN INSULATION.

C. FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE STRANDED COPPER (20-30 AMP) OR COMPACT STRANDED ALUMINUM (40-1000 AMP) WITH 600V INSULATION. REFER TO FEEDER SCHEDULES ON DRAWINGS. COPPER CONDUCTORS SHALL BE THHN/THWN. ALUMINUM CONDUCTORS SHALL BE XHHW-2.

D. MINIMUM WIRE SIZE FOR BRANCH CIRCUIT CONDUCTORS SHALL BE #12 AWG, STRANDED, COPPER.

E. ALL CONDUCTORS SHALL BE PROTECTED IN ACCORDANCE WITH NEC ART 240.4 AND AMPACITY SHALL BE IN ACCORDANCE WITH NEC 310.15 BASED ON 60 DEGREES C RATING FOR SIZES #2 AND SMALLER AND 75 DEGREES C FOR SIZES #1 AWG AND LARGER.

F. MC TYPE CABLE MAY BE USED FOR BRANCH CIRCUITS CONCEALED IN STUD WALL CONSTRUCTION AND FOR FINAL RECESSED LIGHT FIXTURE CONNECTIONS SUPPORT PER CODE. MC-AP TYPE CABLE IS NOT ACCEPTABLE; ALL MC TYPE CABLE SHALL INCLUDE ALL INSULATED EQUIPMENT GROUNDING CONDUCTOR AND BE UL LISTED AND LABELED FOR THE APPLICATION.

G. ALL SINGLE-POLE AND MULTI-POLE BRANCH CIRCUITS WITH NEUTRAL WIRE REQUIREMENT SHALL HAVE INDIVIDUAL NEUTRAL CONDUCTORS TO COMPLY WITH NEC 210.4. EACH NEUTRAL SHALL BE IDENTIFIED AT ALL JUNCTION BOXES AND TERMINALS THE SAME AS ITS CORRESPONDING BRANCH CIRCUIT NUMBER.

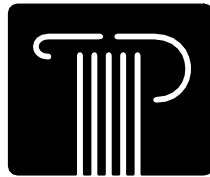
2.06 GROUNDING

A. BOND MECHANICAL METAL PIPING AND DUCT SYSTEMS PER NEC ARTICLE 250.104.

B. BOND AND GROUND ALL NON-CURRENT CARRYING METAL PARTS OF THE BUILDING AND ELECTRICAL SYSTEM AS REQUIRED.

C. INSTALL INSULATED EQUIPMENT GROUNDING CONDUCTOR IN ALL RACEWAYS WITH CONDUCTORS FOR ALL FEEDER AND BRANCH CIRCUITS SIZED IN ACCORDANCE WITH NEC ARTICLE 250.122.

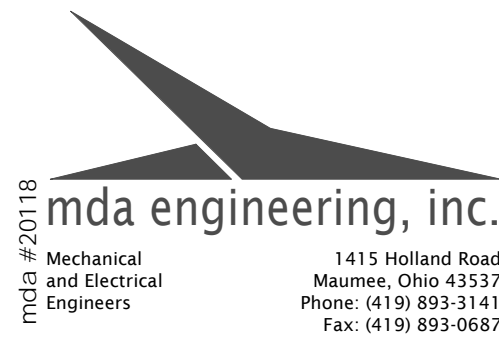
D. SIGNAL AND COMMUNICATION SYSTEMS: FOR TELEPHONE, ALARM, VOICE AND DATA, AND OTHER COMMUNICATION SYSTEMS, PROVIDE AN INSULATED GROUNDING CONDUCTOR IN RACEWAY FROM THE GROUNDING ELECTRODE SYSTEM TO EACH SERVICE LOCATION, TERMINAL CABINET, WIRING CLOSET, AND CENTRAL EQUIPMENT LOCATION, TERMINATE GROUNDING CONDUCTOR ON A ½ X 2 X 12 INCH GROUND BAR WITH ½" X 20 TAPPED HOLES AT 1" O.C.



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ELECTRICAL
SPECIFICATIONS

DRAWING NUMBER:

E5.0

- 2.07

WIRING DEVICES

A.

ALL WIRING DEVICES SHALL BE SPECIFICATION GRADE, HEAVY DUTY FOR SIDE AND BACK WIRING CONVENIENCE.

B.

CONVENIENCE RECEPTACLES SHALL BE 20 AMPERE, 125 VOLT, NEMA 5-20R, SPECIFICATION GRADE, HUBBELL #HBL 5352 HEAVY DUTY, SPECIFICATION GRADE OR EQUAL.

C.

WALL SWITCHES SHALL BE TOGGLE TYPE, 20 AMPERE, 125/277 A.C., QUIET TYPE, HUBBELL #HBL 1221 SERIES OR EQUAL.

D.

VERIFY WIRING DEVICE COLORS WITH ARCHITECT FOR VARIOUS APPLICATIONS IN THE BUILDING.

E.

COVER PLATES IN FINISHED AREAS TO BE SMOOTH NYLON OR LEXAN COLOR TO MATCH INSTALLED DEVICE OR TYPE 302, BRUSHED STAINLESS STEEL, SMOOTH FINISH, HUBBELL S1/S8 OR EQUAL AS SELECTED BY ARCHITECT
- 2.08

DISCONNECTS AND STARTERS

A.

PROVIDE DISCONNECTS FOR ALL EQUIPMENT AS SHOWN ON THE PLANS AND STARTERS FOR ALL EQUIPMENT NOT PROVIDED WITH BUILT-IN CONTROL PANELS.

B.

DISCONNECTS SHALL BE HEAVY DUTY, MULTIPLE POLE, QUICK-MAKE, QUICK-BREAK, H.P. RATED, 250 VOLT OR 600 VOLT IN NEMA 1 ENCLOSURE (INDOORS) OR NEMA 3R ENCLOSURES (OUTDOORS).

C.

DISCONNECTS SHALL BE FUSIBLE OR NON-FUSED AS NOTED AND SHALL INCLUDE CLASS R REJECTION STYLE FUSE HOLDERS.

D.

STARTERS FOR MOTORS ½ HP AND LESS SHALL BE MANUAL STARTERS, 120 VOLTS, WITH BUILT-IN OVERLOADS AND PILOT LIGHT. INSTALL FLUSH IN FINISHED AREAS. SQUARE D, CO., CLASS 2510 OR EQUAL BY ALLEN BRADLEY. CONTRACTOR TO DETERMINE FINAL O.L. THERMAL ELEMENT SIZED BASED UPON FINAL MOTOR F.L.A.

E.

COORDINATE ALL STARTERS, DISCONNECTS, OVERLOADS, ETC., WITH FINAL MOTOR AND EQUIPMENT ITEMS. LOCATE TO MAINTAIN PROPER CLEARANCES.
- 2.09

FUSES

A.

ALL LOW VOLTAGE FUSES SHALL BE TIME DELAY, DUAL ELEMENT, RK-1 REJECTION STYLE 250 V OR 600 V AS APPROPRIATE AND ARRANGED IN A COORDINATED SELECTIVE SYSTEM FOR OVERCURRENT PROTECTION.

B.

ALL FUSES SHALL HOLD A 500 PERCENT OVERLOAD FOR 10 SECONDS AND BE RATED 300KA I.C. MINIMUM. FUSE SIZES FOR INDIVIDUAL MOTOR LOADS SHALL BE PROPERLY SIZED TO ACTUAL MOTOR LABEL FOR MOTOR BRANCH CIRCUIT AND SHORT CIRCUIT PROTECTION PER NEC 430.52.

C.

FUSES SHALL BE REJECTION STYLE, DUAL ELEMENT BUSSMAN LOW PEAK, 300 KOR EQUAL BY LITTLE FUSE OR MERSEN.
- 2.10

RACEWAYS FOR TELECOMMUNICATION CABLING FOR VOICE/DATA SYSTEMS

A.

FURNISH AND INSTALL TELECOMMUNICATIONS BACKBOARDS AS INDICATED ON THE PLANS. BACKBOARDS SHALL BE ¾ INCH PLYWOOD, PAINTED FIRE RETARDANT WHITE AND SIZED AS SHOWN. FIRMLY ANCHOR TO WALL SURFACE WITH APPROPRIATE FASTENERS.

B.

PROVIDE AND INSTALL EMPTY CONDUIT STUBS FROM EACH VOICE/DATA OUTLET LOCATION AS INDICATED ON THE PLANS TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE 90 DEGREE SWEEP ELBOW AND INSULATED BUSHING AT EACH STUB.

C.

CONDUIT SHALL BE 1 INCH DIAMETER MINIMUM AND SHALL BE SIZED FOR 28% MAXIMUM FILL PER BICSI AND EIA/TIA STANDARDS.

D.

VOICE/DATA FLUSH OUTLET BOXES SHALL BE 4 11/16 INCH SQUARE, 2 1/2 INCH DEEP GALVANIZED PRESSED STEEL WITH 1 GANG PLASTER RING AND BLANK FINISHED COVER PLATE.

E.

INCLUDE A PULL STRING IN ALL EMPTY RACEWAYS TO FACILITATE FUTURE CABLING BY OTHERS.

F.

FURNISH AND INSTALL EMPTY RACEWAY TO SIZE AND TYPE AS INDICATED ON THE PLANS FOR BACKBONE CABLING. INCLUDE GROUNDED INSULATING BUSHING ON EACH END. SLEEVE FLOORS AND WALLS WITH RGS CONDUIT AND INSTALL FIRE STOPPING.
- 3.00

PRODUCTS AND EXECUTION
- 3.00

PANELBOARDS (LIGHTING AND APPLIANCES)

A.

ALL NEW PANELBOARDS SHALL BE UL LISTED AND LABELED.

B.

BRANCH CIRCUIT PANELBOARDS (BCP) SHALL BE 120/240 VOLT-1 PHASE-3 WIRE-SOLID NEUTRAL WITH BOLT-ON THERMAL MAGNETIC MOLDED CASE BREAKERS. BRANCH BREAKERS TO HAVE A MINIMUM OF 10K A.I.C. SHORT CIRCUIT RATING FOR PANELBOARDS UP TO AND INCLUDING 400 AMPERE. PANELS SHALL BE SQUARE D NO SERIES OR EQUAL BY SIEMENS, GENERAL ELECTRIC OR CUTLER HAMMER.

C.

ALL PANELS TO INCLUDE NUMBER, SIZE, TYPE AND RATING OF BRANCH AND MAIN DEVICES AS NOTED. PROVIDE MAIN BREAKERS WHERE NOTED TO OBTAIN U.L. INTEGRATED EQUIPMENT SHORT CIRCUIT RATINGS.

D.

PANELBOARDS SHALL BE INSTALLED WITH TRIM, FRONT, DOOR AND FLUSH LOCK, MASTER KEYED FOR THE PROJECT SITE, PAINTED ANSI-61 GRAY. MOUNT WITH TOP OF PANEL AT 6'-0" ABOVE FLOOR.

E.

ALL 2-POLE AND 3-POLE BREAKERS SHALL BE COMMON TRIP.
- F.

ALL BREAKERS SHALL BE BOLT ON. LIGHTING CIRCUITS SHALL BE SWITCH DUTY RATED.
- G.

ALL PANELS SHALL HAVE A COPPER EQUIPMENT GROUND BUS.
- H.

PHASE AND NEUTRAL BUS BARS SHALL BE ALUMINUM.
- I.

FURNISH HANDLE LOCKING DEVICES ON ALL NIGHT LIGHT (NL), EMERGENCY (EM) AND ALL FIRE ALARM CIRCUITS (WITH RED IDENTIFICATION ON BREAKER).
- J.

INSTALL TYPED, DESCRIPTIVE, PANEL CIRCUIT DIRECTORIES TO DESIGNATE AREA AND TYPE OF LOADS SERVED BY EACH CIRCUIT. BRANCH BREAKER NUMBERING SHALL BE AS LISTED ON THE PANELBOARD SCHEDULES AND/OR PLAN DRAWING CIRCUIT NUMBERS.

3.01

LIGHTING FIXTURES

A.

ALL NEW LIGHTING FIXTURES SHALL BEAR THE LABEL OF APPROVAL OF THE UNDERWRITERS LABORATORIES, INC. ALL FIXTURES OF EACH TYPE SHALL BE OF ONE MANUFACTURER.

B.

LED FIXTURE DRIVERS SHALL BE 350MA MINIMUM AND INCLUDE PROTECTION DIODES FOR AC OPERATION. ALL LED DRIVERS TO BE TREATED IN ACCORDANCE WITH IESNA LM STANDARDS AND PROVIDE A 5 YEAR WARRANTY.

C.

EMERGENCY/EGRESS BATTERY PACK TO BE RATED AT A MINIMUM OF 50% OF THE LAMP LUMEN OUTPUT MINIMUM.

D.

LED LAMPS SHALL BE BINNED PER ANSI C78 377A OR GREATER STANDARDS AS REQUIRED.

E.

LED LAMP COLOR TEMPERATURE TO BE AS SCHEDULED.

F.

RECESSED FIXTURES SHALL BE SECURELY FASTENED TO THE CEILING FRAMING MEMBER BY MEANS IDENTIFIED PER NEC 410.36.

G.

SEE SCHEDULE ON PLANS FOR FIXTURE DESCRIPTIONS, MODELS, MANUFACTURERS, ETC.

3.02

NETWORK READY LIGHTING CONTROL SYSTEM

A.

INSTALL A PROGRAMMABLE LOW VOLTAGE DISTRIBUTED LIGHTING CONTROL SYSTEM CONSISTING OF RELAY POWER PACKS, GATEWAY DEVICE, NETWORK BRIDGES, RELAY PANELS, DAYLIGHT SENSORS, VACANCY/OCCUPANCY SENSORS, DIGITAL SWITCHES AND ALL ASSOCIATED WIRING.

B.

LIGHTING CONTROL SYSTEM SHALL BE CONFIGURED TO ALLOW LOCAL ROOM CONTROL DEVICES TO BE CONNECTED TO A FUTURE NETWORKED CONTROL SYSTEM UNDER FUTURE PHASES. PROVIDE BRIDGES AND OTHER NECESSARY DEVICES TO ALLOW FUTURE CONNECTION.

C.

THE FUTURE NETWORKED LIGHTING CONTROL SYSTEM SHALL PROVIDE SEAMLESS CONTROL AND MONITORING OF ALL LIGHTING INCLUDED IN THE SCOPE OF WORK. ALL RELAY, UNLESS OTHERWISE NOTED, SHALL BE INTERCONNECTED BY A COMMUNICATION BUSS MAKING POSSIBLE THE SHARING OF CONTROL FUNCTIONS AND STATUS SYSTEM WIDE. CONTROL INPUTS SHALL BE TRANSFERABLE OVER THE NETWORK TO AFFECT LIGHTING CONTROL PATTERNS AND ZONES. THE NETWORK SHALL PROVIDE THE MEANS TO CONFIGURE, SET-UP, AND MONITOR THE OPERATION OF ALL LIGHTING CONTROL DEVICES.

D.

PROVISIONS FOR FUTURE CONTROL MODULE GATEWAY DEVICE: WALL MOUNTED USER ACCESSIBLE DEVICE CAPABLE OF COMMUNICATING AND CONTROLLING DOWNSTREAM SYSTEM CONTROL DEVICES AND LINKING INTO ETHERNET. BACKLIT LCD TOUCH SCREEN AND INTERNAL ASTRONOMICAL TIME CLOCK.

E.

DIGITAL VACANCY/OCCUPANCY SENSORS: SELF-CONFIGURING, DIGITALLY ADDRESSABLE AND CALIBRATED OCCUPANCY SENSORS WITH DUAL TECHNOLOGY SENSING.

F.

DIGITAL SWITCHES: SELF-CONFIGURING, DIGITALLY ADDRESSABLE PUSHBUTTON ON/OFF, DIMMING, AND SCENE SWITCHES.

G.

NETWORKED SYSTEM POWER (RELAY) PACKS: PLENUM-RATED CONTROLLERS FOR ON/OFF CONTROL. SELECTED MODELS INCLUDE 0-10 VOLT DIMMING OUTPUTS. RATED 16AMP SWITCHING.

H.

FUTURE EQUIPMENT: NETWORKED SYSTEM RELAY PANELS: PANEL SHALL INCORPORATE UP TO 16 NORMALLY CLOSED LATCHING RELAYS CAPABLE OF SWITCHING 120/277VOLT LOADS. RELAYS SHALL BE RATED TO SWITCH UP TO 30A LOAD.

I.

FUTURE EQUIPMENT: WIRELESS COMMUNICATING DEVICES AND OCCUPANCY SENSORS FOR SITE LIGHTING POLES.

J.

NETWORK CONTROL SYSTEM: FREE TOPOLOGY, PLUG-IN WIRING SYSTEM (CAT 5E/6) FOR POWER AND DATA TO DEVICES.

K.

NETWORK BRIDGE: PROVIDES DIGITAL NETWORKED COMMUNICATION BETWEEN DEVICES AND PANELS.

L.

FUTURE EQUIPMENT: A SINGLE PHOTOCCELL SHALL BE MOUNTED AT THE ROOF LINE FACING NORTH FOR MEASURING EXTERIOR LIGHT LEVELS. THE SENSOR SHALL CONNECT TO A PHOTO CONTROL INPUT ON THE CONTROLLER. REPLACING THE ASTRONOMIC CONTROL FUNCTION ON THE CLOCK. THE PHOTO CONTROL MODULE SHALL MEASURE THE ACTUAL EXTERIOR LIGHT LEVEL.

M.

FUTURE SOFTWARE: PROGRAMMING AND CONFIGURATION SOFTWARE: PC-NATIVE APPLICATION CAPABLE OF ACCESSING CONTROL AND STATUS PARAMETERS OF ALL DEVICES ON THE LOCAL NETWORK INCLUDING SCHEDULING AND SEQUENCE OF OPERATIONS OF SUCH.

N.

SUBMITTALS PACKAGE: SUBMIT SHOP DRAWINGS, AND THE PRODUCT DATA SPECIFIED BELOW AT THE SAME TIME AS A PACKAGE.

1.

COMPOSITE WIRING AND/OR SCHEMATIC DIAGRAM OF EACH CONTROL CIRCUIT AS PROPOSED TO BE INSTALLED.

2.

SHOW EXACT LOCATION OF ALL DEVICES, INCLUDING AT MINIMUM SENSORS, RELAYS, AND

SWITCHES FOR EACH AREA ON REFLECTED CEILING PLANS.

3.

PROVIDE ROOM/AREA DETAILS INCLUDING PRODUCTS AND SEQUENCE OF OPERATION FOR EACH ROOM OR AREA. ILLUSTRATE TYPICAL ACCEPTABLE ROOM/AREA CONNECTION TOPOLOGIES.

4.

NETWORK RISER DIAGRAM, INCLUDING FLOOR AND BUILDING LEVEL DETAILS. INCLUDE NETWORK CABLE SPECIFICATION AND END-OF-LINE TERMINATION DETAILS, IF REQUIRED. ILLUSTRATE POINTS OF CONNECTION TO INTEGRATED SYSTEMS. COORDINATE INTEGRATION WITH CONTROL CONTRACTOR, MECHANICAL AND/OR OTHER TRADES. PRODUCT DATA: CATALOG SHEETS, SPECIFICATIONS AND INSTALLATION INSTRUCTIONS.

5.

INCLUDE DATA FOR EACH DEVICE WHICH INDICATES WHERE SENSOR IS PROPOSED TO BE INSTALLED.

O.

CONTRACTOR INSTALLATION AND SERVICES:

1.

CONTRACTOR SHALL COORDINATE ALL WORK WITH THE SYSTEM VENDOR AND ASSIST IN PROGRAMMING SYSTEM IN ACCORDANCE WITH THE SEQUENCE OF OPERATION.

2.

CONTRACTOR TO INSTALL ALL DEVICES AND WIRING IN A PROFESSIONAL MANNER. ALL LINE VOLTAGE CONNECTIONS TO BE TAGGED TO INDICATE CIRCUIT AND SWITCHED LEGS.

3.

CONTRACTOR TO INSTALL ALL ROOM/AREA DEVICES USING MANUFACTURER'S FACTORY-TESTED CAT 5E/6 CABLE WITH PRE-TERMINATED RJ-45 CONNECTORS. IF PRE-TERMINATED CABLE IS NOT USED FOR ROOM/AREA WIRING, THE CONTRACTOR IS RESPONSIBLE FOR TESTING EACH FIELD-TERMINATED CABLE FOLLOWING INSTALLATION, AND SHALL SUPPLY THE LIGHTING CONTROLS MANUFACTURER WITH TEST RESULTS.

4.

CALIBRATE ALL SENSOR TIME DELAYS AND SENSITIVITY TO GUARANTEE PROPER DETECTION OF OCCUPANTS AND ENERGY SAVINGS.

5.

ADJUST TIME DELAY SO THAT CONTROLLED AREA REMAINS LIGHTED WHILE OCCUPIED.

6.

POST START-UP TUNING – AFTER 30 DAYS FROM OCCUPANCY CONTRACTOR IN CONCERT WITH SYSTEM VENDOR SHALL ADJUST SENSOR TIME DELAYS AND SENSITIVITIES TO MEET THE OWNER'S REQUIREMENTS. PROVIDE A DETAILED REPORT TO THE ARCHITECT / OWNER OF POST START-UP ACTIVITY.

P.

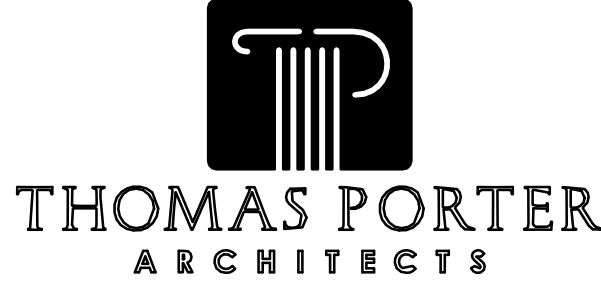
INSTALL SYSTEM PER MANUFACTURER INSTRUCTIONS AND PROVIDE FACTORY AUTHORIZED START-UP AND OWNER TRAINING. CONFIRM THE LOCATION AND MOUNTING OF ALL DIGITAL DEVICES, WITH SPECIAL ATTENTION TO PLACEMENT OF OCCUPANCY AND DAYLIGHTING SENSORS.

Q.

PROVIDE A FIVE YEAR LIMITED MANUFACTURER'S WARRANTY ON ALL ROOM CONTROL DEVICES.

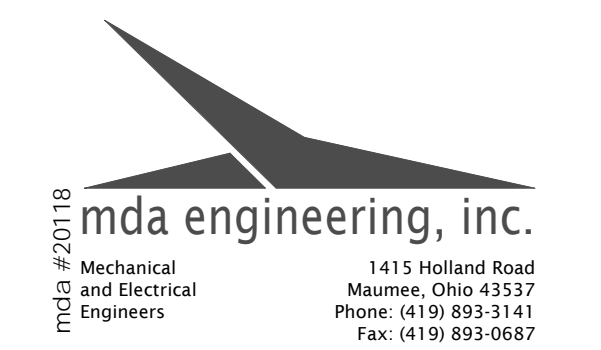
R.

LIGHTING CONTROL SYSTEM SHALL BE ACUTY BRANDS NLIGHT CONTROLS OR EQUAL BY WATT STOPPER OR PRE-APPROVED ENGINEER EQUAL.

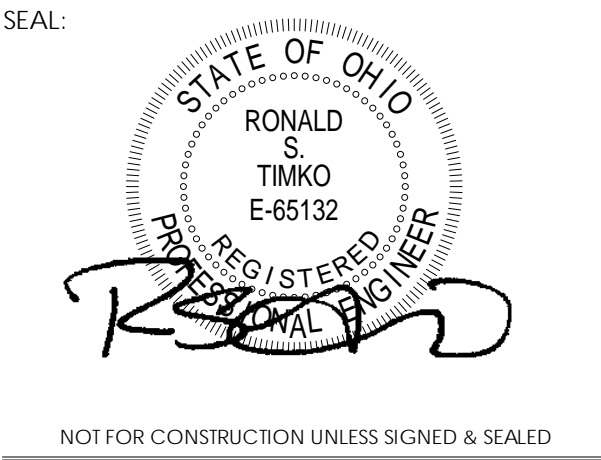


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PROJECT TITLE:

SANDUSKY PARKS
RIVER CLIFF OFFICE RENOVATION

1329 TIFFIN ST.
FREMONT, OH 43420

ISSUE OR REVISION:

11/06/2020	ISSUED FOR BIDDING
DATE	ISSUE / REVISION

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DRAWN:	JRW/M
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