

GENERAL NOTES:

1. RECEPTION DESK, "A" GATES PROVIDED BY OWNER AND INSTALLED BY OTHERS.
2. ALL NUMBERED CABINS AND INTERIOR FENCE TYPE 1 ARE PROVIDED BY OWNER AND INSTALLED BY THE GENERAL CONTRACTOR.
3. 48" FRP COLOR "ALMOND", CLASS III/C RATING. SEE SHEET A1.1 FOR LOCATIONS.
4. 48" FRP COLOR "WHITE", CLASS III/C RATING. SEE SHEET A1.1 FOR LOCATIONS.
5. ALL ELECTRICAL OUTLETS MOUNTED IN GROOM ROOM, TEA CUP ROOM, BOARDING ROOM, AND INDOOR PLAY YARDS SHALL BE GFCI PROTECTED.
6. IF WOOD STUDS ARE USED, BOTTOM PLATE SHALL BE PRESERVATIVE TREATED (B204.11).
7. IF USING WOOD STUDS, PROVIDE FIRE BLOCKING IN NEW WALLS @ CEILING LINES (B717.2).
8. RESTROOM WALLS SHALL BE INSULATED WITH SOUND ATTENUATED BATTS.
9. WALLS INSIDE PREP ROOM, GROOM ROOM, AND JANITOR'S CLOSET TO RECEIVE 1/2" CDX PLYWOOD BACKING BEHIND FRP.
10. ALL GYPSUM AT WET AREA WALLS TO BE FIBERGLASS MAT FACED GYPSUM IN LIEU OF STANDARD.
11. PROVIDE CLEAR SILICONE CAULKING WHERE COMPOSITE BOARD BASE MEETS FLOORING.
12. PROVIDE DEDICATED CIRCUIT FOR TWO QUAD RECEPTACLE POINTS - RACEWAY MOUNTED UNDER COUNTER OF FRONT RECEPTION DESK. TWO HOLLOW LOG COLUMNS FROM COUNTERTOP TO CEILING AREA PROVIDED WITH RECEPTION DESK TO HOUSE POWER AND LOW VOLTAGE CABLE.
13. PROVIDE THREE SETS OF CAT SE CABLES FROM PHONE/DATA DEMARK - RACEWAY MOUNTED UNDER COUNTER OF FRONT RECEPTION DESK.
14. PROVIDE JUNCTION BOX AND ELECTRICAL CIRCUITRY FOR POWER SUPPLY ASSOCIATED WITH DETEX V40XEE DELAYED EGRESS DEVICE. CONNECT FIRE ALARM INPUT AT POWER SUPPLY TO FAIL SAFE UPON SYSTEM ACTIVATION. CONNECT SECURITY SYSTEM TO NOTIFY OWNER UPON SYSTEM ACTIVATION.
15. INSTALL CEMENT BACKER BOARD TO 12" A.F.F. BEHIND TILE.
16. ALL "B" GATES SWING IN BOTH DIRECTIONS.

KEYED NOTES

- #
1. PROVIDE BLOCKING FOR WALL MOUNTED TV
 2. ELECTRICAL SERVICE. SEE ELEC. DWGS.
 3. PROVIDE TACTILE SIGN STATING "EXIT" IN COMPLIANCE WITH ICC/ANSI A117.1, AMERICAN NATIONAL STANDARD FOR ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES. INSTALL ADJACENT TO LATCH SIDE OF DOOR 80" ABOVE FINISHED FLOOR TO THE CENTER LINE OF THE SIGN
 4. **NOT USED** - ABOVE, 6" HEADER @ 10'-0" A.F.F. SEE DETAIL 2/A1.2
 5. TOP OF COUNTER @ 34" AFF.
 6. NEW SERVICE SINK - SEE PLUMBING DRAWINGS
 7. NEW WATER HEATER - SEE PLUMBING DRAWINGS
 8. PORTABLE FIRE EXTINGUISHER. VERIFY EXACT LOCATION AND OTHER REQUIREMENTS WITH LOCAL FIRE MARSHAL. MIN RATING 3440BC.
 9. EXISTING COLUMNS. PROTECT DURING CONSTRUCTION
 10. EXISTING OVERHEAD DOOR OPENING TO REMAIN. CLEAN AND REPAIR AS NECESSARY
 11. ACOUSTIBLOK SOUNDPROOFING TO BE APPLIED TO THE INSIDE FACE OF THE EXTERIOR PLAY YARD FENCE. COORD. w/ CAMP BOW WOW CONSTRUCTION MANAGER
 12. PROVIDE CONTINUOUS TRENCH DRAIN ALONG INSIDE FACE OF EXTERIOR PLAY YARD. SEE PLUMBING DRAWINGS.
 13. EXISTING SPRINKLER CLOSET TO REMAIN
 14. EXISTING STOREFRONT DOORS TO REMAIN LOCKED SHUT
 15. PROVIDE BLACK-OUT COVERING OVER EXISTING STOREFRONT. COORD. w/ CAMP BOW WOW

LEGEND

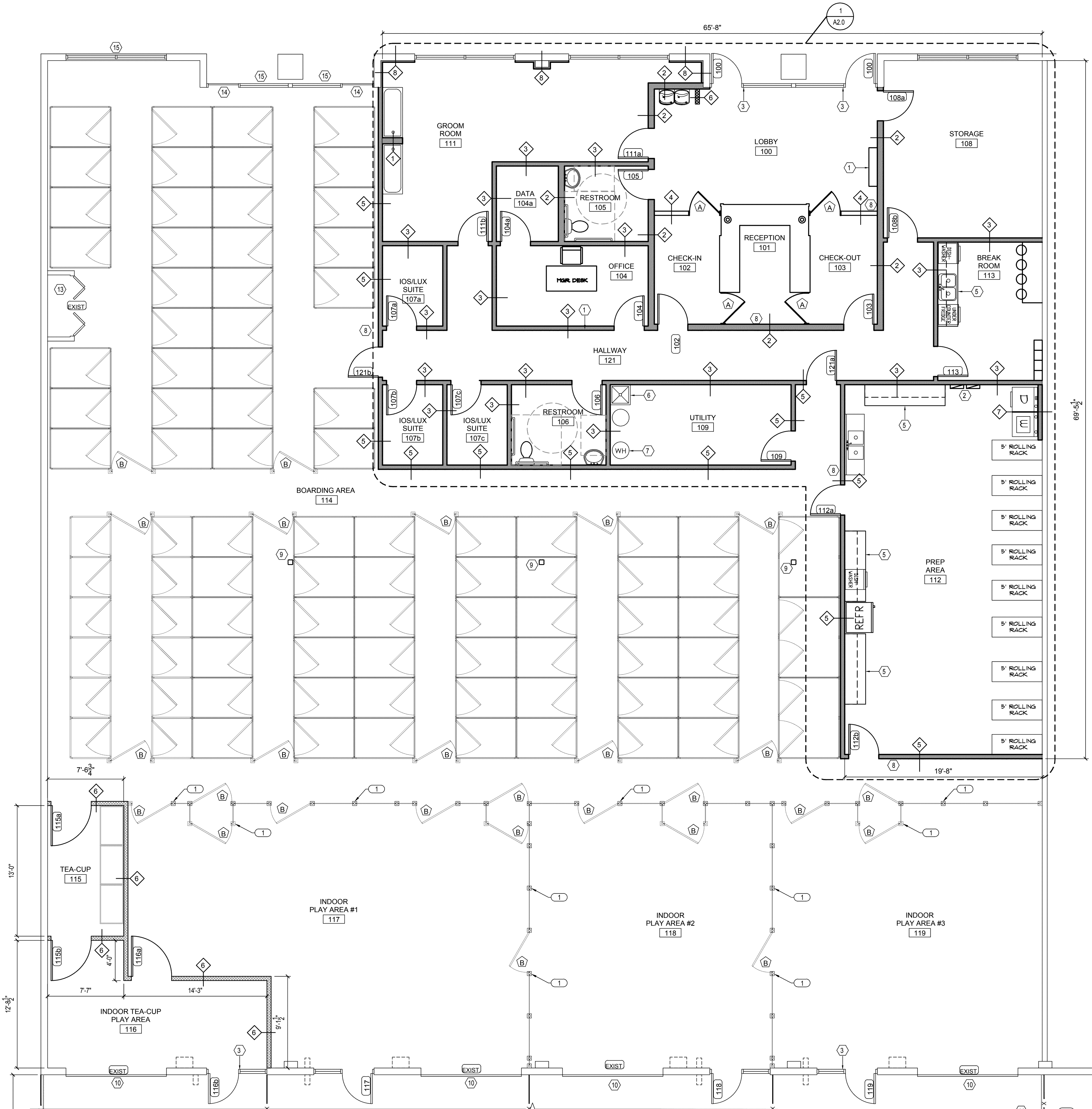
- ◇ WALL TYPE - SEE DETAIL 1/A1.0-C
- DOOR NUMBER - REFER TO SHEET A-4.0
- ◇ GATE NUMBER - REFER TO SHEET A-4.0
- FENCE TYPE - REFER TO SHEET A-1.0A FOR FENCE TYPES
- EXISTING WALL
- NEW WALL CONSTRUCTION-REFER TO WALL TYPE SECTIONS
- NEW HALF-WALL CONSTRUCTION-REFER TO WALL TYPE SECTIONS

KENNEL DESIGN:

CABINS:
SMALL DOGS CABIN 4'WX4'LX6'H
MEDIUM DOGS CABIN 4'WX6'LX6'H
LARGE DOGS CABIN 6'WX8'LX6'-6'H

FENCE TYPES

1. INDOOR PLAY AREA INTERIOR FENCE 4'-0" x 5'-0" HIGH SCOUTS CAMP CORRAL WALL AND GATES. SEE SHEET SP-1 FOR DETAILS.
2. NOT USED
3. OUTDOOR INTERNAL FENCE: 8'-0" PVC VINYL FENCE. SEE SHEET SP-1 FOR DETAILS.
4. OUTDOOR FENCE: 8'-0" HIGH PVC VINYL FENCE. SEE SHEET SP-1 FOR DETAILS.



CONTINUED ON A1.0B

1 FLOOR PLAN
A1.0A

NORTH

3/16" = 1'-0"

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8/16/2019 ISSUE FOR PERMIT
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REVISIONS

CAMP
BOW WOW
2900 SE CORNELIUS PASS RD.
SUITE 118
HILLSBORO, OR.

DATE: 8/16/2019

A1.0A
FLOOR PLAN

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1. RECEPTION DESK, "A" GATES PROVIDED BY OWNER AND INSTALLED BY OTHERS.
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 - 4 **NOT USED** - ABOVE 8" HEADER @ 10'-0" A.F.F. SEE DETAIL 2/A1.2
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 - 11 ACOUSTIBLOK SOUNDPROOFING TO BE APPLIED TO THE INSIDE FACE OF THE EXTERIOR PLAY YARD FENCE. COORD. w/ CAMP BOW WOW CONSTRUCTION MANAGER
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LEGEND

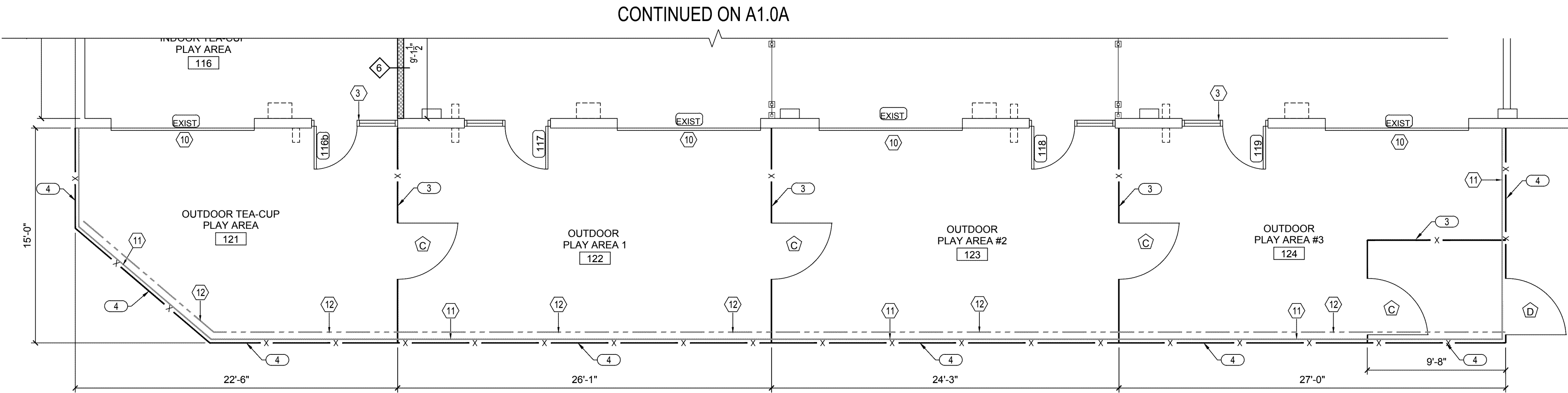
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BOW WOW

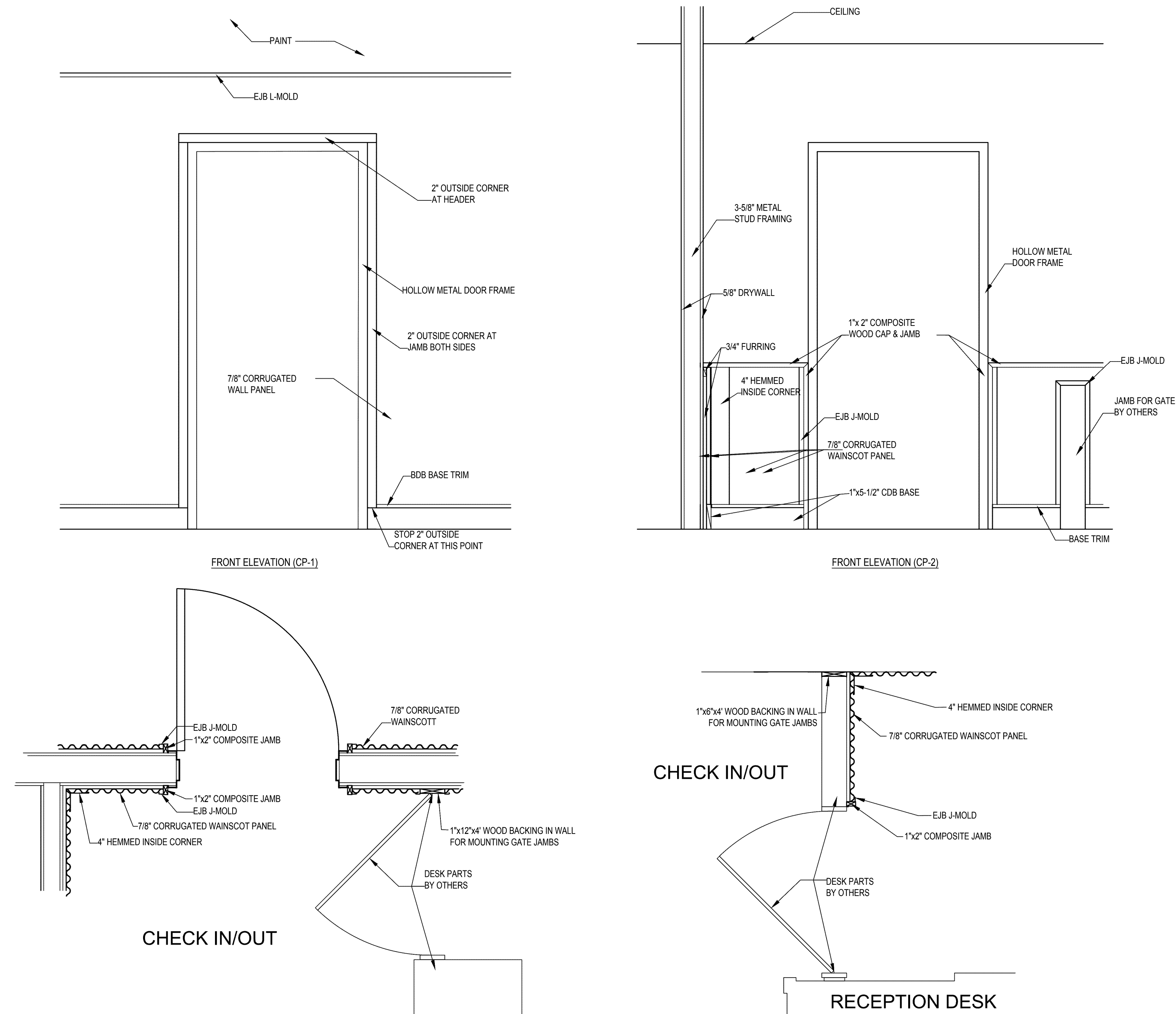
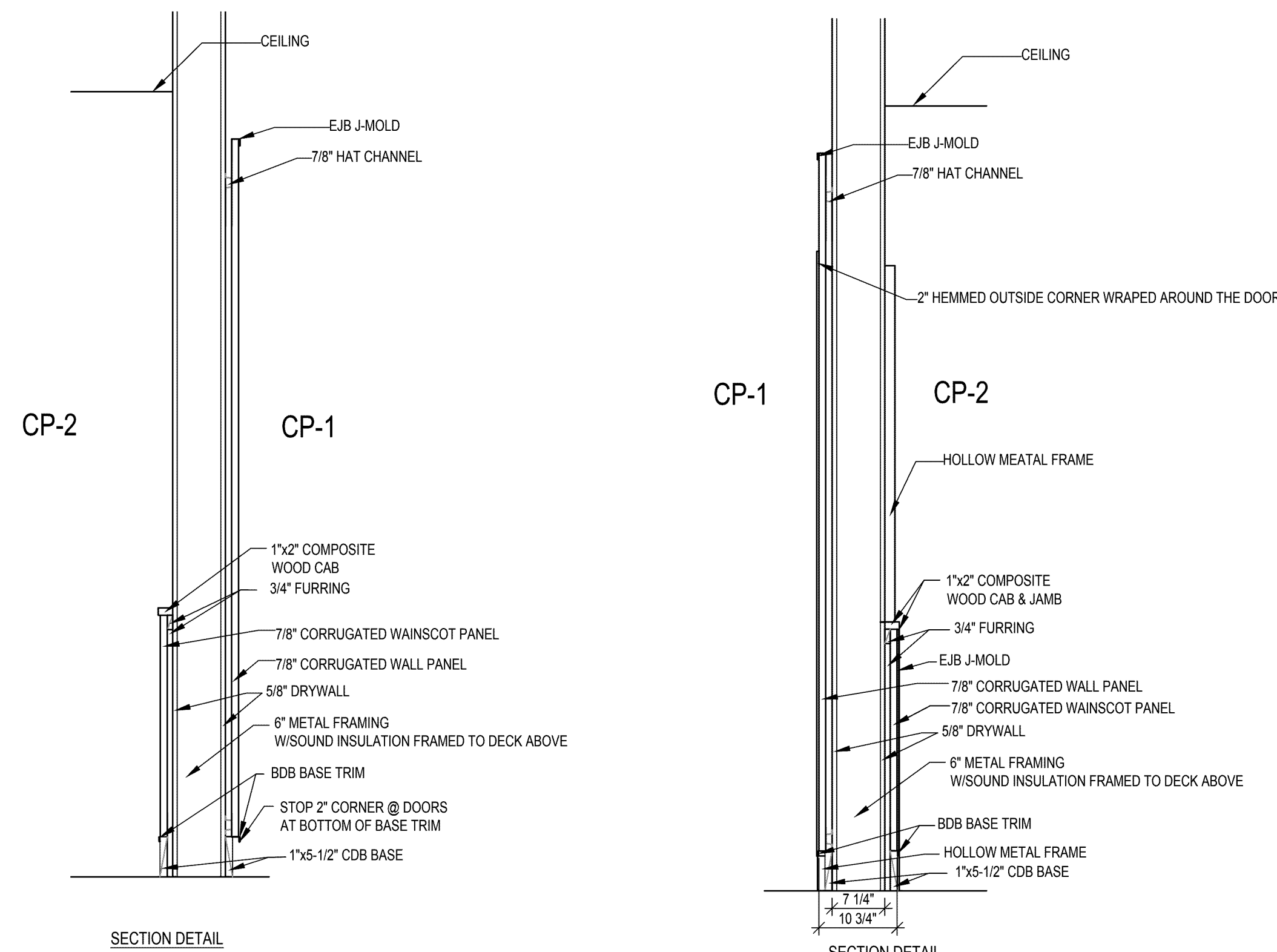
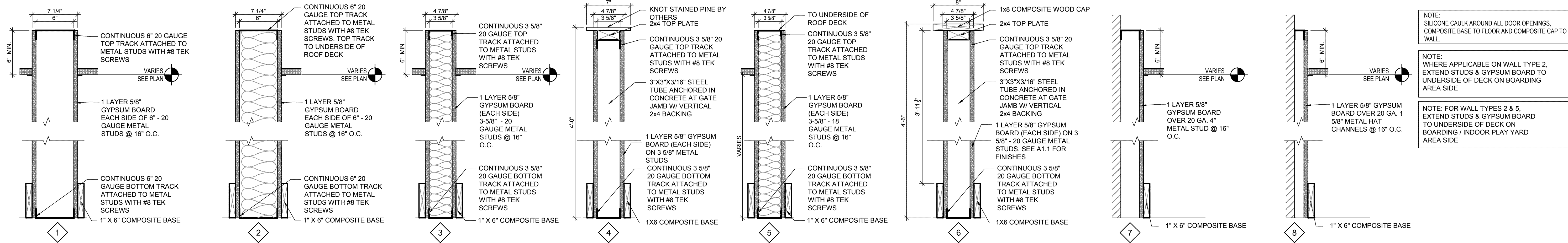
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SUITE 118
HILLSBORO, OR.

DATE: 8/16/2019

A1.0B
FLOOR PLAN

1 FLOOR PLAN
A1.0A

3/16" = 1'-0"



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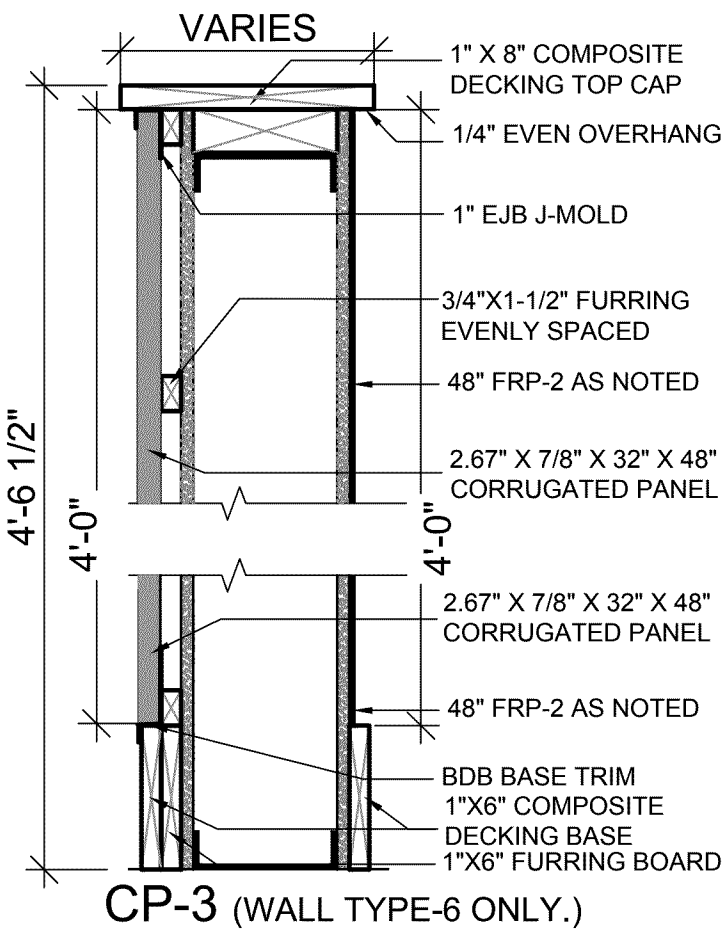
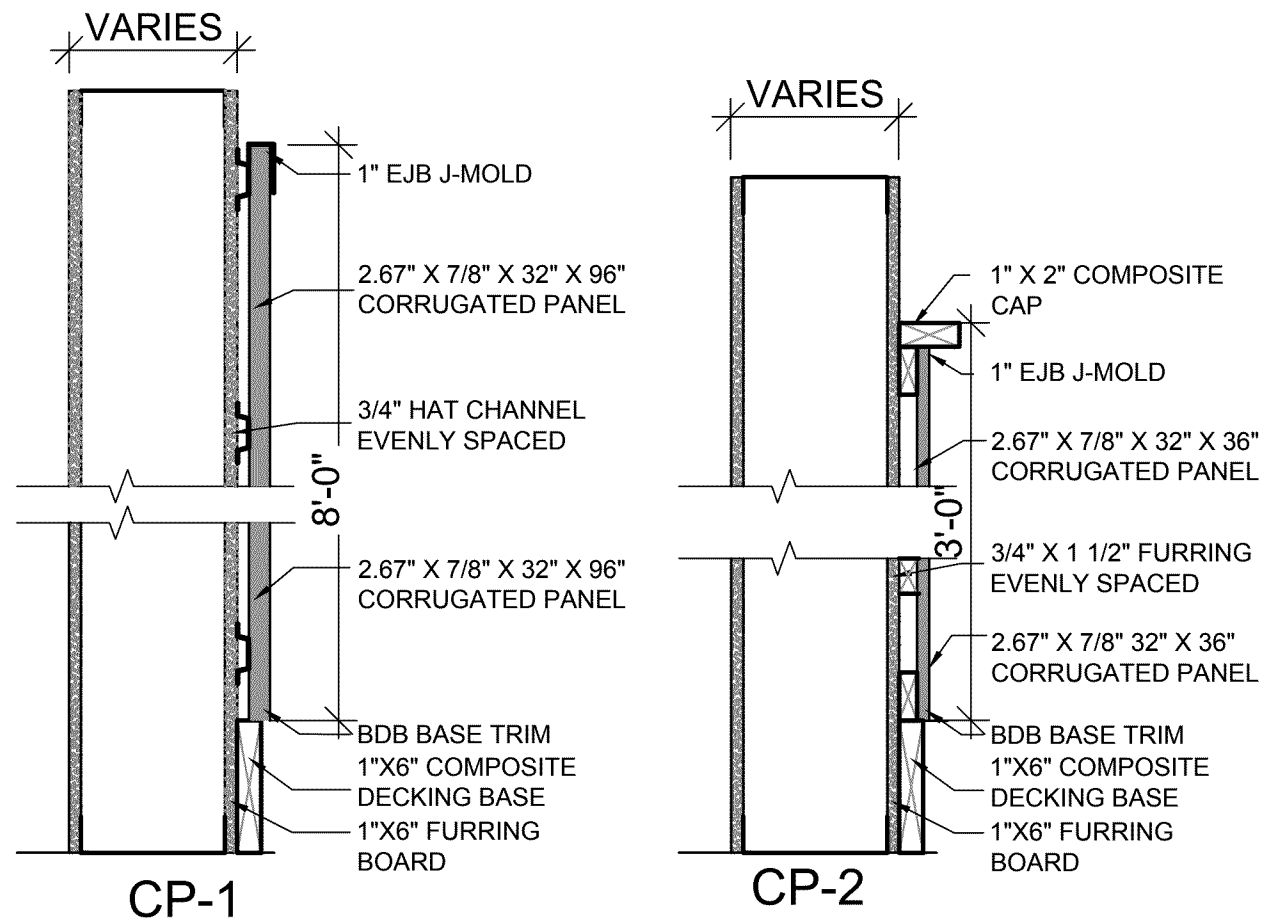
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A1.0C
WALL SECTIONS

NOTE:
SILICONE CAULK
AROUND ALL DOOR
OPENINGS.
COMPOSITE BASE TO
FLOOR AND
COMPOSITE CAP TO
WALL.

NOTE:
USE 2X2 OUTSIDE
CORNER WHIMS
AROUND ALL DOOR
OPENINGS



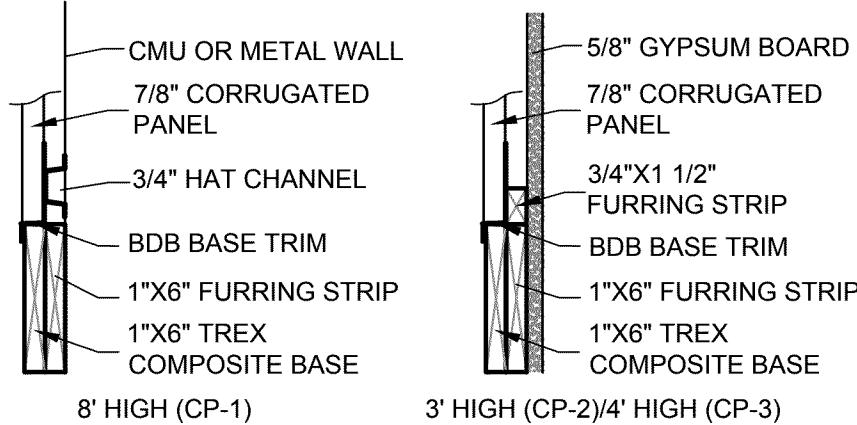
9'-0" WHERE CEILING IS PROVIDED. SEE A1.1

9'-0" WHERE CEILING IS PROVIDED. SEE A1.1

2 WAINSCOT DETAILS

NOTE: VERIFY CEILINGS IN REFLECTED CEILING PLAN. IF CONFLICTING INFORMATION OCCURS, RCP TAKES PRESIDENCE-METAL OR WOOD FRAMING IS ACCEPTABLE

CORRUGATED PANEL BASE DETAILS

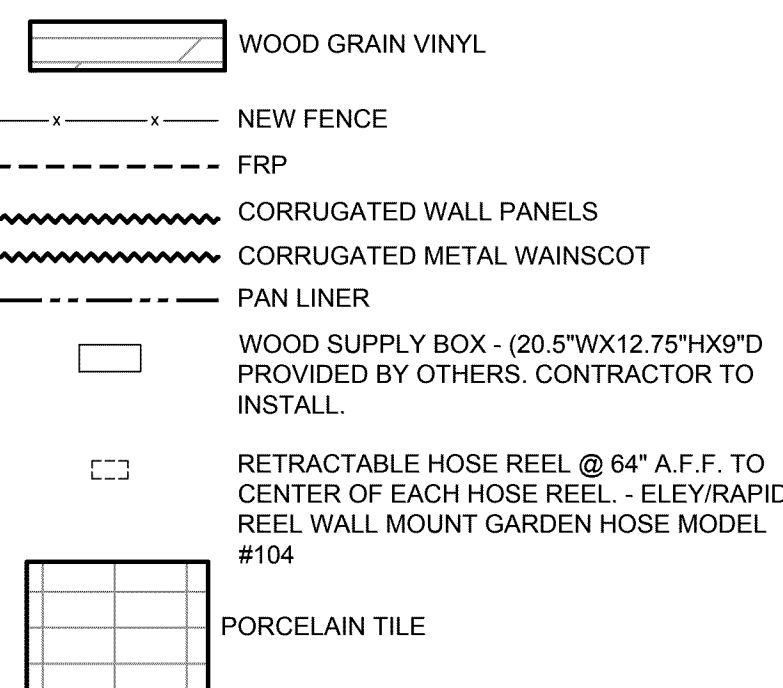


NOTE:
SILICONE CAULK AROUND ALL DOOR OPENINGS.
COMPOSITE BASE TO WALL AND TO FLOOR AND
COMPOSITE CAP TO WALL.

GENERAL NOTES:

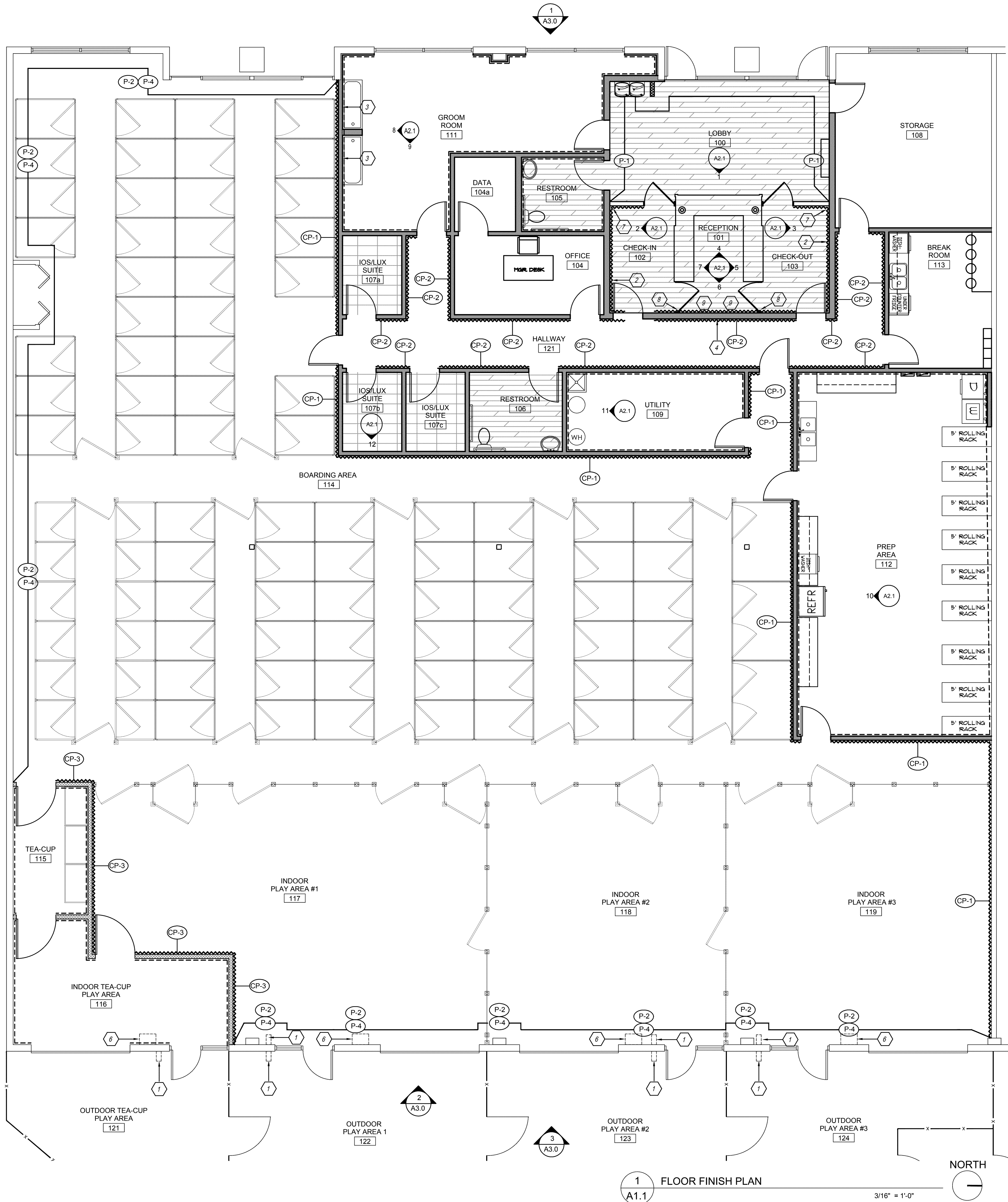
- 48" FRP1 COLOR IS "ALMOND". CLASS III/C RATING.
- 48" FRP2 COLOR IS "WHITE". CLASS III/C RATING.
- PLEASE REFER TO SHEET A-4 FOR FINISH SCHEDULE.
- EXPOSED CEILING IN BUILDING ARE NOT PAINTED.
- INSULATE ENTIRE BUILDING ROOF DECK WITH STANDARD WHITE VINYL FACED WMP-VR METAL BUILDING INSULATION. USE WHITE BANDING TO HOLD INSULATION IN PLACE. INSULATE ROOF DECK TO COMPLY WITH LOCAL ENERGY CODE OR R-19 WHICH EVER IS GREATER.
- EXTEND STEEL PANELING ABOVE DOORS AT CP-3 G.C. TO USE "EPOXY" GLUE K-92" FOR ALL WOODGRAIN FLOORING.
- VERIFY ALL PAINT SELECTIONS WITH OWNER.
- EXIST. STEEL PANELS IN BOARDING AND INDOOR PLAY AREAS TO BE REUSED. ANY NEW STEEL PANELS TO MATCH EXISTING. COORDINATE FINISH W/ OWNER
- ENTIRE FLOOR FINISH AND CEILING GRID MUST BE INSTALLED IN LOBBY BEFORE FRONT DESK CAN BE INSTALLED BY OTHERS
- INSTALL CORRUGATED WAINSCOT PANELING AFTER FRONT DESK INSTALL.

LEGEND



KEYED NOTES:

- HOSE REEL AT 64" A.F.F. TO CENTER AT EACH HOSE REEL. SUPPLIED BY OWNER. INSTALLED BY G.C.
- PROVIDE BACKING FROM 48" TO 60" A.F.F. & INSTALL OWNER SUPPLIED LEASH HOLDERS.
- INSTALL OWNER SUPPLIED CANINE HITCH AT 36" A.F.F.
- PROVIDE BLOCKING FROM 42" TO 90" A.F.F. AND INSTALL OWNER SUPPLIED MARKER BOARDS
- NOT USED
- SUPPLY BOX MOUNTED AT 5' AFF TO TOP OF BOX. TYP.
- PROVIDE 1"x12"x4" BLOCKING FOR HALF-WALL W/ GATE. START BLOCKING @ 10'-6" FROM WALL BEHIND DESK AND END BLOCKING @ 11'-6" FROM SAME WALL.
- PROVIDE 1"x6"x4" BLOCKING FOR HALF WALL W/ GATE BEHIND FRONT DESK.
- PROVIDE (2) EVERBILT, SOLID DOOR STOP. SLATE FINISH, MODEL#20357, HOME DEPOT STORE SKU# 1000027836. INSTALL (1) SOLID DOOR STOP IN TREX CDB FOR EACH CHECK-IN/OUT GATE BEHIND RECEPTION DESK



1 FLOOR FINISH PLAN

3/16" = 1'-0"

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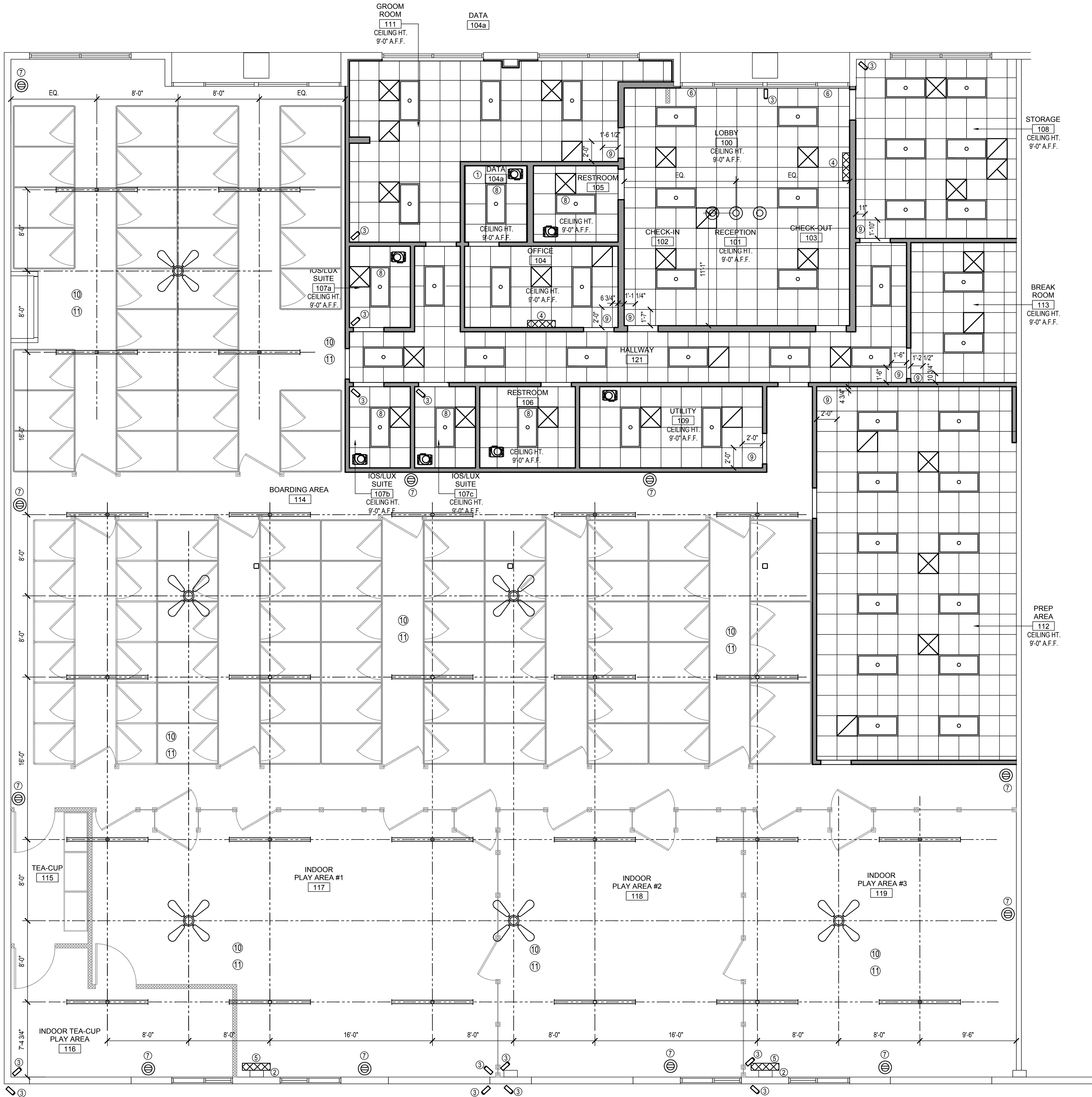
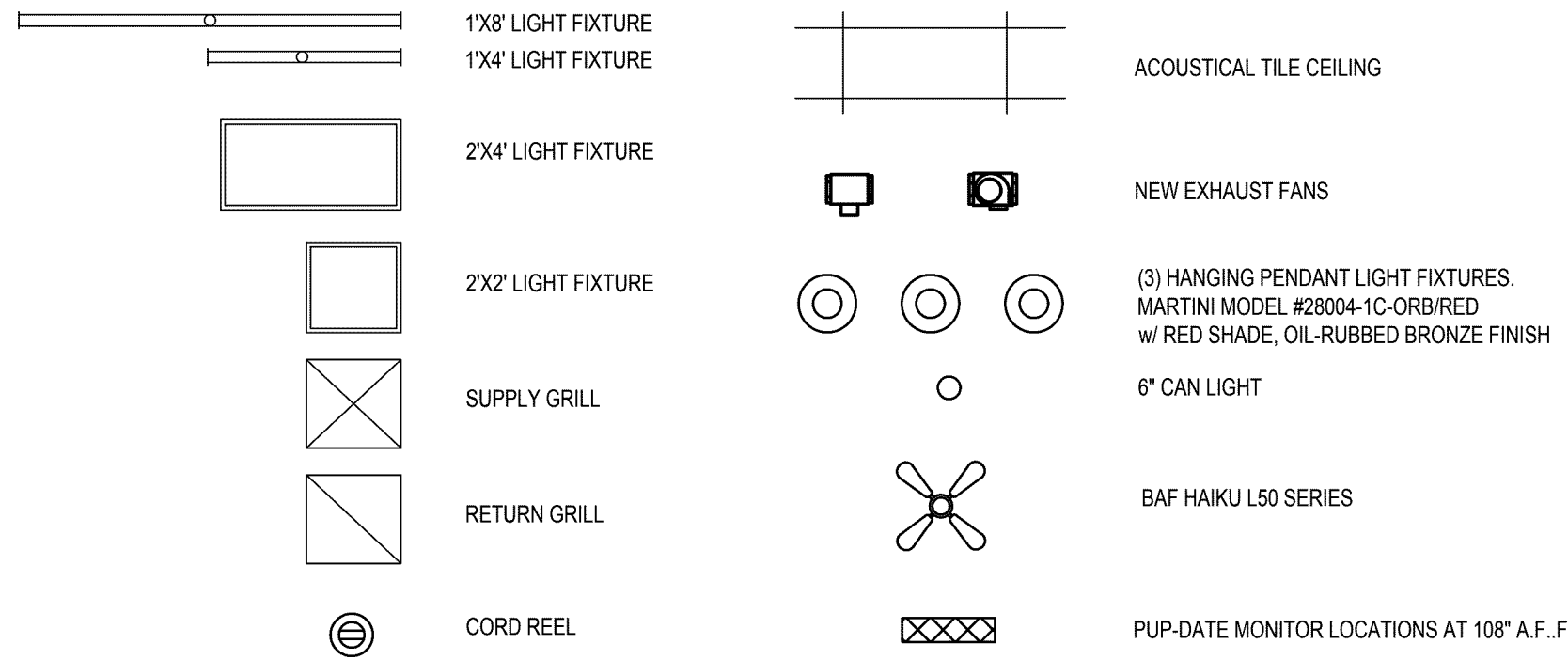
A1.1
FINISH FLOOR PLAN

KEY NOTES:

- 1 WEB CAM SERVER & MONITOR LOCATIONS - REQUIRES DUPLEX OUTLET.
2 PUPDATE SPEAKER LOCATIONS - MOUNT AT 108" O.C. A.F.F. - REQUIRES CABLE RAN BACK TO SERVER LOCATION BY OTHERS.
3 WEB CAM LOCATIONS - MOUNT AT 108" O.C. A.F.F. BY OTHERS.
4 LOBBY MONITOR / MANAGER'S OFFICE MONITOR LOCATION - MOUNT AT 72" O.C. A.F.F. - REQUIRES BLOCKING - REQUIRES DUPLEX OUTLET AT 72" A.F.F.
5 PUPDATE SYSTEM MONITOR LOCATIONS - MOUNT MONITOR AT 108" O.C. A.F.F. -REQUIRES BLOCKING AND DUPLEX OUTLET AT 108" A.F.F.
6 PUPDATE DOOR CHIME.
7 INSTALL IRONTON TRIPLE OUTLET CORD REEL #49666 40' 14AWG 12/3 SJT 15 AMP CORD w/ WALL MOUNTING BRACKET. MOUNT CORD REEL AT 108" A.F.F. RECEPTACLE SERVING CORD REEL SHALL BE MOUNTED AT 108" A.F.F. AND SHALL BE GFCI TYPE
8 CEILING GRID & LIGHT TO BE CENTERED IN ROOM
9 BEGIN CEILING GRID HERE
10 EXISTING SKYLIGHTS TO REMAIN, REMOVE ALL 'BLACK-OUT' FILM FROM SKYLIGHTS
11 EXISTING ROOF INSULATION TO REMAIN, REPAIR AS NECESSARY

NOTE:
-WEBCAMERA AND TV/MONITOR SYSTEM PROVIDED AND INSTALLED BY OTHERS. GENERAL CONTRACTOR TO PROVIDE RECEPTACLES AS REQUIRED.

LEGEND



1 REFLECTED CEILING PLAN

3/16" = 1'-0"

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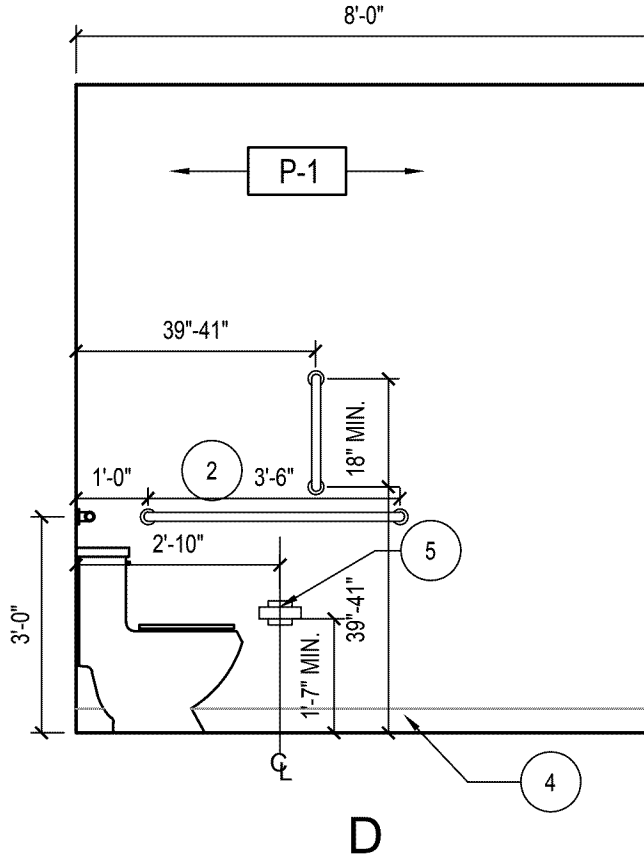
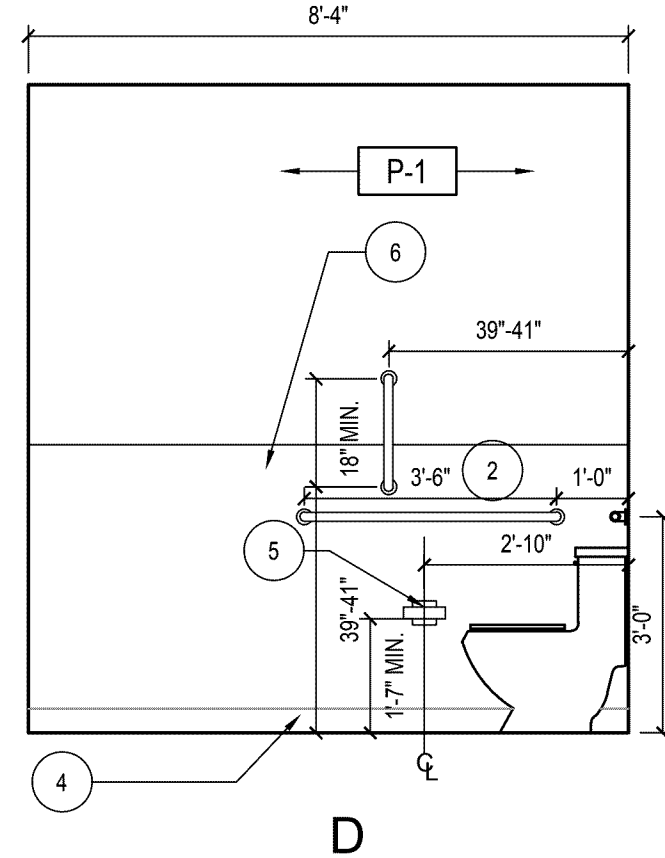
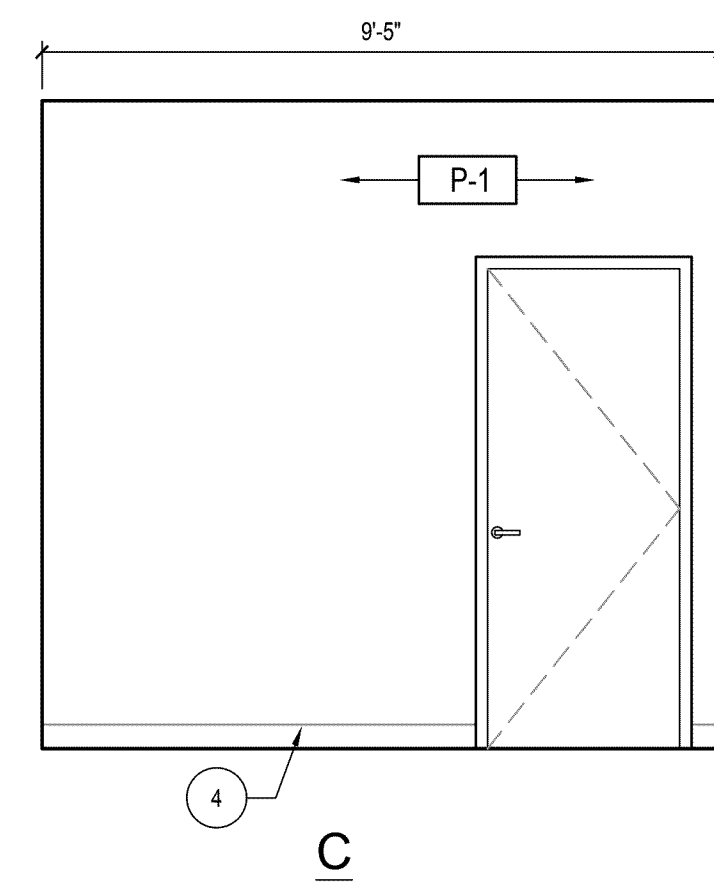
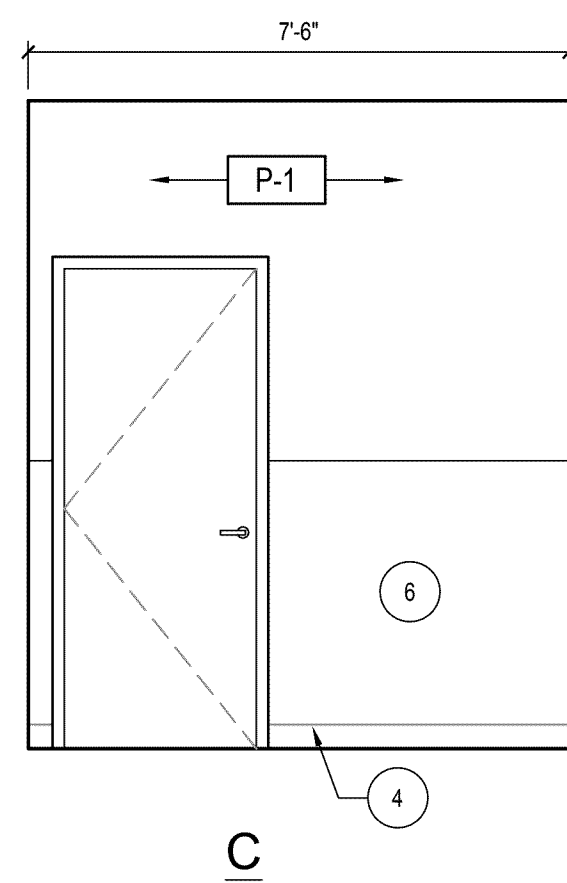
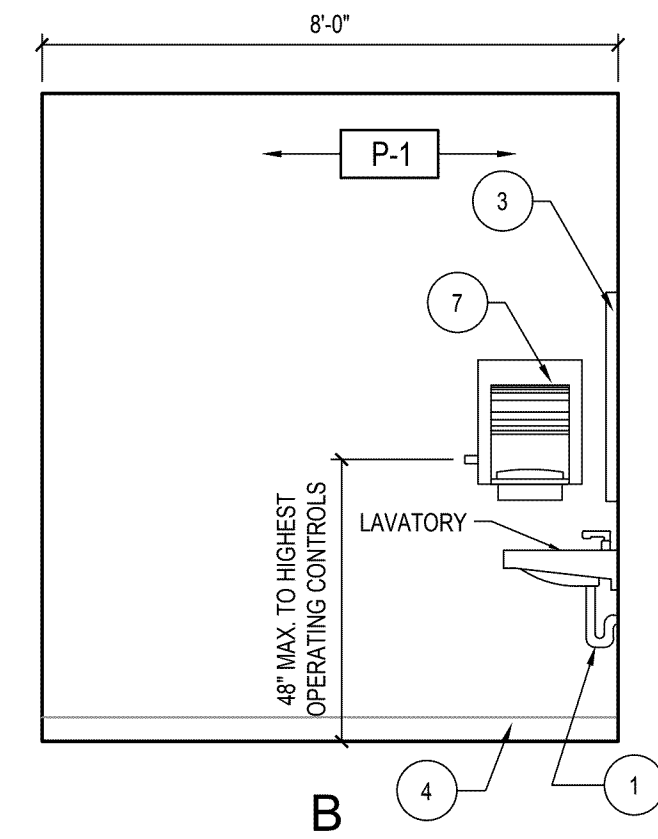
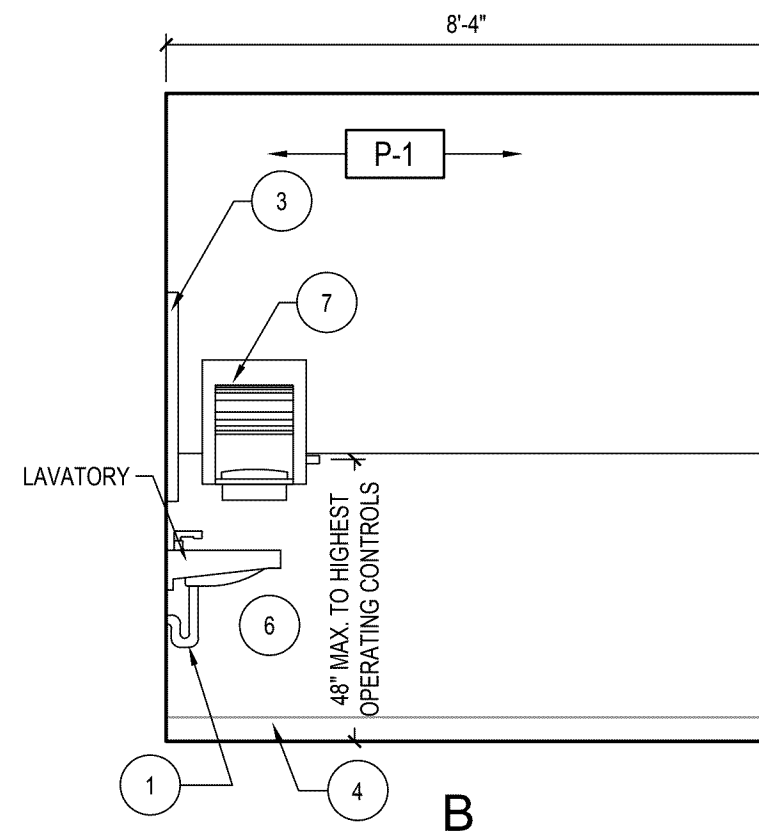
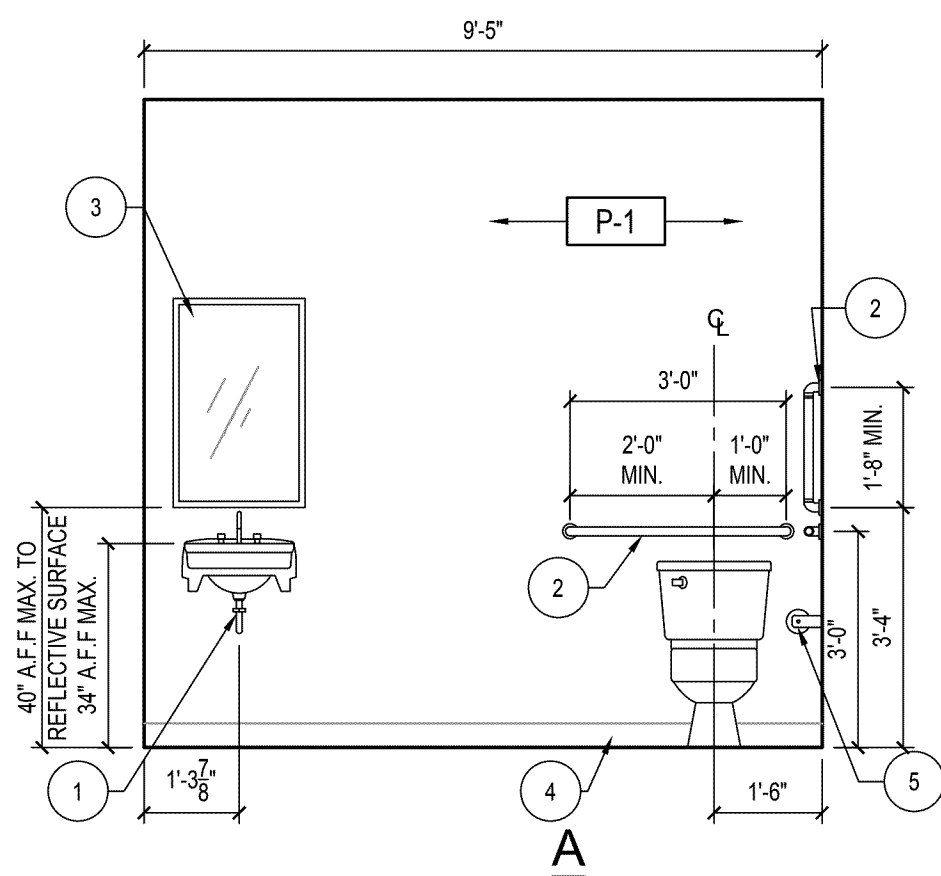
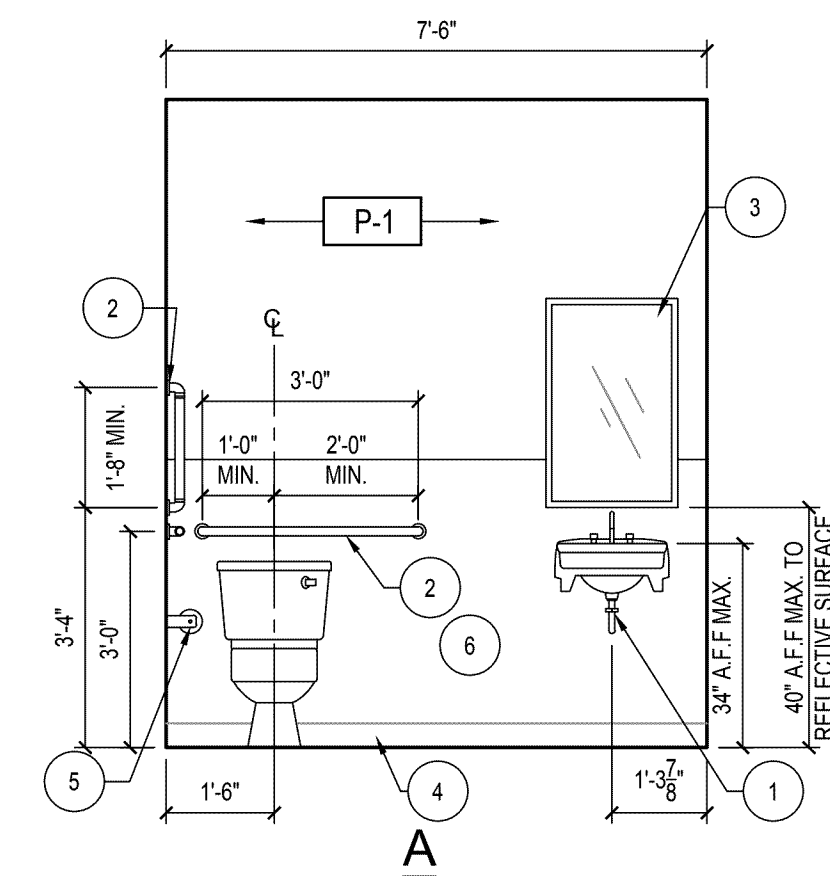
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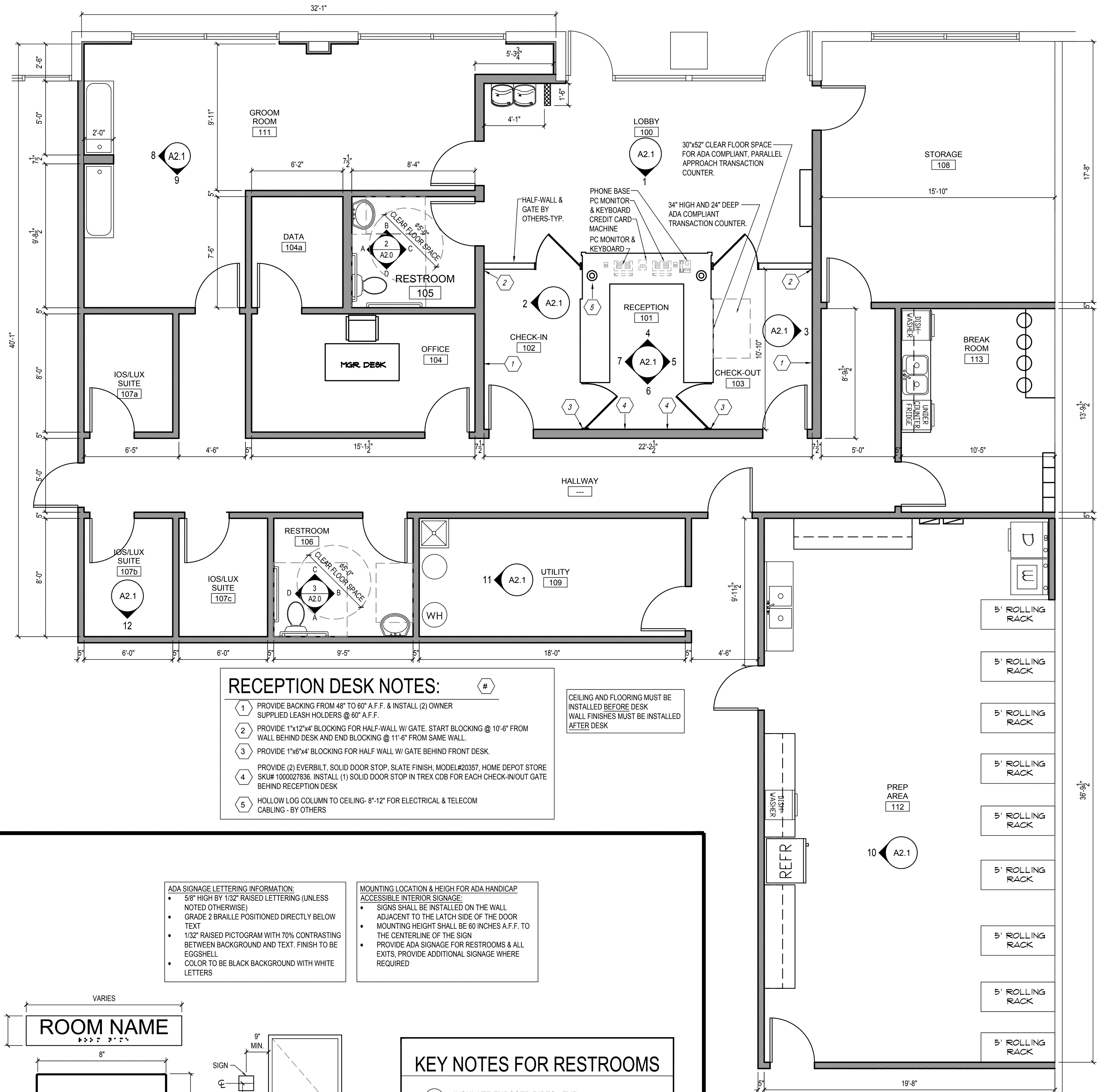
A1.2

REFLECTED CEILING PLAN



2 RESTROOM #105 ELEVATION
A2.0 3/8" = 1'-0"

3 RESTROOM #106 ELEVATION
A2.0 3/8" = 1'-0"



RECEPTION DESK NOTES:

- 1 PROVIDE BACKING FROM 48" TO 60" A.F.F. & INSTALL (2) OWNER SUPPLIED LEASH HOLDERS @ 60" A.F.F.
- 2 PROVIDE 1"x12"x4" BLOCKING FOR HALF-WALL W/ GATE. START BLOCKING @ 10'-6" FROM WALL BEHIND DESK AND END BLOCKING @ 11'-6" FROM SAME WALL.
- 3 PROVIDE 1"x6"x4" BLOCKING FOR HALF WALL W/ GATE BEHIND FRONT DESK.
- 4 PROVIDE (2) EVERBILT, SOLID DOOR STOP, SLATE FINISH, MODEL#20357, HOME DEPOT STORE SKU# 1000027836. INSTALL (1) SOLID DOOR STOP IN TREX CDB FOR EACH CHECK-IN/OUT GATE BEHIND RECEPTION DESK
- 5 HOLLOW LOG COLUMN TO CEILING- 8'-12" FOR ELECTRICAL & TELECOM CABLING - BY OTHERS

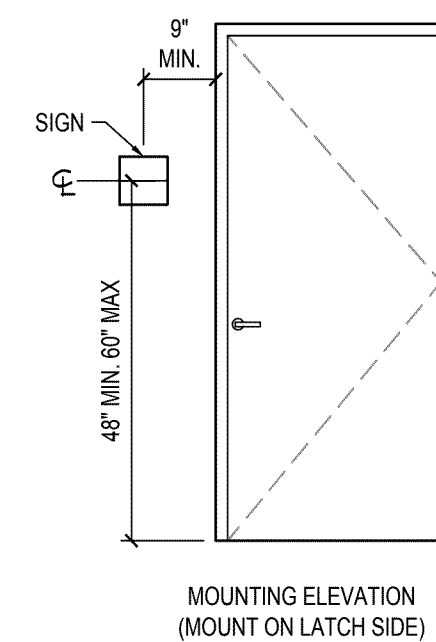
CEILING AND FLOORING MUST BE INSTALLED BEFORE DESK WALL FINISHES MUST BE INSTALLED AFTER DESK

- ADA SIGNAGE LETTERING INFORMATION:
- 5/8" HIGH BY 1/32" RAISED LETTERING (UNLESS NOTED OTHERWISE)
 - GRADE 2 BRAILLE POSITIONED DIRECTLY BELOW TEXT
 - 1/32" RAISED PICTOGRAM WITH 70% CONTRASTING BETWEEN BACKGROUND AND TEXT. FINISH TO BE EGGSHELL
 - COLOR TO BE BLACK BACKGROUND WITH WHITE LETTERS

- MOUNTING LOCATION & HEIGHT FOR ADA HANDICAP ACCESSIBLE INTERIOR SIGNAGE:
- SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR
 - MOUNTING HEIGHT SHALL BE 60 INCHES A.F.F. TO THE CENTERLINE OF THE SIGN
 - PROVIDE ADA SIGNAGE FOR RESTROOMS & ALL EXITS. PROVIDE ADDITIONAL SIGNAGE WHERE REQUIRED



4 ADA SIGNAGE
A2.0



KEY NOTES FOR RESTROOMS

- 1 INSULATE EXPOSED PIPES - TYP.
- 2 GRAB BARS (HORIZONTAL/VERTICAL)
- 3 MIRROR - BY OTHERS, INSTALLED BY G.C.
- 4 RUBBER BASE. - REFER TO FINISH SCHEDULE
- 5 SURFACE MOUNTED TOILET PAPER HOLDER: BRADLEY MODEL# 5054
- 6 PROVIDE FRP PANELS W/ DIVIDER STRIPS FROM BASE TO 48" AFF THROUGHOUT TOILET ROOM. HOLD DIVIDER STRIPS @ 4" A.F.F. TO ALLOW FOR RUBBER BASE. (TYP.)
- 7 PAPER TOWEL DISPENSER, BY OTHERS, INSTALLED BY GC

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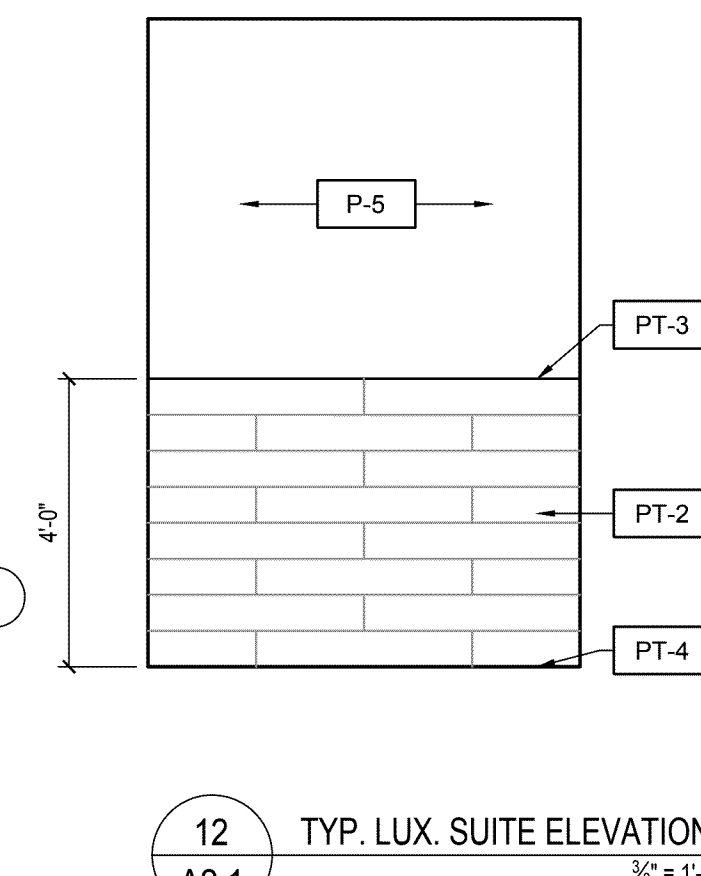
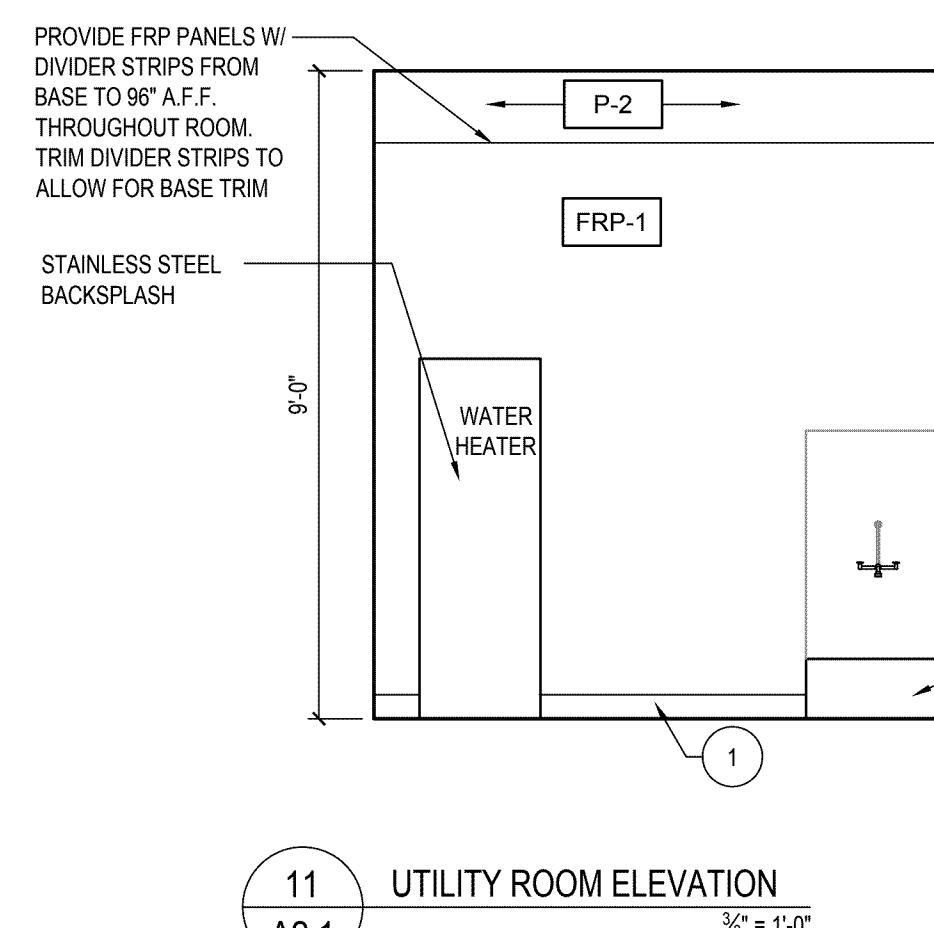
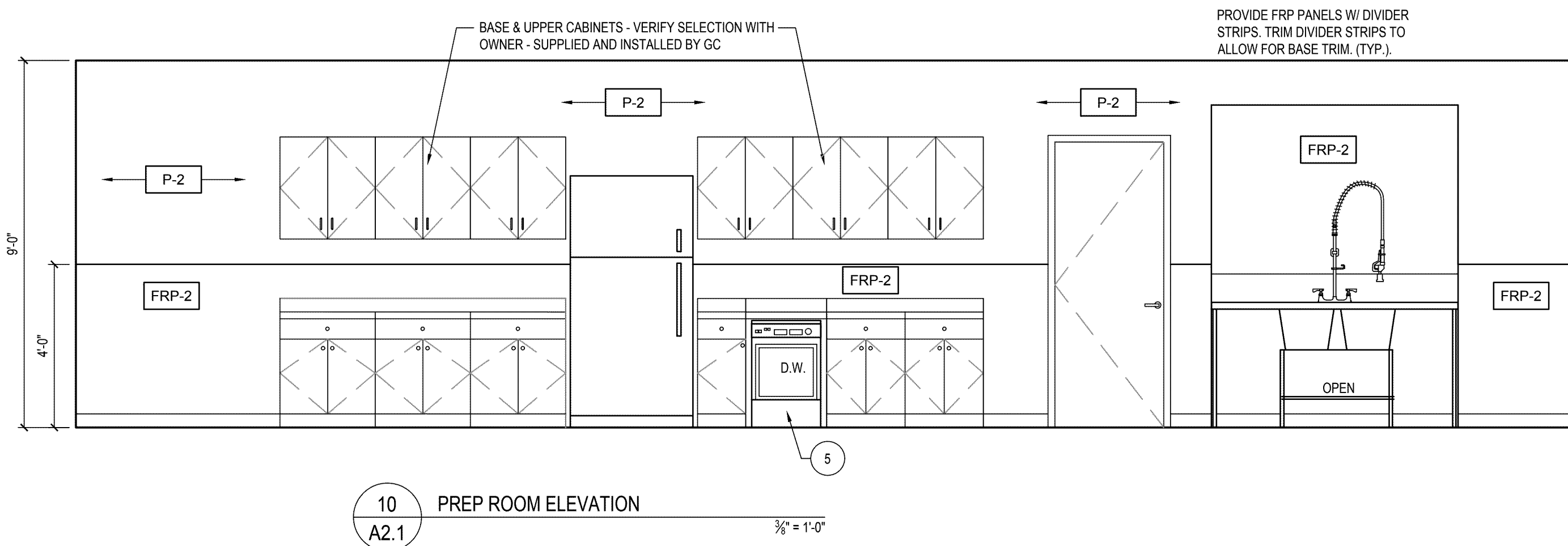
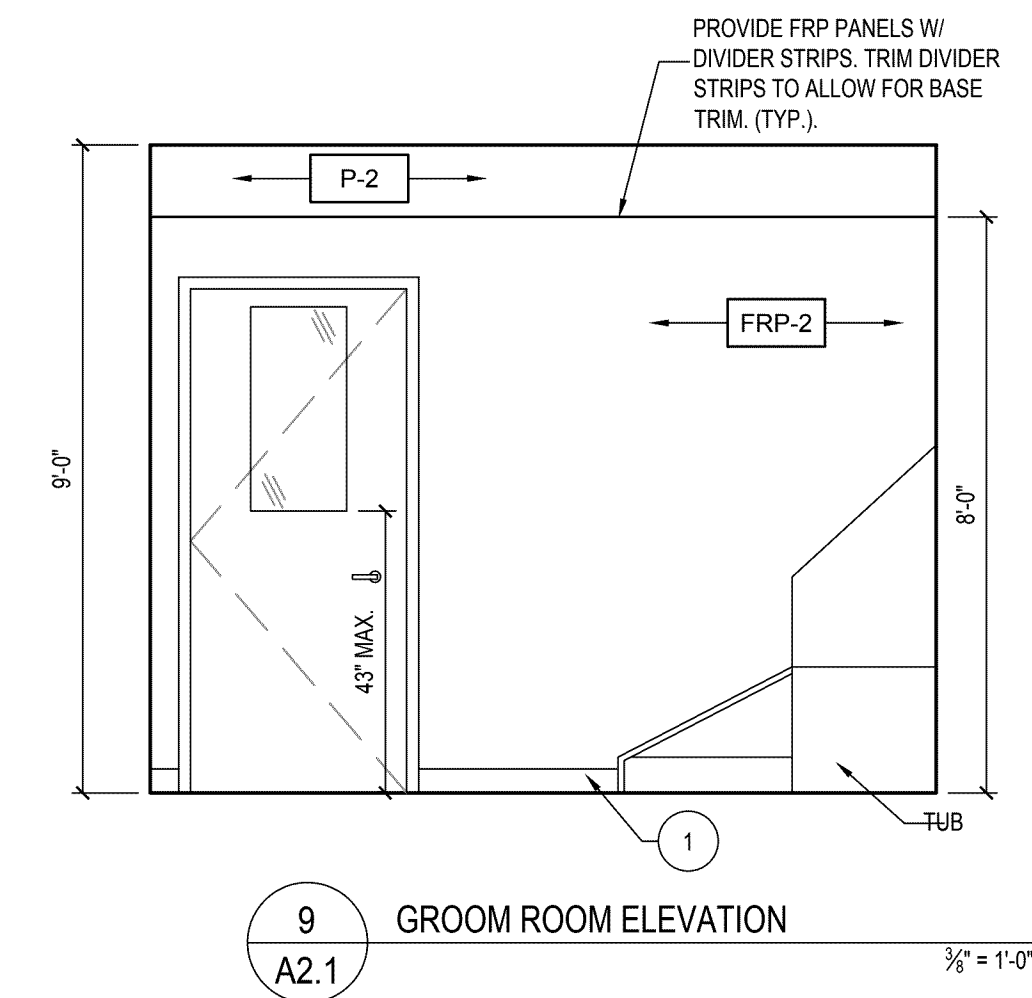
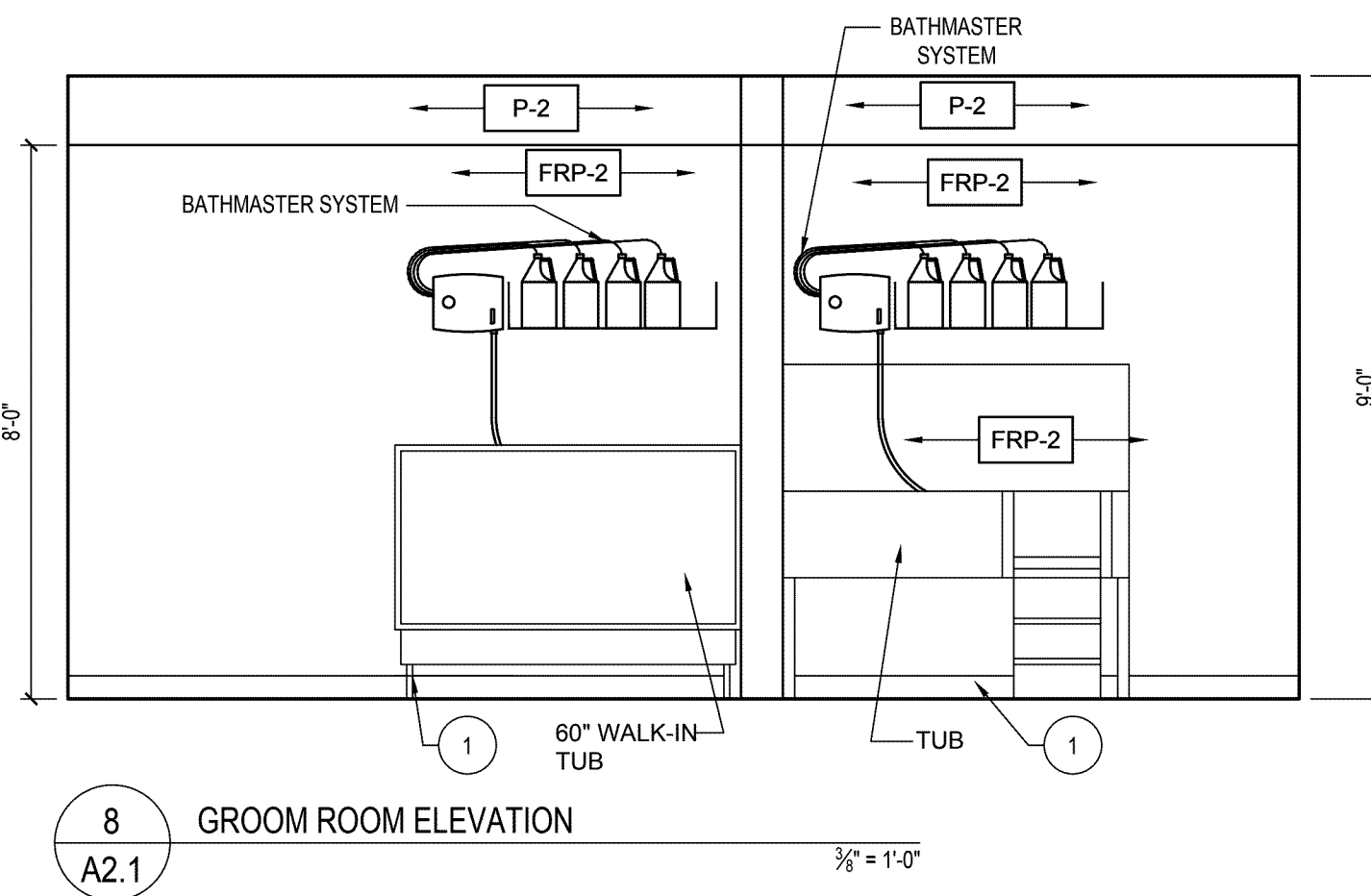
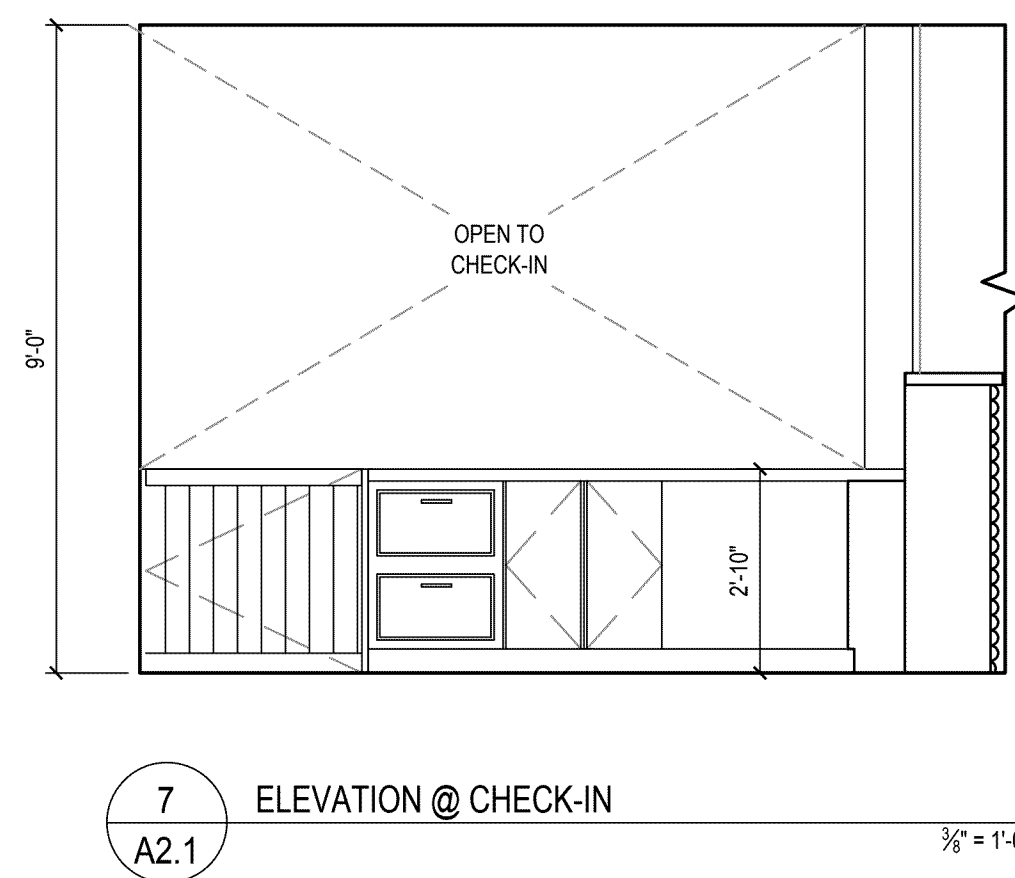
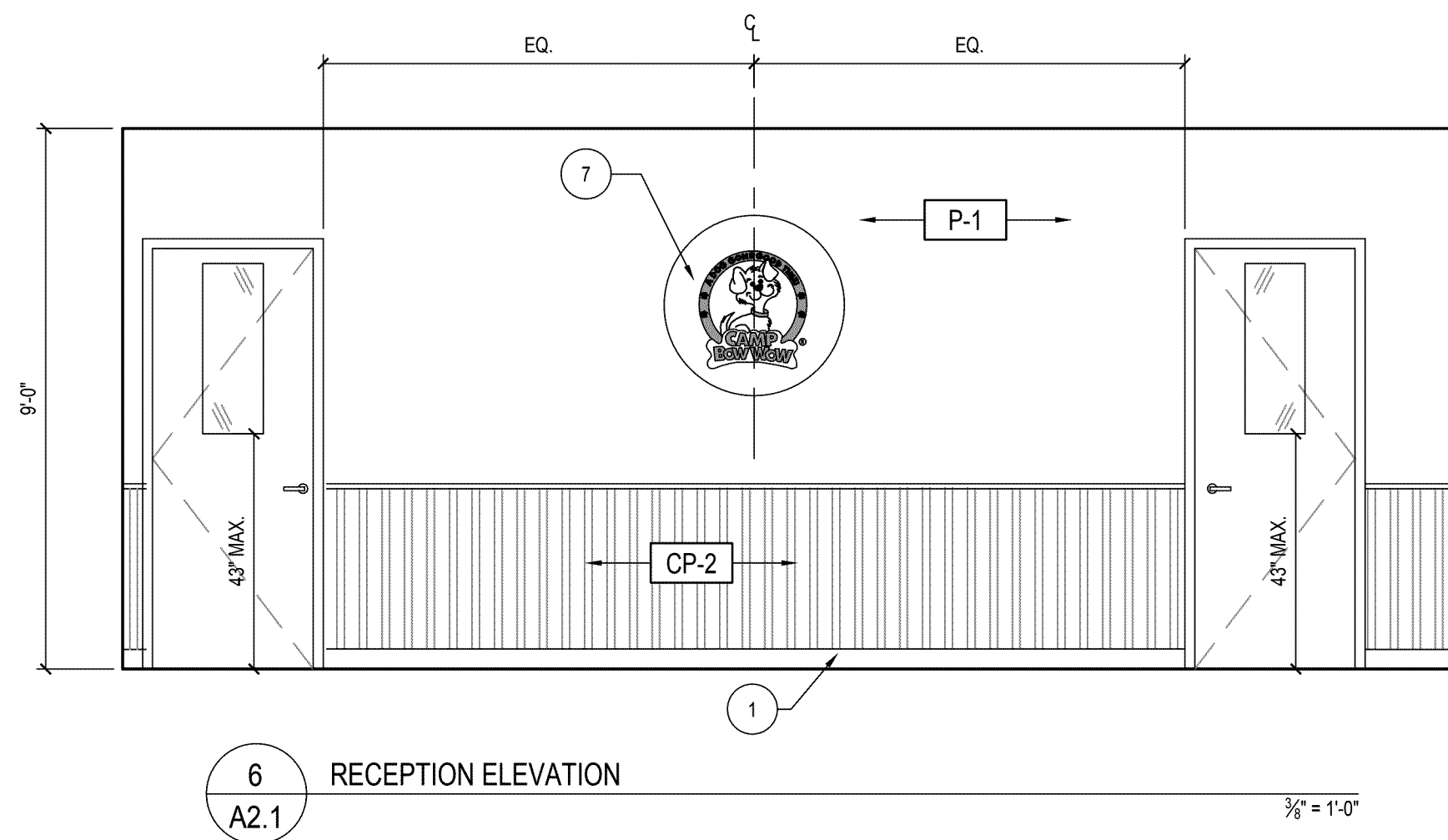
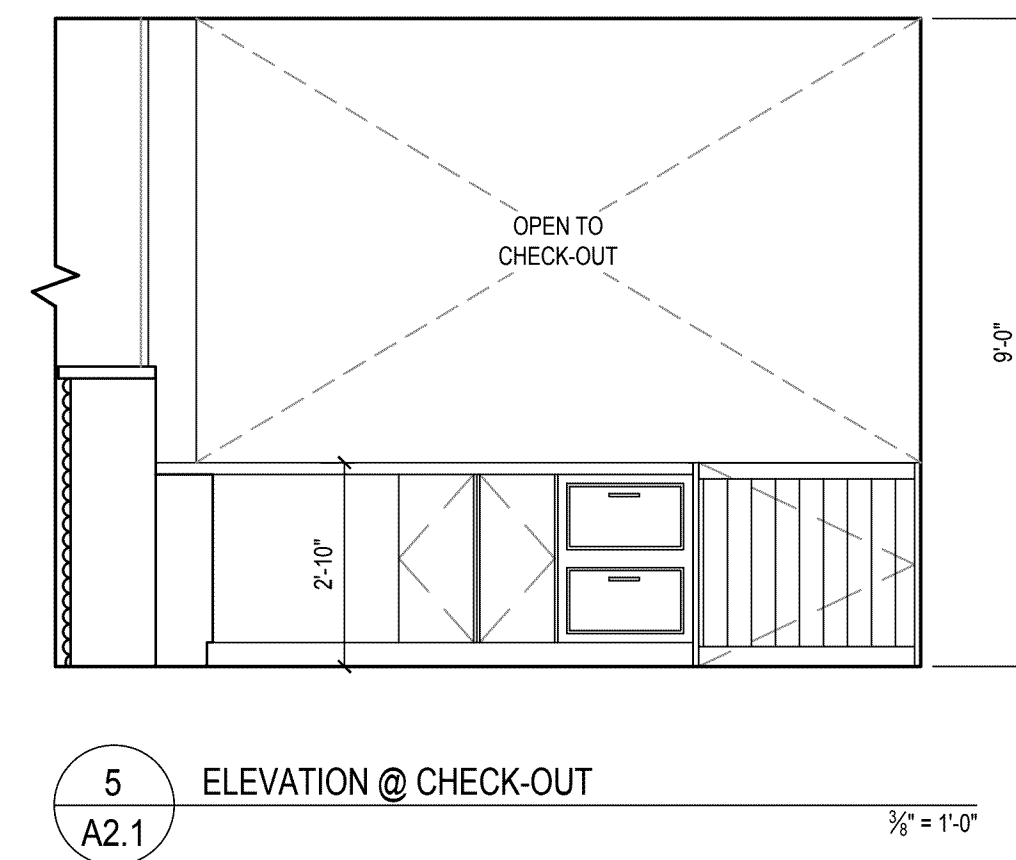
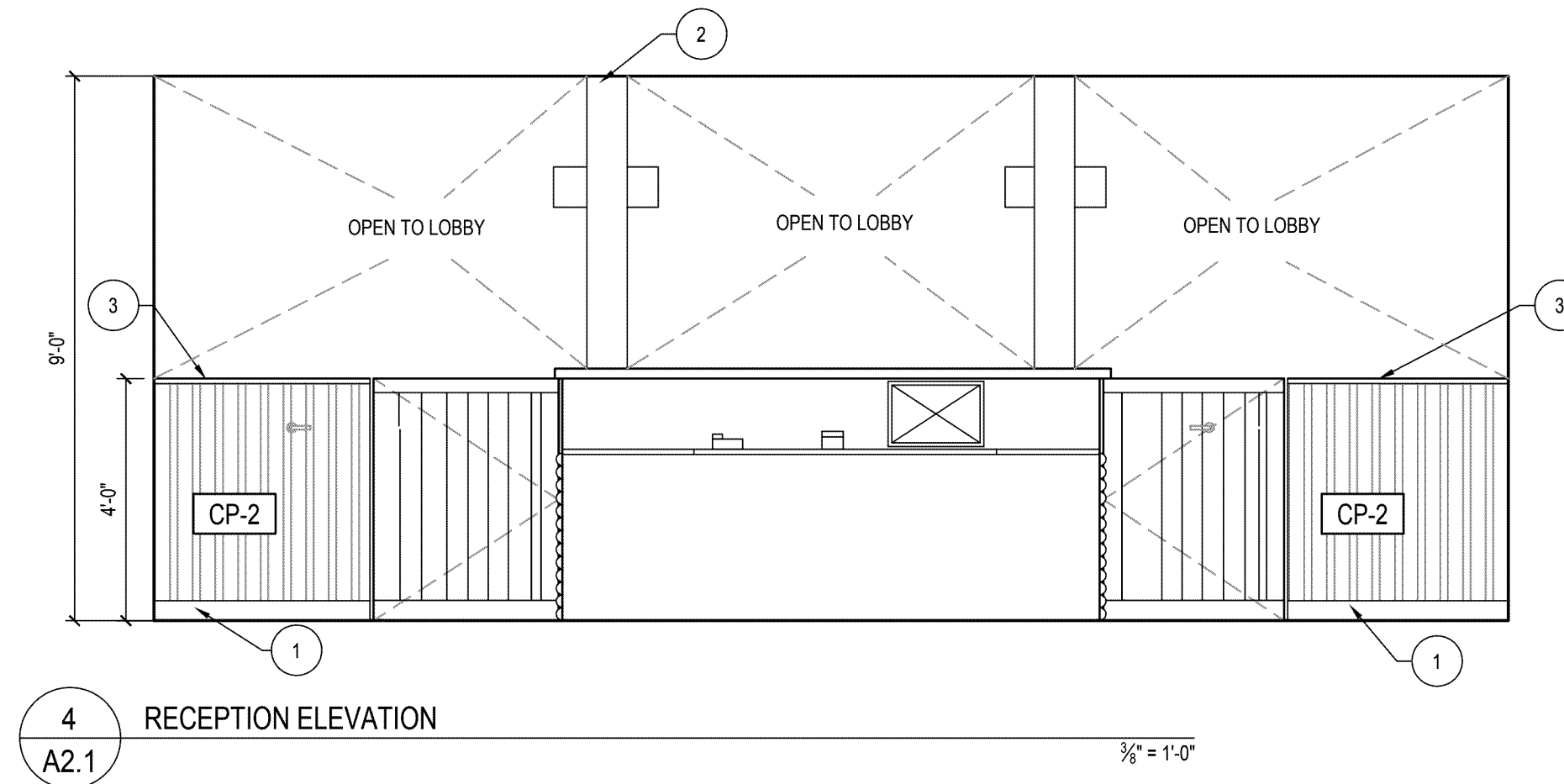
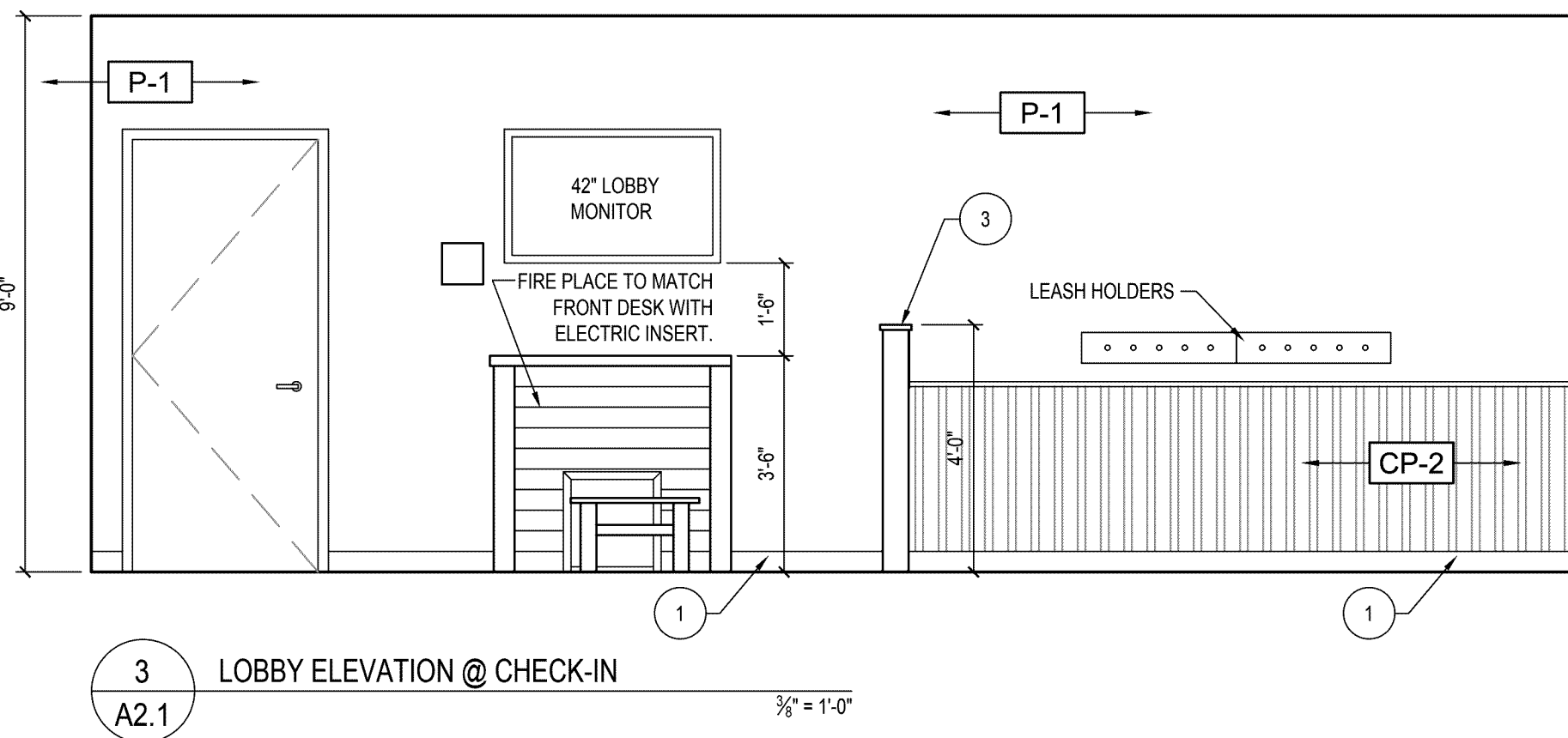
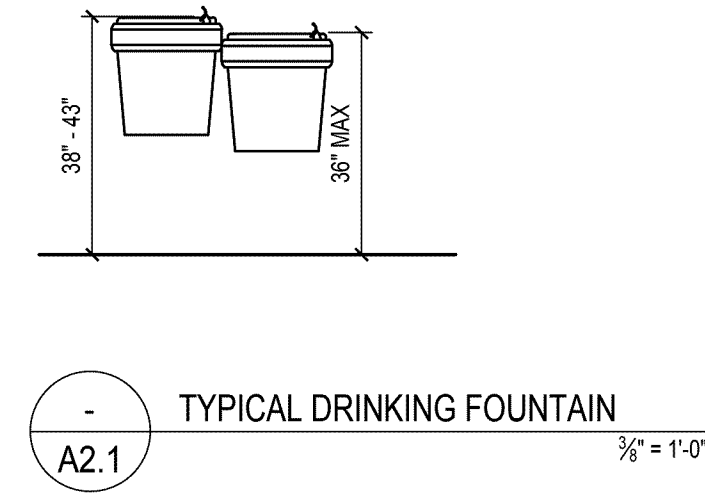
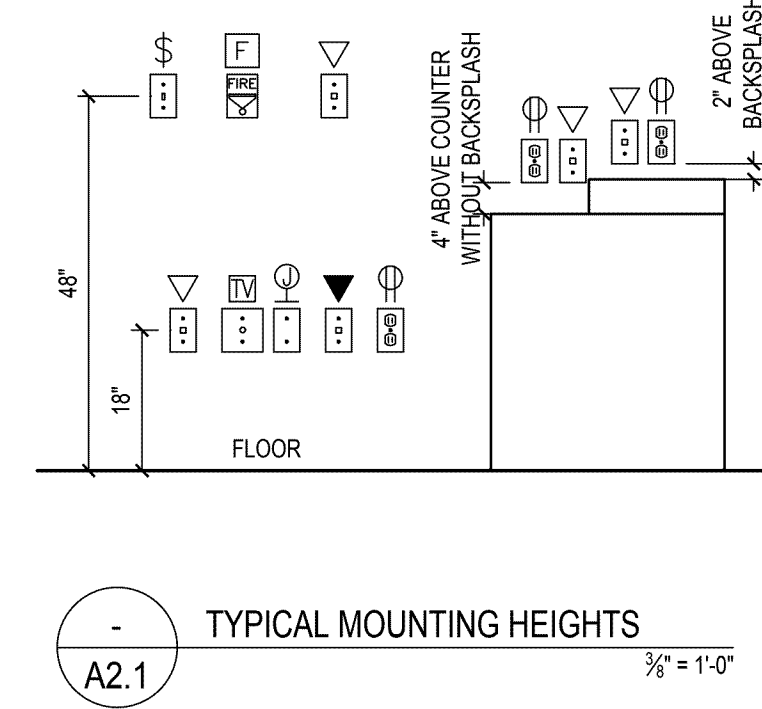
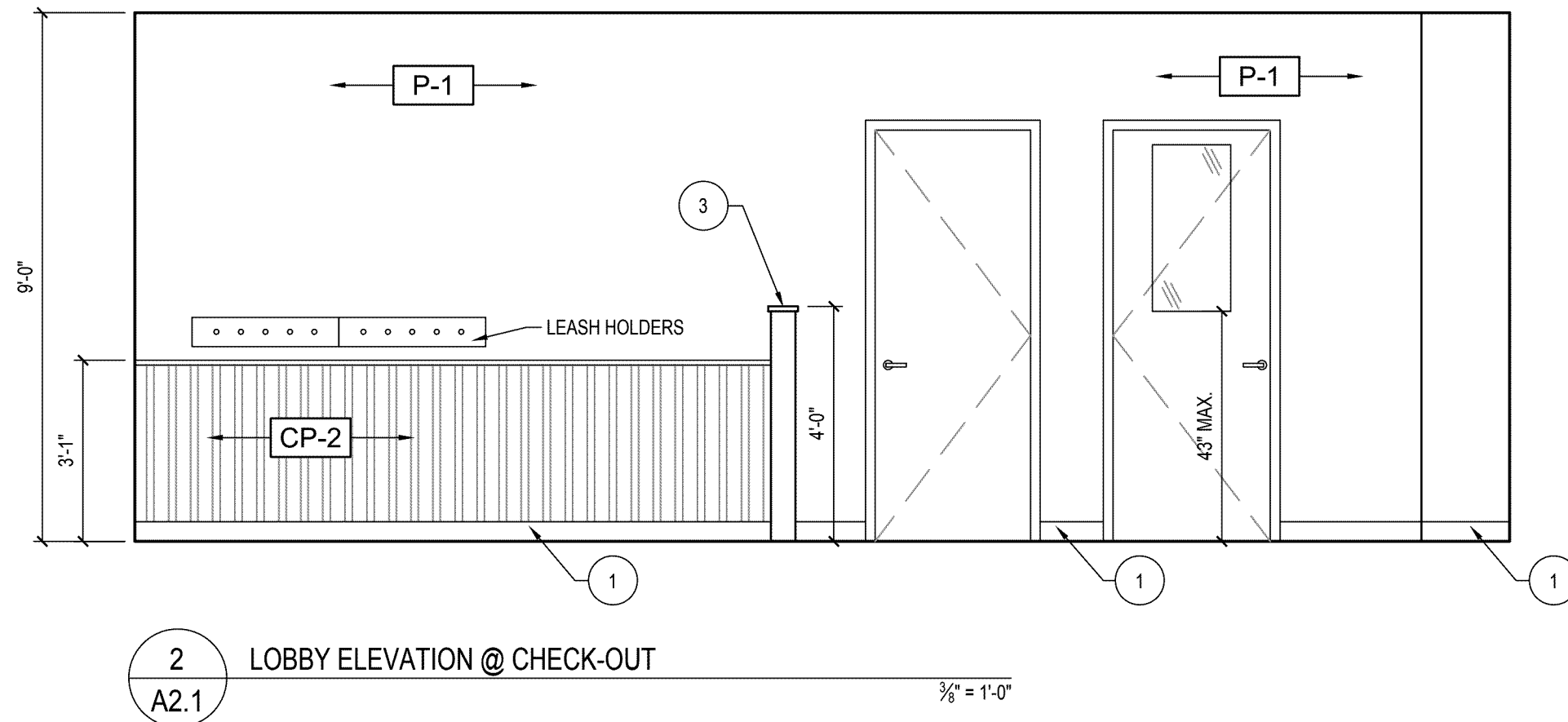
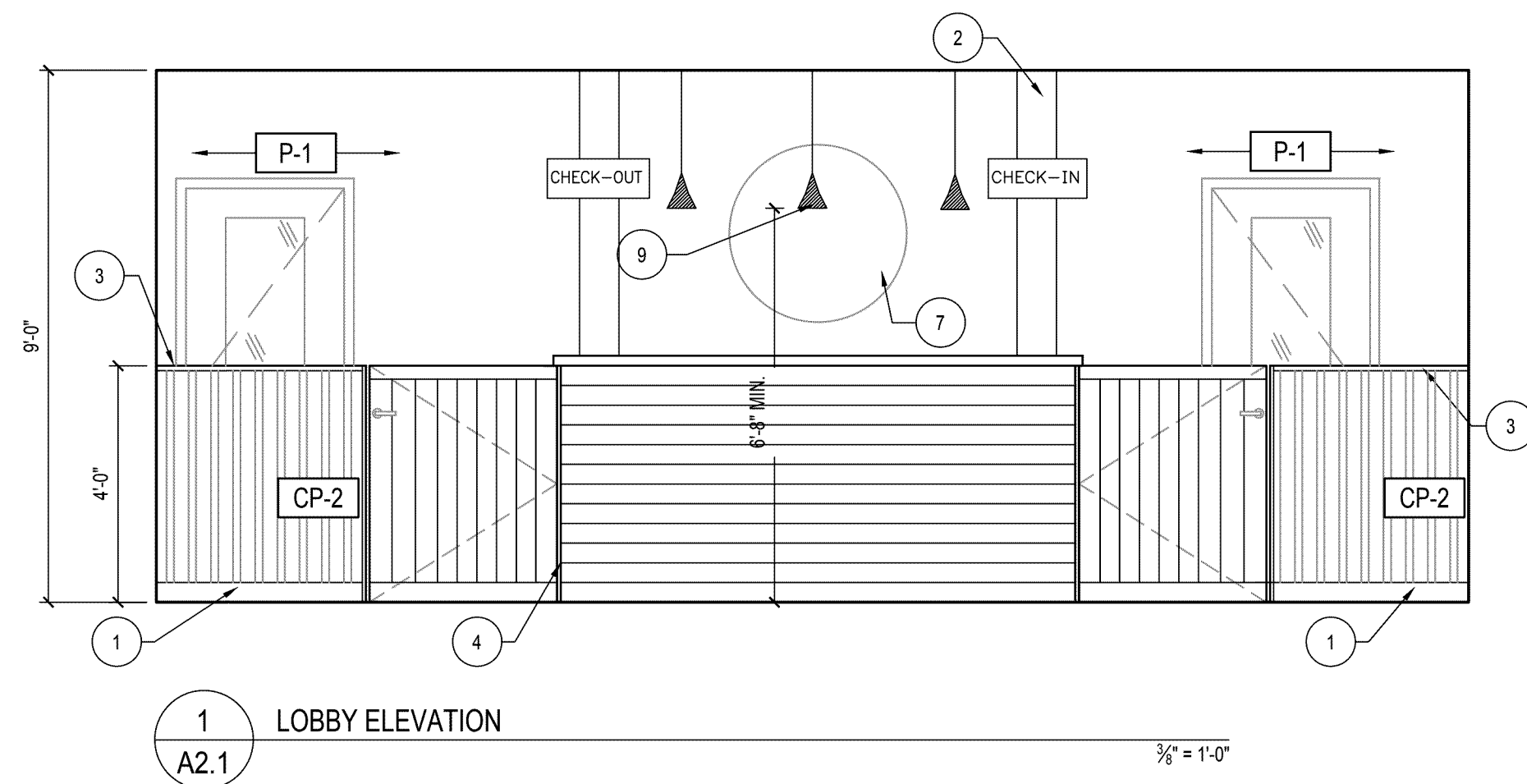
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CAMP BOW WOW

2900 SE CORNELIUS PASS RD.
SUITE 118
HILLSBORO, OR.

DATE: 8/16/2019

A2.0
ENLARGED RESTROOM PLAN



GENERAL NOTES	KEY NOTES
<ul style="list-style-type: none"> CABINETS AND CASEWORK TO BE WHITE LAMINATE FINISH INTERIOR OF CABINET TO BE MELAMINE COUNTER TOPS TO BE WILSON ART - MONTICELLO MAPLE #7925 FURNISH AND INSTALL STANDARD GRADE DOOR AND DRAWER PULLS - CONFIRM COLOR AND FINISH WITH OWNER. 	<ol style="list-style-type: none"> COMPOSITE DECKING BASE. REFER TO FINISH SCHEDULE HOLLOW LOG COLUMN TO CEILING- 8'-12" - BY OTHERS 48" HIGH KNEE WALL AND WOOD CAP BY OTHERS, REFER TO SHEET A-1.0B LOG SIDING WITH FALSE ENDS - BY OTHERS DISHWASHER - COMMERCIAL GRADE - PROVIDED BY OWNER, INSTALLED BY GC JANITOR FLOOR SINK WOOD DISK CAMP BOW WOW LOGO - BY OTHERS NOT USED PENDANT LIGHTS - BOTTOM OF PENDANT AT 80" A.F.F. UNDERCOUNTER REFRIGERATOR - PROVIDED BY OWNER, INSTALLED BY GC

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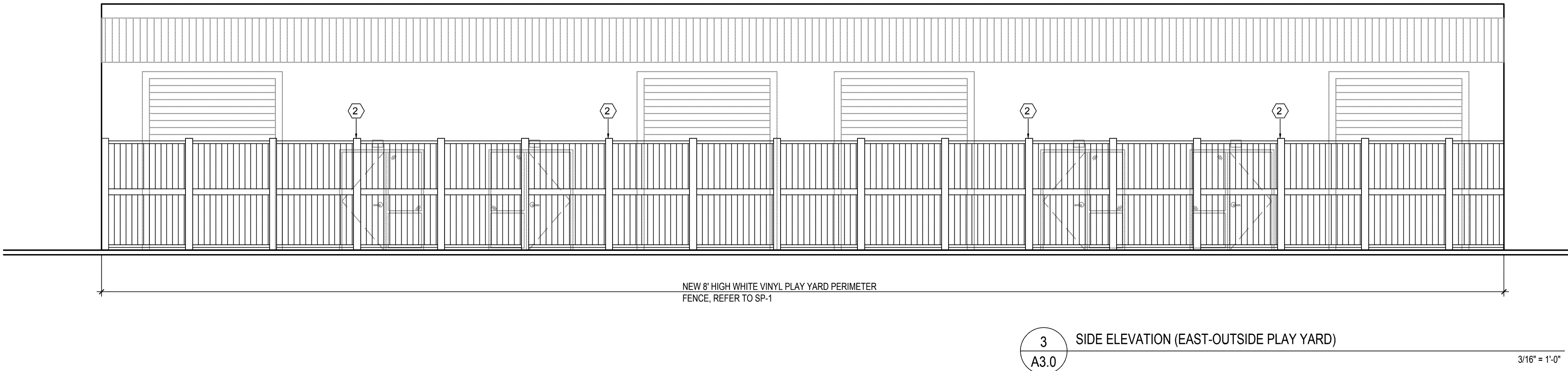
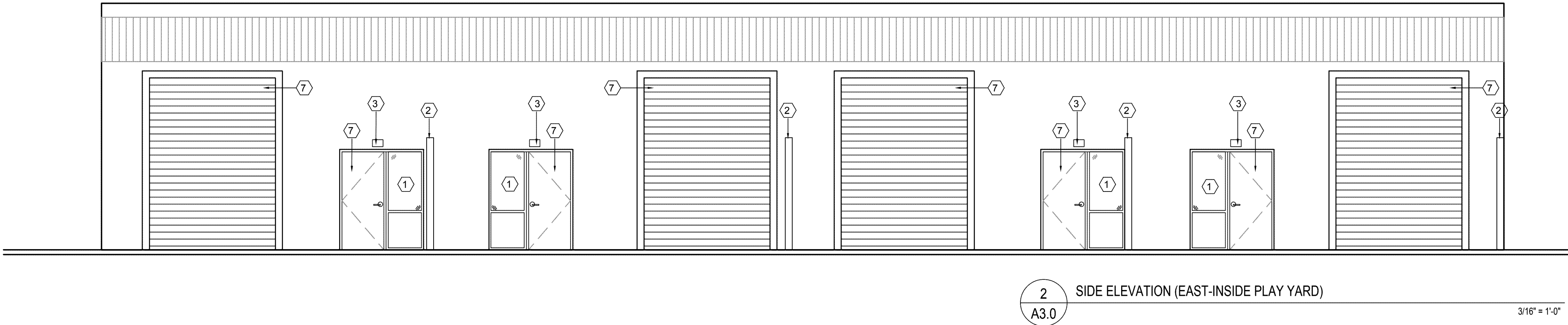
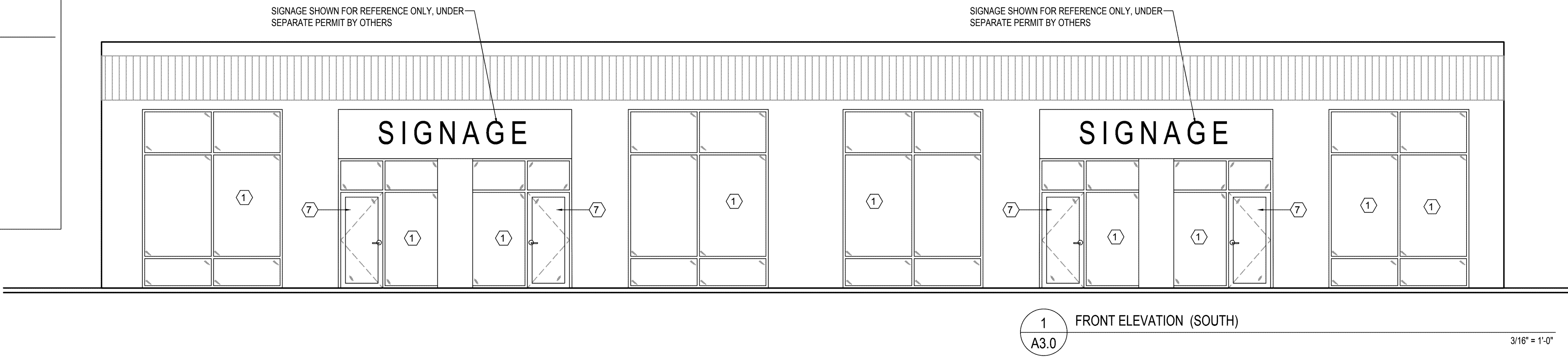
CAMP BOW WOW
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SUITE 118
HILLSBORO, OR.

DATE: 8/16/2019

A2.1
INTERIOR ELEVATIONS

KEYED NOTES

- 1 EXISTING STOREFRONT TO REMAIN, NO CHANGES. COORD. w/ CAMP BOW WOW FOR LOCATIONS OF BLACK-OUT FILM
- 2 NEW 8'-0" HIGH VINYL PLAY YARD FENCE, REFER TO SP-1, TYP.
- 3 NEW WALL PACK, TYP. SEE ELECTRICAL
- 4 NOT USED
- 5 NOT USED
- 6 NOT USED
- 7 EXISTING DOOR TO REMAIN



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A3.0
EXTERIOR ELEVATIONS

DOOR SCHEDULE							
DOOR NUMBER	SIZE	DOOR		FRAME		HARDWARE SET	NOTES
		MATERIAL	FINISH	MATERIAL	FINISH		
100	3'-0" x 7'-0"	ALUM.	MATCH EXIST.	ALUM.	MATCH EXIST.	-	EXISTING DOOR & STOREFRONT, RE-KEY LOCKS
102	3'-0" x 7'-0"	SOLID CORE	LAMINATE	HM	PAINT	1	23" X 35" WINDOW IN UPPER SECTION OF DOOR WITH 1/4" TEMPERED SAFETY GLASS-BRONZE FRAME.
103	3'-0" x 7'-0"	SOLID CORE	LAMINATE	HM	PAINT	1	23" X 35" WINDOW IN UPPER SECTION OF DOOR WITH 1/4" TEMPERED SAFETY GLASS-BRONZE FRAME.
104	3'-0" x 7'-0"	SOLID CORE	LAMINATE	HM	PAINT	3	DUTCH DOOR - OFFICE LOCK SET MASTER KEY TO THIS DOOR - SEPARATE KEY; LAMINATE DOOR SHELF
104a	3'-0" x 7'-0"	SOLID CORE	LAMINATE	HM	PAINT	1	
105	3'-0" x 7'-0"	SOLID CORE	LAMINATE	HM	PAINT	2	
106	3'-0" x 7'-0"	SOLID CORE	LAMINATE	HM	PAINT	2	
107a,b & c	3'-0"x7'-0"	ALUM	ANODIZED	ALUM	ANODIZED	9	ALUMINUM ANODIZED STOREFRONT DOOR, BRUSHED NICKEL FINISH
108a&b	3'-0" x 7'-0"	SOLID CORE	LAMINATE	HM	PAINT	1	23" X 35" WINDOW IN UPPER SECTION OF DOOR WITH 1/4" TEMPERED SAFETY GLASS-BRONZE FRAME.
109	3'-0" x 7'-0"	SOLID CORE	LAMINATE	HM	PAINT	1	
111a&b	3'-0" x 7'-0"	SOLID CORE	LAMINATE	HM	PAINT	1	23" X 35" WINDOW IN UPPER SECTION OF DOOR WITH 1/4" TEMPERED SAFETY GLASS-BRONZE FRAME.
112a&b	3'-0" x 7'-0"	SOLID CORE	LAMINATE	HM	PAINT	1	23" X 35" WINDOW IN UPPER SECTION OF DOOR WITH 1/4" TEMPERED SAFETY GLASS-BRONZE FRAME.
113	3'-0" x 7'-0"	SOLID CORE	LAMINATE	HM	PAINT	1	23" X 35" WINDOW IN UPPER SECTION OF DOOR WITH 1/4" TEMPERED SAFETY GLASS-BRONZE FRAME.
115a&b	4'-0" x 4'-4"	SOLID CORE	LAMINATE	HM	PAINT	12	PARTIAL HT. DOOR, CUT FRAME HEIGHT TO BOTTOM OF TOP CAP; CUT DOOR TO HEIGHT OF 4'4" AND INSTALL WITH 1" GAP A.F.F.
116a	4'-0" x 4'-4"	SOLID CORE	LAMINATE	HM	PAINT	12	PARTIAL HT. DOOR, CUT FRAME HEIGHT TO BOTTOM OF TOP CAP; CUT DOOR TO HEIGHT OF 4'4" AND INSTALL WITH 1" GAP A.F.F.
116b	3'-0" x 7'-0"	EXIST.	EXIST.	EXIST.	EXIST.	6	EXISTING DOOR , RE-KEY LOCKS, SUPPLEMENT HARDWARE
117	3'-0" x 7'-0"	EXIST.	EXIST.	EXIST.	EXIST.	6	EXISTING DOOR , RE-KEY LOCKS, SUPPLEMENT HARDWARE
118	3'-0" x 7'-0"	EXIST.	EXIST.	EXIST.	EXIST.	6	EXISTING DOOR , RE-KEY LOCKS, SUPPLEMENT HARDWARE
119	3'-0" x 7'-0"	EXIST.	EXIST.	EXIST.	EXIST.	6	EXISTING DOOR , RE-KEY LOCKS, SUPPLEMENT HARDWARE
121a & b	3'-0" x 7'-0"	SOLID CORE	LAMINATE	HM	PAINT	1	23" X 35" WINDOW IN UPPER SECTION OF DOOR WITH 1/4" TEMPERED SAFETY GLASS-BRONZE FRAME.
INTERIOR DOORS TO BE 18 WELDED HOLLOW METAL FRAMES, EXTERIOR DOORS TO BE 16 GA WELDED HOLLOW METAL FRAMES							

ROOM FINISH SCHEDULE													
ROOM NAME	ROOM NUMBER	FRP WAINSCOT 48" HIGH	FRP WAINSCOT 96" HIGH	8" TALL CORRUGATED WALL PANEL (CP-1)	36" HIGH STEEL WAINSCOT (CP-2)	48" HIGH STEEL WAINSCOT (CP-3)	NO ELCTRIC RECEPTACLE BELOW 60"	GATE	BASE	CEILING	FLOORS	WALLS	NOTES
LOBBY	100								CDB	ACT	WGV	P1	
RECEPTION	101				X			A	CDB	ACT	WGV	P1	
CHECK IN	102				X		X	A	CDB	ACT	WGV	P1	INSTALL BACKING IN WALLS FROM 48" TO 60" AFF FOR OWNER PROVIDED LEASH HOLDERS
CHECK OUT	103				X		X	A	CDB	ACT	WGV	P1	INSTALL BACKING IN WALLS FROM 48" TO 60" AFF FOR OWNER PROVIDED LEASH HOLDERS
OFFICE	104								RB	ACT	WGV	P1	
DATA	104a								RB	ACT	WGV	P1	
RESTROOM	105	FRP-1							RB	ACT-2	WGV	P1	WHITE Vinylrock CEILING AND ALMOND FRP WAINSCOT TO 48" A.F.F.
RESTROOM	106								RB	ACT-2	WGV	P1	WHITE Vinylrock CEILING
LUXURY SUITES	107a, b & c						X	PT-4	ACT-2	PT-1/PT-4	PT-2/PT-3		WHITE Vinylrock CEILING AND P-5 PAINT ABOVE WALL TILE
STORAGE	108				X		X	A	CDB	ACT	PC	P1	ELEC. RECEPTICLES BELOW 60" A.F.F. APPROVED AT DESK LOCATION. EXIST. PL PANELS TO BE PAINTED P-4
UTILITY	109		FRP-2						CDB	ACT-2	PC	P2	WHITE Vinylrock CEILING, 3" STAINLESS STEEL PANEL B/ SIDES OF FLOOR SINK. AND WHITE FRP WAINSCOT TO 48" A.F.F.
GROOM ROOM	111		FRP-2				X		CDB	ACT-2	PC	P2	WHITE Vinylrock CEILING AND WHITE FRP PANELS 8' A.F.F. SEE ELEVATION DETAILS 8/A2.1-9/A2.1
PREP ROOM	112	FRP-2	FRP-2						CDB	ACT-2	PC	P2	WHITE Vinylrock CEILING AND WHITE FRP PANEL TO 48" & 8' A.F.F. SEE ELEVATIONS 10/A2.1 - 12/A2.1
BREAK ROOM	113								CDB	ACT-2	PC	P2	WHITE Vinylrock CEILING
BOARDING AREA	114	FRP-2		X				B	CDB	OPEN	PC	P2	P-2 ABOVE CP-1 / FRP-2 IN BOARDING AREA; PL PANEL TO 96" ON EXTERIOR WALLS
TEA CUP	115	FRP-2				X	X		CDB	OPEN	PC	PL	CP3 TO 48". CDB ON INSIDE & OUTSIDE WALL & CDB WTC ON WALL TYPE-6. PL PANELS TO BE PAINTED P-4, P-2 ABOVE
INDOOR TEA CUP PLAY AREA	116	FRP-2				X	X		CDB	OPEN	PC	PL	CP3 TO 48". CDB ON INSIDE & OUTSIDE WALL & CDB WTC ON WALL TYPE-6. PL PANELS TO BE PAINTED P-4, P-2 ABOVE
INDOOR PLAY AREA 1	117			X		X	X	B	CDB	OPEN	PC	PL	PL PANELS TO BE PAINTED P-4, P-2 ABOVE
INDOOR PLAY AREA 2	118			X			X	B	CDB	OPEN	PC	PL	PL PANELS TO BE PAINTED P-4, P-2 ABOVE
INDOOR PLAY AREA 3	119			X			X	B	CDB	OPEN	PC	PL	PL PANELS TO BE PAINTED P-4, P-2 ABOVE; P-2 ABOVE CP-1 ON SOUTH WALL

HARDWARE SCHEDULE	
SET #1 1 PASSAGE LEVER (ADA COMPLIANT) 1 1/2 PR BUTTS 1 CLOSER (ADA COMPLIANT) 1 WALL MOUNTED DOORSTOP 3 SILENCERS (1) 6" X 34" KICKPLATE HD THRESHOLD & SEALS	SET #7 1 LEVER LOCK SET (ADA COMPLIANT) 2 CLOSERS (ADA COMPLIANT) PARALLEL ARM APPLICATION 3 PR BUTTS ASTREGAL 2 SURFACE BOLTS WEATHERSTRIPPING DOOR SHOE AND RAIN DRIP 3' SECTION OF #2/0 STRAIGHT LINK STAINLESS CHAIN WITH EYE BOLTS FASTENED TO WALL AND DOOR, CHAIN FITTED WITH SNAP HOOK. G.C. TO PROVIDE BACKING FOR FASTENING OF EYE BOLTS. THRESHOLD SECURITY LATCH GUARD PLATE (1) 6" X 34" KICKPLATE
SET #2 1 LEVER PRIVACY LOCKSET (ADA COMPLIANT) 1 1/2 PR BUTTS 3 SILENCERS 1 WALL MOUNTED DOORSTOP 1 CLOSER (ADA COMPLIANT) (1) 6" X 34" KICKPLATE	SET #8 1 LEVER LOCKSET(ADA COMPLIANT) 1 1/2 PR BUTTS SECURITY LATCH GUARD PLATE 1 CLOSER (ADA COMPLIANT) WEATHERSTRIPPING DOOR SHOE AND RAIN DRIP THRESHOLD 1 CLOSER(ADA COMPLAINT) (1) 6" X 34" KICKPLATE
SET #3 1 OFFICE LOCK (ADA COMPLIANT) FOR LOWER DOOR SECTION 2 PR BUTTS FOR ENTIRE DOOR 3 SILENCERS 2 WALL MOUNTED DOORSTOP 1 SURFACE BOLT 1 SHELF (1) 6" X 34" KICKPLATE	SET #9 DEADLOCK DEADBOLT BY KEY OUTSIDE ONLY - THUMB TURN INSIDE OFFSET DUAL DOOR PULLS HD CLOSER HD THRESHOLD HD SEALS HD HINGES
SET #4 1 LEVER ENTRANCE DEADLOCK (ADA COMPLIANT) 1 1/2 PR BUTTS 3 SILENCERS 1 WALL MOUNTED DOORSTOP (1) 6" X 34" KICKPLATE	SET #10 1 PASSAGE LEVER (ADA COMPLIANT) 1 INACTIVE LEVER 1 SURFACE BOLT (ACTIVE LEAF) 3 PAIR BUTT HINGES 6 SILENCERS 1 WALL MOUNTED DOOR STOP (1) 6" X 34" KICKPLATE
SET #5 1 DELAYED EGRESS RIM EXIT DEVICE WITH MORTISE CYLINDER (ADA COMPLIANT) - DETEX V40XEE 1 1/2 PR BUTTS 1 CLOSER (ADA COMPLIANT) WEATHER STRIPPING DOOR SHOE AND RAIN DRIP THRESHOLD SECURITY LATCH GUARD PLATE (1) 6" X 34" KICKPLATE	SET #11 3 SETS BUTT HINGES, TOP, BOTTOM & INTERMEDIATE 1 LOCKSET - STOREFRONT LOCK 2 OVERHEAD SWEEPERS 2 SETS WEATHERSTRIPPING AND SWEEP 1 ADA THRESHOLD 2 SETS OFFSET PUSH/PULL
SET #6 1 LEVER LOCK SET (ADA COMPLIANT) 1 CLOSER (ADA COMPLIANT) PARALLEL ARM APPLICATION 1 1/2 PR BUTTS WEATHER STRIPPING DOOR SHOE AND RAIN DRIP 3' SECTION OF #2/0 STRAIGHT LINK STAINLESS CHAIN WITH EYE BOLTS FASTENED TO WALL AND DOOR, CHAIN FITTED WITH SNAP HOOK. G.C. TO PROVIDE BACKING FOR FASTENING OF EYE BOLTS. THRESHOLD SECURITY LATCH GUARD PLATE (1) 6"x34" KICK PLATE	SET #12 1 PASSAGE LEVER 1 PAIR BUTT HINGES 3 SILENCERS 1 WALL / FLOOR MOUNTED DOOR STOP 1 6"x46" KICKPLATE

- * ALL DOOR HARDWARE TO RECEIVE BUILDING STANDARD ADA COMPLIANT LEVER SETS.-U.N.O
* PROVIDE SILENCERS ON ALL DOOR FRAMES THROUGHOUT THE ENTIRE SPACE.
* ALL NEW DOOR CLOSERS SHALL BE ADA COMPLIANT. CLOSERS SHALL TAKE 3 SECONDS TO OPERATE FROM AN OPEN POSITION OF 70° TO A POINT 3" FROM THE LATCH. MAXIMUM OPENING FORCE IS NOT TO EXCEED 8 LBS.
* RE-KEY ALL NEW AND EXISTING LOCK SETS TO NEW TENANT MASTER.
* OFFICE DOOR LOCKSET SHALL BE A SEPARATE KEY
* ALL HARDWARE DOOR LEVERS SHALL BE SCHLAGE COMMERCIAL AL SERIES OR EQUAL - STAIN CHROME FINISH.

SCHEDULED FINISHES		
TAG	DESCRIPTION	NOTES
ACT	ACOUSTICAL CEILING TILE	2' X 2' LAYOUT- 15/16" WHITE GRID WITH 5/8" THICK SQUARE LAY IN STANDARD FISSURE TILE
ACT-2	ACOUSTICAL CEILING TILE-WASHABLE	VINYL FACED -GYP CORE -SMOOTH FINISH WHITE
FRP	FIBERGLASS REINFORCED PANELS	ALMOND COLOR-PEBBLE FINISH
FRP-2	FIBERGLASS REINFORCED PANELS	WHITE COLOR-PEBBLE FINISH
P-1	PAINT (SHERWIN WILLIAMS- SVELT SAGE #6164 SATIN)	WALLS PER FINISH SCHEDULE
P-2	PAINT (SHERWIN WILLIAMS-SLEEPY BLUE #6225 SATIN)	BOARDING AREA AND INDOOR PLAY AREA WALLS ABOVE METAL PANELS
P-3	PAINT (SHERWIN WILLIAMS-BREVITY BROWN #6068 DTM-INDUSTRIAL ENAMEL SEMI-GLOSS)	HM DOOR TRIM AND SLABS
P-4	PAINT (SHERWIN WILLIAMS-ACROLOX 218 ALUMINUM TWO-PART EPOXY PAINT)	INDOOR PLAY AREAS TO 8'-0" A.F.F. ON MASONRY WALLS ONLY
P-5	PAINT (SHERWIN WILLIAMS-SNOWBOUND #7004 SATIN)	LUXURY SUITES / ISO. ROOM WALLS ABOVE TILES
WGV	WOOD GRAIN VINYL FLOORING	KARNDUAN VAN GOGH COLLECTION-BARNWOOD 48"x7" VGS-7 BURNT GINGER. CONTACT JON TROSHYNSKI 913-201-2491 jonathan.troshynski@karndean.com USE PO# 0396 ON ORDER
CP1	CORRUGATED WAINSCOT (2.67" x 7/8") 96" TALL	MBCI 2.67 X 7/8" CORRUGATED SHEET (32" WIDE COVERAGE) COLOR G-90 GALVANIZED. 96" TALL SHEET INSTALLED ABOVE BASE.
CP2	CORRUGATED WAINSCOT (2.67" x 7/8") 36" TALL	MBCI 2.67 X 7/8" CORRUGATED SHEET (32" WIDE COVERAGE) COLOR G-90 GALVANIZED. 36" TALL SHEET INSTALLED ABOVE BASE.
CP3	CORRUGATED WAINSCOT (2.67" x 7/8") 48" TALL	MBCI 2.67 X 7/8" CORRUGATED SHEET (32" WIDE COVERAGE) COLOR G-90 GALVANIZED. 48" TALL SHEET INSTALLED ABOVE BASE.
TO ORDER CORRUGATED STEEL CONTACT: MIKE MATULICH 806.740.3209 mmatulich@mbci.com		
PL	PAN LINER	COORD. w/ CAMP BOW WOW CONSTRUCTION MANAGER
PC	POLISHED CONCRETE	3000 GRIT POLISHED CONCRETE
RB	RUBBER BASE	4" ROPPE PINNACLE RUBBER BASE-COLOR: TOFFEE.
CDB	COMPOSITE DECKING BASE	TREX SELECT COMPOSITE DECKING. COLOR: SADDLE ENHANCE. 1"X 5.5" SQUARE EDGE
WTC	WAINSCOT TOP CAP	TREX SELECT COMPOSITE DECKING. COLOR: SADDLE ENHANCE. 1"x7.5" SQUARE EDGE w/ FRP INSIDE TEACUP AREA, 1"X 11.5" SQUARE EDGE w/ CP-3
PT-1	PORCELAIN FLOOR TILE 12x24	DALTILE. FABRIC ART LINEAR. 12x24. COLOR: MIDNIGHT BLUE #MLB5. CEG-IG CUSTOM INDUSTRIAL EPOXY GROUT. COLOR: DOVE GREY #370; INSTALL TILE FROM LEFT TO RIGHT AT DOOR USING A STRETCHER BOND PATTERN. SEE FINISH FLOOR PLAN SHEET A1.1.
PT-2	PORCELAIN WALL TILE 6x36	DALTILE. SADDLE BROOK. 6x36. COLOR: GRAVEL ROAD #SD16. CEG-IG CUSTOM INDUSTRIAL EPOXY GROUT. COLOR: GREYSTONE #42; INSTALL TILE 9 ROWS HIGH TO HEIGHT OF 4'-8 1/4" (+/- 1/8") A.F.F. USING A STRETCHER BOND PATTERN. SEE FINISH PLAN SHEET A1.1.
PT-3	STAINLESS STEEL NICKEL TILE TRIM	SCHLUTER SYSTEMS, SCHEINE 3/8" STAINLESS STEEL NICKEL FINISH #E100
PT-4	ALUMINUM ANODIZED NICKEL COVE BASE	SCHLUTER SYSTEMS, DILEX-AHK 1/2" ALUM. ANOD. IN NICKEL FINISH #AHK1S125AT
*NOTE: ALL INTERIOR LAMINATE DOORS AND INTERIOR COUNTERS TO BE WILSONART MONTICELLO MAPLE #7925		

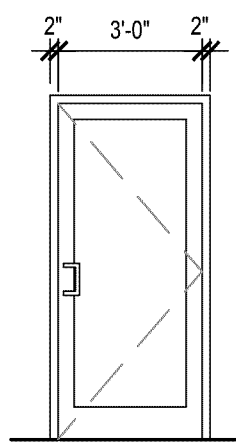
GENERAL NOTES:

- ALL PRODUCTS ARE RECOMMENDED PER CAMP BOW WOW'S SPECIFICATIONS. ANY EQUAL OR ALTERNATIVES MUST BE PRESENTED TO CAMP BOW WOW FOR APPROVAL PRIOR TO PURCHASING AND INSTALLATION.

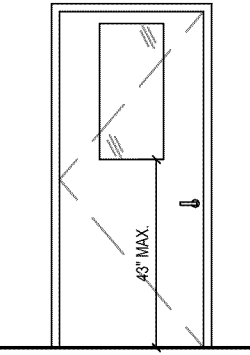
3000 GRIT POLISHED CONCRETE FLOOR SPECS:

CONCRETE POLISH PROCESS:

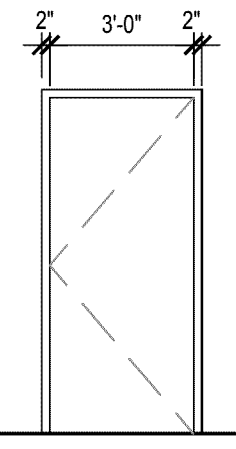
- SEAL ALL CRACKS & JOINTS w/ CLEAR POLYUREA PE-85 (TWO PART) TO SPECIFICATIONS
- 30 GRIT METAL PAD
- 70 GRIT METAL PAD
- 120 GRIT METAL PAD
- WASH
- CONSOLIDECK LS (HARDENER) SATURATION
- 100 GRIT RESIN PAD
- 200 GRIT RESIN PAD
- 400 GRIT RESIN PAD
- 800 GRIT RESIN PAD
- WASH
- CONSOLIDECK LS GUARD(SEALER) SATURATION
- BUFF PASS w/ 800 GRIT RESIN PAD
- BUFF PASS w/ 3000 GRIT PAD



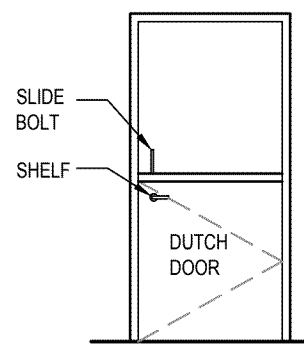
ALUM. STOREFRONT DOOR AT LUXURY SUITES



DOOR w/ WINDOW



H.M. DOOR

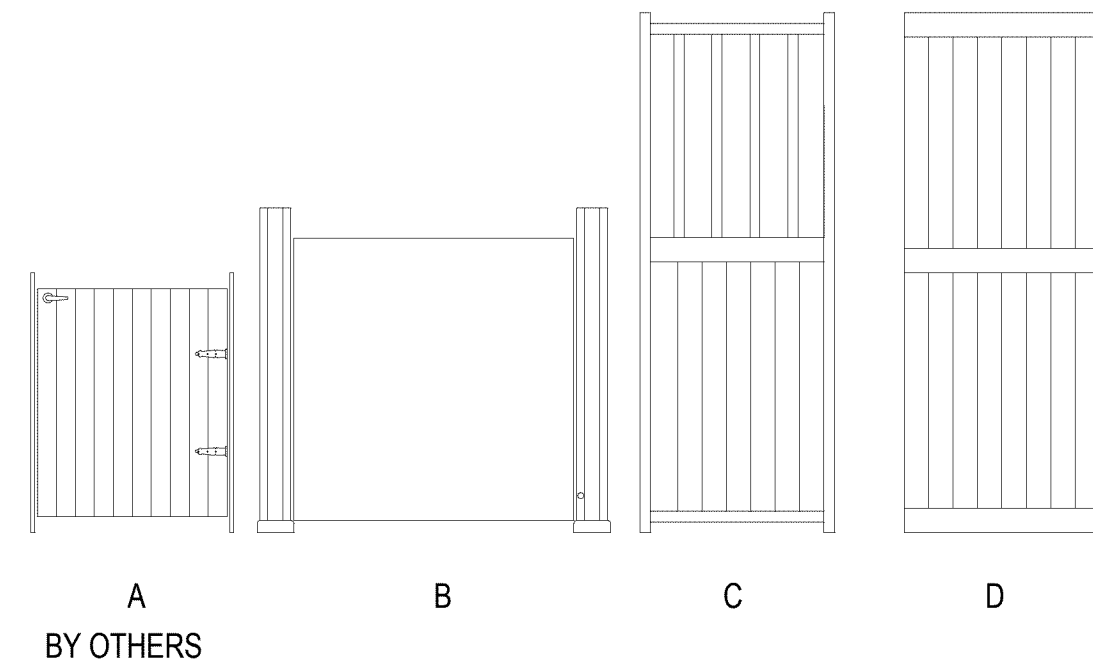


DUTCH DOOR #104

STANDARD INTERIOR DOOR FINISH
LAMINATE VENEER WILSONART
MONTICELLO MAPLE #7925

GENERAL CONTRACTOR TO PROVIDE EXTERIOR HOLLOW METAL DOOR, FRAME, AND MATERIALS TO MEET CODE REQUIREMENTS, INCLUDING, BUT NOT LIMITED TO, WIND LOADS, PROTECTION OF OPENINGS, WIND-BORNE DEBRIS PROTECTION, AND IMPACT RESISTANCE.

GATE SCHEDULE			
GATES	SIZE	QUANTITY	NOTES
	3'-0" x 4'-0"	4	GATE TO MATCH LOG DESK - BY OTHERS
	4'- 3 5/8" x 5'-0"	27	OWNER PROVIDED - CONTRACTOR INSTALLED
	4'-0" x 7'-0"	4	
	4'-0" x 8'-0"	1	



A
BY OTHERS

B

C

D

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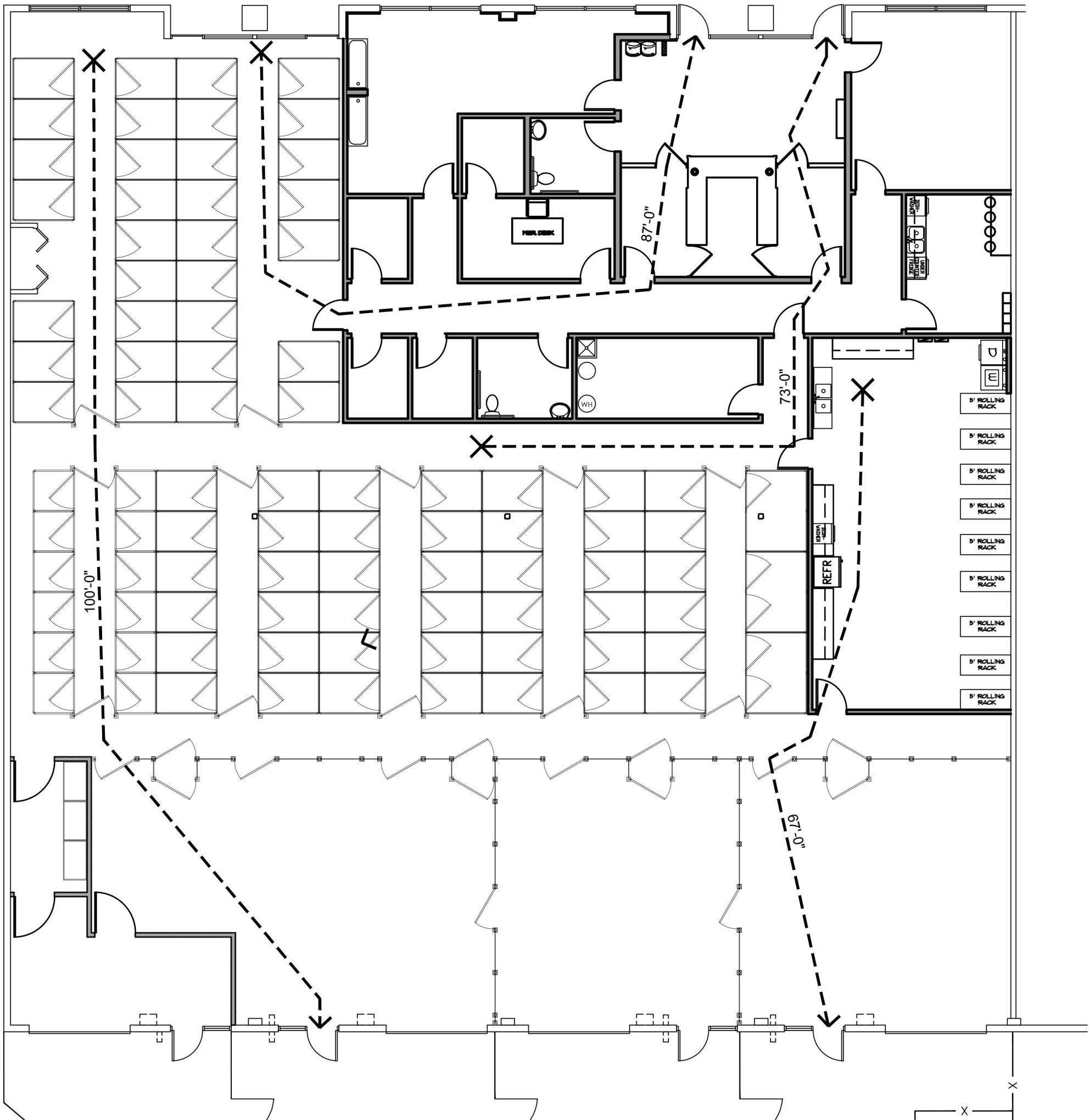
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HILLSBORO, OR.

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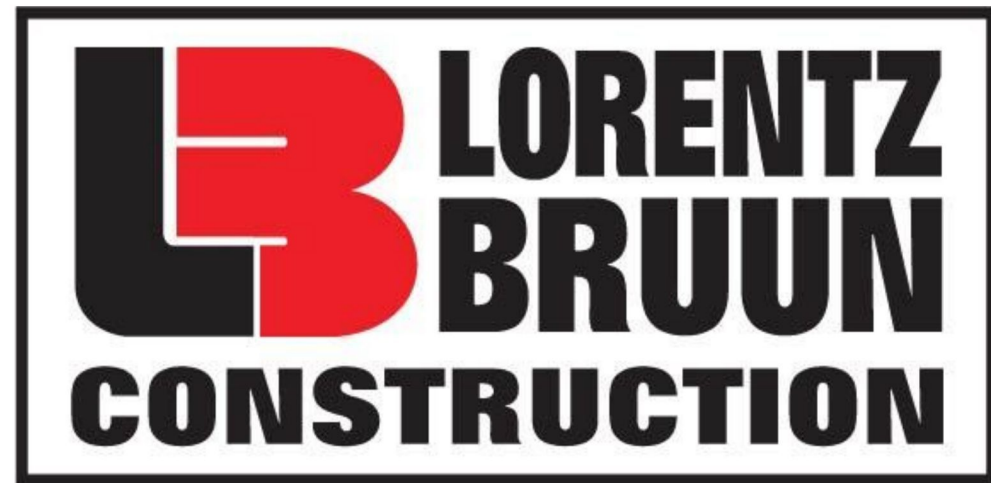
A4.0
SCHEDULES



2900 SE CORNELIUS PASS RD.
SUITE 118
HILLSBORO, OR.



PROJECT TEAM



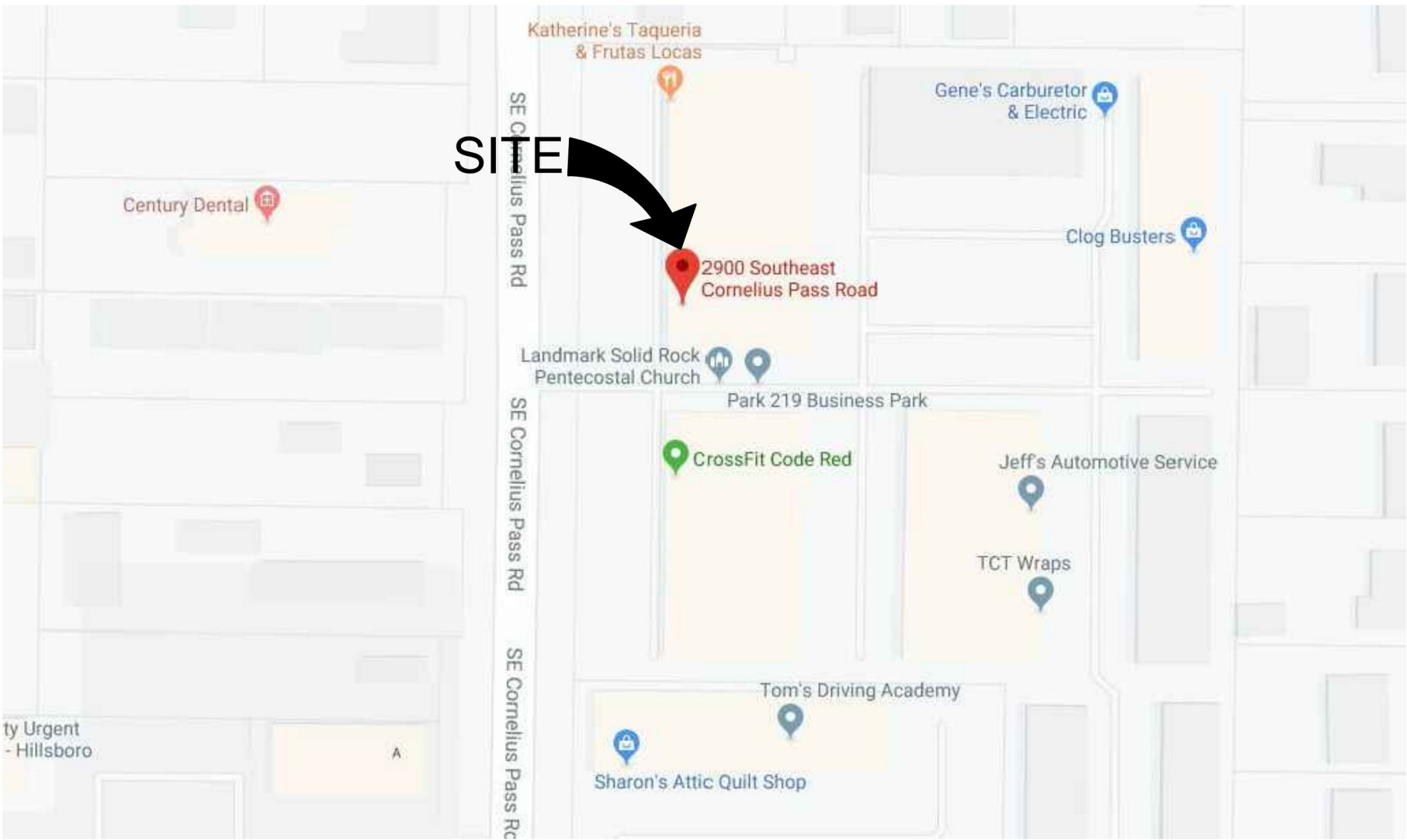
PROJECT SCOPE

INTERIOR BUILD-OUT OF AN EXISTING BUILDING FOR A DOG DAYCARE FACILITY.

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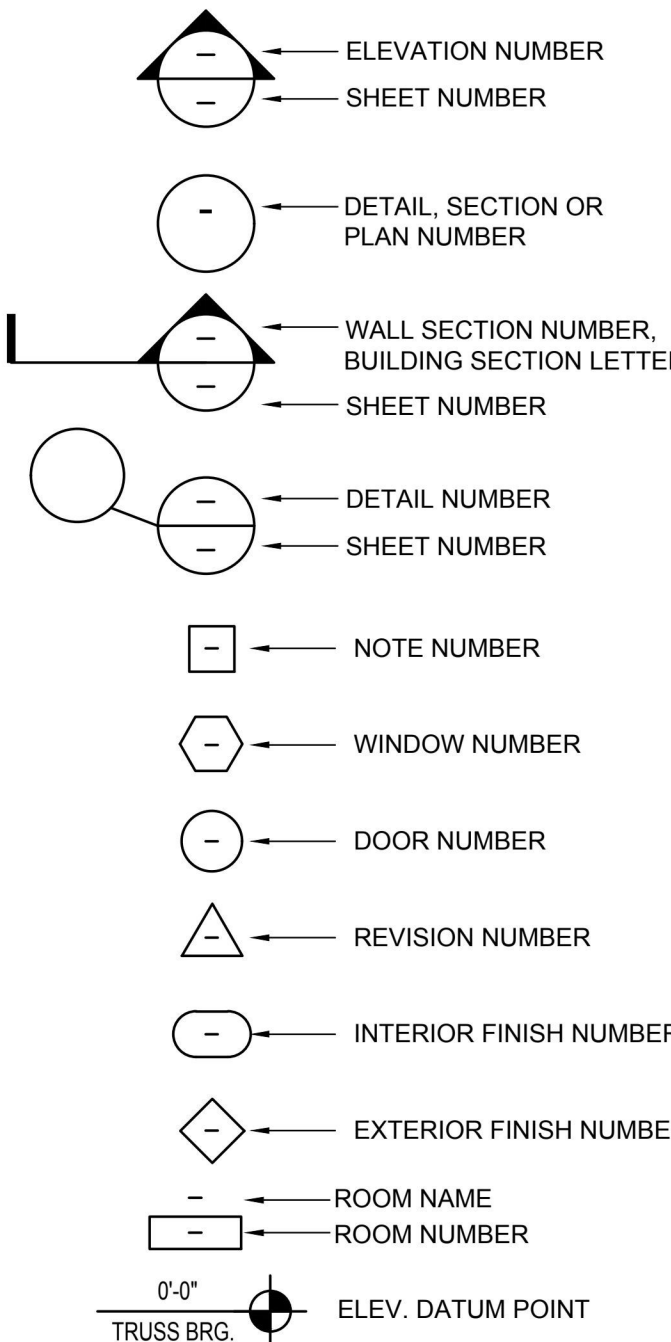
VICINITY MAP



ABBREVIATIONS

AC	AIR CONDITIONING	MIN	MINIMUM
AFF	ABOVE FINISH FLOOR	MO	MASONRY OPENING
AHU	AIR HANDLING UNIT	MR	MIRROR/MOISTURE RESISTANT
AL	ALUMINUM	MT	MARBLE THRESHOLD
ASPH	ASPHALT	MTL	METAL
AT	ALUMINUM THRESHOLD	NA	NOT APPLICABLE
BD	BOARD	NIC	NOT IN CONTRACT
BLKT	BLANKET	NOM	NOMINAL
CJ	CONTROL JOINT	NTS	NOT TO SCALE
CLG	CEILING	OC	ON CENTER
CMU	CONCRETE MASONRY UNIT	OPP	OPPOSITE
COL	COLUMN CONC CONCRETE	PLYWD	PLYWOOD
CONT	CONTINUOUS	PREFAB	PREFABRICATED
CPT	CARPET	PSF	POUNDS PER SQUARE FOOT
CT	CERAMIC TILE	PT	PAINT
CL	CENTER LINE	QT	QUARRY TILE
DBL	DOUBLE	R	RISER
DF	DRINKING FOUNTAIN	REBAR	REINFORCING BAR
DIA	DIAMETER	REF	REFERENCE
DIM	DIMENSION	REINF	REINFORCE
DN	DOWN	REQ'D	REQUIRED
DS	DOWN SPOUT	RO	ROUGH OPENING
EA	EACH	RTU	ROOF TOP UNIT
EB	EFFINGHAM BUILDERS SUPPLY	SB	SPLASHBLOCK
EJ	EXPANSION JOINT	SHLVS	SHELVES
ELEC	ELECTRICAL	SIM	SIMILAR
ELEV	ELEVATION	SPEC	SPECIFICATION
EQ	EQUAL	SS	STAINLESS STEEL
EXIST	EXISTING	STL	STEEL
FD	FLOOR DRAIN	STOR	STORAGE
FE	FIRE EXTINGUISHER	SUSP	SUSPENDED
FF	FINISH FLOOR	T	TREAD
FR	FIRE RATED	TELE	TELEPHONE
GALV	GALVANIZED	TPD	TOILET PAPER DISPENSER
GYPBD	GYPSON BOARD	TPD	TYPICAL
HCB	HANDICAPPED	UNO	UNLESS NOTED OTHERWISE
HD	HEARTLAND DENTAL	VCT	VINYL COMPOSITION TILE
HDW	HARDWARE	VERT	VERTICAL
HM	HOLLOW METAL	VIF	VERIFY IN FIELD
HVAC	HEATING, AIR CONDITIONING, &	VT	VINYL THRESHOLD
VENT		WC	WATER CLOSET
INSUL	INSULATION	WD	WOOD
MAS	MASONRY	WP	WATERPROOF
MAX	MAXIMUM	WWF	WELDED WIRE FABRIC
MECH	MECHANICAL	W/	WITH
MFGR	MANUFACTURER		

DRAWING SYMBOLS



PROJECT DATA

PROJECT LOCATION: HILLSBORO, OR
PROJECT DESCRIPTION: TENANT BUILD-OUT

CURRENT CODES AND STANDARDS:

BUILDING:	2014 OREGON STRUCTURAL SPECIALTY CODE
MECHANICAL:	2014 OREGON MECHANICAL SPECIALTY CODE
PLUMBING:	2017 OREGON PLUMBING SPECIALTY CODE
ELECTRICAL:	2017 OREGON ELECTRICAL SPECIALTY CODE
ENERGY:	2014 OREGON ENERGY EFFICIENCY SPECIALTY CODE
FIRE:	2015 INTERNATIONAL FIRE CODE
FUEL & GAS:	2014 OREGON MECHANICAL SPECIALTY CODE
EXIST. BUILDING:	2014 OREGON STRUCTURAL SPECIALTY CODE
ACCESSIBILITY:	2014 OREGON STRUCTURAL SPECIALTY CODE

BUILDING AREA: BUILDING: 9,821 SQ. FT.

OCCUPANCY TYPE: BUSINESS GROUP B

CONSTRUCTION TYPE: 2B
TOTAL AREA OF PROPOSED USE: 9,821 S.F. OF BUILDING DISTRIBUTION AS FOLLOWS:
BUSINESS AREA: 3,000/100 SF PER PERSON=30
WAREHOUSE AREA: 6,821/500 SF PER PERSON=14
(INDOOR PLAY YARDS & BOARDING AREA):
TOTAL MAX. OCCUPANT LOAD: =44

PLUMBING FIXTURE REQUIREMENTS (2015 OPC TABLE 403.1)
WATER CLOSETS: (2) REQUIRED, (2) PROVIDED
LAVATORIES: (2) REQUIRED, (2) PROVIDED
MOP SINK: (1) REQUIRED, (1) PROVIDED
DRINKING FOUNTAINS: (2) PROVIDED

TOILET-ROOMS: (2) REQUIRED, (2) PROVIDED

EGRESS WIDTH PER OCCUPANT SERVED
NUMBER OF EXITS
EGRESS REQUIRED: 2
EGRESS PROVIDED: 4

EGRESS WIDTH
OCCUPANCY
BUSINESS OCCUPANCY
WITH SPRINKLER SYSTEM
EGRESS WIDTH PER OCCUPANT SERVED
0.20 INCHES PER OCCUPANT
44 x 0.20" = 8.8" MINIMUM
(4) 36" WIDE
PROVIDED 144" - FROM BUILDING

EXIT ACCESS TRAVEL DISTANCE (2014 OREGON STRUCTURAL SPECIALTY CODE)
SPRINKLERED: YES
MAX. LENGTH : 200 FEET
MAX. LENGTH PROVIDED: 100'-0" FEET

SEAL:

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BOW WOW

2900 SE CORNELIUS PASS RD.
SUITE 118
HILLSBORO, OR.

DATE: 8/16/2019

CS

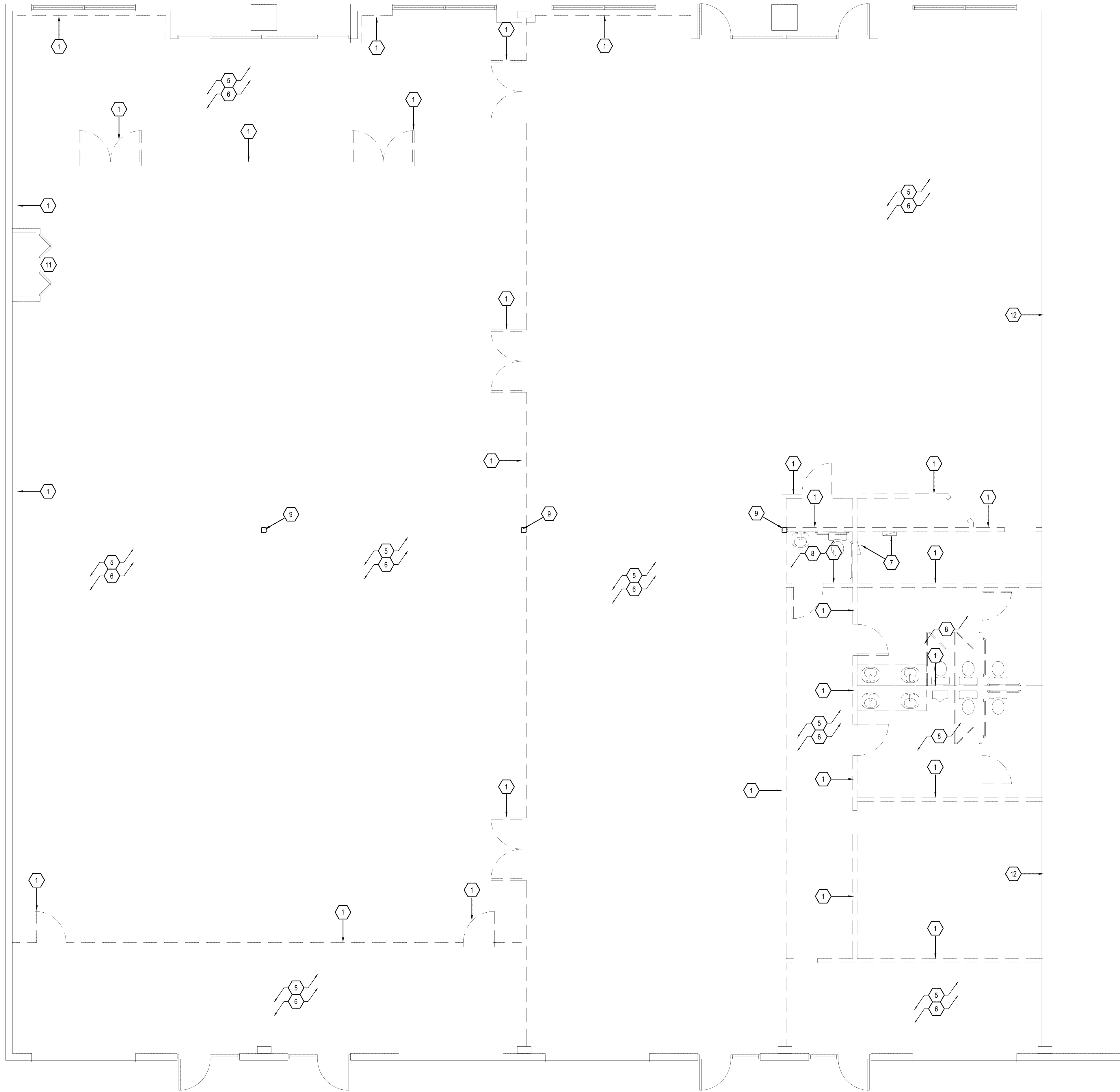
COVER SHEET

DEMOLITION NOTES:

- THIS DRAWING IS INTENDED TO DEPICT THE GENERAL INTENT OF DEMOLITION WORK. MOST MAJOR ITEMS ARE SHOWN. CONTRACTOR SHALL VISIT THE SITE TO DETERMINE EXACT EXISTING CONDITIONS AND SCOPE OF WORK.
- PROVIDE ALL DEMOLITION AS REQUIRED FOR THE CONSTRUCTION OF THE SPACE DETAILED IN THE ARCHITECTURAL PLANS, INCLUDING EXISTING FIXTURES.
- PROTECT EXISTING PARTITIONS, FIXTURES, EQUIPMENT AND ALL BUILDING COMPONENTS NOT DESIGNATED FOR REMOVAL. IF EXISTING MATERIALS OR OBJECTS DESIGNATED TO REMAIN ARE DAMAGED, THEY SHALL BE REPAIRED OR REPLACED WITH MATERIAL EQUAL TO AND IN LIKE CONDITION, WITHOUT ADDITIONAL COST TO CAMP BOW WOW.
- DEBRIS CONTAINERS TO BE USED. CONTRACTOR TO KEEP SITE AND BUILDING SPACE IN A NEAT AND ORDERLY MANNER.
- CONTACT CONSTRUCTION MANAGER IF QUESTIONS EXIST OVER SPECIFIC ITEMS OR THE REUSE OF SAME.
- ALL DIMENSIONS GIVEN ARE FOR ESTIMATION & REFERENCE ONLY. FIELD VERIFY.
- ALL DEMOLITION SHALL BE CARRIED OUT IN SAFE MANNER AND IN STRICT ACCORDANCE WITH THE STATE AND LOCAL CODES.
- PROVIDE TEMPORARY SUPPORT AND BRACING AT ALL WALLS DURING DEMOLITION AS REQUIRED
- DASHED LINES TYPICALLY REPRESENT ITEMS TO BE REMOVED, RELOCATED OR DEMOLISHED ON THE DEMOLITION PLAN ONLY. REFERENCE THE DEMOLITION NOTES FOR DESCRIPTION OF THESE GENERAL ITEMS.
- GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING OF TENANT SPACE BOTH DURING AND FOLLOWING DEMOLITION WORK.
- PROTECT ALL EXISTING MATERIALS AND FINISHES THAT ARE TO REMAIN. REPAIR AND PATCH THESE EXISTING MATERIALS AND FINISHES DURING CONSTRUCTION WHERE NEEDED. MATCH NEW MATERIALS INSTALLED TO ENSURE THAT ALL DEMOLITION AND NEW CONSTRUCTION IS COMPATIBLE AND INDISTINGUISHABLE. REQUIRED PROTECTION INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:
 - DRYWALL
 - ELECTRICAL OUTLETS AND SWITCHES
 - EXTERIOR DOORS AND FRAMES
 - FIRE PROTECTION SYSTEM
 - MECHANICAL EQUIPMENTS
 - FIRE PROTECTION
- IN AREAS INDICATED TO RECEIVE NEW FLOOR COVERING, REMOVE EXISTING FLOOR MATERIALS AND PREPARE SLAB FOR PROPER INSTALLATION OF NEW FLOORING MATERIALS
- REFER TO NEW FLOOR AND/OR CEILING PLAN FOR EXTENT OF WORK TO REMAIN OR TO BE RELOCATED OR REMOVED
- GC TO CLEAN AND PREPARE ALL EXISTING SURFACES TO RECEIVE NEW FINISHES PER DRAWINGS
- EXISTING HVAC TO REMAIN. RELOCATE AS REQUIRED TO COORDINATE WITH NEW DESIGN. G.C. TO TEST, EVALUATE AND RECOMMEND ANY WORK NEEDED. G.C. TO PROVIDE AIR BALANCE. G.C. TO PROVIDE PREVENTATIVE MAINTENANCE/ EVALUATION ON THE EXISTING EQUIPMENT INCLUDING FILTERS + AN ADDITIONAL FILTER CHANGE AT THE END OF THE JOB. GC TO COVER ALL INTAKE DUCTING WITH A FILTER MATERIAL TO PREVENT DUST & DEBRIS FROM BEING INTRODUCED TO THE HVAC RETURN SYSTEM. GC SHALL REMOVE ALL FILTER MATERIAL AT COMPLETION OF CONSTRUCTION.
- PROVIDE ALL CLEAN-UP AND REMOVAL OF DEBRIS FROM PREMISES CAUSED BY DEMOLITION WORK.
- REMOVE ALL UNGROUNDED OUTLET DEVICES
- G.C. TO INSPECT ALL EXISTING WINDOWS, MASONRY & LENTILS - REPLACE & REPAIR AS NECESSARY.

DEMOLITION KEY NOTES:

- 1 REMOVE EXISTING WALL, WALL FURRING AND ASSOCIATED DOORS - TYP.
- 2 **NOT USED** FOR NEW DOOR ASSEMBLY.
- 3 **NOT USED** FOR NEW PASSAGEWAY, PROVIDE MIN. FURRING INSIDE NEW OPENING.
- 4 **NOT USED** EXISTING REFRIGERATOR, DISHWASHER, KITCHEN COUNTER AND CABINETS AND SINK TO BE REMOVED AND RELOCATED IN THE NEW BREAK ROOM.
- 5 REMOVE EXISTING FLOORING THROUGHOUT. PREP SURFACE FOR REQUIRED FINISHES.
- 6 REMOVE EXISTING CEILING AND/OR LIGHTING THROUGHOUT, U.N.O.
- 7 EXISTING ELECTRICAL SERVICE TO BE RELOCATED, SEE ELEC. DRAWINGS
- 8 EXISTING PLUMBING FIXTURES TO BE REMOVED. ALL SUPPLY AND WASTE LINES NOT TO BE REUSED SHALL BE CAPPED.
- 9 EXISTING COLUMNS TO REMAIN. PROTECT DURING DEMOLITION & CONSTRUCTION. REMOVE ANY EXISTING FURRING.
- 10 **NOT USED** OVERHEAD DOORS TO BE REMOVED. OPENING TO BE INFILLED TO MATCH ADJACENT SURFACE. LOCATION OF NEW DOOR.
- 11 EXISTING SPRINKLER RISER CLOSET TO REMAIN
- 12 EXISTING DEMISING WALL TO REMAIN



1
D1.0

DEMOLITION PLAN

3/16"= 1'-0"

NORTH

SEAL:

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DATE: 8/16/2019

D1.0
DEMOLITION PLAN

ELECTRICAL SYMBOLS LIST (ALL SYMBOLS SHOWN MAY NOT APPEAR ON DRAWINGS)									
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLUORESCENT/LED LIGHTING FIXTURE – CEILING MOUNTED, RECESSED, SURFACE, SUSPENDED		SINGLE POLE TOGGLE SWITCH		DUPLEX RECEPTACLE		TELECOMMUNICATIONS OUTLET-COMBINATION TELEPHONE/DATA		AUDIO VISUAL ALARM
	FLUORESCENT/LED LIGHTING FIXTURE – WALL MOUNTED		3-WAY TOGGLE SWITCH		GROUND FAULT INTERRUPTER DUPLEX RECEPTACLE		TELECOMMUNICATIONS OUTLET-DATA		VISUAL ALARM
	FLUORESCENT/LED INDUSTRIAL LIGHT		4-WAY TOGGLE SWITCH		DUPLEX RECEPTACLE-TAMPER RESISTANT		TELECOMMUNICATIONS OUTLET-TELEPHONE		VOICE COMMUNICATION SPEAKER
	INCANDESCENT, FLUORESCENT, LED OR H.I.D. LIGHTING FIXTURE – CEILING SURFACE, SUSPENDED		SINGLE POLE DIMMER SWITCH		WEATHERPROOF WITH GFI RECEPTACLE		DOORBELL		VOICE COMMUNICATION SPEAKER W/VISUAL ALARM DEVICE
	INCANDESCENT, FLUORESCENT, LED OR H.I.D. LIGHTING FIXTURE – WALL SURFACE		KEY OPERATED SINGLE POLE TOGGLE SWITCH		DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER. VERIFY EXACT MOUNTING HEIGHT WITH ARCHITECTURAL PLANS		SPEAKER		HORN
	INCANDESCENT, FLUORESCENT, LED OR H.I.D. LIGHTING FIXTURE – CEILING RECESS		LOW VOLTAGE SWITCH		DUPLEX RECEPTACLE MOUNTED AT SPECIAL MOUNTING HEIGHT INDICATED ON DRAWING OR AS INDICATED ON THE ASSOCIATED ARCHITECTURAL ELEVATION.		DOOR CONTACT		PRE-SIGNAL ALARM DEVICE
	INCANDESCENT, FLUORESCENT, LED OR H.I.D. LIGHTING FIXTURE – WALL RECESS		MOMENTARY CONTACT SWITCH		DOUBLE DUPLEX RECEPTACLE		DOOR POSITION SWITCH		BELL
	LIGHT TRACK		SINGLE POLE MANUAL MOTOR STARTER WITH THERMAL OVERLOAD ELEMENT PROTECTION FOR FRACTIONAL SINGLE PHASE MOTORS.		SIMPLEX RECEPTACLE		CARD ACCESS CONTROL (CARD STRIKE)		MANUAL PULL STATION
	FLUORESCENT/LED LIGHTING FIXTURE – CEILING MOUNTED, RECESSED, SURFACE, SUSPENDED (NL) CONNECTED TO NIGHTLIGHT CIRCUIT (EM) CONNECTED TO EMERGENCY CIRCUIT		SINGLE POLE MANUAL MOTOR STARTER FOR FRACTIONAL SINGLE PHASE MOTOR FOR PROJECTION SCREEN CONTROL DEVICE.		DUPLEX RECEPTACLE-SWITCHED TOP OR RIGHT HALF		ELECTRICAL DOOR STRIKE		SYSTEM SMOKE DETECTOR WITH INTEGRAL HORN
	FLUORESCENT/LED LIGHTING FIXTURE – WALL MOUNTED (NL) CONNECTED TO NIGHTLIGHT CIRCUIT (EM) CONNECTED TO EMERGENCY CIRCUIT		SWITCH WITH PILOT LIGHT		ISOLATED GROUND DUPLEX RECEPTACLE (ORANGE)		SECURITY VIDEO CAMERA		CARBON MONOXIDE DETECTOR
	FLUORESCENT/LED INDUSTRIAL LIGHT (NL) CONNECTED TO NIGHTLIGHT CIRCUIT (EM) CONNECTED TO EMERGENCY CIRCUIT		TWO POLE SWITCH		DUPLEX RECEPTACLE RECESSED IN FLOOR		REMOTE HOLD-UP ANN		SMOKE DETECTOR
	INCANDESCENT, FLUORESCENT, LED OR H.I.D. LIGHTING FIXTURE – CEILING SURFACE, SUSPENDED (NL) CONNECTED TO NIGHTLIGHT CIRCUIT (EM) CONNECTED TO EMERGENCY CIRCUIT		OCCUPANCY SENSOR SWITCH		SPECIAL PURPOSE OUTLET		SECURITY TOUCH PAD		HEAT DETECTOR (135° UNLESS OTHERWISE NOTED).
	INCANDESCENT, FLUORESCENT, LED OR H.I.D. LIGHTING FIXTURE – WALL SURFACE (NL) CONNECTED TO NIGHTLIGHT CIRCUIT (EM) CONNECTED TO EMERGENCY CIRCUIT		INDICATES DUAL LEVEL SWITCHING – SEE DUAL LEVEL SWITCHING DETAIL		WIREMOLD RACEWAY – SURFACE MOUNTED RECEPTACLES. DENOTE PLUS MOLD AS NOTED ON PLANS		PREWIRED CONTROL PANEL		DUCT SMOKE DETECTOR
	INCANDESCENT, FLUORESCENT, LED OR H.I.D. LIGHTING FIXTURE – CEILING RECESS (NL) CONNECTED TO NIGHTLIGHT CIRCUIT (EM) CONNECTED TO EMERGENCY CIRCUIT		LOW VOLTAGE SWITCH STATION – SEE LOW VOLTAGE SWITCHING STATION SCHEDULE		PANELBOARD		ELEVATOR STATUS CONTROL PANEL		DUCT SMOKE DETECTOR TEST SWITCH
	INCANDESCENT, FLUORESCENT, LED OR H.I.D. LIGHTING FIXTURE – WALL RECESS (NL) CONNECTED TO NIGHTLIGHT CIRCUIT (EM) CONNECTED TO EMERGENCY CIRCUIT		DIMMING SYSTEM CONTROL STATION – SEE DIMMING SYSTEM SCHEDULE		LOW VOLTAGE RELAY CABINET		FIRE ALARM ANNUNCIATOR PANEL		TROUBLE BELL W/TEST AND SILENCE SWITCH W/LAMP
	EMERGENCY BATTERY UNIT		PUSHBUTTON SWITCH		DISTRIBUTION PANEL		FIRE ALARM CONTROL PANEL		SPRINKLER WATERFLOW INDICATOR
	REMOTE HEAD		SWITCH STATION – SEE SWITCH STATION SCHEDULE		NON-FUSED DISCONNECT SWITCH-HORSEPOWER RATED		FIRE PUMP CONTROL PANEL		PRESSURE SWITCH
	EXIT SIGN WITH BATTERY BACK-UP. TYPE AS INDICATED ON DRAWINGS		OCCUPANCY SENSOR – CEILING MOUNTED		FUSED DISCONNECT SWITCH-HORSEPOWER RATED		JOCKEY PUMP CONTROL PANEL		SAFE ALARM
	OUTDOOR POLE MOUNTED FIXTURE – SEE LIGHTING POLE AND FIXTURE SCHEDULE		OCCUPANCY SENSOR – WALL MOUNTED		MAGNETIC COMBINATION MOTOR STARTER AND DISCONNECT SWITCH		SOUND SYSTEM CABINET		HOLD UP SWITCH
	BOLLARD – GROUND MOUNTED – OUTDOOR		MOTION DETECTOR		VARIABLE FREQUENCY DRIVE		TELEPHONE TERMINATION CABINET		SUSPICION SWITCH
	TIME CLOCK – SEE TIME CLOCK SCHEDULE		SINGLE POLE TOGGLE SWITCH WITH DUPLEX RECEPTACLE COMBINATION		MOTOR, HORSEPOWER AS NOTED		VOICE COMMUNICATION CONTROL PANEL		FIREMAN'S VOICE COMMUNICATION TELEPHONE
	CONTACTOR – SEE CONTACTOR SCHEDULE		EMERGENCY STOP PUSH BUTTON (SHUNT TRIP)		TRANSFORMER		FLEXIBLE CONDUIT CONNECTION		CITY FIRE ALARM BOX TIE AND DISCONNECT
	PHOTO-CELL		TELEVISION		JUNCTION BOX		HOT WIRE		TAMPER SWITCH
			POWER POLE		PULL BOX – SIZE AS REQUIRED		NEUTRAL WIRE		FIRE DEPARTMENT KNOX BOX
			SOUNDER		METER SOCKET		GROUND WIRE		DRY EXTINGUISH SYSTEM

ABBREVIATIONS:
(ALL ABBREVIATIONS SHOWN MAY NOT APPEAR ON DRAWINGS)

A AMP
ABV ABOVE
AC ALTERNATING CURRENT
AFF ABOVE FINISHED FLOOR
AFG ABOVE FINISHED GRADE
AFCI ARC FAULT CIRCUIT INTERRUPTER
AC AMPERES INTERRUPTING CAPACITY
AL ALUMINUM
ALT ALTERNATE
ATS AUTOMATIC TRANSFER SWITCH
ARCH ARCHITECT
AWG AMERICAN WIRE GAUGE
BFC BELOW FINISHED CEILING
BFG BELOW FINAL GRADE
BLDG BUILDING
BPC BOLTED PRESSURE CONTACT SWITCH
BRKR BREAKER
C CONDUIT
CATV CABLE TELEVISION
CB CIRCUIT BREAKER
CCTV CLOSED CIRCUIT TELEVISION
CCT CIRCUIT
CLG CEILING
COMED COMMONWEALTH EDISON COMPANY
CP CONTROL PANEL
C/T CURRENT TRANSFORMER
CU COPPER
DC DIRECT CURRENT
DIST DISTRIBUTION
DN DOWN
EC ELECTRICAL CONTRACTOR
ELEC ELECTRIC
ELEV ELEVATION
EM EMERGENCY
EMT ELECTRIC METALLIC TUBING
ERS EXISTING REMOVE FROM SERVICE
ERL EXISTING TO BE RELOCATED
ETR EXISTING TO REMAIN
EX EXISTING
F FLUSH
FAA FIRE ALARM ANNUNCIATOR PANEL
FBO FURNISHED BY OTHERS
FOP FIRE ALARM CONTROL PANEL
FDR FEEDER
FIXT FIXTURE
FLUOR FLUORESCENT
FLR FLOOR
FU FUSE
FVNR FULL VOLTAGE NON-REVERSING
GC GENERAL CONTRACTOR
GFI GROUND FAULT INTERRUPTED
GRC GALVANIZED RIGID CONDUIT
GRND GROUND
GYP GYPSUM BOARD
HOA HAND-OFF-AUTO SWITCH
HP HORSEPOWER
HV HIGH VOLTAGE
HVAC HEATING & VENTILATING CONTRACTOR
IG ISOLATED GROUND
IL INTERLOCK
IMC INTERMEDIATE METALLIC CONDUIT
JB JUNCTION BOX
KVA KILOVOLT-AMPERE
KW KILOWATT
KWH KILOWATT-HOUR
LCP LIGHTING CONTROL PANEL
LTG LIGHTING
LV LOW VOLTAGE
MAG MAGNETIC STARTER
MAN MANUAL STARTER
MCB MAIN CIRCUIT BREAKER
MCC MOTOR CONTROL CENTER
MDP MAIN DISTRIBUTION PANEL
MLO MAIN LUGS ONLY
MSB MAIN SWITCHBOARD
MTD MOUNTED
N NEW
NEC NATIONAL ELECTRICAL CODE
NEMA NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NEUT NEUTRAL
NF NON-FUSED SAFETY SWITCH
NIC NOT IN CONTRACT
N/O NORMALLY OPEN
NTS NOT TO SCALE
P POLE
PA PUBLIC ADDRESS
PB PUSHBUTTON
PEND PENDANT
PC PHOTO CONTROL
PF POWER FACTOR
PH PHASE
PNL PANEL
PRI PRIMARY
PVC POLY (VINYL CHLORIDE)
RAI REMAIN AS IS
RE/CKT RECONNECT TO EXISTING CIRCUIT
RECEPT RECEPTACLE
REL RELOCATED
REQ'D REQUIRED
RM ROOM
RVS REDUCED VOLTAGE STARTING
SC SHORT CIRCUIT
SPEC SPECIFICATION
SPKR SPEAKER
STD STANDARD
SURF SURFACE
SW SWITCH
SWBD SWITCHBOARD
SWGR SWITCHGEAR
SYM SYMMETRICAL
SYS SYSTEM
TC TIME CLOCK
TEL TELEPHONE
TTB TELEPHONE TERMINATION BOARD
TV TELEVISION
TYP TYPICAL
UG UNDERGROUND
UL UNDERWRITER'S LABORATORIES
UNIV UNIVERSAL
UNO UNLESS OTHERWISE NOTED
USS UNIT SUBSTATION
V VOLT
VA VOLT-AMPERE
VDT VIDEO DISPLAY TERMINAL
VERT VERTICAL
VFD VARIABLE FREQUENCY DRIVE
VOL VOLUME
VF VERIFY IN FIELD
W/ WITH
WP WEATHERPROOF
WT WATERTIGHT
XFMR TRANSFORMER

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2900 SE CORNELIUS PASS RD.
SUITE 118
HILLSBORO, OR.

DATE:07/26/2019

E0.0
ELECTRICAL SYMBOLS AND
ABBREVIATIONS

GENERAL REQUIREMENTS

1. THE CONTRACTOR SHALL PROVIDE AND PAY FOR ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR A COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEM(S). ITEMS AND ACCESSORIES REASONABLY INFERRED AS NECESSARY TO COMPLETE THE PROPER OPERATION OF THE SYSTEM(S) SHALL BE PROVIDED.
 - A. GENERAL PURPOSE AND SPECIAL POWER OUTLETS AND POWER WIRING.
 - B. NEW LIGHTING, LIGHTING CONTROL PANEL, MOUNTING ACCESSORIES, CONTROLS AND POWER WIRING.
 - C. EXIT AND EMERGENCY LIGHTING SYSTEM, COMPLETE WITH ASSOCIATED CONDUIT AND WIRING.
 - D. FIRE ALARM SYSTEMS IN CONFORMANCE WITH THE APPLICABLE CODES.
 - E. EMPTY CONDUIT FOR COMMUNICATION AND DATA SYSTEM.
 - F. POWER, COMMUNICATION, AND DATA RACEWAY ASSEMBLIES, FLEXIBLE CONDUIT AND POWER WIRING.
 - G. PROJECT RECORD DRAWINGS.
 - H. ALL PERMITS, TESTING AND INSPECTION FEES.
2. NO EXTRA COMPENSATION WILL BE CONSIDERED FOR WORK REFERENCED OR IMPLIED IN THE CONTRACT DOCUMENTS. THE CONTRACT DOCUMENTS MAY INCLUDE BUT NOT BE LIMITED TO: ELECTRICAL, MECHANICAL, PLUMBING, ARCHITECTURAL OR STRUCTURAL.
3. NO EXTRA COMPENSATION WILL BE CONSIDERED FOR WORK REFERRED TO OR IMPLIED ON THE CONTRACT DOCUMENT BUT "NOT INCLUDED" IN THE BID UNLESS ABSOLUTELY NOTED AS SUCH ON THE SUBMITTED BID DOCUMENTS.
4. MATERIALS AND INSTALLATION SHALL COMPLY WITH FEDERAL, STATE, UTILITY REQUIREMENTS, LAWS AND ORDINANCES OF CITIES, TOWNS, OSMA AND LOCAL GOVERNING BODIES HAVING JURISDICTION.
5. THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF 12 MONTHS AFTER FINAL ACCEPTANCE OF THE WORK.
6. THE INTENT IS TO FURNISH, ERECT, INSTALL, CONNECT, CLEAN, ADJUST, TEST AND PLACE IN SERVICE ALL MATERIALS, EQUIPMENT AND SYSTEMS FOR ALL WORK SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS. SHOULD THERE BE ANY DISCREPANCIES OR A QUESTION OF INTENT, REFER THE MATTER TO THE ARCHITECT/ENGINEER FOR A FINAL DECISION.
7. ALL QUESTIONS DURING THE CONSTRUCTION PROCESS SHALL BE DIRECTED TO THE ENGINEER IN A WRITTEN FORM IN AN "RFI," ANY FORMAL OR INFORMAL DISCUSSION OR PHONE CONVERSATION DOES NOT CONSTITUTE THE AUTHORIZATION TO PROCEED OR ENGINEER'S APPROVAL. THE "RFI" MUST CONTAIN THE FOLLOWING INFORMATION: FAILURE TO COMPLY WILL RENDER THE "RFI" VOID AND IT WILL BE RETURNED UNANSWERED:
 - A. PROJECT NAME.
 - B. FIRM'S NAME.
 - C. DATE.
 - D. AUTHOR'S NAME (PRINTED).
 - E. AUTHOR'S NAME (SIGNED).
 - F. DRAWING NUMBER.
 - G. DATE OF DRAWING.
8. MISCELLANEOUS APPARATUS, MATERIAL OR WORK NOT SHOWN ON DRAWINGS, OR ANY INCIDENTAL ACCESSORIES, SHALL BE PROVIDED BY THE CONTRACTOR. TRANSFORMERS (LINE VOLTAGE TO LOW VOLTAGE), ETC., NECESSARY TO MAKE THE WORK COMPLETE SHALL BE FURNISHED AND INSTALLED WITHOUT ADDITIONAL EXPENSE TO THE OWNER.
9. THE ELECTRICAL CONTRACTOR SHALL FOLLOW THE STANDARDS AND SPECIFICATIONS CONTAINED HEREIN AS WELL AS:
 - A. ORDINA ELECTRICAL CODE (NEC 2017 WITH AMENDMENTS).
 - B. ALL APPLICABLE LOCAL AND MUNICIPAL CODES, AMENDMENTS AND ORDINANCES.
 - C. UNDERWRITERS LABORATORIES (UL).
 - D. NFPA, NEMA, ANSI, IES AND IEEE STANDARDS.
 - E. NEPA LIFE SAFETY CODE 101.
 - F. ASHRAE 90.1, INTERNATIONAL ENERGY CONSERVATION CODE.
10. THE ELECTRICAL CONTRACTOR SHALL BID ALL WORK AS SHOWN AND NOTED AND THE EXACT MATERIAL AND EQUIPMENT AS SPECIFIED. ANY UNAPPROVED SUBSTITUTION OF MATERIAL AND EQUIPMENT DURING THE BIDDING PROCESS TO SECURE THE AWARD OF CONTRACT WILL NOT BE ACKNOWLEDGED.

11. THE ELECTRICAL CONTRACTOR SHALL BE FINANCIALLY LIABLE FOR ANY REQUIRED ENGINEERING REVIEW TIME DUE TO ANY PROPOSED PRODUCT CHANGE AND/OR VOLUNTARY "VALUE ENGINEERING" DURING THE BIDDING PROCESS THROUGH THE SUBMITTAL PROCESS.
12. ANY CONFLICTING INFORMATION DEPICTED OR IMPLIED ON THE DRAWINGS IDENTIFIED DURING THE BIDDING PROCESS SHALL BE SUBMITTED FOR CLARIFICATION OF INTENT. FAILURE TO CLARIFY THE ENGINEERS INTENT MAY MAKE THE ELECTRICAL CONTRACTOR LIABLE FOR ANY ASSOCIATED COSTS RELATIVE TO CHANGES DURING THE CONSTRUCTION PROCESS.
13. NO EXTRA CHARGES SHALL BE ACCEPTED BY THE OWNER FOR WORK THAT HAS TO BE PERFORMED DUE TO THE CONTRACTOR'S NEGLIGENCE TO VERIFY THE EXISTING CONDITIONS.
14. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL MATERIAL AND LABOR SO THAT THIS CONSTRUCTION IS IN COMPLIANCE WITH THE APPLICABLE BUILDING CODES.
15. THE CONTRACTOR COVENANTS AND AGREES THAT HE AND HIS SUBCONTRACTORS AND THEIR AGENTS, AND EMPLOYEES WILL PROVIDE AND MAINTAIN AND SAFE PLACE TO WORK AND THAT HE AND THEY WILL COMPLY WITH ALL LAWS AND REGULATIONS OF ANY GOVERNMENTAL AUTHORITY HAVING JURISDICTION HEREON. THE CONTRACTOR AGREES TO INDEMNIFY, DEFEND AND HOLD HARMLESS THE ARCHITECT/ENGINEER(S) AND THE OWNER FROM AND AGAINST ANY LIABILITY, LOSS, INJURY, DEATH, DAMAGE OR EXPENSE, INCLUDING ATTORNEYS' FEES.

REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS

1. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE CONTRACT DOCUMENTS, VISIT THE SITE, AND BECOME THOROUGHLY FAMILIAR WITH THE BUILDING STANDARDS AND LOCAL CONDITIONS RELATING TO THE WORK PRIOR TO SUBMITTING THE BID PROPOSAL. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR OF THE OBLIGATIONS OF THE CONTRACT. IDENTIFY ALL DISCREPANCIES TO THE ENGINEER.
2. THE DRAWINGS SHALL SERVE TO INDICATE THE GENERAL LAYOUT OF THE VARIOUS ITEMS OF EQUIPMENT. THE LAYOUT OF THE EQUIPMENT, ACCESSORIES AND OTHER COMPONENTS ARE DIAGRAMMATIC UNLESS SPECIFICALLY SHOWN OR DIMENSIONED.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY MATERIALS, EQUIPMENT OR CONFIGURATION BELIEVED TO BE INADEQUATE, UNSUITABLE, IN VIOLATION OF LAWS, ORDINANCES, RULES OR REGULATIONS OF AUTHORITIES HAVING JURISDICTION PRIOR TO INSTALLATION.
4. THE EXISTING POWER, SIGNAL AND COMMUNICATION SYSTEMS ARE TO REMAIN IN SERVICE TO PROVIDE FOR THE OWNER'S FUNCTION. SHOULD IT BECOME NECESSARY TO SHUT-DOWN ANY SYSTEM OR PORTION OF A SYSTEM, APPROVAL IN WRITING SHALL BE OBTAINED FROM THE OWNER AND SHALL BE ONLY FOR THE PERIOD AND TIME AGREED UPON. THE BID IS TO INCLUDE THE COST OF ANY TEMPORARY WIRING AND PREMIUM TIME REQUIRED FOR THE SHUT-DOWN.
5. THE BID SHALL INCLUDE ANY RELOCATION COSTS TO THE EXISTING ELECTRICAL SYSTEM AND COMPONENTS OR EQUIPMENT REQUIRED TO ACCOMMODATE THE NEW CONSTRUCTION.

PERMITS, FEES

1. THE CONTRACTOR SHALL PREPARE AND SUBMIT ANY AND ALL DATA, DRAWINGS, AND DETAILS REQUIRED TO SECURE AND PAY FOR ALL PERMITS, GOVERNMENTAL FEES, TAXES, INSPECTIONS AND LICENSES NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK.
2. ARRANGE FOR AND PAY ALL APPLICABLE FEES FOR TEST AND INSPECTIONS REQUIRED BY LOCAL AUTHORITIES HAVING JURISDICTION.
3. WHERE REGULATIONS OF ELECTRIC UTILITY AND TELEPHONE COMPANIES APPLY, CONFORMANCE WITH THEIR REGULATIONS IS MANDATORY AND ANY COSTS INVOLVED SHALL BE INCLUDED IN THE CONTRACT.

SUBMITTALS AND SHOP DRAWINGS

1. THE CONTRACTOR SHALL PREPARE AND SUBMIT TO GOVERNMENTAL AGENCIES AND UTILITY COMPANIES THE SHOP DRAWINGS, WHICH ARE REQUIRED BY THESE AGENCIES, FOR THEIR APPROVAL.
2. THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE FIRE PREVENTION BUREAU, THE DOCUMENTS, INCLUDING DRAWINGS, REQUIRED TO OBTAIN APPROVAL OF EMERGENCY LIGHTING AND EXIT SIGN TYPES AND LOCATIONS. A COPY OF THE APPROVED DRAWINGS SHALL BE PROVIDED TO THE ENGINEER BEFORE THE START OF CONSTRUCTION.
3. THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE FIRE PREVENTION BUREAU, THE DOCUMENTS, INCLUDING DRAWINGS, REQUIRED TO OBTAIN APPROVAL OF THE EQUIPMENT AND LOCATIONS OF THE DEVICES THAT COMPRISE THE FIRE ALARM LIFE SAFETY SYSTEM. A COPY OF THE APPROVED DRAWINGS SHALL BE PROVIDED TO THE ENGINEER BEFORE THE START OF CONSTRUCTION.
4. CONTRACTOR SHALL SUBMIT COMPLETE FLOOR PLAN AND CEILING PLANS DRAWN TO THE SCALE OF 1/8" = 1'-0", SHOWING ALL EQUIPMENT, WIRINGS AND CONDUIT TO BE INSTALLED. THE COMPLETE BRANCH CIRCUIT WIRING DISTRIBUTION SYSTEM SHALL ALSO BE SHOWN, ACCURATELY INDICATING BRANCH CIRCUIT RUNS, CIRCUIT DESIGNATIONS AND LOCATIONS IN WALLS, FLOORS OR CEILINGS. THE DRAWING SHALL ALSO SHOW THE WORK COORDINATED WITH ALL OTHER TRADES. ALL DRAWINGS SHALL BE SUBMITTED PRIOR TO STARTING THE WORK, AND IN ACCORDANCE WITH AN APPROVED SCHEDULE PROVIDED BY THE CONTRACTOR, TO AVOID ANY DELAY ON PROJECT.
5. SHOP DRAWINGS SHALL INCLUDE CONTRACTOR'S NAME, JOB ADDRESS, MANUFACTURERS' NAMES, CATALOG NUMBERS, CUTS, DIAGRAMS AND OTHER SUCH DESCRIPTIVE DATA AS MAY BE REQUIRED TO IDENTIFY AND REVIEW THE EQUIPMENT. SUBMITTALS SHALL BE IN LOCAL GROUPS, FOR EXAMPLE, ALL LIGHTING FIXTURES (PARTIAL SUBMITTALS SHALL NOT BE REVIEWED). THE CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF THE FOLLOWING SHOP DRAWINGS FOR REVIEW:
 - A. LIGHTING FIXTURES, LIGHTING CONTROLS, LAMPS AND BALLASTS
 - B. RECEPTACLES, SWITCHES, WIRING DEVICES, DIMMERS, FLOOR FITTINGS, RELAYS, TIME SWITCHES
 - C. FUSES, DISCONNECT SWITCHES
 - D. PANELBOARDS AND OTHER DISTRIBUTION EQUIPMENT
 - E. SMOKE DETECTION, FIRE ALARM, SIGNAL DEVICES CONTROLLERS AND ANNUNCIATORS. A COMPLETE FIRE ALARM SYSTEM, INCLUDING POINT-TO-POINT DRAWINGS
 - F. SWITCHBOARDS AND METER CENTERS
6. PREPARE AND MAINTAIN IN CURRENT STATUS A COMPLETE SET OF DETAILED DRAWINGS COMPLETELY CIRCUITED WITH ALL BRANCH CIRCUIT LOAD SCHEDULES FOR ALL WORK INCLUDED UNDER THIS CONTRACT. THESE DRAWINGS SHALL BE MADE ON MYLAR SHEETS AT THE CONTRACTOR'S EXPENSE.
7. THE ELECTRICAL CONTRACTOR IS NOT ALLOWED TO USE THE CONTRACT DOCUMENTS FOR "AS-BUILT" DRAWINGS. THE BACKGROUNDS SHALL BE IN THE LATEST RELEASE OF AUTOCAD. AT THE CONTRACTORS OPTION THE AUTOCAD BACKGROUNDS CAN BE OBTAINED FROM THE ENGINEERING FIRM AT THE COST OF \$100.00 PER DRAWING FILE.
8. PRIOR TO ROUGHING IN ANY ELECTRICAL WORK AND ORDERING EQUIPMENT, SUBMIT DRAWINGS TO OWNER FOR REVIEW AND APPROVAL. THE ENGINEERS NOT CONTRACTED TO REVIEW SHOP DRAWINGS.
9. CONTRACTOR SHALL NOT ORDER ANY LIFE SAFETY EQUIPMENT OR ROUGH-IN ANY CONDUITS PRIOR TO SECURING APPROVAL OF RELATED SHOP DRAWINGS FROM THE LOCAL AUTHORITIES AND OWNER.
10. CONTRACTOR SHALL BE FINANCIALLY LIABLE FOR ANY REQUIRED ENGINEERING REVIEW DUE TO ANY PROPOSED PRODUCT CHANGE AND/OR VOLUNTARY "VALUE ENGINEERING" DURING THE BIDDING PROCEDURE AND THE SUBMITTAL PROCESS. CONTRACTOR SHALL BE FINANCIALLY LIABLE FOR ANY REQUIRED ENGINEERING REVIEW DUE TO SUPPLIERS OR MANUFACTURERS REQUIREMENTS TO HAVE AN ENGINEER SIGN OFF ON SUBMITTALS.
11. ONE (1) WEEK PRIOR TO THE FINAL INSPECTION, DELIVER TO THE ARCHITECT FOUR TYPEWRITTEN COPIES EACH OF THE FOLLOWING:
 - A. CERTIFICATION FROM CONTRACTOR THAT ALL EQUIPMENT AND SYSTEMS HAVE BEEN PROPERLY INSTALLED, ADJUSTED AND TESTED.
 - B. CERTIFICATION FROM THE RESPECTIVE MANUFACTURER'S AUTHORIZED REPRESENTATIVE THAT THE EQUIPMENT AND SYSTEMS HAVE BEEN PROPERLY INSTALLED, ADJUSTED AND TESTED.
 - C. FIRE ALARM SYSTEM
 - D. LIGHTING CONTROL SYSTEM

CONSTRUCTION REQUIREMENTS

1. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TEMPORARY POWER, LIGHTING AND WIRING FOR THE PERFORMANCE OF ALL TRADES FOR THE ENTIRE PERIOD OF CONSTRUCTION AND SHALL REMOVE ALL TEMPORARY SERVICES AT THE COMPLETION OF CONSTRUCTION.
2. MATERIALS AND EQUIPMENT SHALL BE LISTED AND/OR LABELED BY UL, ETL, CSA OR ANOTHER NATIONALLY RECOGNIZED TESTING LABORATORY.
3. ALL MATERIAL, EQUIPMENT, WIRING DEVICES, ETC. SHALL BE NEW, UNLESS SPECIFICALLY INDICATED AS EXISTING TO BE REUSED. ACCEPTABLE MANUFACTURERS:
 - A. SQUARE D COMPANY
 - B. CUTLER-HAMMER
 - C. GENERAL ELECTRIC COMPANY
4. ALL MATERIALS AND EQUIPMENT SHALL BE STORED, HANDLED, ERECTED, INSTALLED, CONNECTED, CLEANED, ADJUSTED, TESTED, CONDITIONED AND PLACED IN SERVICE IN ACCORDANCE WITH THE MANUFACTURERS' DIRECTIONS AND RECOMMENDATIONS.
5. EXCEPT AS NOTED OTHERWISE, ALL WORK REQUIRED INCLUDING LABOR, EQUIPMENT AND MATERIALS SHALL BE IN STRICT COMPLIANCE WITH THE BUILDING STANDARD.
6. THE CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS INCLUDING ALL SAFETY REQUIREMENTS ON THE PROJECT SITE AND SHALL COORDINATE ALL WORK ACTIVITIES WITH THE GENERAL CONTRACTOR.
7. THE ELECTRICAL CONTRACTOR WITH THE APPROVAL OF THE ARCHITECT/ENGINEER AND WITHOUT ADDITIONAL COST TO THE OWNER, MAY MAKE MINOR MODIFICATIONS IN THE WORK AS REQUIRED BY INTERFERENCES AND WORK OF OTHER TRADES.
8. THE ELECTRICAL CONTRACTOR SHALL REFER TO ALL CONTRACT DOCUMENTS FOR DETAILS, REFLECTED CEILING PLANS, AND LARGE SCALE DRAWINGS FOR ARCHITECTURAL, STRUCTURAL AND MECHANICAL WORK.
9. THE ELECTRICAL CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS/ELEVATIONS FOR THE EXACT LOCATION OF ALL LIGHT FIXTURES, RECEPTACLES AND WALL OUTLETS FOR ALL DIMENSIONS AND LOCATIONS.
10. COORDINATE THE UTILITY COMPANY SERVICE CORRESPONDENCE, FEEDS, AND INSTALLATION. ARRANGE ALL MEETINGS AS REQUIRED.
11. DELIVER MATERIALS IN ADEQUATE TIME TO MAINTAIN APPROVED CONSTRUCTION SCHEDULE AND STORE IN A SAFE DRY LOCATION OUT OF THE WAY OF CONSTRUCTION OPERATIONS WHERE APPROVED BY THE BUILDING ENGINEER.
12. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF CONDUIT, BOXES, EQUIPMENT, FIXTURES AND OTHER WORK. EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS SHALL BE DETERMINED AT THE SITE AND SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT/ENGINEER. THE ELECTRICAL CONTRACTOR SHALL CHECK DRAWINGS OF OTHER TRADES TO VERIFY LOCATIONS IN WHICH WORK WILL BE INSTALLED. FURNISH ALL TRADES AFFECTED WITH ADVANCE INFORMATION ON LOCATIONS, SIZES OF FRAMES, BOXES, SIZES, AND OPENINGS NEEDED FOR THE COMPLETION OF ALL WORK.

INSTALLATION

1. MOUNTING HEIGHTS AND ORIENTATION OF ALL DEVICES, EQUIPMENT, OUTLETS, JUNCTION BOXES AND LIGHTING FIXTURES SHALL BE PER ARCHITECTURAL ELEVATIONS.
2. ALL FEEDERS AND BRANCH CIRCUITS SHALL BE CONNECTED TO PANELBOARDS, SO THAT LOADS ARE DISTRIBUTED EQUALLY ON ALL PHASES.
3. A VERIFICATION OF POLARITY SHALL BE MADE, AND IT SHALL BE ENSURED THAT ALL FUSES, CIRCUIT BREAKERS AND CONTROL DEVICES ARE CONNECTED IN THE LINE SIDE (HOT) CONDUCTORS ONLY. BAYNETT AND EDISON SOCKET LAMP HOLDERS SHALL HAVE THEIR OUTER SHELL CONNECTED TO THE NEUTRAL. POLARITY OF THE RECEPTACLES SHALL BE VERIFIED.

EXECUTION

1. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF THE ELECTRICAL EQUIPMENT. UNLESS OTHERWISE NOTED, MOUNTING HEIGHTS SHALL BE AS DIRECTED BY ARCHITECT:
 - A. RECEPTACLES AND COMMUNICATIONS OUTLETS SHALL BE MOUNTED 15" AFF ON CENTERLINE. THE LONG DIMENSION SHALL BE VERTICALLY MOUNTED.
 - B. SWITCHES SHALL BE MOUNTED 48" AFF.
 - C. ABOVE COUNTER OUTLETS AND SWITCHES SHALL BE MOUNTED AT 48" AFF TO CENTERLINE, BUT NOT LESS THAN 3-1/2" ON CENTERLINE ABOVE THE BACKPLATE.
 - D. WALL MOUNTED TELEPHONE SHALL BE MOUNTED 54" AFF TO CENTERLINE.
 - E. HVAC USER LOCAL DISCONNECT SWITCHES SHALL BE MOUNTED 54" AFF TO CENTERLINE.
 - F. FIRE ALARM DEVICES:
2. AUDIO/VISUAL ALARM DEVICES SHALL BE WALL MOUNTED 80" AFF TO CENTERLINE OR 6" BELOW CEILING, WHICHEVER IS LOWER.
3. NUMBERED CIRCUITS ARE TO ILLUSTRATE DESIGN INTENT TO ELECTRICAL CONTRACTOR. FIELD CONDITIONS MAY ARISE TO CHANGE DESIGN. INDICATE THE ACTUAL CIRCUIT NUMBERS USED ON THE "AS-BUILT" DRAWINGS.
4. ALL WORK INSTALLED WITHIN THE CEILING PLENUM SHALL BE IN ACCORDANCE WITH WIRING METHOD REQUIREMENTS FOR AIR HANDLING CEILING SPACES. REFER TO THE MECHANICAL AND ARCHITECTURAL DRAWINGS FOR PLENUM AREAS AND ADDITIONAL INFORMATION.
5. ALL OF THE PIPE ELECTRICAL, INSERTS, CASTINGS, FRAMES AND OTHER APPURTENANCES SHALL BE SHOWN ON THE ELECTRICAL DRAWINGS. THE CONTRACTOR SHALL COORDINATE THE ELECTRICAL DRAWINGS WITH ALL OTHER CONTRACT DOCUMENTS AND TRADES FOR LOCATIONS, SIZES AND DETAILS.
6. PRIOR TO ANY DIGGING, TRENCHING, ETC. CONTACT ALL LOCAL UTILITY COMPANIES AND MUNICIPALITIES AND CONFIRM EXACT LOCATIONS OF ALL EXISTING UTILITIES.

CLOSEOUT

1. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL BALANCE EACH PANEL SO THAT THERE IS NO MORE THAN 3% DIFFERENCE BETWEEN PHASES. THE LOAD SHALL BE MONITORED DURING THE PEAK AM. DEMAND PERIOD. HOWEVER, THE RECONFIGURATION OF THE PANEL SHALL OCCUR AFTER CLOSE OF BUSINESS. THE SCHEDULING OF ALL WORK SHALL BE WITH THE CONSTRUCTION MANAGER. SUBMIT REPORT TO ENGINEER. ELECTRICAL CONTRACTOR SHALL TAKE ACTUAL READINGS IF THE OWNER REQUESTS. TO DEMONSTRATE THE PROPER LOAD BALANCE. IN THE EVENT THAT, IN THE OPINION OF THE ARCHITECT AND ENGINEER, THE LOADS ARE NOT PROPERLY BALANCED, THE CONTRACTOR SHALL ADJUST CIRCUITS AT HIS EXPENSE.
2. THE CONTRACTOR SHALL PROVIDE NEW TYPE-WRITTEN PANEL DIRECTORIES FOR ALL PANELS CHANGED OR ADDED. PROVIDED ENGRAVED PLASTIC LABELS PERMANENTLY ATTACHED (NO ADHESIVES) FOR ALL NEW PANELS AND DISTRIBUTION EQUIPMENT.
3. PRIOR TO FINAL ACCEPTANCE, THE CONTRACTOR SHALL PROVIDE A WRITTEN CERTIFICATE THAT ALL EQUIPMENT AND SYSTEMS HAVE BEEN PROPERLY INSTALLED PER CODE, CLEANED, ADJUSTED AND TESTED. INCLUDE IN THE CERTIFICATE CORRESPONDENCE FROM EACH EQUIPMENT MANUFACTURER'S REPRESENTATIVE THAT THE CONFIGURATION OF THEIR EQUIPMENT, SYSTEM AND THE INSTALLATION CONFORM TO THE MANUFACTURER'S REQUIREMENTS.
4. THE CONTRACTOR SHALL PROVIDE ORIGINAL "AS-BUILT" DRAWINGS. THESE DRAWINGS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE ON REPRODUCIBLE SHEETS OF THE SAME SIZE AS THE ARCHITECTURAL DRAWINGS. SUBMIT AS-BUILT DRAWINGS TO OWNER.
5. SUBMIT CERTIFIED RECORDS OF ALL TESTS, INCLUDING LOAD BALANCING, IN TABULATED PERMANENT, REPRODUCIBLE FORM, COMPLETELY INDEXED AND EXPLAINED, INDICATING THE SPECIFIC TEST PERFORMED, ENVIRONMENTAL CONDITIONS AND RESULTS OBTAINED UPON COMPLETION OF THE PROJECT AND FULL SCOPE OF WORK.
6. PROVIDE PERMANENT IDENTIFICATION MARKINGS AND NAMEPLATES FOR WIRING AND EACH ITEM OF ELECTRICAL APPARATUS AND ASSOCIATED CONTROLLED EQUIPMENT, WITH THE SAME INSCRIPTIONS AS SHOWN ON THE DRAWINGS, OR, AS DIRECTED, CLEARLY AND NEATLY APPLIED ENGRAVED PLASTIC LAMINATE, WHITE WITH BLACK CURE, 1-1/4" X 3" MINIMUM.
7. A GROUND CONTINUITY TEST (MEGGER) SHALL BE MADE BETWEEN MAIN GROUND SYSTEM AND EQUIPMENT. THE TEST SHALL BE IN ACCORDANCE WITH TEN AMPS D.C. SHALL BE USED BETWEEN GROUND REFERENCES AND EACH GROUND POINT TESTED. RESISTANCE SHALL BE CALCULATED AND SHALL NOT EXCEED 25 OHMS.
8. PROVIDE A PERMANENT PLAQUE IN THE ELECTRICAL ROOM INDICATING THE FEEDER SIZES AND LOCATIONS OF EACH OF THE ELECTRICAL SERVICES.

CUTTING AND PATCHING

1. ALL CUTTING, DRILLING AND PATCHING OF BUILDING CONCRETE, MASONRY, STEEL OR BRON WORK SHALL BE INCLUDED BY THE CONTRACTOR, SO THAT THE WORK SHALL BE PROPERLY INSTALLED UNDER NO TENDENCY FOR STRUCTURAL WORK BE CUT, WITHOUT WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER PRIOR TO THE START OF WORK.
2. FIRE SEAL ALL PENETRATIONS THROUGH RATED WALLS, CEILINGS AND FLOORS WITH 3M MODEL FIRE BARRIER CP-25, OR THOMAS & BETTS MODEL #FAME SAFE.
3. PROVIDE DRILLING, CUTTING, FITTING AND PATCHING NECESSARY FOR THE INSTALLATION OF CONDUITS, WIRE WAYS AND OTHER ELECTRICAL EQUIPMENT, AND PROVIDE SUPPORTS FOR BRACING AND ANCHORAGE OF WORK. NO CUTTING OF STRUCTURAL WORK OR OF FIREPROOFING SHALL BE DONE WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT AND STRUCTURAL ENGINEER.
4. NO CORING, DRILLING OR OTHER PENETRATIONS POST TENSION SLABS IS ALLOWED UNLESS AUTHORIZED BY THE STRUCTURAL ENGINEER. COORDINATE WORK WITH THE GENERAL CONTRACTOR AND BUILDING ENGINEER.
5. THE SLAB SHALL BE X-RAYED PRIOR TO CUTTING TO DETERMINE THE EXACT LOCATION OF STRUCTURAL MEMBERS. CUTTING OF ANY STRUCTURAL MEMBERS IS UNACCEPTABLE.

WIRE

1. BRANCH CIRCUIT WIRE FOR USE IN INTERIOR DRY LOCATIONS #8 AWG AND SMALLER SHALL BE TYPE THHN COPPER CONDUCTORS. ALL OTHER SIZE WIRE FOR USE IN INTERIOR DRY LOCATIONS SHALL BE DUAL RATED THHN/THWN 600 VOLT INSULATED COPPER CONDUCTORS. NO WIRE SMALLER THAN NO. 12 AWG SHALL BE USED FOR LIGHTING OR POWER WIRING. CONTROL WIRE SHALL BE 14 AWG STRANDED.
2. BRANCH CIRCUIT HOMERUNS FOR 120 VOLT CIRCUITS OVER 80'-0" LONG AND FOR 277 VOLT CIRCUITS OVER 120'-0" LONG SHALL BE ONE STANDARD WIRE SIZE LARGER THAN WHAT IS REQUIRED FOR THE AMPERE RATING OF PROTECTIVE DEVICE.
3. BRANCH CIRCUIT WIRING CONSISTING OF ONE NEUTRAL OR MORE SHALL HAVE THE NEUTRAL CONDUIT INCREASED TO #10 AWG MINIMUM.
4. ISOLATED GROUNDING RECEPTACLE BRANCH CIRCUIT WIRING SHALL CONSIST OF A DEDICATED PHASE, NEUTRAL AND ISOLATED (INSULATED) GROUNDING CONDUCTORS FOR EACH CIRCUIT.
5. PROVIDE GROUND CONDUCTOR IN ALL LMT AND IMC TYPE CONDUITS.
6. TELEPHONE AND COMMUNICATION WIRING AND ALL FINAL TERMINATION'S AT THE PUNCHDOWN ARE THE RESPONSIBILITY OF THE OWNER'S TELEPHONE SERVICE PROVIDER.
7. ELECTRONIC EQUIPMENT, CABLEING, AND ALL ACCESSORIES SHALL BE INSTALLED BY THE OWNERS REPRESENTATIVE OR APPROVED OTHER.
8. 600 VOLT WIRE AND CABLE FOR BRANCH CIRCUITS AND FEEDERS SHALL BE SINGLE CONDUCTOR COPPER, NO. 12 MINIMUM EXCEPT WHERE NOTED OTHERWISE. COLOR CODE PER OWNER.
9. 600 VOLT WIRE AND CABLE SHALL BE STRANDED.
10. WIRE INSULATION FOR CONTROLS, BRANCH CIRCUITS AND BRANCH FEEDERS SHALL BE TYPE THW, THHN OR THHW FOR 75 DEGREES C., AND WIRE FOR LINE VOLTAGE, CONTROL CIRCUITS AND SIGNAL SYSTEM SHALL BE NO. 14 AWG MINIMUM SOLID COPPER WITH 800 VOLT INSULATION TYPE THW, THHN, THHN.

RACEWAYS

1. PROVIDE COMPLETE METAL RACEWAY SYSTEMS AND ENCLOSURES FOR ALL LIGHTING, POWER, TELEPHONE/DATA, FIRE ALARM WIRING THROUGHOUT THE EXTENT OF THE REQUIRED SYSTEMS.
2. RACEWAYS SHALL CONSIST OF THE FOLLOWING:
 - A. ELECTRICAL METALLIC TUBING (EMT) SHALL BE USED FOR ALL POWER AND LIGHTING BRANCH CIRCUITS. EMT FITTINGS SHALL BE OF THE SET-SCREW TYPE. COMPRESSION TYPE FITTING SHALL BE USED IN PLENUM AREAS.
 - B. CONDUIT OF ANY SIZE USED FOR COMMUNICATIONS OR DATA WIRING, LOCATED INDOORS, SHALL BE EMT. EMT FITTINGS SHALL BE SET-SCREW TYPE. COMPRESSION TYPE FITTINGS SHALL BE USED IN PLENUM AREAS.
 - C. RIGID HEAVY WALL GALVANIZED STEEL (HWM) OR INTERMEDIATE METAL CONDUIT (IMC) SHALL BE USED FOR POWER CONDUIT 2-1/2" DIAMETER OR LARGER, OR ANY SIZE CONDUIT WHEN ENCASED IN THE FLOOR SLAB. HW SHALL BE USED FOR INCOMING ELECTRICAL SERVICE, ANY SIZE CONDUIT ROUTED OUTDOORS, OR WHERE IN DIRECT CONTACT WITH THE EARTH. ALL HW AND IMC FITTINGS AND COUPLINGS SHALL BE THREADED.
 - D. MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS OTHERWISE INDICATED. ALL EMPTY CONDUITS SHALL HAVE A NYLON PULLSTRING.
 - E. COMMUNICATIONS SYSTEM RACEWAY THE RACEWAY SYSTEM FOR COMBINATION TELEPHONE/DATA OUTLETS SHALL UTILIZE A 4" SQUARE 2-1/8" DEEP BACKBOX WITH A SINGLE GANG FLUSH WALL OPENING WITH A 3/4" CONDUIT TO THE RACEWAY SYSTEM. TELECOMMUNICATION CONDUITS SHALL BE BASED ON THE QUANTITY OF CABLES ROUTED TO EACH TELECOMMUNICATION DEVICE. CONFIRM ACTUAL CABLE TYPE AND PHYSICAL SIZE PRIOR TO CONDUIT INSTALLATION.
3. PROVIDE A PULL WIRE OR ROPE IN ALL EMPTY CONDUIT.
4. ALL RACEWAYS SHALL BE CONCEALED. DEVICES SHALL BE FLUSH MOUNTED, UNLESS OTHERWISE NOTED.

5. EACH SWITCH, LIGHTING FIXTURE, RECEPTACLE AND OTHER MISCELLANEOUS DEVICES SHALL BE PROVIDED WITH A GALVANIZED PRESSED STEEL OUTLET BOX OF NOT LESS THAN NO. 14 US GAUGE STEEL. RACEWAYS SHALL BE FASTENED WITH LOCKWUITS. ALL UNUSED KNOCKOUTS MUST BE SEALED. THERE MUST BE SUFFICIENT ROOM FOR WIRES AND DEVICES AND DEEP BOXES SHALL BE INSTALLED WHERE REQUIRED. BOXES SHALL BE SECURELY AND ADEQUATELY SUPPORTED.
6. FINAL CONNECTIONS TO MOTORS, TRANSFORMERS AND SIMILAR EQUIPMENT THAT IS SUBJECT TO VIBRATION OR ADJUSTMENT SHALL BE MADE WITH SECTIONS OF FLEXIBLE METAL CONDUIT. THE MINIMUM LENGTH SHALL BE 18" AND THE MAXIMUM SHALL BE 36" LONG.
7. IN SUSPENDED CEILING WHERE RECESSED LIGHTING FIXTURES ARE INSTALLED, PROVIDE JUNCTION BOXES NEAR THE FIXTURES FOR EXTENDING THE BRANCH CIRCUIT CONDUCTORS TO THE FIXTURE USING FLEXIBLE METAL CONDUIT. THE FLEXIBLE METAL CONDUIT SHALL BE 3/8" MINIMUM PLENUM RATED, IN LENGTHS NOT EXCEEDING 6'.

8. BRANCH CIRCUIT HOME RUNS OVER 75 FEET LONG AT 250 VOLTS SHALL BE ONE WIRE SIZE LARGER THAT THE AMPERE RATING OF PROTECTIVE DEVICE.
9. IN SUSPENDED CEILINGS, PROVIDE DEDICATED SUPPORT FOR CONDUIT AND JUNCTION BOXES DIRECTLY FROM THE STRUCTURAL SLAB, DECK, OR FRAMING PROVIDED FOR THAT PURPOSE. BRANCH CIRCUIT CONDUITS SHALL NOT BE CLIPPED TO DUCTWORK. THE CEILING SUPPORT WIRES OR SPLINE UNLESS THAT CEILING SYSTEM HAS BEEN SPECIFICALLY DESIGNED FOR THAT PURPOSE.

10. ALL CONDUIT, WIREWAY AND EQUIPMENT SHALL BE PROTECTED AGAINST ENTRANCE OF LOUDS AND FOREIGN MATTER BY MEANS OF PLUGS OR CAPS. COVER FIXTURES, DETECTORS AND DEVICES FURNISHED AND/OR INSTALLED DURING THE CONSTRUCTION PERIOD. DEVICES DAMAGED SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR REPLACED.
11. PROVIDE CORROSION RESISTANT HANGERS, ANGLES, CHANNELS ANCHORS AND OTHER SUPPORTS REQUIRED BY FIELD CONDITIONS TO INSTALL ITEMS OF ELECTRICAL EQUIPMENT. SUPPORTS AND METHODS OF FASTENING TO BUILDING STRUCTURE SHALL BE ACCEPTABLE TO THE ARCHITECT/ENGINEER.

12. NO ELECTRICAL ITEMS SHALL REST ON, OR DEPEND FOR SUPPORT ON SUSPENDED CEILING MECHA (TILES, PLASTER, SPLINES, ETC.) IN SUSPENDED CEILING, SUPPORT CONDUITS DIRECTLY FROM STRUCTURAL SLABS, DECKS OR FRAMING MEMBER.
13. ELECTRICAL METALLIC TUBING (EMT) "THIN WALL" CONDUIT SHALL BE HOT-DIPPED GALVANIZED 2 INCHES AND SMALLER WHEN USED FOR LIGHTING AND POWER CIRCUITS.

14. FLEXIBLE CONDUIT SHALL BE GALVANIZED STEEL, 3/4 INCH MINIMUM SIZE, EXCEPT FOR LIGHTING FIXTURE WHIPS THAT MAY BE 3/8 INCH MINIMUM SIZE. IN AIR PLENUM AREAS, PROVIDE THE TYPE OF FLEXIBLE CONDUIT IN ACCORDANCE WITH CODE REQUIREMENTS. LENGTH OF FLEXIBLE CONDUIT SHALL BE SIX (6) FEET MAXIMUM.
15. THE ELECTRICAL CONTRACTOR MAY SUBSTITUTE 1/2" C FOR THE SPECIFIED 3/4" IF THE FOLLOWING CONDITIONS ARE SATISFIED:
 - A. SUBMIT TO THE ENGINEER A FULLY CIRCUITED PLAN SHOWING ALL PROPOSED CONDUIT AND WIRING LAY OUT FOR REVIEW.
 - B. SUBMIT TO THE ENGINEER FOR REVIEW A COMPLETE CALCULATION TO INDICATE CONDUIT FILL RATIO IN CONJUNCTION WITH THE SUBMITTED PLAN.
 - C. THIS SUBMISSION IS SUBJECT TO A REVIEW FEE BY THE ENGINEER OF \$300.00 MINIMUM AND \$100.00 PER HOUR THEREAFTER.

16. CONDUITS SHALL RUN PARALLEL TO BUILDING CONSTRUCTION AND SUITABLY SUPPORTED AT CODE REQUIRED INTERVALS. SUCH CONDUITS SHALL BE PAINTED IN ACCORDANCE WITH THE ARCHITECT'S DIRECTIONS.
17. BUSHINGS FOR 1 INCH CONDUIT AND SMALLER SHALL BE SELF-EXTINGUISHING THERMOPLASTIC TYPE. FOR 1-1/4 INCH CONDUIT AND LARGER SHALL BE MALLEABLE IRON BODY, WITH INSULATING MATERIAL LOCATED IN PLACE.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE RUSTPROOF BOXES, CABLE SUPPORT BOXES AND WIREWAYS FOR PROPER INSTALLATION OF THE ELECTRICAL WORK WITH ALL COVERS ACCESSIBLE. ALL PULL BOXES, CABLE SUPPORT BOXES AND LARGE JUNCTION BOXES FOR INDOOR USE SHALL BE OF CODE GAUGE STEEL. ALL BOXES INSTALLED IN AIR PLENUM CEILINGS SHALL BE IN ACCORDANCE WITH THE CODE.

19. OUTLET BOXES SHALL BE GALVANIZED PRESSED STEEL, KNOCKOUT TYPE, WITH SUITABLE PLASTER RINGS AND COVERS OR PLATES. SIZE IN ACCORDANCE WITH THE NEC OR GOVERNING CODES.
20. ALL CEILING OUTLETS, INSTALLED IN PLASTER CEILING SHALL BE 4 INCHES OCTAGON 2-1/8 INCHES DEEP MINIMUM. CEILING OUTLETS, WHICH ARE TO SUPPORT LIGHTING FIXTURES, SHALL BE EQUIPPED WITH A 3/8 INCH MALLEABLE IRON FIXTURE STUD SECURELY FASTENED INTO THE OUTLET BOX.
21. OUTLET BOXES WHICH ARE INSTALLED IN PLASTER WALLS SHALL BE 4 INCHES SQUARE 1-1/2 INCHES DEEP WITH PLASTER RINGS OF THE SAME DEPTH AS THE PLASTER. MULTIBANG BOXES SHALL BE USED WHERE REQUIRED.
22. INSTALL ALL CONDUITS WITH NO MORE THAN 270 DEGREES OF BENDS. ALL CONDUIT THAT REQUIRES MORE THAN THE SPECIFIED DEGREE OF BENDS SHALL HAVE A PULLBOX INSTALLED.
23. ALL PANELBOARD FEEDERS OF MORE THAN 200' SHALL HAVE A PULLBOX INSTALLED.
24. ALL PULLBOXES SHALL BE SIZED IN ACCORDANCE WITH THE APPLICABLE CODE OR NEC 314-71.
25. PROVIDE A RACEWAY SYSTEM OF CONDUITS, CONFIGURED FOR 4 CABLES PER OUTLET, 0.24" OD (VERIFY) UTILIZING WIDE RADIUS BENDS AND OVERSIZED JUNCTION BOXES. THE CONDUITS SHALL TERMINATE WHERE NOTED ON THE PLANS. THE GROUPING OF CABLES SHALL BE AS FOLLOWS:

MAXIMUM QUANTITY OF CABLES IN CONDUIT											
CABLE DIAMETER	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6
18	1	1	1	1	1	1	1	1	1	1	1
22	0	4	7	12	16	22	36	50	60	70	80
24	0	3	6	10	15	20	30	40	50	60	70
29	0	2	4	6	9	12	17	21	26	31	36
31	0	2	3	4	6	8	12	14	17	20	24

DEVICES

1. SPECIAL RECEPTACLES SHALL BE AS NOTED ON THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE ALL SPECIAL OUTLET BOXES THAT MAY BE REQUIRED TO ENCLOSE RECEPTACLES.
2. THE COLOR OF RECEPTACLES, SWITCHES, DIMMERS AND WALL PLATES SHALL BE AS DIRECTED BY ARCHITECT. ISOLATED GROUNDING OUTLETS AND COVERPLATES SHALL BE IDENTIFIED WITH AN ORANGE TRIANGLE.
3. DIMMERS SHALL BE THIN PROFILE WITH ELECTRONIC TOUCH SWITCH AND LINEAR SLIDE CONTROL. DIMMERS SHALL BE COMPATIBLE WITH THE LIGHT FIXTURE BALLAST OR LOW VOLTAGE TRANSFORMERS. DEBATE FOR HEAT AS REQUIRED. PROVIDE SEPARATE NEUTRALS FOR EACH DIMMER AND ONE SINGLE CONTINUOUS COVERPLATE FOR MULTIPLE DIMMERS. MANUFACTURED BY LUTRON MODEL 6AVR0, LIGHTOLIER MODEL JONSET SERIES.
4. PROVIDE PILOT SWITCH FOR CONTROL OF EACH EXHAUST FAN. THE TOGGLE SHALL ILLUMINATE WHEN THE FAN IS ON. ENGRAVE THE NAMEPLATE WITH THE MARKING "EXHAUST FAN".
5. RECEPTACLES AND SWITCHES SHALL BE TRADITIONAL STYLE WITH FINDER GROOVE FACE, 20A RATED, SIZE WIRE, PLATED STEEL WRAP-AROUND BRIDGE, TOGGLE TYPE SWITCH OPERATORS AND THERMOPLASTIC NYLON FACE.
6. ALL RECEPTACLES AND SWITCHES SHALL BE MANUFACTURED BY: HUBBELL, LEVITON, OR PASS/SEYMOUR.
7. ALL DEVICE PLATES TO BE THERMOPLASTIC NYLON TYPE.

LAMPS AND BALLASTS

1. FLUORESCENT AND COMPACT FLUORESCENT LAMPS SHALL BE TRIPHOSPHOR TYPE, COLOR TEMPERATURE OF 3500K AND A COLOR RENDERING INDEX OF NOT LESS THAN 82 (T8). MANUFACTURED BY GENERAL ELECTRIC, OSRAM/SYLVANIA OR PHILIPS.
2. BALLASTS SHALL CONSIST OF THE FOLLOWING:
 - A. FLUORESCENT LAMP BALLASTS SHALL BE ELECTRONIC, WITH A MAXIMUM TOTAL HARMONIC DISTORTION LESS THAN 10%, HIGH POWER FACTOR TYPE, CLASS A SOUND RATING.
 - B. COMPACT FLUORESCENT BALLASTS SHALL BE HIGH POWER FACTOR TYPE, CLASS A, MANUFACTURED BY GE/MOTOROLA, ADVANCE, ENERGY SAVING OR UNIVERSAL.
 - C. COORDINATE BALLAST/REDUCED WATTAGE LAMP COMPATIBILITY WITH ENERGY SAVING, HIGH EFFICIENCY.
 - D. ALL BALLASTS USED SHALL BE UL LISTED.
3. INCANDESCENT LAMP HOLDERS SHALL BE MADE OF PORCELAIN OR HIGH HEAT, NONHYGROSCOPIC, NONFLAMMABLE MOLDED COMPOUND, RATED AT NOT LESS THAN 600 WATTS, 250 VOLTS, AND SHALL BE FIRMLY HELD IN PLACE TO PREVENT DAMAGE TO CONDUCTOR INSULATION AND TO PREVENT SOCKET TURNING DURING LAMP REPLACEMENT.

LIGHTING CONTROLS

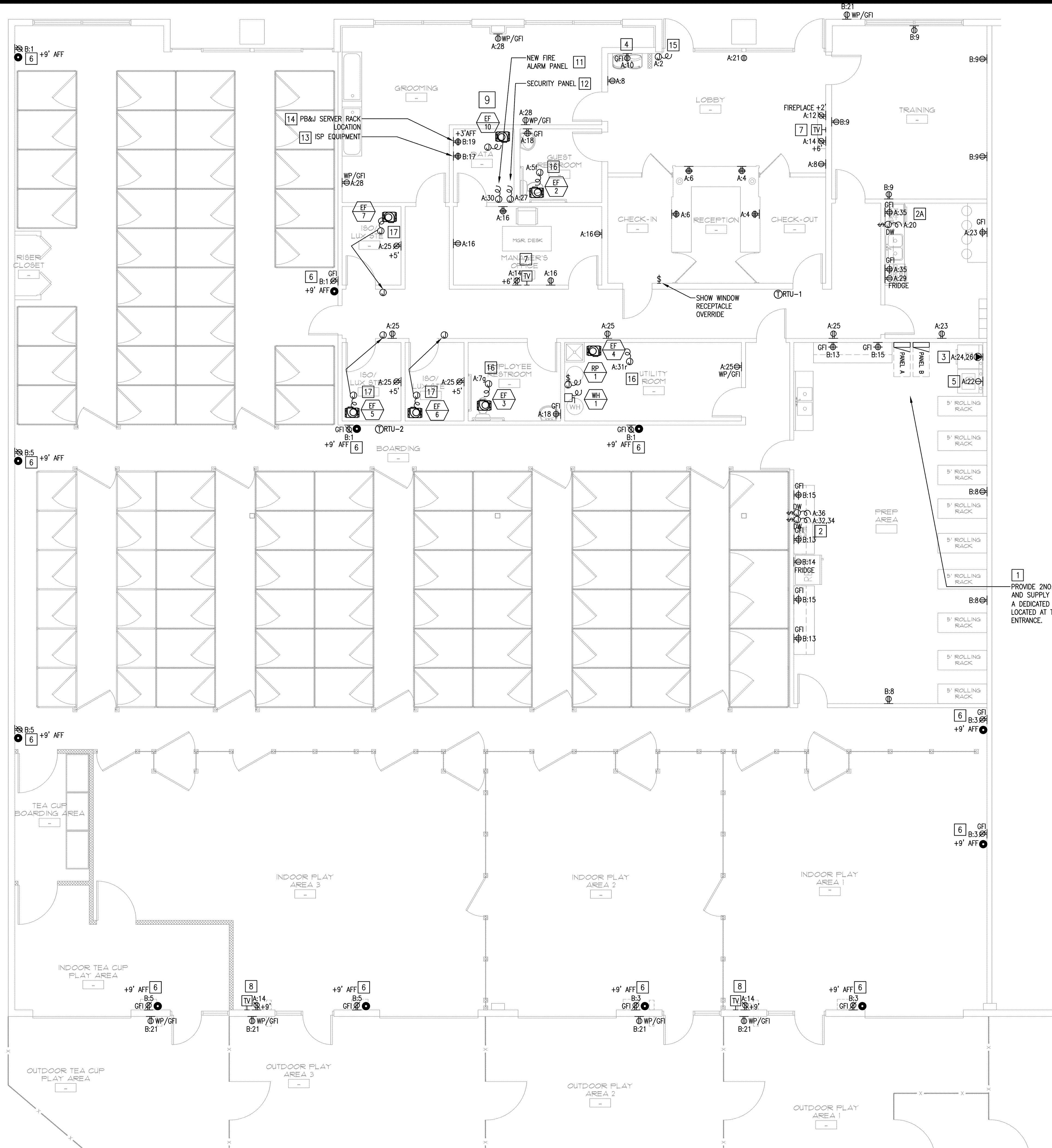
1. ALL OCCUPANCY DEVICES SHALL BE DUAL TECHNOLOGY PASSIVE INFRARED AND ULTRASONIC TYPE FOR MAXIMUM RELIABILITY.
2. PROVIDE ALL POWER PAKS REQUIRED.

LIGHTING

1. THE CONTRACTOR SHALL VERIFY THE CEILING TYPE BEFORE ORDERING LIGHTING FIXTURES. RECESSED FIXTURES INSTALLED IN PLENUM CEILING SHALL BE PLENUM APPROVED. FIXTURES SHALL BE PROVIDED WITH THE PROPER FRAME OR ADAPTER TO RESIZE THE TYPE OF CEILING. COMPLETE WITH LAMPS, LENSES, END CAPS, MOUNTING HARDWARE, ETC. MODIFY THE FIXTURE CATALOG NUMBERS AS REQUIRED TO OBTAIN THE NECESSARY OPTIONS AND ACCESSORIES.
2. EACH LIGHTING FIXTURE SHALL BE RIDIDLY SUPPORTED FROM THE BUILDING CONSTRUCTION AND SHALL INCLUDE SUSPENSION HANGERS, DEVICES AND OTHER WORK FOR FIXTURE SUPPORT. FIXTURES SHALL NOT BE SUPPORTED FROM THE CEILING GRID SYSTEM UNLESS THE CEILING SYSTEM IS SPECIFICALLY MANUFACTURED AND APPROVED TO DO SO.
3. PROVIDE LINE FUSE FOR ALL FLUORESCENT BALLASTS. FIELD FUSE ANY FIXTURE NOT CONTAINING SAME.
4. RECESSED MOUNTED LIGHTING FIXTURES SHALL BE CONNECTED TO A JUNCTION BOX WITH FLEXIBLE CONDUIT. FUNNEL CONNECTION OF LIGHT FIXTURE SHALL BE WITH HEAT RESISTANT WIRE.
5. BALLASTS SHALL BE ACCESSIBLE, FOR SERVING WITHOUT REMOVING OR DISMANTLING THE FIXTURES. EACH FLEXIBLE BALLAST SHALL BE BOLTED TO THE FIXTURE BODY OR HOUSING WITH FOUR STUDS OR CAPTIVE SCREWS. FIXTURES SHALL BE RECESSED, SURFACE OR PENDANT TYPE AS SPECIFIED IN FIXTURE SCHEDULE, AND SHALL INCLUDE SOCKETS, OUTLETS, CEILING CANNOPES AND ITEMS, HOOKS AND ALL OTHER NECESSARY ACCESSORIES.
6. SHEET METAL ASSEMBLIES SHALL CONFORM WITH ALL OF THE FOLLOWING:
 - A. SHALL BE FORMED TO PREVENT WARPING AND SAGGING. HOUSING, TRIM AND LENS FRAME SHALL BE TRUE STRAIGHT (UNLESS INTENTIONALLY CURVED) AND PARALLEL TO EACH OTHER AS DESIGNED.
 - B. WIREWAYS AND FITTINGS SHALL BE FREE OF BURRS AND SHARP EDGES AND SHALL ACCOMMODATE INTERNAL AND BRANCH CIRCUIT WIRING WITHOUT DAMAGE TO THE WIRING.
 - C. WHEN INSTALLED, ALL EXPOSED FIXTURE HOUSING SURFACES, TRIM FRAME, DOOR FRAME AND LENS FRAME SHALL BE FREE OF LIGHT LEAKS. LENS DOOR SHALL CLOSE IN A LIGHT TIGHT MANNER.
 - D. HINGED DOOR CLOSURE FRAMES SHALL OPERATE SMOOTHLY WITHOUT BINDING WHEN THE FIXTURE IS IN THE INSTALLED POSITION, AND LATCHES SHALL FUNCTION EASILY BY FINGER ACTION WITHOUT THE USE OF TOOLS.
 - E. PROVIDE 18" X 18" MINIMUM ACCESS PANELS AS REQUIRED. TYPE SHALL BE TO SUIT APPLICATION.
7. LIGHTING FIXTURE INSTALLATION SHALL BE COORDINATED WITH HVAC DUCTS, EQUIPMENT, AND FIRE PROTECTION PIPING. WITHOUT ADDITIONAL COST TO THE OWNER, CONTRACTOR SHALL REARRANGE FIXTURES TO AVOID OBSTRUCTIONS AND SUBMIT NEW LAYOUT TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.
8. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE CEILING CONTRACTOR AND THE MECHANICAL CONTRACTOR. FAILURE TO COORDINATE WILL MAKE THE ELECTRICAL CONTRACTOR RESPONSIBLE FOR ALL COST RELATING TO LIGHT FIXTURE LOCATIONS AND CHANGES.
9. ENAMELED FINISHES SHALL BE ELECTROSTATICALLY APPLIED AND BAKED.
10. FINISH OF FIXTURES SHALL BE UNIFORM IN QUALITY AND APPEARANCE, DURABLE AND FREE FROM DEFECTS.
11. ALL REFLECTORS SHALL BE PROTECTED WITH REMOVABLE PROTECTIVE VINYL FILM WHICH SHALL BE REMOVED AFTER INSTALLATION AND BEFORE RELAMPING.
12. ALL FLUORESCENT FIXTURES CONNECTED TO 20A CIRCUITS SHALL BE PROVIDED WITH INDIVIDUAL FUSES.
13. ALL LIGHTING CONTROL SYSTEM SHALL BE PROVIDED IN ACCORDANCE WITH ASHRAE 90.1 AND EEC 2015.

DISTRIBUTION

1. ALL ELECTRICAL PANELBOARDS SHALL COMPLY WITH THE FOLLOWING:
 - A. COPPER BUS
 - B. ALLOW ADEQUATE WIRING AND BENDING SPACE TO PROPERLY TERMINATE CONDUCTORS WITHOUT INJURY TO THE CONDUCTOR OR TO THE CONDUIT.
 - C. ALL CIRCUIT BREAKERS SHALL BE BOLT ON UNLESS OTHERWISE NOTED.
2. THREE PHASE MOTOR STARTERS SHALL BE OF THE COMBINATION TYPE, CONSISTING OF A FUSED DISCONNECT SWITCH AND ACROSS THE LINE MAGNETIC STARTER. NEMA NO.1 CONTACTS SHALL BE MINIMUM SIZE STARTER CONTACTS FURNISHED. ALL THREE PHASE MOTOR STARTERS SHALL BE FURNISHED WITH SOLID-STATE OVERLOAD RELAYS TO PROTECT ALL THREE PHASES. THE RELAYS SHALL BE ADJUSTED FOR THE PARTICULAR MOTOR IT IS USED WITH, BASED ON ACTUAL NAMEPLATE DATA. PROVIDE ONE SET OF FORM C AUXILIARY CONTACTS, (1 N.O. AND 1 N.C.) IN EACH STARTER. PROVIDE INTERNAL 120 VOLT CONTROL TRANSFORMER OF 100 VA MINIMUM SIZE. MOUNT THE CONTROL TRANSFORMER INSIDE THE STARTER ENCLOSURE. BOTH PRIMARY AND SECONDARY SIZES OF THE CONTROL TRANSFORMER SHALL BE FUSED. PROVIDE A HAND-OFF-AUTOMATIC SELECTOR SWITCH ON THE COVER WITH MOTOR ON/OFF PILOT LIGHTS. MANUFACTURED BY SIEM



GENERAL POWER NOTES

1. ALL WORK MUST COMPLY WITH NEC, NFPA, LIFE SAFETY AND LOCAL APPLICABLE CODES.
2. ALL CONDUIT SHALL BE 1/2" EMT, MINIMUM.
3. ALL WIRE SHALL BE MINIMUM OF #12 THIN COPPER. NO SUBSTITUTION OF ALUMINUM SHALL BE ACCEPTED.
4. SEE ARCHITECTURAL DRAWINGS/ELEVATIONS FOR EXACT LOCATIONS OF ALL RECEPTACLES AND DEVICES.
5. ALL BRANCH CIRCUIT CONDUCTORS FROM THE PANELBOARD(S) TO THE FIRST OUTLET SHALL BE INCREASED TO THE NEXT LARGER SIZE WHERE THE LENGTH OF THE HOME RUN EXCEEDS 100'-0" ON 120/208V CIRCUITS.
6. POWER AND DATA WALL OUTLETS/J-BOXES MUST BE PROPERLY ALIGNED BETWEEN STUDS USING CADDY BRACKET OR APPROVED EQUAL WITH SPACING FOR (3) 4x4 J-BOXES.
7. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL MECHANICAL EQUIPMENT WITH THE MECHANICAL CONTRACTOR. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF ALL MECHANICAL EQUIPMENT.
8. ALL 125-VOLT, SINGLE-PHASE, 15 AND 20 AMPERE RECEPTACLES INSTALLED ADJACENT TO SINKS, OUTSIDE, IN THE KENNEL AREAS, BATH AREAS ETC. AND THOSE SERVING VENDING MACHINES, AND DRINKING FOUNTAINS SHALL BE GFI TYPE OR PROTECTED BY AN UPSTREAM GFCI CIRCUIT BREAKER.
9. ALL RECEPTACLES LOCATED OUTSIDE SHALL BE WEATHER RESISTANT TYPE, INSTALLED IN WEATHERPROOF ENCLOSURES AND PROVIDED WITH WEATHERPROOF IN-USE COVERS.
10. ALL ELECTRICAL DEVICES LOCATED IN THE GROOM ROOM, TEA CUP ROOM, VESTIBULE, CABINS AND BOARDING AREA SHALL HAVE WEATHERPROOF IN-USE COVERS AND SHALL BE MOUNTED BETWEEN 48" - 60" A.F.F. SWITCHES AND OUTLETS CAN BE MOUNTED ABOVE WAINSCOTS PANELING.
11. ALL SWITCH, OUTLETS AND VOICE/DATA COVERPLATES SHALL BE ALMOND COLOR IN ALL ROOMS AND AREAS TO RECEIVE ALMOND COLOR FRP AND/OR SHERWIN WILLIAMS-SVELT SAGE #6184 SATIN PAINT.
12. ALL SWITCH, OUTLETS AND VOICE/DATA COVERPLATES SHALL BE WHITE COLOR IN ALL ROOMS AND AREAS TO RECEIVE WHITE COLOR FRP AND/OR SHERWIN WILLIAMS-SLEEPY BLUE #6225 SATIN PAINT.

1 PROVIDE 2NO. NEW PANELS AND SUPPLY EACH PANEL FROM A DEDICATED METER/ 200A BREAKER LOCATED AT THE EXTERNAL SERVICE ENTRANCE.

KEY NOTES

- 1 SEE E4.1 FOR RISER DIAGRAM OF THE ELECTRICAL DISTRIBUTION SYSTEM. EITHER PROVIDE 1NO. 84 WAY PANEL OR PROVIDE 2NO. LINKED 42WAY PANELS.
- 2 PROVIDE ELECTRICAL CONNECTION AND ELECTRICAL CIRCUITRY OPTION FOR COMMERCIAL 208V/30A & RESIDENTIAL 120V/20A DISHWASHER. ELECTRICAL CIRCUITRY SHALL CONSIST OF 2#10CU, 1#10CU GROUND FOR COMMERCIAL AND 2#12CU, 1#12CU GROUND FOR RESIDENTIAL. VERIFY LOCATION AND ELECTRICAL REQUIREMENTS WITH ARCHITECTURAL DRAWINGS, EQUIPMENT MANUFACTURER, OWNER.
- 2A PROVIDE ELECTRICAL CONNECTION AND ELECTRICAL CIRCUITRY OPTION FOR RESIDENTIAL 120V/20A DISHWASHER. ELECTRICAL CIRCUITRY SHALL CONSIST OF 2#12CU, 1#12CU GROUND. VERIFY LOCATION AND ELECTRICAL REQUIREMENTS WITH ARCHITECTURAL DRAWINGS, EQUIPMENT MANUFACTURER, OWNER.
- 3 PROVIDE RECEPTACLE FOR OWNER PROVIDED DRYER. VERIFY ELECTRICAL REQUIREMENTS WITH OWNER'S SELECTION.
- 4 PROVIDE A 20A/120V DEDICATED CIRCUIT FOR ELECTRIC WATER COOLER. PROVIDE GFCI IN PANEL TO MEET READILY ACCESSIBLE NEC CODE REQUIREMENT
- 5 PROVIDE RECEPTACLE FOR OWNER PROVIDED WASHING MACHINE. VERIFY ELECTRICAL REQUIREMENTS WITH OWNER'S SELECTION.
- 6 PROVIDE SINGLE OUTLET CORD REEL. 40' 12AWG CORD. PROVIDE WITH WALL MOUNTING BRACKET ACCESSORY. MOUNT CORD REEL AT 108" AFF. RECEPTACLE SERVING CORD REEL SHALL BE MOUNTED AT 108" AFF AND SHALL BE GFCI PROTECTED.
- 7 MONITOR LOCATION - MOUNT AT 60" AFF TO BOTTOM OF MONITOR - PROVIDE AND INSTALL DUPLEX OUTLET AND SVGA PORT AT 72" AFF.
- 8 MESSAGING SYSTEM MONITOR LOCATION - MOUNT AT 96" AFF TO BOTTOM OF MONITOR - PROVIDE AND INSTALL DUPLEX RECEPTACLE AND SVGA PORT AT 108" AFF.
- 9 EXHAUST FAN TO BE CONTROLLED BY LOCAL THERMOSTAT WITHIN ROOM.
- 10 NOT REQUIRED
- 11 PROVIDE 20A/120V DEDICATED CIRCUIT FOR FIRE ALARM CONTROL PANEL. FIRE ALARM SYSTEM AND CABLING INSTALLED BY OTHERS. COORDINATE WITH FIRE ALARM CONTRACTOR FOR EXACT LOCATION OF OUTLET. PROVIDE RED IDENTIFICATION AT ELECTRICAL PANEL STATING "FIRE ALARM CIRCUIT" TO COMPLY WITH NEC 760.121(B)
- 12 PROVIDE 20A/120V DEDICATED CIRCUIT FOR THE SECURITY ALARM CONTROL PANEL. SECURITY ALARM SYSTEM AND CABLING INSTALLED BY OTHERS. COORDINATE WITH SECURITY ALARM CONTRACTOR FOR EXACT LOCATION OF OUTLET.
- 13 PROVIDE 20A/120V QUADPLEX DEDICATED CIRCUIT FOR THE ISP EQUIPMENT. ISP SYSTEM AND CABLING INSTALLED BY OTHERS. COORDINATE WITH ISP CONTRACTOR FOR EXACT LOCATION OF OUTLET.
- 14 PROVIDE 20A/120V QUADPLEX DEDICATED CIRCUIT FOR THE PB&J EQUIPMENT CABINET. PB&J EQUIPMENT AND CABLING INSTALLED BY OTHERS. INSTALL OUTLET @24" AFF AND BEHIND CABINET. COORDINATE WITH PB&J CONTRACTOR FOR EXACT LOCATION OF OUTLET.
- 15 PROVIDE 120V POWER FOR DOGGY UP DOOR CHIME. PROVIDE AND INSTALL ALL COMPONENTS FOR A COMPLETE AND OPERATIONAL SYSTEM. VERIFY REQUIREMENTS WITH MANUFACTURER.
- 16 EXHAUST FAN TO BE CONTROLLED BY LOCAL LIGHTING CIRCUIT WITHIN ROOM.
- 17 EXHAUST FAN TO BE CONTROLLED BY LOCAL WALL MOUNTED SPEED CONTROLLER

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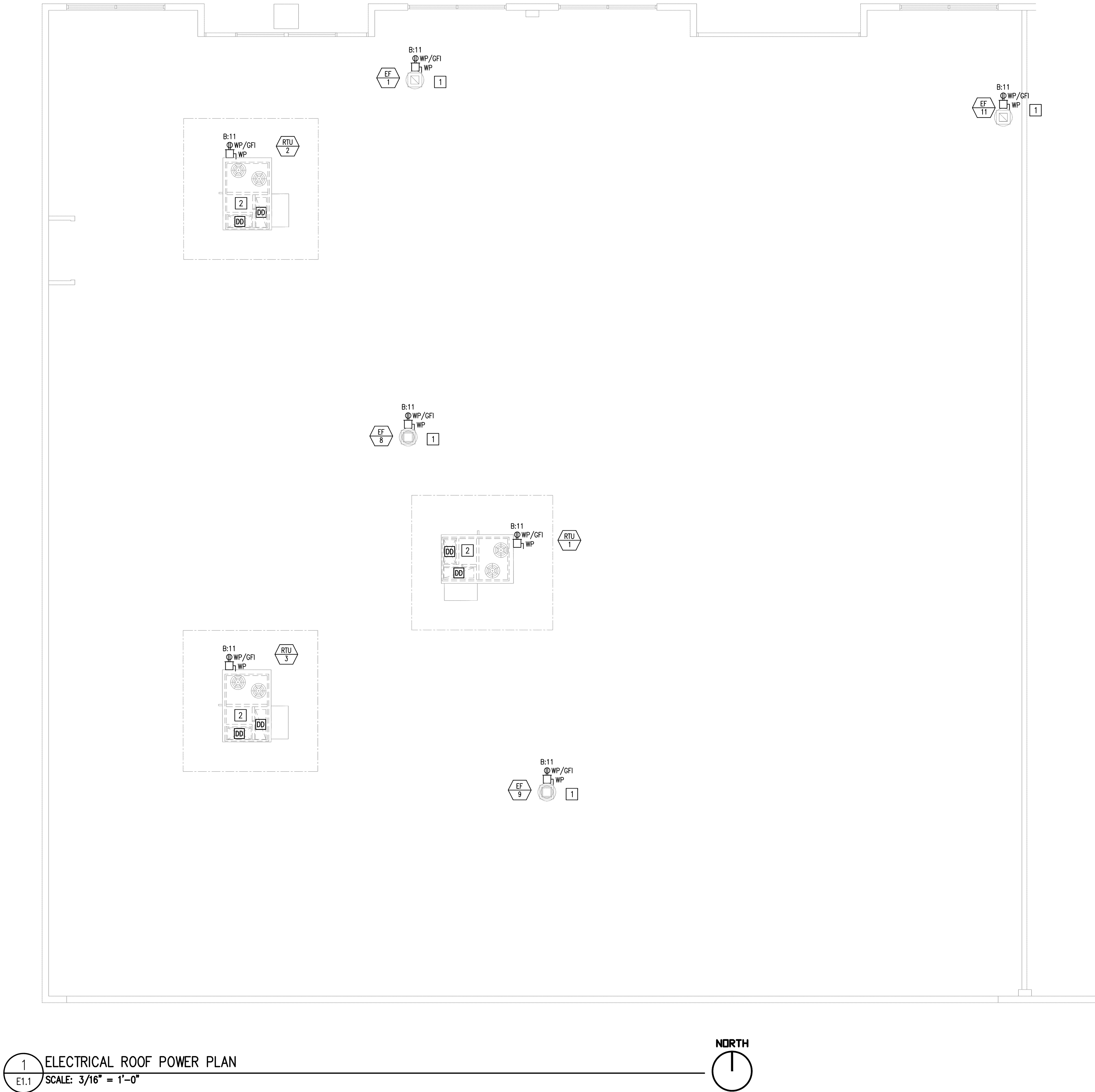
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BOW WOW
2900 SE CORNELIUS PASS RD.
SUITE 118
HILLSBORO, OR.

DATE: 07/26/2019

E1.0
ELECTRICAL POWER PLAN

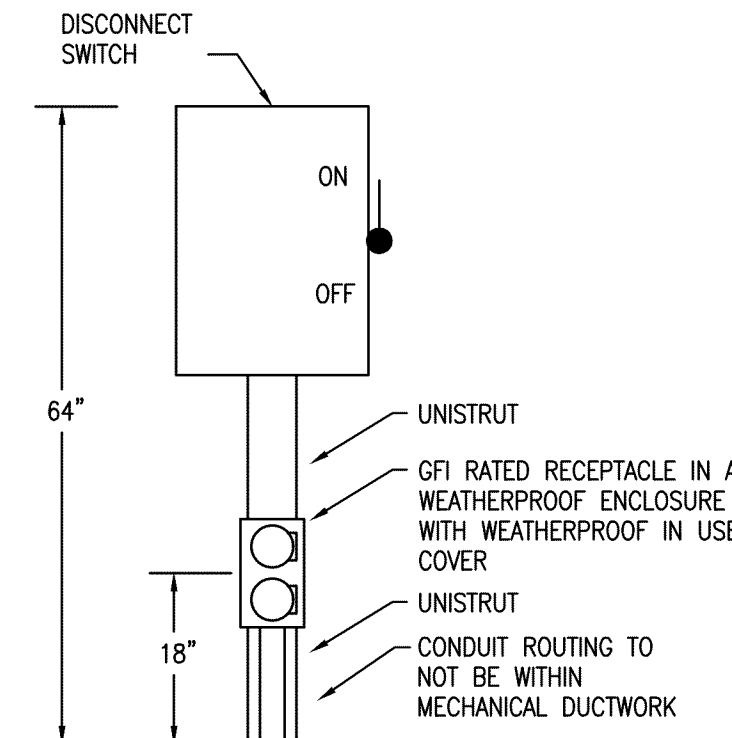


GENERAL POWER NOTES

1. ALL WORK MUST COMPLY WITH NEC, NFPA, LIFE SAFETY AND LOCAL APPLICABLE CODES.
2. ALL CONDUIT SHALL BE 1/2" EMT, MINIMUM.
3. ALL WIRE SHALL BE MINIMUM OF #12 THHN COPPER. NO SUBSTITUTION OF ALUMINUM SHALL BE ACCEPTED.
4. SEE ARCHITECTURAL DRAWINGS/ELEVATIONS FOR EXACT LOCATIONS OF ALL RECEPTACLES AND DEVICES.
5. ALL BRANCH CIRCUIT CONDUCTORS FROM THE PANELBOARD(S) TO THE FIRST OUTLET SHALL BE INCREASED TO THE NEXT LARGER SIZE WHERE THE LENGTH OF THE HOME RUN EXCEEDS 100'-0" ON 120/208V CIRCUITS.
6. POWER AND DATA WALL OUTLETS/J-BOXES MUST BE PROPERLY ALIGNED BETWEEN STUDS USING CADDY BRACKET OR APPROVED EQUAL WITH SPACING FOR (3) 4x4 J-BOXES.
7. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL MECHANICAL EQUIPMENT WITH THE MECHANICAL CONTRACTOR. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF ALL MECHANICAL EQUIPMENT.
8. ALL 125-VOLT, SINGLE-PHASE, 15 AND 20 AMPERE RECEPTACLES INSTALLED OUTSIDE SHALL BE GFI TYPE OR PROTECTED BY AN UPSTREAM GFCI CIRCUIT BREAKER.
9. ALL RECEPTACLES LOCATED OUTSIDE SHALL BE WEATHER RESISTANT TYPE, INSTALLED IN WEATHERPROOF ENCLOSURES AND PROVIDED WITH WEATHERPROOF IN-USE COVERS.

KEY NOTES

1. CONNECT EXHAUST FAN TO TIMECLOCK. EXHAUST FAN SHALL RUN CONTINUOUSLY DURING HOURS OF OPERATION.
2. SMOKE DETECTORS SHALL BE INSTALLED IN RETURN AIR SYSTEMS WITH A DESIGN CAPACITY GREATER THAN 2,000 CFM, IN THE RETURN AIR AND SUPPLY AIR DUCT OR PLENUM UPSTREAM OF ANY FILTERS, EXHAUST AIR CONNECTIONS, OUTDOOR AIR CONNECTIONS OR DECONTAMINATION EQUIPMENT AND APPLIANCES. FIRE ALARM DUCT SMOKE DETECTORS SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR AND WIRED BY THE ELECTRICAL CONTRACTOR. PROVIDE A REMOTE TEST SWITCH ACCESSIBLE FOR THE SUPPLY & RETURN DUCT SMOKE DETECTORS FOR THE FIRE DEPARTMENT TO USE. COORDINATE REMOTE TEST SWITCH LOCATION WITH THE FIRE DEPARTMENT.



2 ROOFTOP RECEPTACLE MOUNTING

SCALE: N.T.S.

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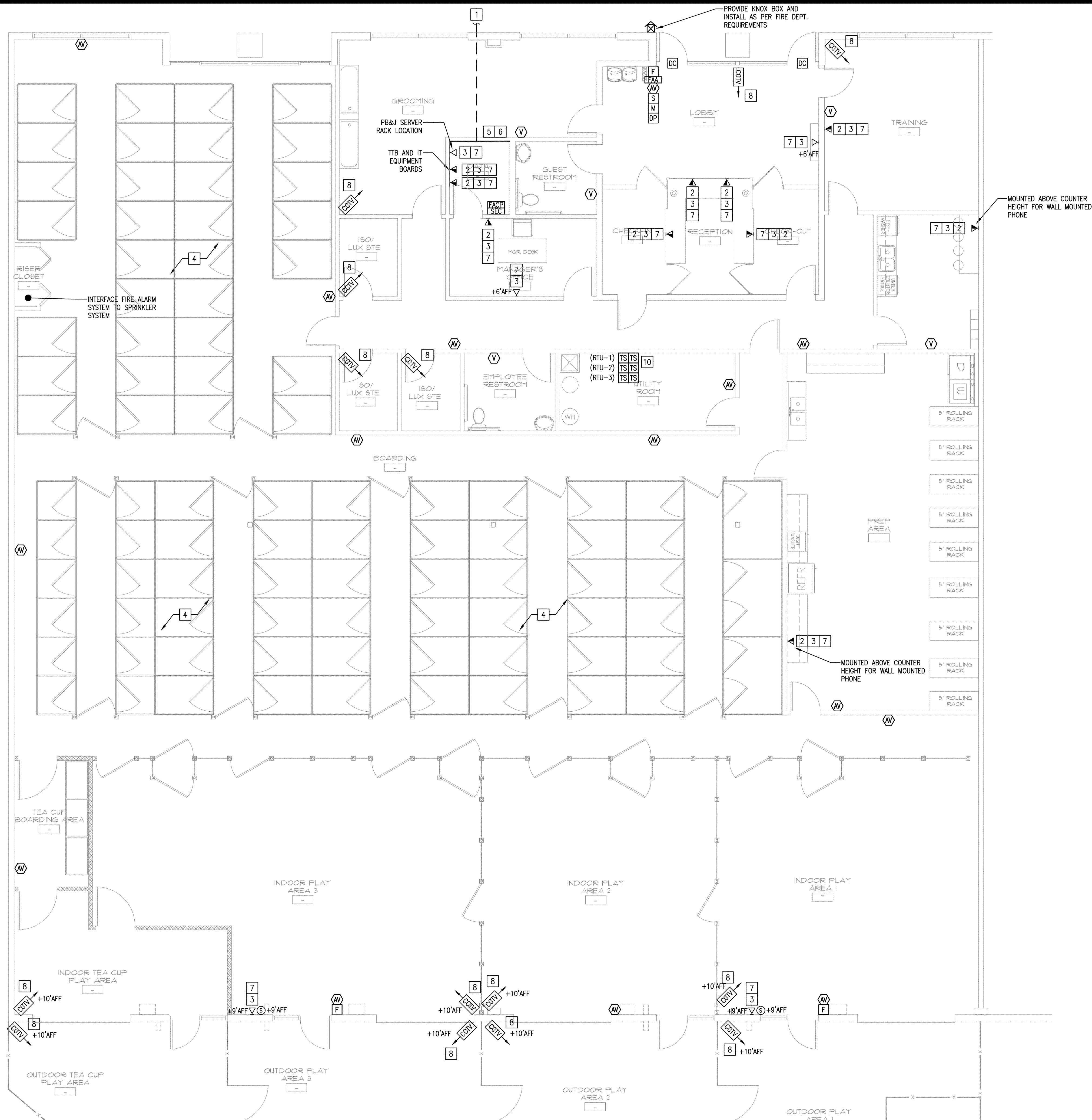
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HILLSBORO, OR.

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E1.1

ELECTRICAL ROOF
POWER PLAN



GENERAL TELECOM NOTES

1. ALL WORK SHALL MEET OR EXCEED NEC STANDARDS.
2. E.C. SHALL VERIFY THE LOCATIONS AND MOUNTING HEIGHTS OF ALL DEVICES WITH ARCHITECTURAL DRAWINGS AND OWNER PRIOR TO ROUGH-IN.
3. COORDINATE DEVICE MOUNTING HEIGHTS WITH THE INSTALLATION OF FIRE RATED PLYWOOD (FRP) TO AVOID DEVICES BEING LOCATED ALONG THE TOP EDGE OF THE FRP RESULTING IN THE FRP HAVING TO BE NOTCHED OR TRIMMED OFF.
4. FIRE ALARM/SECURITY CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FOR THEIR WORK.
5. FIRE ALARM SYSTEMS SHALL BE INCLUSIVE OF ALL REQUIRED DEVICES FOR COMPLIANCE WITH ALL NATIONAL, STATE, AND LOCAL CODES REGARDLESS OF WHETHER OR NOT ALL REQUIRED DEVICES ARE SHOWN ON THIS DRAWING.
6. PROVIDE A NEW FULLY FUNCTIONAL FIRE ALARM CONTROL PANEL WITH A SECONDARY POWER SUPPLY (BATTERY PACK) FOR CONNECTING ALL REQUIRED DEVICES REQUIRED FOR CODE COMPLIANCE.
7. FIRE ALARM SYSTEM IS SHALL BE INTERFACED WITH BUILDING FIRE SPRINKLER SYSTEM TO PROVIDE OCCUPANT NOTIFICATION UPON FLOW ACTIVATION.
8. ALL SWITCH, OUTLETS AND VOICE/DATA COVERPLATES SHALL BE ALMOND COLOR IN ALL ROOMS AND AREAS TO RECEIVE ALMOND COLOR FRP AND/OR SHERWIN WILLIAMS-SVELT SAGE #6164 SATIN PAINT.
9. ALL SWITCH, OUTLETS AND VOICE/DATA COVERPLATES SHALL BE WHITE COLOR IN ALL ROOMS AND AREAS TO RECEIVE WHITE COLOR FRP AND/OR SHERWIN WILLIAMS-SLEEPY BLUE #6223 SATIN PAINT.
10. ELECTRICAL CONTRACTOR SHOULD COORDINATE BETWEEN THIS DRAWING AND THE PB&J SPECIALIST DRAWING TO ENSURE ALL CLIENT REQUIREMENTS ARE MET.

KEY NOTES

1. INCOMING PHONE SERVICE SHALL BE (4) DEDICATED LINES. LAN-1 AND LAN-2 ARE DEDICATED TELEPHONE LINES. LAN-3 IS A DEDICATED FIRE ALARM SYSTEM DIALER TELEPHONE LINE. LAN-4 IS A FIRE ALARM SYSTEM DIALER ROLL-OVER LINE/INTERNET/FAX LINE.
2. ROUTE ALL TELEPHONE CABLING TO TELEPHONE BACKBOARD.
3. ROUTE ALL DATA CABLING TO ROUTER LOCATED AT TELEPHONE BACKBOARD.
4. GLASS BREAK SENSORS SHALL NOT BE USED FOR WINDOWS IN BOARDING AREA. IF WINDOWS ARE PRESENT, PHOTOEYE BEAMS ARE PREFERABLE.
5. PROVIDE 2NO. 4'x8' FIRE RATED PLYWOOD FOR TELEPHONE EQUIPMENT MOUNTING. EXTEND EXISTING TELEPHONE SERVICE ENTRANCE CONDUIT TO THIS LOCATION.
6. PROVIDE 1NO. 4'x8' FIRE RATED PLYWOOD FOR WEBCAM SERVER SYSTEM.
7. COORDINATE TELEPHONE AND DATA CABLING AND FACEPLATES WITH OWNER. VERIFY EXACT MOUNTING HEIGHTS WITH OWNER/ARCH. 48" AFF MAX
8. ALL CAMERA, MONITORS, SPEAKERS, ETC. AND ASSOCIATED CABLING SHALL BE PROVIDED AND INSTALLED BY OTHERS. DEVICES ARE SHOWN ON THIS DRAWING FOR ILLUSTRATION PURPOSES ONLY. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL REQUIRED 120 VOLT POWER NEEDED.
9. NOT REQUIRED
10. PROVIDE A REMOTE TEST SWITCH ACCESSIBLE FOR THE SUPPLY & RETURN DUCT SMOKE DETECTORS FOR THE FIRE DEPARTMENT TO USE. COORDINATE REMOTE TEST SWITCH LOCATION WITH THE FIRE DEPARTMENT.

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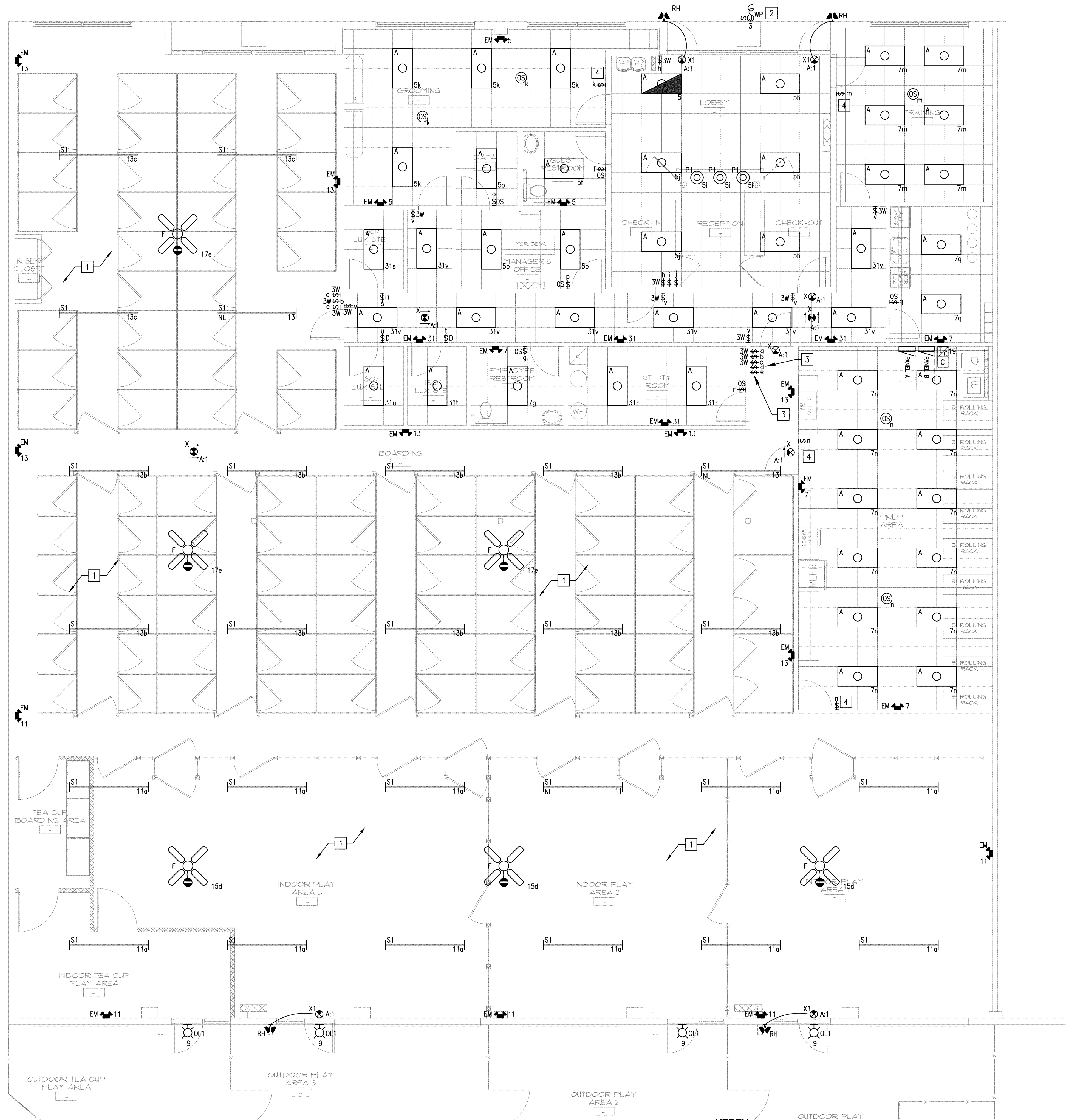
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E2.0

ELECTRICAL LOW-VOLTAGE
PLAN

1 ELECTRICAL LOW VOLTAGE PLAN
E2.0 SCALE: 3/16" = 1'-0"





GENERAL LIGHTING NOTES

1. ALL WORK MUST COMPLY WITH NEC, NFPA, LIFE SAFETY AND LOCAL APPLICABLE CODES.
2. ALL CONDUIT SHALL BE 1/2" EMT, MINIMUM.
3. ALL WIRE SHALL BE MINIMUM OF #12 THIN COPPER.
4. SEE ARCHITECTURAL DRAWINGS/ELEVATIONS FOR EXACT LOCATIONS OF ALL LIGHTING FIXTURES AND DEVICES.
5. VERIFY ALL OCCUPANCY SENSOR LOCATIONS. COORDINATE WITH MANUFACTURER'S INSTRUCTIONS AND FURNITURE LAYOUT IN THE SPACE TO ENSURE PROPER PLACEMENT.
6. LIGHTING FIXTURES IN ACOUSTICAL CEILING TILE TO BE CENTERED IN TILE, UNLESS OTHERWISE NOTED.
7. CENTER EMERGENCY/EXIT LIGHTS ABOVE DOORS, UNLESS OTHERWISE NOTED.
8. IF EMERGENCY LIGHT, EXIT SIGN, OR NIGHT LIGHT IS SHOWN CIRCUITED TO A LOCALLY SWITCHED LIGHTING CIRCUIT, PROVIDE ADDITIONAL UNSWITCHED HOT (BYPASS ALL CONTACTORS AS REQUIRED.)
9. ALL ELECTRICAL DEVICES LOCATED IN THE GROOMING ROOM, LUXURY SUITES, ISOLATION ROOM, INDOOR PLAY AREA, AND BOARDING AREA SHALL HAVE WATERPROOF IN-USE COVERS WHERE INSTALLED AT 48" AFF OR LOWER.
10. ALL CIRCUITS SHOWN SHALL BE FED FROM ELECTRICAL PANEL 'A' UNLESS OTHERWISE NOTED.
11. ALL SWITCH, OUTLETS AND VOICE/DATA COVERPLATES SHALL BE ALMOND COLOR IN ALL ROOMS AND AREAS TO RECEIVE ALMOND COLOR FRP AND/OR SHERWIN WILLIAMS-SVELT SAGE #6164 SATIN PAINT.
12. ALL SWITCH, OUTLETS AND VOICE/DATA COVERPLATES SHALL BE WHITE COLOR IN ALL ROOMS AND AREAS TO RECEIVE WHITE COLOR FRP AND/OR SHERWIN WILLIAMS-SLEEPY BLUE #6225 SATIN PAINT.
13. OCCUPANCY SENSORS INSTALLED TO MEET OREGON ENERGY EFFICIENCY SPECIALTY CODE 2014 AND IECC SHALL BE FITTED WITH LOCAL OVERRIDE AS NECESSARY TO MEET CLIENTS OPERATIONAL REQUIREMENTS.
14. LOCAL LIGHTS IN A ROOM WILL BE CONTROLLED BY A SWITCH / OCCUPANCY SENSOR AS SHOWN WITHIN THE ROOM OR IDENTIFIED BY A SMALL LETTER (EG. o) IF SWITCHED WITHIN A GROUP.
15. SEE DRAWING E4 FOR LIGHTING FIXTURE SCHEDULE AND LIGHTING CONTROL SCHEMATICS
16. REMOVE ALL EXISTING LIGHTING AS PER DEMOLITION PHASE

KEY NOTES

- 1 TYPE "S1" LIGHT FIXTURE SHALL BE MOUNTED TO THE CEILING JOISTS WITHIN THE BOARDING AREAS. PROVIDE LAMP PROTECTION SLEEVES ON ALL EXPOSED LAMPS IF REQUIRED.
- 2 PROVIDE JUNCTION BOX, DISCONNECT SWITCH AND FLEXIBLE CONNECTIONS REQUIRED FOR EXTERIOR SIGNAGE. LOCATION IS INDICATIVE, COORDINATE EXACT SIGNAGE LOCATION AND REQUIREMENTS WITH GENERAL CONTRACTOR AND OWNER. PROVIDE CONDUIT AND ELECTRICAL WIRING AS REQUIRED.
- 3 PROVIDE FAN SPEED CONTROL SWITCH.
- 4 PROVIDE LOCAL OVERRIDE SWITCH FOR OCCUPANCY DETECTOR AS PER IECC CODE

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DATE:07/26/2019

E3.0

ELECTRICAL LIGHTING PLAN

1 ELECTRICAL LIGHTING PLAN
E3.0 SCALE: 3/16" = 1'-0"

PLUMBING EQUIPMENT WIRING SCHEDULE													
BOL = BUILT-IN OVERLOAD CS = COMBINATION STARTER FU = FUSED			IU = IN UNIT MAG = MAGNETIC STARTER MAN = MANUAL STARTER			NF = NON-FUSED NU = NEAR UNIT OU = ON UNIT			RVS = REDUCED VOLTAGE STARTER 2SP = 2-SPEED MAGNETIC STARTER VFD = VARIABLE FREQUENCY DRIVE				
TAG	DESCRIPTION	MCA	KW	HP	VOLT	PHASE	FEEDER CONNECTION	SIZE OF WIRE AND CONDUIT	DISCONNECT AT UNIT				NOTES
									FURNISHED BY:				
									EC	HC	SIZE	TYPE	
<div>WH 1</div>	ELEC WATER HEATER (UTILITY ROOM)	3	–	–	120V	1	B:4	2#12, 1#12GRND, 3/4"C.	X	–	20A	NF	1
<div>RP 1</div>	RE-CIRCULATION PUMP (UTILITY ROOM)	0.84	–	–	120V	1	B:2	2#12, 1#12GRND, 3/4"C.	X	–	20A	NF	1

NOTE:
1. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER.
2. DISCONNECT SHALL BE TYPE NEMA-1.
3. BALANCED 3 PHASE WATER HEATER ELEMENTS.

HVAC MOTOR WIRING SCHEDULE													
BOL = BUILT-IN OVERLOAD CS = COMBINATION STARTER FU = FUSED			IU = IN UNIT MAG = MAGNETIC STARTER MAN = MANUAL STARTER			NF = NON-FUSED NU = NEAR UNIT OU = ON UNIT			RVS = REDUCED VOLTAGE STARTER 2SP = 2-SPEED MAGNETIC STARTER VFD = VARIABLE FREQUENCY DRIVE				
TAG	DESCRIPTION	MCA	KW	HP	VOLT	PHASE	FEEDER CONNECTION	SIZE OF WIRE AND CONDUIT	DISCONNECT AT UNIT				NOTES
									FURNISHED BY:				
									EC	HC	SIZE	TYPE	
<div>RTU 1</div>	OFFICE AREAS (LOCATION: ROOF AREA)	45	–	–	208V	3	A:38,40,42	3#8, 1#10GRND, 3/4"C.	X	–	50A	NF	1,2,3
<div>RTU 2</div>	BAORDING AREAS (LOCATION: ROOF AREA)	41	–	–	208V	3	B:32,34,36	3#8, 1#10GRND, 3/4"C.	X	–	50A	NF	1,2,3
<div>RTU 3</div>	INDOOR PLAY AREAS (LOCATION: ROOF AREA)	57	–	–	208V	3	B:38,40,42	3#6, 1#10GRND, 1"C.	X	–	60A	NF	1,2,3

NOTE:
1. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER.
2. DISCONNECT SHALL BE TYPE NEMA-3R.
3. PROVIDE SMOKE DUCT DETECTOR IN BOTH SUPPLY AND RETURN AIR FLOWS, M.C TO PROVIDE AND INSTALL TEST SWITCH AND DUCT DUCT DETECTOR, E.C TO WIRE AND CONNECT.

EXHAUST FAN MOTOR WIRING SCHEDULE													
BOL = BUILT-IN OVERLOAD CS = COMBINATION STARTER FU = FUSED			IU = IN UNIT MAG = MAGNETIC STARTER MAN = MANUAL STARTER			NF = NON-FUSED NU = NEAR UNIT OU = ON UNIT			RVS = REDUCED VOLTAGE STARTER 2SP = 2-SPEED MAGNETIC STARTER VFD = VARIABLE FREQUENCY DRIVE				
TAG	DESCRIPTION	MCA	KW	HP	VOLT	PHASE	FEEDER CONNECTION	SIZE OF WIRE AND CONDUIT	DISCONNECT AT UNIT				NOTES
									FURNISHED BY:				
									EC	HC	SIZE	TYPE	
EF 1	EXHAUST FAN (GROOMING) (LOCATION: ROOF)	–	–	1/10	120V	1	B:16	2#12, 1#12GRND, 3/4".	X	–	20A	NF	1,2,3
EF 2	EXHAUST FAN (GUEST RESTROOM) (LOCATION: CEILING)	–	0.014	–	120V	1	A:7f	2#12, 1#12GRND, 3/4".	X	–	20A	NF	1,5
EF 3	EXHAUST FAN (EM. RESTROOM) (LOCATION: CEILING)	–	0.014	–	120V	1	A:7g	2#12, 1#12GRND, 3/4".	X	–	20A	NF	1,5
EF 4	EXHAUST FAN (UTILITY ROOM) (LOCATION: CEILING)	–	0.014	–	120V	1	A:31r	2#12, 1#12GRND, 3/4".	X	–	20A	NF	1,5
EF 5	EXHAUST FAN (ISO/LUX SUITE) (LOCATION: CEILING)	–	0.128	–	120V	1	B:18	2#12, 1#12GRND, 3/4".	X	–	20A	NF	1,7
EF 6	EXHAUST FAN (ISO/LUX SUITE) (LOCATION: CEILING)	–	0.128	–	120V	1	B:18	2#12, 1#12GRND, 3/4".	X	–	20A	NF	1,7
EF 7	EXHAUST FAN (ISO/LUX SUITE) (LOCATION: CEILING)	–	0.128	–	120V	1	B:18	2#12, 1#12GRND, 3/4".	X	–	20A	NF	1,7
EF 8	EXHAUST FAN (BOARDING) (LOCATION: ROOF)	–	–	1/2	120V	1	B:20	2#12, 1#12GRND, 3/4".	X	–	20A	NF	1,2,3
EF 9	EXHAUST FAN (PLAY AREAS) (LOCATION: ROOF)	–	–	1	120V	1	B:22	2#12, 1#12GRND, 3/4".	X	–	20A	NF	1,2,3
EF 10	EXHAUST FAN (DATA ROOM) (LOCATION: CEILING)	–	0.224	–	120V	1	B:25	2#12, 1#12GRND, 3/4".	X	–	20A	NF	1,6
EF 11	EXHAUST FAN (TRAINING) (LOCATION: ROOF)	–	–	1/10	120V	1	B:23	2#12, 1#12GRND, 3/4".	X	–	20A	NF	1,2,3

NOTE:
1. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER.
2. DISCONNECT SHALL BE TYPE NEMA-3R.
3. TIME CLOCK CONTROLLED
4. LOCAL SWITCH CONTROLLED
5. INTERLOCKED WITH LIGHTING
6. THERMOSTAT CONTROLLED
7. WALL SPEED CONTROLLER

LIGHTING FIXTURE SCHEDULE								
TAG	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	LAMPS		MOUNTING	VOLT	NOTES
				NO	TYPE			
A	2x4 RECESSED LED TROFFER 4800LM PACKAGE	METALUX	24GR LED SERIES	1	35W LED	RECESSED	120	1
A1	SAME AS FIXTURE 'A' WITH DAYLIGHT DIMMING BALLAST (ONLY SHOWN IF REQUIRED)	METALUX	24GR LED SERIES	1	35W LED	RECESSED	120	1
F	CEILING FAN WITH 22PP74 FAN SPEED CONTROLLER	DAYTON	5NP25	—	—	STEM	120	1
OL1	EXTERIOR LED WALL PACK	LUMARK	XTOR2B	1	18W LED	WALL	120	1,5
P1	CEILING PENDANT LIGHT	ACCESS LIGHTING	28004-1C-ORB/RED	1	10W LED	CEILING MOUNTED PENDANT	120	1,7,8
S1	8FT 8400lm LED SUSPENDED LINEAR FITTING	METALUX	8T SNLED LED SERIES	1	73W LED	SUSPENDED	120	1,6
S1E	8FT 8400lm LED SUSPENDED LINEAR FITTING WITH INTERNAL EGRESS BATTERY PACK (ONLY SHOWN IF REQUIRED)	METALUX	8T SNLED LED SERIES	1	73W LED	SUSPENDED	120	1,2,6
S2	4FT 4000lm LED LINEAR FITTING	METALUX	4APVTL-D-40LB40	1	39W LED	CANOPY MOUNTED	120	1,5
X	LED EXIT SIGN	SURELITE	LPX SERIES	1	LED 5W	UNIVERSAL	120	1,2,3,4
X1	LED EXIT SIGN WITH DOUBLE BATTERY	SURELITE	LPXH SERIES	1	LED 5W	UNIVERSAL	120	1,2,3,4
RH	TWIN REMOTE HEAD	SURELITE	RF SERIES	2	LED	WALL	120	1,5
EM	EGRESS EMERGENCY BATTERY UNIT	SURELITE	CU2 SERIES	2	LED	WALL	120	1,2

NOTE:
1. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL LIGHTING FIXTURE LOCATIONS, TYPE, MOUNTING, FINISH AND MANUFACTURER WITH ARCHITECT PRIOR TO ORDERING FIXTURES. THE LIGHTING FIXTURE SCHEDULE IS FOR REFERENCE ONLY.
2. PROVIDE A MINIMUM OF 90-MINUTES BATTERY BACK-UP.
3. EXIT SIGN INSCRIPTION, DIRECTIONAL ARROWS AND NUMBER OF FACES SHALL BE INDICATED ON THE DRAWINGS.
4. CATALOG NUMBER OF EXIT SIGNS DO NOT INDICATE WALL, CEILING OR PENDANT MOUNTED, ARROWS (RIGHT/LEFT), SINGLE FACE OR DOUBLE FACE. COORDINATE WITH FLOOR PLANS.
5. FIXTURE SHALL BE U.L. WET LOCATION LISTED.
6. COORDINATE HANGER CHAIN LENGTH FOR PROPER MOUNTING HEIGHTS.
7. TO FIND LOCAL SUPPLIERS, GO TO WWW.ACCESSLIGHTINGS.COM, AT TOP OF HOMEPAGE CLICK TAB "WHERE TO BUY". A SEARCH MENU SHALL APPEAR, FILL IN ZIP CODE, ENTER SEARCH WITHIN MILES, SELECT STATE AND CLICK THE "SEARCH" BUTTON. THE RESULTS SHOWING COMPANY NAME, ADDRESS, PHONE NUMBER AND MAP LINK OF A LOCAL LIGHTING SUPPLIER WILL APPEAR.
8. LAMP TYPE A19 LED, 10W LAMP INCLUDED. FINISH OIL RUBBED BRONZE (ORB), DIFFUSER TYPE: GLASS, COLOR RED.

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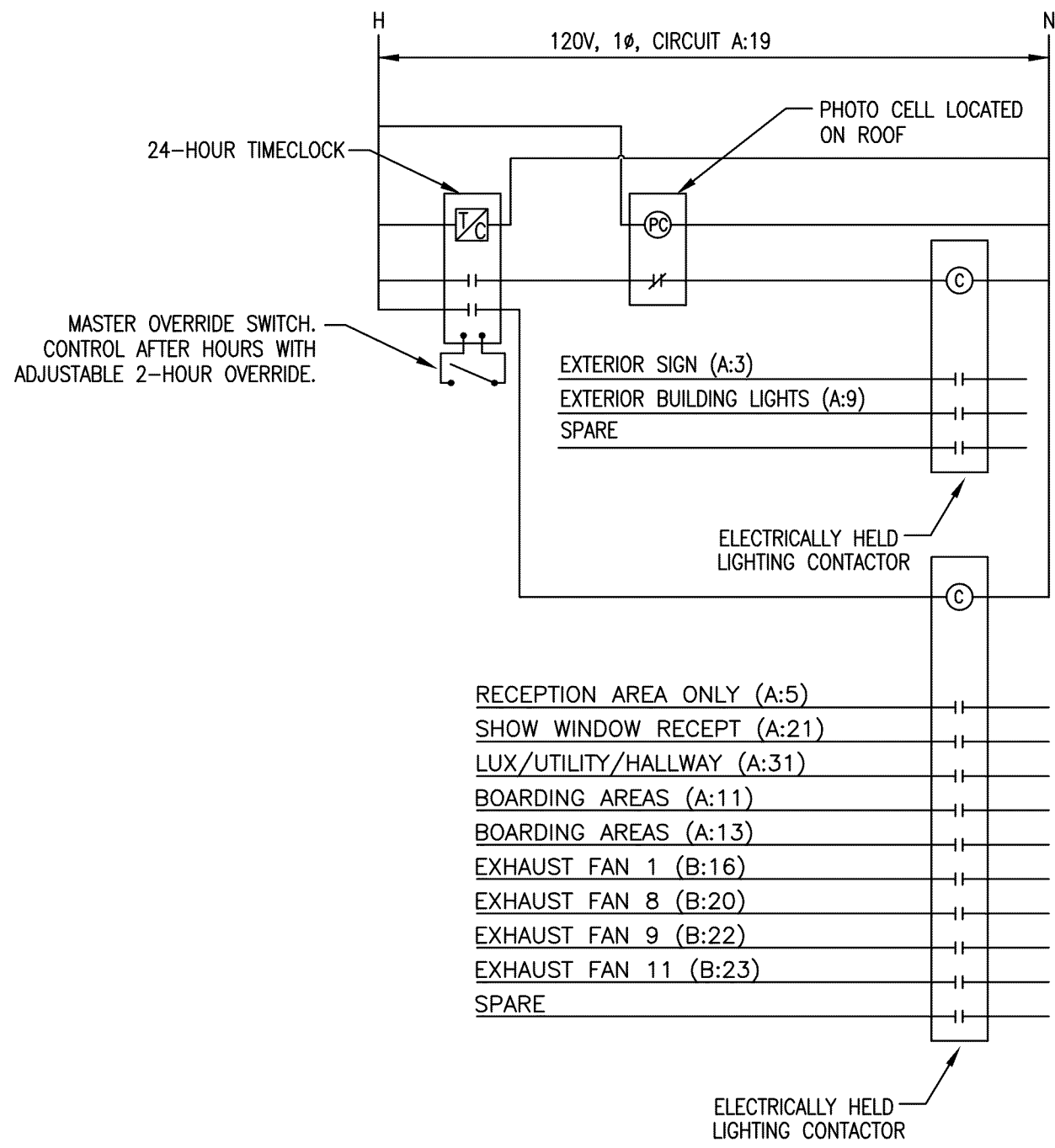
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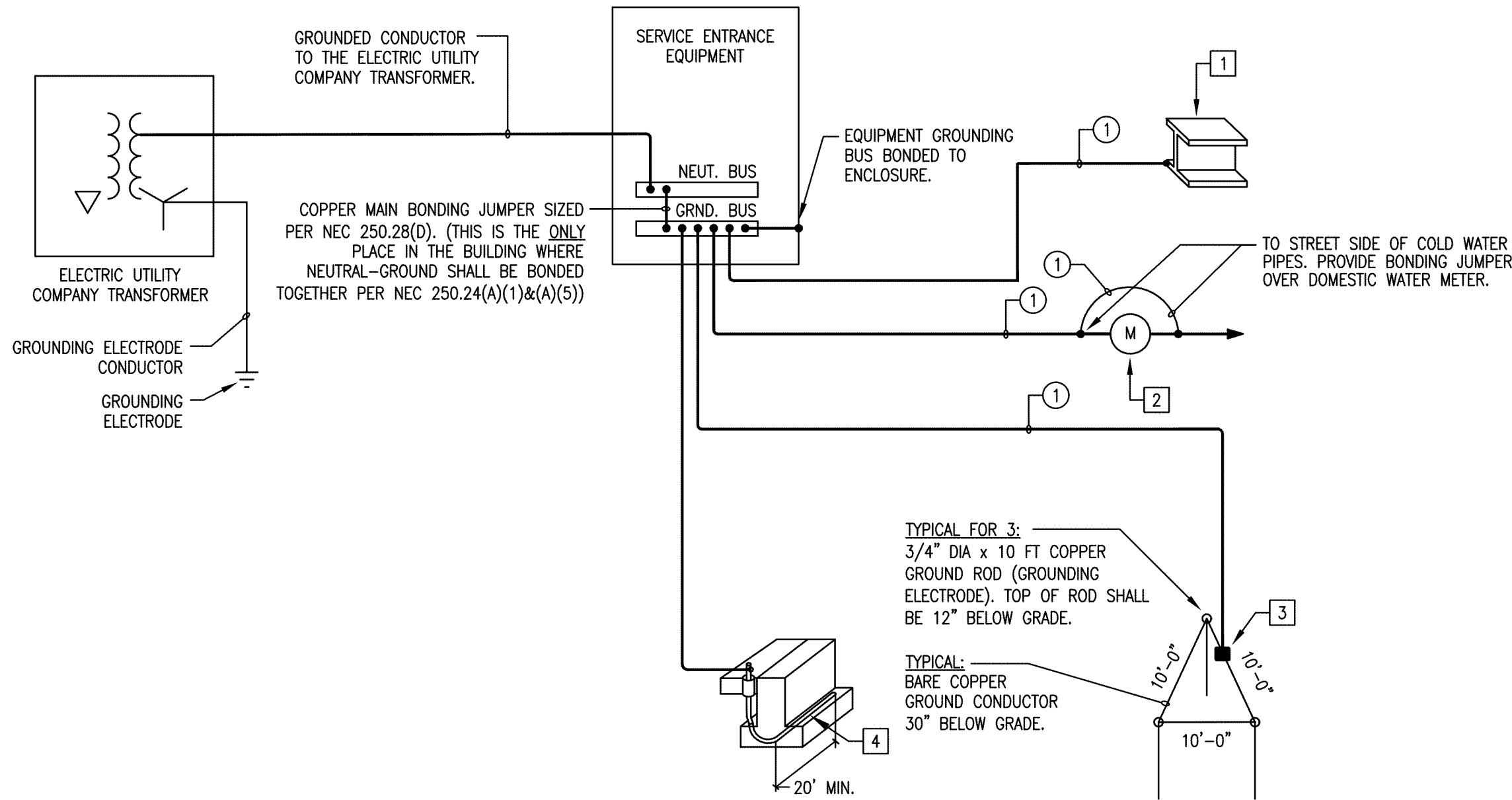
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ELECTRICAL SCHEDULES



- ### TIMECLOCK NOTES
- TIMECLOCK SHALL CONTROL AN ELECTRICAL CONTACTOR FOR INTERNAL LIGHTING OVERRIDE TO MEET THE REQUIREMENTS OF IECC 2015 AND A SECOND CONTACTOR WITH PHOTOCELL OVERRIDE FOR THE EXTERNAL LIGHTING/SIGNAGE.
 - TIMECLOCK TO BE SET TO TURN ON POWER ONE HOUR BEFORE THE BUSINESS OPENS. (FINAL TIME SETTING TO BE CONFIRMED BY OWNER)
 - TIMECLOCK TO BE SET TO TURN OFF POWER TWO HOURS AFTER THE BUSINESS CLOSSES TO ALLOW FOR SAFE EXIT OF EMPLOYEES. (FINAL TIME SETTING TO BE CONFIRMED BY OWNER)
 - PHOTOCELL SHALL BE LOCATED ON THE ROOF OR EXTERIOR NORTH FACING WALL.
 - PHOTOCELL SHALL OVERRIDE TIMECLOCK POWER TO EXTERNAL LIGHTING CONTACTOR WHEN SUFFICIENT DAYLIGHT IS PRESENT. PHOTOCELL SHOULD BE CONFIGURED TO ONLY TURN EXTERIOR LIGHTING AND SIGNAGE ON AT DUSK TIME.
 - TIME CLOCK AND OCCUPANCY SENSORS INSTALLED THROUGHOUT THE BUILDING SHALL BE TESTED AND COMMISSIONED BEFORE PROJECT IS HANDED OVER TO COMPLY WITH IECC 2015 C408.3.1



- ### GENERAL NOTES
- ALL METAL RACEWAYS CONTAINING GROUNDING ELECTRODE CONDUCTORS SHALL BE BONDED AT BOTH ENDS AS REQUIRED BY NEC 250.64(E). PROVIDE GROUNDING TYPE BUSHINGS & COMPRESSION FITTINGS.
 - GROUNDING STANDARDS PURPOSELY EXCEED THOSE GIVEN BY THE NEC. THE ELECTRICAL CONTRACTOR SHALL PROVIDE A BUILDING GROUNDING SYSTEM MEETING NEC STANDARDS AS SHOWN ON THIS DRAWING.
 - COPPER GROUNDING ELECTRODE CONDUCTORS AND BONDING JUMPERS SHALL BE SIZED BASED UPON ELECTRICAL SERVICE SIZE PER NEC 250.66

- ### KEY NOTES
- CADWELD TO NEAREST EFFECTIVELY GROUNDED BUILDING STRUCTURAL STEEL. GROUNDING ELECTRODE COMPLIANT WITH NEC 250.52(A)(2)
 - METAL UNDERGROUND WATER PIPE ELECTRODE COMPLIANT WITH NEC 250.52(A). THE GROUNDING CONNECTION TO THE INTERIOR METAL WATER PIPE SHALL BE MADE WITHIN THE FIRST FIVE FEET OF THE WATER PIPE ENTRANCE TO THE BUILDING.
 - EXOTHERMIC WELDED CONNECTION TO GROUND ROD AND CONDUCTORS. GROUNDING ELECTRODE COMPLIANT WITH NEC 250.53(G). GROUNDING WELL SYSTEM SHALL BE BONDED TOGETHER PER NEC 250.66.
 - INSTALL A CONCRETE ENCASED ELECTRODE, COMPLIANT WITH NEC 250.52(A)(3), CONSISTING OF AT LEAST 20 FEET OF BARE #4 AWG COPPER ENCASED IN 2 INCHES OF CONCRETE NEAR THE BOTTOM OF THE FOOTING OR FOUNDATION (BELOW GRADE) THAT IS IN DIRECT CONTACT WITH EARTH.

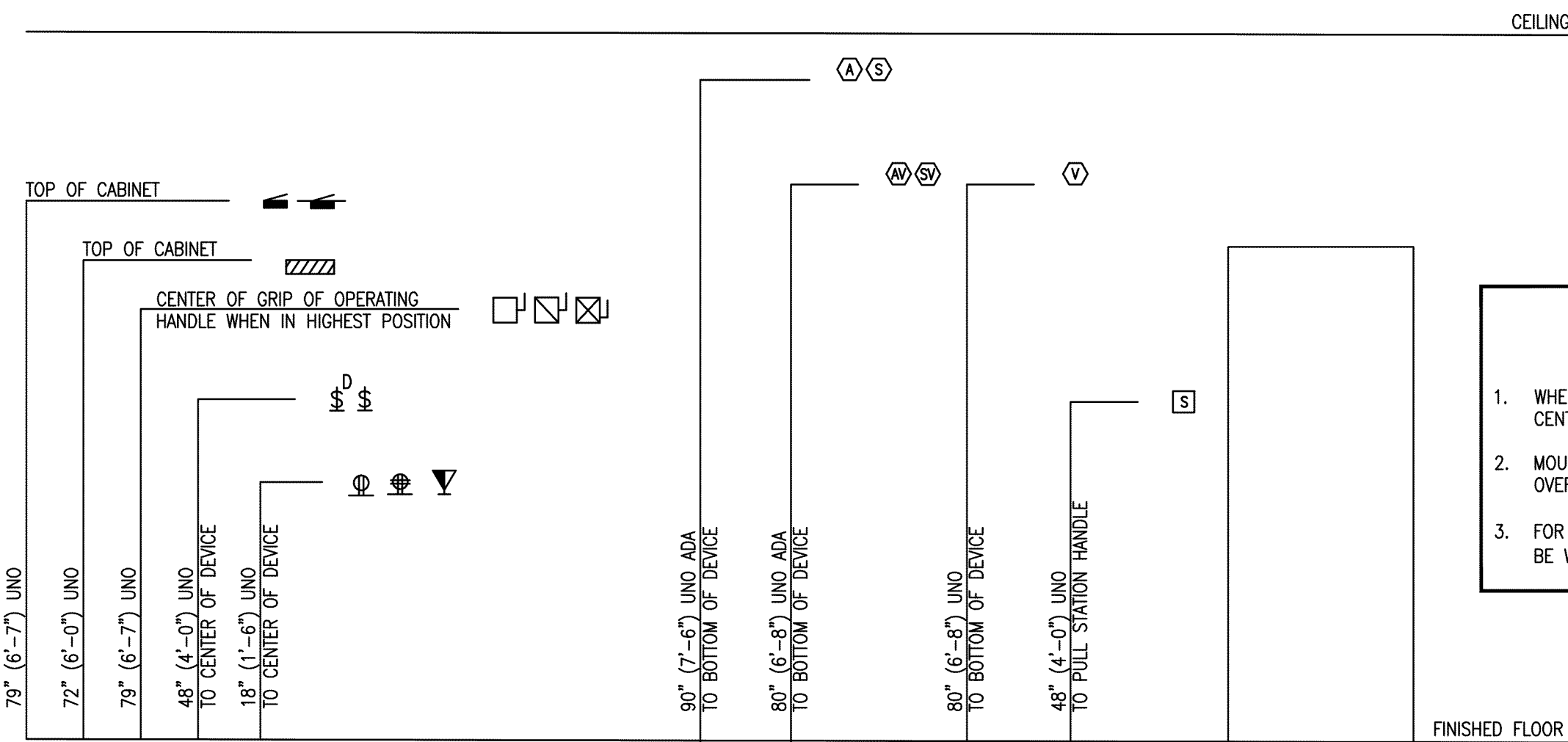
FEEDER SCHEDULE			
FEEDER #	WIRE:	CONDUIT	COMMENTS
1	1/0	1\"C	

1 INTERNAL AND EXTERIOR LIGHTING CONTROL

SCALE: N.T.S.

3 SERVICE GROUNDING DETAILS

SCALE: N.T.S.



- ### GENERAL NOTES
- WHENEVER DEVICES ARE INDICATED TO BE ABOVE DOORS, DEVICE SHALL BE CENTERED BETWEEN TOP OF DOOR TRIM AND CEILING LINE.
 - MOUNTING HEIGHTS SHOWN ON ARCHITECTURAL ELEVATIONS SHALL GOVERN OVER THOSE SHOWN ABOVE.
 - FOR CEILINGS BELOW 7'-4", FIRE ALARM STROBE OR HORN/STROBES SHALL BE WALL MOUNTED 6" BELOW FINISHED CEILING.

4 EQUIPMENT AND DEVICE MOUNTING HEIGHT DETAIL

SCALE: N.T.S.

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
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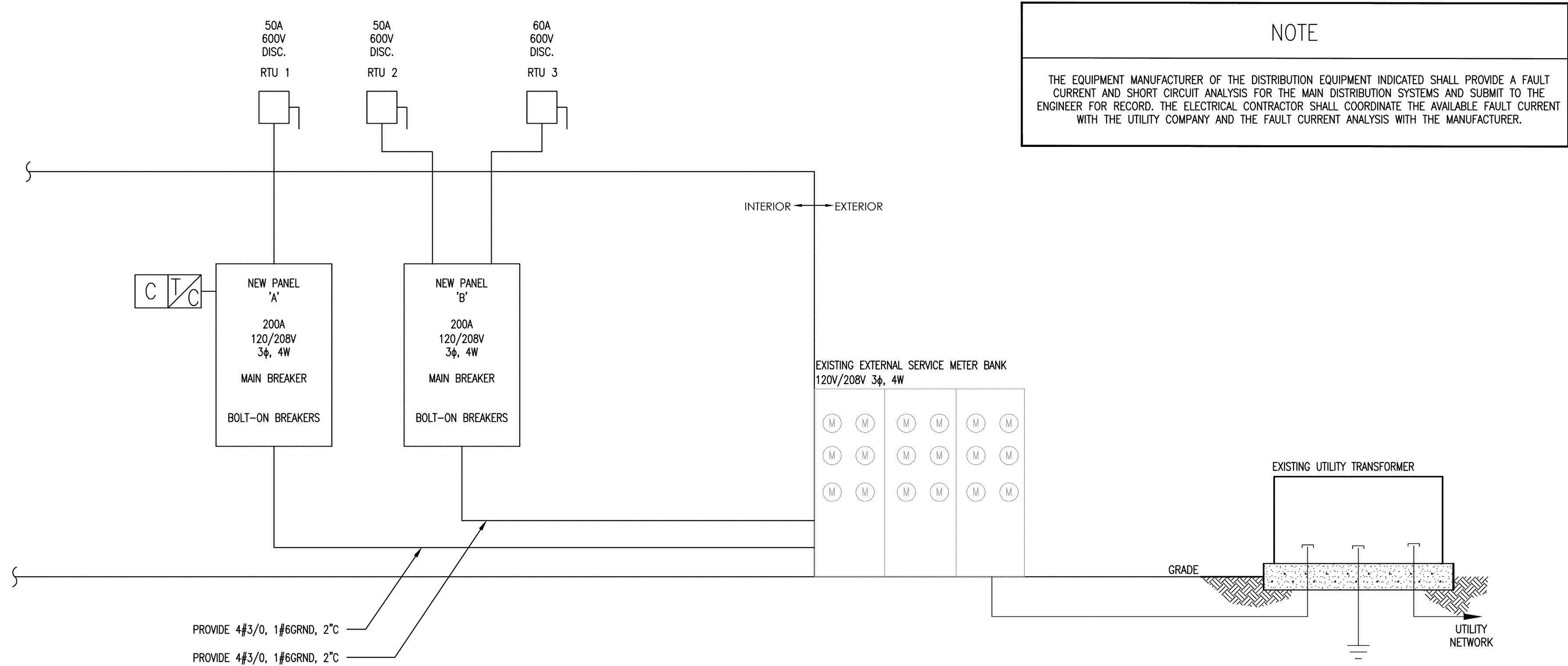
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E4.1

ELECTRICAL SCHEDULES

<div> <div>  <div> <div>Larson</div> <div>www.larsonengr.com</div> </div> </div> <div> <div>NEW PANEL SCHEDULE</div> <div>NEW PANEL DATA</div> </div> </div>			NEW PANEL SCHEDULE																							
<div> <div>PANEL: B</div> <div> <div>LOCATION: PREP AREA</div> <div>PANEL WIDTH: 20"</div> <div>ENCLOSURE: NEMA 1</div> <div>BUS TYPE: COPPER</div> </div> </div>			<div> <div>TYPE: NEW</div> <div> <div>MOUNTING: FLUSH</div> <div>⇒ SURFACE</div> </div> <div> <div>FEDER: ⇒ TOP</div> <div>BOTTOM</div> </div> </div>			<div> <div>BUS: 200A</div> <div> <div>MAIN: 200A</div> <div>⇒ MAIN BREAKER</div> <div>⇒ MAIN LUGS ONLY</div> </div> </div>			<div> <div>VOLTAGE: 120 208</div> <div> <div>NEUTRAL: ⇒ 100%</div> <div>⇒ 200%</div> </div> <div> <div>GROUND: ⇒ EQUIPMENT</div> <div>ISOLATED</div> </div> </div>			<div> <div>3 PHASE, 4 WIRE</div> <div> <div>OPTIONS: ⇒ BOLT-ON CIRCUIT BREAKERS</div> <div>FEED THRU LUGS</div> <div>MONO-FLUSH TRIM</div> <div>SHUNT TRIP</div> </div> </div>														
SHORT CIRCUIT RATING: TBD																										
ITEM			PHASE	NEUT	GND	COND	TYPE	AMP RATING	POLE	CR NO	LEFT PHASE LOAD			RIGHT PHASE LOAD			CR NO	POLE	AMP RATING	TYPE	COND	GND	NEUT	PHASE	ITEM	
CORD REEL 1,2,3,4			#12	#12	#12	3/4"	R	20A	1	3	720	A	B	C	100	A	B	2	1	20A	H	3/4"	#12	#12	#12	(R1) RE-CIRCULATION PUMP
CORD REEL 5,6,7,8			#12	#12	#12	3/4"	R	20A	1	3	720				540			4	1	20A	H	3/4"	#12	#12	#12	(WH1) WATER HEATER
CORD REEL 9,10,11,12			#12	#12	#12	3/4"	R	20A	1	5				720			0	6	1	20A	S	-	-	-	-	SPARE
SPARE			#12	#12	#12	3/4"	S	20A	1	7	1080				540			6	1	20A	R	3/4"	#12	#12	#12	RECEPT - PREP AREA
RECEPT - TRAINING ROOM			#12	#12	#12	3/4"	R	20A	1	9				900			0	10	1	20A	S	-	-	-	-	SPARE
RECEPT - ROOF EQUIPMENT			#12	#12	#12	3/4"	R	20A	1	11				1080			0	12	1	20A	S	-	-	-	-	SPARE
RECEPT - PREP RM COUNTER			#12	#12	#12	3/4"	R	20A	1	13	1500				500			14	1	20A	R	3/4"	#12	#12	#12	RECEPT - PREP AREA FRIDGE
RECEPT - PREP RM COUNTER			#12	#12	#12	3/4"	R	20A	1	15				1500			250	16	1	20A	H	3/4"	#12	#12	#12	EXHAUST FAN 1
QUAD FOR SSP			#12	#12	#12	3/4"	E	20A	1	17				1080			384	18	1	20A	H	3/4"	#12	#12	#12	EXHAUST FAN 5,6,7
QUAD FOR P&SJ			#12	#12	#12	3/4"	E	20A	1	19	1080				1176			20	1	20A	H	3/4"	#12	#12	#12	EXHAUST FAN 8
RECEPT - EXTERIOR OUTLETS			#12	#12	#12	3/4"	R	20A	1	21				900			1920	22	1	20A	H	3/4"	#12	#12	#12	EXHAUST FAN 9
EXHAUST FAN 11			#12	#12	#12	3/4"	H	20A	1	23				250			224	24	1	20A	H	3/4"	#12	#12	#12	EXHAUST FAN 10
SPARE			-	-	-	-	S	20A	1	25	0				0			25	1	20A	S	-	-	-	-	SPARE
SPARE			-	-	-	-	S	20A	1	27	0			0			0	28	1	20A	S	-	-	-	-	SPARE
SPARE			-	-	-	-	S	20A	1	29				0			0									

TABLES ARE BASED ON EVENLY DISTRIBUTED LOAD ALLOWING A 3% VOLTAGE DROP AT LAST OUTLET.		
FOR 120V-20A BRANCH CIRCUITS ONLY (UNLESS NOTED OTHERWISE)		
IF DISTANCE (A+B) IN FEET IS: (SEE DIAGRAM AT RIGHT)	USE COPPER WIRE IN METALLIC CONDUIT, AWG SIZE AS FOLLOWS ON ENTIRE CIRCUIT AND SIZE CONDUIT ACCORDINGLY.	
0' TO 100'	#12 AWG (MIN.)	
100' TO 175'	#10 AWG	
175' TO 300'	#8 AWG	
300' TO 450'	#6 AWG (MAX.)	



NOTE

THE EQUIPMENT MANUFACTURER OF THE DISTRIBUTION EQUIPMENT INDICATED SHALL PROVIDE A FAULT CURRENT AND SHORT CIRCUIT ANALYSIS FOR THE MAIN DISTRIBUTION SYSTEMS AND SUBMIT TO THE ENGINEER FOR RECORD. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE AVAILABLE FAULT CURRENT WITH THE UTILITY COMPANY AND THE FAULT CURRENT ANALYSIS WITH THE MANUFACTURER.

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ELECTRICAL SCHEDULES

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E4.4
ELECTRICAL SCHEDULES

1 INTERNAL LIGHTING COMCHECK REPORT
E4.4 SCALE: N.T.S.

2 EXTERNAL LIGHTING COMCHECK REPORT
E4.4 SCALE: N.T.S.

DUCTWORK SYMBOL LIST			
	DOUBLE LINE TO SINGLE LINE TRANSITION. FIRST NUMBER IN DIMENSION IS SIDE SHOWN.		ROUND NECK SUPPLY AIR DIFFUSER WITH VOLUME DAMPER AT TAKE-OFF
	ROUND FLEXIBLE DUCT. DOUBLE LINE AND SINGLE LINE SHOWN.		SQUARE OR RECTANGULAR NECK SUPPLY AIR REGISTER WITH VOLUME DAMPER AT TAKE-OFF
	SUPPLY AND RETURN AIR DUCT SECTIONS, ROUND AND RECTANGULAR. FIRST NUMBER IN DIMENSION IS SIDE. ARROW POINTS TO.		ROUND NECK RETURN OR EXHAUST AIR DIFFUSER WITH VOLUME DAMPER AT TAKE-OFF
	90 DEGREE SQUARE ELBOWS WITH TURNING VANES, UP AND DOWN. SUPPLY AND RETURN AIR DUCTS SHOWN.		SQUARE OR RECTANGULAR NECK RETURN OR EXHAUST AIR REGISTER WITH VOLUME DAMPER AT TAKE-OFF
	90 DEGREE ROUND ELBOWS, UP AND DOWN. SUPPLY AND RETURN AIR DUCTS SHOWN.		SUPPLY, RETURN, OR EXHAUST REGISTER, SIDE OF DUCT TAKE-OFF WITH VOLUME DAMPER.
	LONG RADIUS ELBOWS, R = W AS PER SMACNA, AND RECTANGULAR ELBOWS WITH TURNING VANES, CONSTRUCTED AS PER SMACNA		SUPPLY, RETURN, OR EXHAUST REGISTER WITH VOLUME DAMPER SHOWN IN ELEVATION VIEW
	MANUAL VOLUME DAMPER, "VD" TEXT DESIGNATION MAY OR MAY NOT BE PRESENT		CEILING MOUNTED SLOT DIFFUSER WITH PLENUM, FLEX DUCT, VOLUME DAMPER, AND TAKE-OFF
	CONICAL TEE. ROUND DUCT BRANCH FROM ROUND OR RECTANGULAR DUCT MAIN.		WALL MOUNTED SLOT DIFFUSER WITH PLENUM, FLEX DUCT, VOLUME DAMPER, AND TAKE-OFF
	CAPPED DUCT, END OF RUN OR FOR FUTURE CONNECTION.		DUCT ACCESS DOOR. SHOWN IN BOTTOM AND SIDE OF DUCT.
	CHANGE OF ELEVATION, RISE (R) OR DROP (D). ARROW SHOWS DIRECTION OF THE RISE OR DROP.		FLEXIBLE DUCT CONNECTION.
	RECTANGULAR DUCT TO ROUND DUCT TRANSITION.		ROOF MOUNTED EXHAUST FAN, TYPICAL DESIGNATION, EF-01.
	TEE BRANCH TAKE-OFF WITH SQUARE ELBOWS, TURNING VANES AND VOLUME DAMPERS		DUCT MOUNTED SERIES OR PARALLEL FAN POWERED TERMINAL WITH REHEAT COIL AND FLEXIBLE DUCT CONNECTION
	TEE BRANCH TAKE-OFF WITH LONG RADIUS ELBOWS AND VOLUME DAMPERS		HOT WATER FIN TUBE RADIATION HEAT
	BRANCH TAKE-OFF WITH BOOT AND VOLUME DAMPER. A = 1/2 B, AS PER SMACNA.		CEILING MOUNTED, RADIANT CEILING PANELS.
	BRANCH TAKE-OFF WITH LONG RADIUS ELBOW AND VOLUME DAMPER.		DUCT MOUNTED REHEAT COIL OR HEATING COIL
	MOTOR OPERATED DAMPER BACK DRAFT DAMPER MOTOR OPERATED SMOKE CONTROL DAMPER		DUCT MOUNTED VAV TERMINAL WITH REHEAT COIL AND FLEXIBLE CONNECTION
	AIR FLOW MEASURING STATION FREEZESTAT STATIC PRESSURE SENSOR		DUCT MOUNTED VVT TERMINAL WITH REHEAT COIL AND FLEXIBLE CONNECTION
	FIRE DAMPER, SMOKE DAMPER AND COMBINATION FIRE/SMOKE DAMPER IN PLAN VIEW DUCTS AND IN RISER DUCTS.		CEILING AND DUCT MOUNTED EXHAUST FANS
	DOOR UNDERCUT		

ABBREVIATIONS:	
AC	AIR CONDITIONING
AD	ACCESS DOOR
AF	AIR FOIL
AHU	AIR HANDLING UNIT
A/AMP	AMPERE
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ATC	AUTOMATIC TEMPERATURE CONTROL
ATM	ATMOSPHERE
BDD	BACK-DRAFT DAMPER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR CENT CENTER OR CENTRIFUGAL
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CO	CARBON MONOXIDE
CONN	CONNECTION
CUH	CABINET UNIT HEATER
D	DRAIN
DB	DRY BULB (TEMPERATURE)
DEG	DEGREE
DDC	DIRECT DIGITAL CONTROL
DIA	DIAMETER
DIM	DIMENSION
DP	DIFFERENTIAL PRESSURE
EA	EACH OR EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EMER	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
ERL	EXISTING TO BE RELOCATED
ERS	EXISTING, REMOVE FROM SERVICE
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EUH	ELECTRICAL UNIT HEATER
EWT	ENTERING WATER TEMPERATURE
EX	EXISTING
EXH	EXHAUST
EXT	EXTERNAL
EXP	EXPANSION
F	FAHRENHEIT
FA	FREE AREA OR FIRE ALARM
FC	FLEXIBLE CONNECTION
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
F.D.	FIRE DAMPER
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLDR	FLOOR DRAIN
FBM	FEET PER MINUTE
FPS	FEET PER SECOND
FS	FLOW SWITCH
FT	FEET
G	GAS
GA	GAUGE
GAL	GALLONS
GALV	GALVANIZED
GPH	GALLONS PER HOUR
CPM	GALLONS PER MINUTE
GR	GRADE
HB	HOSE BIB (CONNECTION)
HD	HEAD
HP	HORSEPOWER OR HIGH POINT
HR	HOUR
HRU	HEAT RECOVERY UNIT
HTG	HEATING
HZ	HERTZ (CYCLES PER SECOND)
ID	INSIDE DIAMETER
IN	INCHES
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LB	POUND
LF	LINEAR FEET
LD	LINEAR DIFFUSER
LP	LOW POINT
LRA	LOCKED ROTOR AMPS
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPS
MIN	MINIMUM
MU	MAKE-UP WATER MUA MAKE-UP AIR
N	NEW
NC	NOISE CRITERIA OR NORMALLY CLOSED
NO	NORMALLY OPEN
NOM	NOMINAL
OA	OUTSIDE AIR
PCF	POUNDS PER CUBIC FOOT
PD	PRESSURE DROP
PH	PHASE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
REL	RELOCATED
RET	RETURN
RH	RELATIVE HUMIDITY
RLA	RUNNING LOAD AMPS
RFM	REVOLUTIONS PER MINUTE
RTU	ROOF-TOP UNIT
SA	SUPPLY AIR
SDT	SATURATED CONDENSING TEMPERATURE
SC	SMOKE DETECTOR OR SMOKE DAMPER
SE	SENSIBLE
SF	COMBINATION SMOKE / FIRE DAMPER
SHC	SENSIBLE HEAT CAPACITY
SP	STATIC PRESSURE
SF	SQUARE FEET
SS	STAINLESS STEEL
SUP	SUPPLY
T	TEMPERATURE OR THERMOSTAT
TA	TRANSFER AIR
TSTAT	THERMOSTAT
TON	12,000 BTUH (COOLING CAPACITY)
TP	TYPICAL
UC	UNDERCUT (DOOR)
V	VOLTS
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
(ALL ABBREVIATIONS SHOWN MAY NOT APPEAR ON DRAWINGS)	

GENERAL NOTES	
1. ALL PERMITS, LICENSES, APPROVALS AND OTHER ARRANGEMENTS FOR WORK SHALL BE OBTAINED BY THE CONTRACTOR AT HIS OWN EXPENSE.	LENGTH UPSTREAM OF ANY AIR OUTLET DEVICES.
2. ALL WORK SHALL CONFORM TO ALL APPLICABLE LOCAL AND STATE CODES, REGULATIONS, AND OREGON SPECIALTY BUILDING CODES AS AMENDED.	14. PROVIDE VOLUME DAMPER IN EACH NEW BRANCH DUCT TO EACH AIR OUTLET EVEN THOUGH ALL DAMPERS REQUIRED MAY NOT APPEAR ON THE HVAC DESIGN FLOOR PLAN DRAWINGS.
3. HVAC CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO BIDDING TO VERIFY ALL EXISTING FIELD CONDITIONS, EQUIPMENT, DIMENSIONS, ETC., AND SHALL INCLUDE ALL REQUIRED CHANGES IN HIS BID FOR A COMPLETE OPERATING SYSTEM. BY SUBMITTING A BID, THE CONTRACTOR ACKNOWLEDGES THAT HE HAS VISITED THE JOB SITE, VERIFIED ALL EXISTING FIELD CONDITIONS, AND HAS INCLUDED ALL REQUIRED CHANGES IN HIS BID TO FURNISH AND INSTALL A COMPLETE OPERATING SYSTEM.	15. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND MAY NOT SHOW EVERY CONDITION, OFFSET, BEND OR ELBOW WHICH MAY BE REQUIRED FOR THE SUCCESSFUL INSTALLATION OF THIS WORK. DRAWINGS WILL BE FOLLOWED AS CLOSELY AS POSSIBLE WITH ADDITIONAL FITTINGS INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
4. PROVIDE ALL DEMOLITION REQUIRED FOR REMOVAL OF SYSTEMS, MATERIALS, AND EQUIPMENT MADE OBSOLETE BY THIS PROJECT. ALL ITEMS OF EXISTING EQUIPMENT, MATERIALS, FIXTURES, ETC., SHALL REMAIN THE PROPERTY OF THE BUILDING OWNER. ALL REUSABLE ITEMS SALVAGED DURING DEMOLITION SHALL BE RETAINED FOR EVALUATION BY THE BUILDING OWNER. CONTRACTOR SHALL LEGALLY DISPOSE ALL ITEMS REJECTED OR UNWANTED BY THE BUILDING OWNER.	16. PROVIDE FIRE DAMPERS AND ACCESS DOORS AT FIRE DAMPERS FOR ALL DUCTWORK PENETRATING FIRE RATED WALLS. ACCESS DOORS ARE NOT REQUIRED WHEN THE FIRE DAMPER IS EASILY ACCESSIBLE BY REMOVING A REGISTER OR GRILLE.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL FIELD CONDITIONS AND COORDINATE ALL WORK WITH TRADES PRIOR TO ANY WORK BEING DONE, TO INSURE CONFLICTS DO NOT OCCUR.	17. MIN. PIPE SIZE SHALL BE 3/4". REDUCE PIPE SIZE AT EQUIPMENT CONNECTION AS REQUIRED.
6. CONTRACTOR SHALL FIELD COORDINATE ALL VOLTAGES WITH ELECTRICAL CONTRACTOR.	18. CONTRACTOR SHALL PROVIDE ACCESS DOORS AS REQUIRED PER SMACNA, PROVIDE EXTRA ACCESS DOORS AS SHOWN ON THESE PLANS.
7. FINAL THERMOSTAT AND SENSOR LOCATIONS SHALL BE COORDINATED WITH THE ARCHITECT AND ENGINEER, BEFORE INSTALLATION.	19. PROVIDE PRESSURE REGULATING VALVE AT ALL EQUIPMENT ITEMS USING NATURAL GAS AT A PRESSURE LESS THAN THE UPSTREAM PIPING PRESSURE. ALL NATURAL GAS PRESSURE REDUCING VALVES SHALL BE VENTED TO THE OUTSIDE OF THE BUILDING.
8. ALL AIR OUTLET LOCATIONS SHALL BE COORDINATED IN ACCORDANCE WITH ARCHITECTURAL REFLECTED CEILING PLANS.	20. FABRICATE DUCTS, ELBOWS, TRANSITIONS, OFFSETS, BRANCH CONNECTIONS, AND OTHER CONSTRUCTION WITH GALVANIZED SHEET STEEL, ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."
9. ALL DUCT SIZES SHOWN ON THE DRAWINGS INDICATED ARE INSIDE, CLEAR LINEAR DIMENSIONS.	21. PROVIDE TRANSFER AIR OPENINGS IN NON-FIRE RATED WALLS. PROVIDE TRANSFER AIR OPENINGS WITH FIRE DAMPERS IN FIRE RATED WALLS. TRANSFER AIR OPENINGS SHALL BE SIZED FOR A MAXIMUM AIR VELOCITY OF 400 FPM THROUGH THE FREE AREA OF THE TRANSFER AIR OPENING.
10. ALL CONCEALED DUCTWORK SHALL BE FABRICATED FROM GALVANIZED SHEET METAL WITH EXTERIOR INSULATION UNLESS NOTED OTHERWISE.	22. EQUIPMENT AND APPLIANCES SHALL BE INSTALLED AS REQUIRED BY THE TERMS OF THEIR APPROVAL, IN ACCORDANCE WITH THE CONDITIONS OF THE LISTING, THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND THE CODE. MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT THE TIME OF INSPECTION.
11. ALL EXPOSED DUCTWORK SHALL BE ROUND SPIRAL DUCT FROM GALVANIZED SHEET STEEL WITH OR WITHOUT PAINT GRIP FINISH UNO. IF PAINT GRIP FINISH IS CHOSEN, PAINTING OF DUCTWORK IS ENTIRELY AT DISCRETION OF OWNER WITH NO EXTERIOR OR INTERIOR INSULATION UNLESS NOTED OTHERWISE.	23. ALL LOW AND MEDIUM PRESSURE AIR-CONDITIONING SUPPLY DUCTWORK WILL TO BE SEALED TO MEET THE CURRENT 2014 OREGON ENERGY EFFICIENCY SPECIALTY CODE AND THE 2014 OREGON MECHANICAL SPECIALTY CODE.
12. PROVIDE TURNING VANES IN ALL 90 DEGREE RECTANGULAR DUCT TURNS.	
13. ALL FLEXIBLE DUCTWORK SHALL BE INSULATED AND NOT EXCEED 5'-0" FEET IN	

DIFFUSER, REGISTER, & GRILLE DESIGNATION	
COMMERCIAL	
DIFFUSERS, REGISTERS, & GRILLES	FOR LINEAR DIFFUSERS
NECK SIZE TO EQUAL DUCT RUN-OUT. THROW IS 4-WAY UNLESS INDICATED OTHERWISE	THROW IS 2-WAY UNLESS INDICATED OTHERWISE

NATURAL GAS NOTES	
1. EVERY ATTEMPT HAS BEEN MADE TO VERIFY EXISTING GAS PRESSURE PRIOR TO BID.	
2. CONTRACTOR SHALL VERIFY EXISTING GAS SERVICE WITH UTILITY PRIOR TO BID AND CONSTRUCTION. IF GAS PRESSURE BEFORE METER IS LESS THAN PRESSURE SHOWN ON DRAWINGS, CONTRACTOR SHALL NOTIFY PRIOR TO BID.	
3. CONTRACTOR SHALL COORDINATE LOCATION AND SIZE OF GAS METER WITH GAS UTILITY AND OWNER.	
4. EACH PIECE OF GAS FIRED EQUIPMENT SHALL BE PROVIDE WITH A GAS PRESSURE REGULATING VALVE AND SHUT-OFF VALVE AS SHOWN IN DETAIL. VENT PIPING FROM PRV SHALL VENT TO THE OUTDOORS AND BE WEATHER AND INSECT PROOF.	
5. PROVIDE EACH PIECE GAS FIRED EQUIPMENT SHALL BE PROVIDE WITH A 12" DIRT LEG.	
6. ALL GAS PIPING SHALL BE SCHEDULE 40 STEEL PIPE, UNLESS OTHERWISE NOTED.	
7. PRIOR TO INITIAL OPERATION, GAS LINES SHALL BE PRESSURE TESTED AT 1.5 TIMES THE RATED MAXIMUM PRESSURE BUT NOT LESS THAN 3PSIG. THE TEST DURATION SHALL NOT BE LESS THAN 1/2 HOUR FOR EACH 500 CUBIC FEET OF PIPE VOLUME OR AS NOTED PER LOCAL CODES.	

COMMISSIONING:	
COMMISSIONING OF THE BUILDING IS REQUIRED. G.C. TO CONSULT AN APPROVED COMMISSIONING AGENT AND SHALL PROVIDE EVIDENCE OF MECHANICAL SYSTEMS COMMISSIONING AND COMPLETION. ALL COMMISSION REPORTS SHALL BE MADE AVAILABLE TO THE OWNER AND AHJ.	
1. G.C. SHALL DEVELOP A COMMISSIONING PLAN FOR THE BUILDING. COMMISSION PLAN SHALL INCLUDE:	
1.1. A NARRATIVE DESCRIPTION OF THE ACTIVITIES THAT WILL BE ACCOMPLISHED DURING EACH PHASE OF COMMISSIONING, INCLUDING THE PERSONNEL INTENDED TO ACCOMPLISH EACH OF THE ACTIVITIES.	
1.2. A LISTING OF SPECIFIC EQUIPMENT, APPLIANCES OR SYSTEMS TO BE TESTED AND A DESCRIPTION OF THE TESTS TO BE PERFORMED.	
1.3. FUNCTIONS TO BE TESTED INCLUDING, BUT NOT LIMITED TO, CALIBRATIONS AND ECONOMIZER CONTROLS.	
1.4. CONDITION UNDER WHICH THE TEST WILL BE PERFORMED. TESTING SHALL AFFIRM WINTER AND SUMMER DESIGN CONDITIONS AND FULL OUTSIDE AIR CONDITIONS.	
1.5. MEASURABLE CRITERIA FOR PERFORMANCE.	
2. THE HVAC SYSTEM SHALL BE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS. AIR AND WATER FLOW RATES SHALL BE MEASURED AND ADJUSTED TO DELIVER FINAL FLOW RATES WITHIN THE TOLERANCES PROVIDED IN THE PRODUCT SPECIFICATIONS. TEST AND BALANCE ACTIVITIES SHALL INCLUDE AIR AND HYDRONIC SYSTEM BALANCING.	
2.1. EACH SUPPLY AIR OUTLET AND ZONE TERMINAL DEVICE SHALL BE EQUIPPED WITH MEANS FOR AIR BALANCING IN ACCORDANCE WITH THE MECHANICAL CODE. AIR SYSTEM SHALL BE BALANCED IN A MANNER TO FIRST MINIMIZE THROTTLING LOSSES THEN, FOR FANS WITH SYSTEMS POWER OF GREATER THAN 1 HP, FAN SPEED SHALL BE ADJUSTED TO MEET DESIGN FLOW CONDITIONS.	
3. FUNCTIONAL PERFORMANCE TESTING SHALL BE CONDUCTED.	
3.1. EQUIPMENT FUNCTIONAL PERFORMANCE TESTING SHALL DEMONSTRATE THE INSTALLATION AND OPERATION OF COMPONENTS, SYSTEMS, AND SYSTEM-TO-SYSTEM INTERFACING RELATIONSHIPS IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS SUCH THAT OPERATION, FUNCTION, AND MAINTENANCE SERVICEABILITY FOR EACH OF THE COMMISSIONED SYSTEMS IS CONFIRMED. TESTING SHALL INCLUDE ALL MODES AND SEQUENCES OF OPERATION, INCLUDING UNDER FULL-LOAD, PART-LOAD AND THE FOLLOWING EMERGENCY CONDITIONS:	
3.1.1. ALL MODES AS DESCRIBED IN THE SEQUENCE OF OPERATION.	
3.1.2. REDUNDANT OR AUTOMATIC BACK-UP MODE.	
3.1.3. PERFORMANCE OF ALARMS.	
3.1.4. MODE OF OPERATION UPON A LOSS OF POWER AND RESTORATION OF POWER.	
3.2. HVAC AND SERVICE WATER HEATING CONTROL SYSTEMS SHALL BE TESTED TO DOCUMENT THE CONTROL DEVICES, COMPONENTS, EQUIPMENT AND SYSTEMS ARE CALIBRATED AND ADJUSTED AND OPERATE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS. SEQUENCES OF OPERATION SHALL BE FUNCTIONALLY TESTED TO DOCUMENT THEY OPERATE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.	
3.3. ALL AIR ECONOMIZERS SHALL UNDERGO A FUNCTIONAL TEST TO DETERMINE THAT THEY OPERATE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.	
4. A PRELIMINARY REPORT OF COMMISSIONING TEST PROCEDURES AND RESULTS SHALL BE COMPLETED AND CERTIFIED BY THE COMMISSIONING AGENT AND PROVIDED TO THE BUILDING OWNER OR OWNERS AUTHORIZED AGENT. THE REPORT SHALL BE ORGANIZED WITH MECHANICAL AND SERVICE HOT WATER FINDINGS IN SEPARATE SECTIONS TO ALLOW INDEPENDENT REVIEW. THE REPORT SHALL BE IDENTIFIED AS "PRELIMINARY COMMISSIONING REPORT" AND SHALL IDENTIFY:	
4.1. IDENTIFICATION OF DEFICIENCIES FOUND DURING TESTING REQUIRED BY THIS SECTION THAT HAVE NOT BEEN CORRECTED AT THE TIME OF REPORT PREPARATION.	
4.2. DEFERRED TEST THAT CANNOT BE PERFORMED AT THE TIME OF REPORT PREPARATION BECAUSE OF CLIMATIC CONDITIONS.	
4.3. CLIMATIC CONDITIONS REQUIRED FOR PERFORMANCE OF THE DEFERRED TESTS.	
BUILDINGS, OR PORTIONS THEREOF, SHALL NOT BE CONSIDERED ACCEPTABLE FOR A FINAL INSPECTION, UNTIL THE AHJ CODE OFFICIAL HAS RECEIVED A LETTER OF TRANSMITTAL FROM THE BUILDING OWNER ACKNOWLEDGE THAT THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT HAS RECEIVED THE PRELIMINARY COMMISSIONING REPORT. THE CODE OFFICIAL SHALL BE PERMITTED TO REQUIRE THAT A COPY OF THE PRELIMINARY COMMISSIONING REPORT BE MADE AVAILABLE FOR REVIEW BY THE CODE OFFICIAL.	
5. ALL COMMISSIONING REPORTS SHALL BE PROVIDED TO THE BUILDING OWNER OR OWNERS AUTHORIZED AGENT WITHIN 90 DAYS OF THE DATE OF RECEIPT OF THE CERTIFICATE OF OCCUPANCY.	
5.1. ALL OPERATING AND MAINTENANCE MANUALS SHALL BE PROVIDED AND INCLUDE ALL THE FOLLOWING:	
5.1.1. SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.	
5.1.2. MANUFACTURERS OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED.	
5.1.3. NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY.	
5.1.4. HVAC AND SERVICE HOT WATER CONTROLS SYSTEM MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS AND CONTROL SEQUENCE DESCRIPTIONS. DESIRED OR FIELD-DETERMINED SET POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS AT CONTROL DEVICES OR FOR DIGITAL CONTROL SYSTEMS, IN SYSTEM PROGRAMMING INSTRUCTIONS.	
5.1.5. SUBMITTAL DATA INDICATING ALL SELECTED OPTIONS FOR EACH PIECE OF LIGHTING EQUIPMENT AND LIGHTING CONTROLS.	
5.1.6. OPERATION AND MAINTENANCE MANUALS FOR EACH PIECE OF LIGHTING EQUIPMENT. REQUIRED ROUTINE MAINTENANCE ACTIONS, CLEANING AND RECOMMENDED RELAMPING SHALL BE CLEARLY IDENTIFIED.	
5.1.7. A SCHEDULE FOR INSPECTING AND RECALIBRATING ALL LIGHTING CONTROLS.	
5.1.8. A NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING RECOMMENDED SET POINTS.	
5.2. SYSTEM BALANCE REPORTS INCLUDING ALL ACTIVITIES AND MEASUREMENTS COMPLETED IN ACCORDANCE WITH DESCRIPTIONS ABOVE.	
5.3. FINAL COMMISSIONING REPORT WITH TEST PROCEDURES AND RESULTS IDENTIFIED AS "FINAL COMMISSIONING REPORT" SHALL BE DELIVERED TO THE BUILDING OWNER OR OWNER'S AUTHORIZED AGENT. THE REPORT SHALL BE ORGANIZED WITH MECHANICAL, SYSTEM AND SERVICE HOT WATER SYSTEM FINDING IN SEPARATE SECTIONS TO ALLOW INDEPENDENT REVIEW. THE REPORT SHALL INCLUDE THE FOLLOWING:	
5.3.1. RESULTS OF FUNCTIONAL PERFORMANCE TESTS.	
5.3.2. DISPOSITION OF DEFICIENCIES FOUND DURING TESTING, INCLUDING DETAILS OF CORRECTIVE MEASURES USED OR PROPOSED.	
5.3.3. FUNCTIONAL PERFORMANCE TEST PROCEDURES USED DURING THE COMMISSIONING PROCESS INCLUDING MEASURABLE CRITERIA FOR TEST ACCEPTANCE, PROVIDED HEREIN FOR REPEATABILITY.	

SEAL:

THIS DOCUMENT IS
PRELIMINARY AND
NOT FOR
REGULATORY
APPROVAL,
PERMITTING OR
CONSTRUCTION.
08/02/19

NO DATE REMARKS
REVISIONS

CAMP
BOW WOW
2900 SE CORNELIUS PASS RD.
SUITE 118
HILLSBORO, OR.

DATE:07/26/2019

MO.0
MECHANICAL SYMBOLS
AND ABBREVIATIONS

MECHANICAL SPECIFICATIONS

GENERAL REQUIREMENTS:

1. THE GENERAL REQUIREMENTS OF THE ARCHITECTURAL SPECIFICATIONS ARE A PART OF THESE SPECIFICATIONS. WHERE AN INCONSISTENCY EXISTS BETWEEN THE WORDING OR INTENT, THIS DIVISION SHALL TAKE PRECEDENCE.
2. THE STANDARD FORM OF GENERAL CONDITIONS ISSUED BY THE AMERICAN INSTITUTE OF ARCHITECTS DOCUMENT A201, LATEST EDITION, SHALL FORM PART OF THIS CONTRACT.
3. SPECIFICATIONS AND DRAWINGS ARE INTENDED TO BE COOPERATIVE. WHAT IS CALLED FOR BY EITHER SHALL BE AS BINDING AS IF CALLED FOR BY BOTH. ANY WORK OR MATERIALS NOT SPECIFICALLY MENTIONED THROUGH REQUIRED TO MAKE THE JOB COMPLETE, SHALL BE FURNISHED BY THE CONTRACTOR AT HIS EXPENSE.

LAWS, ORDINANCES, FEES, AND INSPECTIONS:

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES AND REGULATIONS APPLYING TO THE WORK AS DRAWN AND SPECIFIED. IF THE CONTRACTOR OBSERVES THAT THE DRAWINGS AND SPECIFICATIONS DO NOT COMPLY WITH ANY OF THE APPLICABLE LAWS, ORDINANCES, RULES AND REGULATIONS, HE SHALL PROMPTLY NOTIFY THE ENGINEER IN WRITING WHEN SUBMITTING HIS BID. ANY NECESSARY CHANGES IN THE WORK SHALL BE ADJUSTED AS PROVIDED FOR IN THE CONTRACT. IF THE CONTRACTOR PERFORMS ANY WORK CONTRARY TO SUCH LAWS, ORDINANCES, RULES AND REGULATIONS, HE SHALL BEAR ALL COSTS FOR CORRECTING THIS WORK.
2. ALL CONTRACTORS SHALL APPLY, PROCURE AND PAY FEES FOR ALL PERMITS AND INSPECTIONS OR OTHER OBLIGATIONS THAT THE CITY, COUNTY, STATE OR UTILITIES MAY REQUIRE IN ORDER FOR HIM TO DO HIS WORK.
3. EQUIPMENT AND APPLIANCES SHALL BE INSTALLED AS REQUIRED BY THE TERMS OF THEIR APPROVAL, IN ACCORDANCE WITH THE CONDITIONS OF THE LISTING, THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND THE CODE. MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT THE TIME OF INSPECTION.

TRADE JURISDICTION AND COORDINATION OF WORK:

1. THIS CONTRACTOR SHALL FURNISH ALL LABOR AND MATERIALS NECESSARY FOR THE COMPLETE FULFILLMENT OF THIS WORK. FOR WORK OTHER THAN THAT WHICH IS GENERALLY ACCEPTED BY HIS TRADE, SUBLET ALL LABOR OR MATERIALS NECESSARY TO A CONTRACTOR ENGAGED IN THAT TRADE SO THAT THERE IS NO DELAY OR STOPPAGE OF WORK.
2. THE CONTRACTOR SHALL CONFER WITH OTHER TRADES WHOSE WORK MAY AFFECT HIS INSTALLATION TO AVOID INTERFERENCE BEFORE STARTING THE INSTALLATION. ALL CHANGES IN THE WORK OF THIS CONTRACTOR CAUSED BY HIS NEGLECT TO COORDINATE WITH OTHER TRADES SHALL BE MADE BY HIM AT HIS OWN EXPENSE.

WORKMANSHIP, MATERIALS, AND PRODUCTS:

1. ALL MATERIALS SHALL BE NEW AND OF FIRST QUALITY. ALL LABOR SHALL BE EXECUTED IN A NEAT, WORKMANLIKE MANNER AND SHALL BE PERFORMED BY MECHANICS SKILLED IN THEIR RESPECTIVE TRADES.
2. BASIS-OF-DESIGN PRODUCTS: WHERE A SPECIFIC MANUFACTURER'S PRODUCT IS NAMED, INCLUDING MAKE OR MODEL NUMBER OR OTHER DESIGNATION, THIS ESTABLISHES THE SIGNIFICANT QUALITIES RELATED TO TYPE, FUNCTION, DIMENSION, IN-SERVICE PERFORMANCE, PHYSICAL PROPERTIES, APPEARANCE, AND OTHER CHARACTERISTICS, FOR PURPOSES OF EVALUATING COMPARABLE PRODUCTS OF OTHER NAME MANUFACTURERS. THE DRAWINGS AND SPECIFICATIONS INDICATE SIZES, PROFILES, DIMENSIONS, AND OTHER CHARACTERISTICS THAT ARE BASED ON THE PRODUCT NAMED.
3. WHERE THE TERM "PROVIDE" IS INDICATED ON THE DRAWINGS AND SPECIFICATIONS; THIS MEANS FURNISH AND INSTALL THE EQUIPMENT OR SYSTEM, COMPLETE AND READY FOR THE INTENDED USE.
4. PROVIDE "PLENUM RATED" EQUIPMENT WHERE REQUIRED BY LOCAL CODE.

CUTTING AND PATCHING:

1. EACH CONTRACTOR SHALL DO HIS OWN CUTTING AND PATCHING. WHEN OPENINGS ARE REQUIRED THROUGH BEARING WALLS, FURNISH AND INSTALL, THE NECESSARY STEEL IF STRUCTURALLY REQUIRED. THIS CONTRACTOR SHALL NOT ENDANGER ANY WORK BY CUTTING, DIGGING OR OTHER METHODS, AND SHALL NOT CUT OR ALTER THE WORK OF OTHER TRADES WITHOUT CONSENT OF THE CONSTRUCTION MANAGER, ARCHITECT, AND/OR ENGINEER.

CLEAN UP:

1. UPON COMPLETION OF THE INSTALLATION OF THE MECHANICAL WORK, CLEAN INSTALLED SURFACES ACCORDING TO WRITTEN INSTRUCTIONS OF MANUFACTURER OR FABRICATOR OF THE PRODUCT INSTALLED, USING ONLY CLEANING MATERIALS SPECIFICALLY RECOMMENDED. IF SPECIFIC CLEANING MATERIALS ARE NOT RECOMMENDED, USE CLEANING MATERIALS THAT ARE NOT HAZARDOUS TO HEALTH OR PROPERTY AND THAT WILL NOT DAMAGE EXPOSED SURFACES.
2. CLEAN METAL-DUCT SYSTEM COMPONENTS BY REMOVING VISIBLE SURFACE CONTAMINANTS AND DEPOSITS. MARK POSITION OF DAMPERS AND AIR-DIRECTIONAL MECHANICAL DEVICES BEFORE CLEANING, AND RESTORE TO THEIR MARKED POSITION ON COMPLETION. CLEAN ENTIRE SYSTEM OF RUBBISH, PLASTER, DIRT, ETC., BEFORE INSTALLING GRILLES OR DIFFUSERS. REPLACE FILTERS AND SCREENS WITH NEW FILTERS AND GRILLES.
3. FLUSH HYDRONIC PIPING SYSTEMS WITH CLEAN WATER. REMOVE AND CLEAN OR REPLACE STRAINER SCREENS. AFTER CLEANING AND FLUSHING HYDRONIC PIPING SYSTEMS, BUT BEFORE BALANCING, REMOVE DISPOSABLE FINE-MESH STRAINERS IN PUMP SUCTION DIFFUSERS.
4. REPAIR MARRED AND DAMAGED FACTORY-PAINTED FINISHES WITH MATERIALS AND PROCEDURES TO MATCH ORIGINAL FACTORY FINISH.

PROJECT CLOSEOUT PROCEDURES AND WARRANTY:

1. AT PROJECT CLOSEOUT, THE CONTRACTOR SHALL SUBMIT RECORD DRAWINGS ("AS-BUILT" DRAWINGS) OF INSTALLED DUCTWORK, PIPING, AND EQUIPMENT AS IT WAS ACTUALLY INSTALLED. SUBMIT "AS-BUILT" DRAWINGS AT MINIMUM 1/8" = 1'-0" SCALE. SUBMIT ONE (1) COPY TO ARCHITECT AND ONE (1) TO ENGINEER.
2. THIS CONTRACTOR SHALL PREPARE AND FURNISH TO THE OWNER, TWO BOUND COPIES OF A TYPEWRITTEN LIST OF ALL EQUIPMENT, THE EQUIPMENT MANUFACTURERS OPERATING INSTRUCTIONS, AND A SCHEDULE OF VALVES INSTALLED UNDER THIS CONTRACT. EACH PIECE OF EQUIPMENT LISTED SHALL BE DESCRIBED BY THE DRAWING DESIGNATION NUMBER. THE VALVE SCHEDULE SHALL INDICATE VALVE IDENTIFICATION NUMBER, LOCATION, AND PURPOSE.
3. THIS CONTRACTOR SHALL GUARANTEE HIS WORK TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL CERTIFICATE. ANY REPAIRS OR REPLACEMENT DURING THE PERIOD SHALL BE MADE WITHOUT COST TO THE OWNER, UPON THE OWNER'S REQUEST.

SUBMITTALS:

1. THIS CONTRACTOR SHALL SUBMIT TO THE OWNER FOR APPROVAL COMPLETE LISTS INCLUDING CATALOG CUTS, ETC., AND WHERE APPLICABLE DIMENSIONED SHOP DRAWINGS OF ALL MATERIALS, FIXTURES AND EQUIPMENT TO BE FURNISHED AND INSTALLED UNDER THIS CONTRACT. INCLUDE SHEETMETAL DUCT LAYOUTS AND PIPING PLAN LAYOUTS. SUBMIT SHOP DRAWINGS FOR REVIEW, DRAWN TO A MINIMUM SCALE OF 1/8" = 1'-0". DO NOT ORDER EQUIPMENT, FABRICATE DUCTWORK OR INSTALL EQUIPMENT, DUCTWORK OR PIPING BEFORE RECEIVING SHOP DRAWINGS REVIEWED BY THE OWNER. ENGINEER IS NOT CONTRACTED TO REVIEW SHOP DRAWINGS.
2. REQUIRED ITEMS TO BE SUBMITTED SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - A. GRILLES / REGISTERS / DIFFUSERS.
 - B. MAJOR EQUIPMENT ITEMS: RTUS, AHUS, CHILLERS, BOILERS, PUMPS, MAKE-UP AIR UNITS, CONDENSERS/CONDENSING UNITS, FURNACES, UNIT HEATERS, BASEBOARD HEATERS, FAN COILS, COMPUTER ROOM UNITS, HEAT RECOVERY UNITS, ETC.
 - C. FANS.
 - D. LOUVERS.
 - E. PIPING MATERIALS, FITTINGS, AND VALVES.
 - F. TEMPERATURE CONTROLS
3. CONTRACTOR SHALL BE FINANCIALLY LIABLE FOR ANY REQUIRED ENGINEERING REVIEW DUE TO ANY PROPOSED PRODUCT CHANGE AND/OR VOLUNTARY "VALUE ENGINEERING" DURING THE BIDDING PROCEDURE AND THE SUBMITAL PROCESS. CONTRACTOR SHALL BE FINANCIALLY LIABLE FOR ANY REQUIRED ENGINEERING REVIEW DUE TO SUPPLIER'S OR MANUFACTURER'S REQUIREMENTS TO HAVE AN ENGINEER SIGN OFF ON SUBMITTALS.

SCOPE OF WORK:

1. PROVIDE ALL LABOR AND MATERIALS, EQUIPMENT, FACILITIES, TRANSPORTATION AND SERVICES NECESSARY TO FURNISH, INSTALL AND COMPLETE THE HEATING, VENTILATING AND AIR CONDITIONING WORK AS INDICATED ON THE DRAWINGS AND SPECIFIED HERE IN. THE WORKMANSHIP SHALL BE COMPLETE IN EVERY RESPECT, BE TESTED AND APPROVED, AND BE SATISFACTORY TO THE ARCHITECT/ENGINEER AND IN ACCORDANCE WITH THE LOCAL, COUNTY AND STATE LAWS GOVERNING THIS INSTALLATION, INCLUDING THE FIRE MARSHALL.
2. THE DRAWINGS INDICATE DIAGRAMMATICALLY THE EXTENT AND LOCATION OF THE WORK INCLUDED. WORK INDICATED, BUT HAVING MINOR DETAILS OMITTED, SHALL BE PROVIDED, INCLUDING THESE DETAILS, WITHOUT EXTRA COST.
3. INTENT: IT IS THE DECLARED AND ACKNOWLEDGED INTENT OF THESE SPECIFICATIONS TO PROVIDE THE HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS, INCLUSIVE OF ALL REQUIRED PARTS AND ACCESSORIES, COMPLETE AND READY FOR USE AS ITEMIZED, BUT NOT NECESSARILY LIMITED TO THE FOLLOWING:
 - A. FURNACES, CONDENSING UNITS AND ACCESSORIES.
 - B. HEAT RECOVERY VENTILATORS AND ACCESSORIES.
 - C. ROOFTOP HVAC SYSTEMS, ROOF CURBS, AND ACCESSORIES.
 - D. NATURAL GAS PIPING AND ACCESSORIES.
 - E. REFRIGERANT PIPING AND ACCESSORIES.
 - F. HVAC DRAIN PIPING.
 - G. ALL VENTILATING, HEATING, AND COOLING DUCTWORK.
 - H. TOILET EXHAUST FANS WITH ACCESSORIES AND DUCTWORK.
 - I. MISCELLANEOUS FANS WITH ACCESSORIES AND DUCTWORK.
 - J. KITCHEN EXHAUST FAN WITH ACCESSORIES AND DUCTWORK.
 - K. DUCT LINING AND THERMAL INSULATION.
 - L. PIPING AND THERMAL INSULATION.
 - M. BASES, PLATFORMS, SUPPORTS AND HANGERS, VIBRATION ISOLATORS.
 - N. EQUIPMENT, PIPING, DUCTWORK AND VALVE IDENTIFICATION.
 - O. TEST AND BALANCING.
 - P. TEMPERATURE CONTROL SYSTEMS.
 - Q. MOTOR STARTERS, MAGNETIC CONTACTORS AND CONTROLS FOR HVAC EQUIPMENT.
 - R. SPLIT DX REFRIGERATION HVAC SYSTEMS.
 - S. AIR HANDLING UNIT SYSTEMS.
 - T. BOILERS AND ACCESSORIES.
 - U. PUMPS AND ACCESSORIES.
 - V. PRESSURIZED FILL AND MAKE-UP WATER SYSTEM.
 - W. HEATING HOT WATER.
 - X. CHILLERS AND ACCESSORIES.
 - Y. STEAM, STEAM CONDENSATE, PUMPED STEAM CONDENSATE.
 - Z. CHILLED WATER PIPING.

MECHANICAL IDENTIFICATION:

1. GENERAL: PROVIDE MECHANICAL IDENTIFICATION FOR MECHANICAL EQUIPMENT, PIPING AND DUCT SYSTEMS. COMPLY WITH ANSI A13.1 FOR LETTERING SIZE, LENGTH OF COLOR FIELD, COLORS AND VIEWING ANGLES OF IDENTIFICATION DEVICES. PROVIDE IDENTIFICATIONS PRODUCTS MANUFACTURED BY "SETON" OR APPROVED EQUAL.
2. EQUIPMENT: PROVIDE EQUIPMENT SYSTEM NUMBER, CAPACITY, FLOW RATE, STATIC PRESSURE, PUMP HEAD, ETC.
3. DUCT AND PIPING SYSTEMS: PROVIDE SYSTEM DESIGNATION NAME AND DIRECTION OF FLOW.
4. VALVE TAGS: PROVIDE BRASS VALVE TAGS AND BRASS "S" HOOK FASTENERS WITH VALVE NUMBER AND TYPE OF SERVICE NOTED ON TAG.

CONCRETE BASES, NOISE AND VIBRATION CONTROL:

1. CONCRETE BASES: ANCHOR EQUIPMENT WITH ANCHOR BOLTS TO CONCRETE BASE ACCORDING TO EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS. INSTALL ANCHOR BOLTS AT ELEVATIONS REQUIRED FOR PROPER ATTACHMENT TO SUPPORTED EQUIPMENT. CONSTRUCT CONCRETE BASES NOT LESS THAN 4 INCHES LARGER IN BOTH DIRECTIONS THAN SUPPORTED UNIT. PROVIDE ACOUSTICAL AND VIBRATION ISOLATION TREATMENT BETWEEN BASES AND EQUIPMENT AS INDICATED BELOW.
2. PROVIDE ACOUSTICAL AND VIBRATION ISOLATION TREATMENT TO MAINTAIN NOISE AND VIBRATION LEVELS EQUAL TO OR LESS THAN THOSE INDICATED BY ASHRAE AND ARI 880 AND 885. VIBRATION ISOLATORS SHALL BE SELECTED BY THE MANUFACTURER IN ACCORDANCE WITH THE WEIGHT DISTRIBUTION TO PRODUCE UNIFORM DEFLECTIONS AND TO PREVENT THE TRANSMISSION OF VIBRATION AND MECHANICALLY TRANSMITTED SOUND INTO THE BUILDING STRUCTURE OR OTHER ROOMS.
3. PROVIDE VIBRATION ISOLATORS AND FLEXIBLE CONNECTIONS AS REQUIRED FOR ALL PUMPS, FANS, REFRIGERATION MACHINES, AND OTHER ROTATING COMPONENT EQUIPMENT. PROVIDE AND INSTALL SPRING AND/OR NEOPRENE VIBRATION ISOLATORS. PROVIDE VIBRATION ISOLATION HANGERS WITHIN 50 FEET OF ALL PUMPS, FANS, REFRIGERATION MACHINES, AND OTHER ROTATING COMPONENT EQUIPMENT.

DUCTWORK:

1. DUCT SYSTEM DESIGN, AS INDICATED, HAS BEEN USED TO SELECT SIZE AND TYPE OF AIR-MOVING AND DISTRIBUTION EQUIPMENT AND OTHER AIR SYSTEM COMPONENTS. CHANGES TO LAYOUT OR CONFIGURATION OF DUCT SYSTEM MUST PROVIDE ORIGINAL DESIGN RESULTS WITHOUT INCREASING SYSTEM TOTAL PRESSURE.
2. ALL DUCTWORK SHALL BE PRIME GALVANIZED SHEET STEEL, LOCK FORMING QUALITY. FABRICATE AND REINFORCE DUCTWORK IN ACCORDANCE WITH THE CURRENT EDITION OF SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" AND PER LOCAL CODE.
3. ROUND SPIRAL DUCTWORK SHALL BE UNITED SHEET METAL TYPE DUCT OR APPROVED EQUAL, INSTALLED AND SUSPENDED AS PER MANUFACTURER'S RECOMMENDATIONS.
4. DUCT DIMENSIONS SHOWN ON DRAWINGS ARE INSIDE CLEAR DIMENSIONS. INCREASE DUCT SIZE WHEN LINING IS USED. ALL DUCTWORK SHALL BE COORDINATED WITH CEILING HEIGHTS AS SET FORTH BY ARCHITECT. FLATTEN AND/OR OFFSET DUCTWORK AS PER SMACNA STANDARDS TO MAINTAIN CEILING HEIGHTS.
5. PROVIDE SUPPLY, RETURN AND EXHAUST DIFFUSERS, REGISTERS AND GRILLES AS SCHEDULED ON DRAWINGS. ALL AIR OUTLETS AND INLETS SHALL BE COMPATIBLE WITH THE BUILDING TENANT STANDARDS AND/OR THE ARCHITECTURAL CEILING AND WALL SYSTEMS. ALL AIR OUTLETS AND INLETS SHALL BE PROVIDED WITH FINISHES AS SELECTED BY ARCHITECT. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF ALL AIR OUTLETS AND INLETS.
6. AT THE CONTRACTOR'S OPTION, A 5'-0" MAXIMUM LENGTH OF INSULATED FLEXIBLE DUCT CAN BE PROVIDED TO EACH AIR SUPPLY OUTLET AND RETURN INLET AS REQUIRED (ONE FOOT LONG MAXIMUM LENGTH FOR COMPUTER ROOM UNITS). IF DUCTWORK IS SOUND-LINED, EXTEND RECTANGULAR SOUND-LINED DUCTWORK TO A POINT NEAR THE OUTLET OR INLET SO THAT THE FLEXIBLE DUCT CAN BE ATTACHED TO THE OUTLET OR INLET.
7. PROVIDE TAPERED FITTINGS FOR ALL BRANCH DUCT TAKE-OFFS. PROVIDE TAPERED SPIN-IN FITTING WITH LOCK-IN QUADRANT AND VOLUME DAMPER, FOR LOW PRESSURE DUCTWORK FROM BRANCHES TO DIFFUSERS.
8. PROVIDE FIRE DAMPERS PER CODE REQUIREMENTS. PROVIDE TYPE "B" FIRE DAMPERS FOR LOW PRESSURE DUCTWORK AND TYPE "C" FIRE DAMPERS FOR MEDIUM PRESSURE DUCTWORK. PROVIDE A DUCT ACCESS DOOR FOR EACH FIRE DAMPER.
9. PROVIDE VOLUME DAMPERS FOR AIR BALANCING PURPOSES. PROVIDE MANUAL VOLUME DAMPERS ON ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK BRANCHES, AND TO AIR DIFFUSERS, REGISTERS AND GRILLES UNLESS NOTED OTHERWISE. DAMPERS SHALL BE OPPOSED BLADE TYPE UNLESS NOTED OTHERWISE.
10. VOLUME DAMPERS ABOVE ACCESSIBLE CEILINGS: PROVIDE LOCKING LEVER HANDLE AND POSITION INDICATOR, YOUNG REGULATOR 400 SERIES 400 OR EQUIVALENT.
11. VOLUME DAMPERS ABOVE DRYWALL CEILINGS AND OTHER INACCESSIBLE CEILINGS: PROVIDE CONTROL WIRE OR ROD OPERATED DAMPERS WITH LOCKING LEVER HANDLE AND POSITION INDICATOR ENCLOSED IN A CONTROL BOX WITH ADJUSTABLE COVER. YOUNG REGULATOR 315 SERIES 315 OR EQUIVALENT, AND/OR PROVIDE CEILING ACCESS PANELS SIZED AS REQUIRED, 12" X 12" MINIMUM SIZE.
12. PROVIDE TURNING VANES IN ALL 90 DEGREE ELBOWS AND IN OTHER LOCATIONS PER SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
13. PROVIDE ROOFTOP HVAC UNIT LEVELING CURBS/SUPPORTS OR SHIMMING AND/OR BLOCKING SO THAT THE ROOFTOP HVAC UNIT WILL BE INSTALLED PLUMB AND LEVEL. SHIMMING AND/OR BLOCKING MATERIAL SHALL BE OF WEATHER RESISTANT CONSTRUCTION AND SHALL FILL ALL VOIDS BETWEEN THE ROOF CURB/SUPPORT AND THE ROOF DECK. MECHANICAL CONTRACTOR WILL INSTALL UNIT ROOF CURBS ON TOP OF LEVELING CURB/SUPPORT OR SHIMMING AND/OR BLOCKING.
14. MEDIUM PRESSURE SUPPLY DUCTWORK SHALL BE CONSIDERED AS ALL DUCTWORK UPSTREAM OF VAN BOXES AND FAN POWERED VAN BOXES. PROVIDE 3" S.P. DUCT CONSTRUCTION AND DUCT SEALING UNLESS NOTED OTHERWISE. DO NOT USE ROUND SINGLE WALL MEDIUM PRESSURE DUCTWORK IN LENGTHS LONGER THAN FIVE FEET FOR SOUND-LINED SYSTEMS.
15. LOW PRESSURE DUCTWORK SHALL BE CONSIDERED AS ALL DUCTWORK NOT DEFINED AS MEDIUM PRESSURE DUCTWORK, UNLESS NOTED OTHERWISE. PROVIDE 2" S.P. DUCT CONSTRUCTION AND DUCT SEALING FOR SUPPLY AND RETURN AIR AND 1" S.P. DUCT CONSTRUCTION AND DUCT SEALING FOR EXHAUST DUCTWORK UNLESS OTHERWISE NOTED.
16. OUTDOOR DUCTWORK: ALL DUCTWORK WILL BE GALVANIZED OR BLACK IRON AND CONSTRUCTED AND SEALED TO COMPLY WITH SMACNA STANDARDS. PROVIDE WATERPROOF SEAMS AND JOINTS FOR DUCTWORK. PROVIDE TWO COATS OF EXTERIOR PAINT OVER ALL EXPOSED DUCTWORK. PROVIDE "PAVE CO." TYPE ROOF SUPPORTS FOR DUCTS WITH ALL NECESSARY ANGLE IRON SUPPORT LEGS AND CROSSSES AS NECESSARY. SEAL ALL DUCTWORK PENETRATING BUILDING EXTERIOR AND MAKE WATER TIGHT.

VENTILATION TEST AND BALANCING:

1. TESTING, ADJUSTING, AND BALANCING OF ALL HVAC SYSTEMS SHALL BE PERFORMED BY AN INDEPENDENT TESTING AGENCY WITH QUALIFIED PERSONNEL CERTIFIED BY ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). THE HVAC CONTRACTOR SHALL NEGOTIATE A CONTRACT WITH A CERTIFIED MEMBER OF ONE OF THE ABOVE TESTING AGENCIES.
2. AFTER COMPLETION OF ALL REQUIRED WORK, THE CONTRACTOR SHALL OPERATE AND MAKE ANY REQUIRED ADJUSTMENT TO EQUIPMENT, DUCTWORK, VALVES, ETC., AS MAY BE NECESSARY TO PUT THE SYSTEMS IN PROPER OPERATING CONDITION. AFTER ALL ADJUSTMENTS HAVE BEEN COMPLETED, THE CONTRACTOR SHALL BALANCE AIRFLOW AND WATER FLOW, WITHIN DISTRIBUTION SYSTEMS, INCLUDING SUBMANS, BRANCHES, AND TERMINALS; TO THE INDICATED QUANTITIES ACCORDING TO THE SPECIFIED TOLERANCES.
 - A. SUPPLY, RETURN, AND EXHAUST FANS: PLUS 5 TO PLUS 10 PERCENT.
 - B. AIR OUTLETS AND INLETS: 0 TO MINUS 10 PERCENT.
3. DURING THE TESTING AND BALANCING, THE CONTRACTOR SHALL VERIFY THAT AUTOMATIC CONTROL DEVICES ARE FUNCTIONING PROPERLY, AND REPORT DEFICIENCIES DISCOVERED BEFORE AND DURING PERFORMANCE OF TESTING, ADJUSTING, AND BALANCING PROCEDURES.
4. SEASONAL PERIODS: PERFORM ADDITIONAL INSPECTIONS, TESTING, AND ADJUSTING DURING NEAR-PEAK SUMMER AND WINTER CONDITIONS.
5. CONTRACTOR SHALL SUBMIT A PROJECT CERTIFICATION GUARANTEE AND CERTIFIED BALANCE REPORT TO ARCHITECT AND ENGINEER BEFORE PROJECT FINAL ACCEPTANCE. THE FINAL TEST RESULTS SHALL BE TABULATED AND FOUR (4) CERTIFIED COPIES SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.
6. THE TESTING, ADJUSTING, AND BALANCING AGENT SHALL PROVIDE A WRITTEN WARRANTY AGREEING TO PERFORM AT LEAST FOUR (4) INSTANCES OF ADDITIONAL TESTING, ADJUSTING, AND BALANCING, WITHIN 2 YEARS FROM DATE OF SUBSTANTIAL COMPLETION, FOR THE FOLLOWING: AT ARCHITECTS AND/OR BUILDING OWNER'S DISCRETION, VERIFY THAT BALANCED CONDITIONS ARE BEING MAINTAINED THROUGHOUT, TO CORRECT UNUSUAL CONDITIONS, TO PERFORM OWNER REQUESTED ADJUSTMENTS, AND/OR TO MAINTAIN SEASONAL MECHANICAL SYSTEMS PERFORMANCE REQUIREMENTS.

PIPING:

1. GENERAL: ALL PIPING FOR THIS WORK SHALL BE IN CONFORMANCE WITH ASTM STANDARDS. ALL CHANGES IN DIRECTIONS SHALL BE MADE WITH FITTINGS. REAM ALL PIPING AND CLEAN OUT BEFORE ASSEMBLY. PROVIDE VALVES OF SIMILAR MATERIAL AS THE PIPING MATERIAL THEY ARE INSTALLED IN; FERROUS BODY VALVES WITH STEEL PIPING OR BRASS AND BRONZE VALVES WITH COPPER PIPING. PROVIDE DIELECTRIC FITTINGS, UNIONS, ETC. WHERE PIPING, VALVES, FITTINGS, EQUIPMENT, ETC. OF DISSIMILAR METALS ARE JOINED. PROVIDE UNIONS, IN PIPING 2" AND SMALLER, ADJACENT TO EACH VALVE AND AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT. PROVIDE FLANGES, IN PIPING 2-1/2" AND LARGER, ADJACENT TO FLANGED VALVES AND AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT. COVER OPEN PIPING DURING CONSTRUCTION. FLUSH OUT AND CLEAN PIPING IN A MANNER APPROVED BY THE VALVE AND PIPING MANUFACTURERS FOR EACH BRANCH TAKEOFF. PROVIDE A 3-ELBOW "Z" SHAPE CONNECTION TO PROVIDE PIPING FLEXIBILITY FOR PIPE EXPANSION. PROVIDE GUIDES, ANCHORS, EXPANSION LOOPS, SUPPORTS, VENTS, DRAINS, CONTROLS, ETC. AS REQUIRED.
2. STEEL PIPING SHALL BE SCHEDULE 40, ASTM A 53, UNLESS NOTED OTHERWISE. FITTINGS FOR PIPE 2" AND SMALLER SHALL BE CAST OR MALLEABLE IRON SCREWED FITTINGS, UNLESS NOTED OTHERWISE. ALL PIPING 2-1/2" AND LARGER SHALL BE BUTT WELDED. WELDING SHALL ONLY BE DONE BY WELDERS CERTIFIED FOR THIS WORK. PAINT PIPING EXPOSED OUTSIDE WITH ONE COAT OF RUST-INHIBITING PRIMER AND ONE COAT OF BLACK FINISH PAINT.
3. COPPER PIPING SHALL BE ASTM B 88, TYPE ACR, K, OR L AS INDICATED BELOW. FITTINGS SHALL BE ASTM B 16.22, WROUGHT COPPER.
4. PIPING SYSTEMS AND MATERIALS.
 - A. NATURAL GAS PIPING: SCHEDULE 40 STEEL PIPE. FOR PIPE SIZES 2" AND SMALLER, PROVIDE ALL SCREWED AND/OR WELDED PIPING AS REQUIRED BY APPLICABLE BUILDING CODE. FOR PIPE SIZES LARGER THAN 2", PROVIDE ALL WELDED PIPING AS REQUIRED BY APPLICABLE BUILDING CODE. GROUND ALL GAS PIPING. INSTALL DRIP LEGS AND SHUTOFF VALVES IN GAS PIPING BEFORE EACH CONNECTION TO EQUIPMENT. INSTALL VENT PIPING FROM PRV VALVES TO THE OUTDOORS WITH WEATHERPROOF AND INSECT-PROOF OUTDOOR TERMINATION DEVICES.
 - B. HVAC DRAIN PIPING: TYPE L DRAWN COPPER OR SCHEDULE 40 PVC PLASTIC FOR INDOOR DRAINS FROM COPPER PIPING SYSTEM. SCHEDULE 40, ASTM A53 STEEL OR SCHEDULE 40 PVC PLASTIC FOR INDOOR DRAINS FROM STEEL PIPING SYSTEMS. SCHEDULE 40 PVC PLASTIC FOR OUTDOOR DRAINS. INSTALL A TRAP IN THE DRAIN PIPE. PROVIDE A SPLASH BLOCK FOR DRAIN TERMINATIONS FOR ROOFTOP HVAC UNITS.
 - C. REFRIGERANT PIPING: TYPE K DRAWN COPPER OR TYPE ACR DRAWN COPPER. PROVIDE SHUTOFF VALVES, FILTER DRYERS, SOLENOID VALVES, THERMAL EXPANSION VALVES, SIGHT GLASSES, PRESSURE GAUGES, OIL TRAPS, ETC. AS REQUIRED. PROVIDE INDOOR REFRIGERANT VENT PIPING TO THE OUTSIDE AS REQUIRED.
 - D. REFRIGERANT PIPING: PROVIDE TYPE K DRAWN COPPER WITH WROUGHT COPPER, FORGED BRASS, OR BRONZE ALLOY FITTINGS.
 - E. HYDRONIC PIPING (HEATING HOT WATER, CHILLED WATER, HEAT PUMP LOOP WATER, CONDENSER WATER, PUMPED STEAM CONDENSATE, MAKE-UP AND FILL WATER): SCHEDULE 40 STEEL PIPE, TYPE K, OR TYPE L DRAWN COPPER PIPE FOR SIZES UP TO 2". SCHEDULE 40 STEEL PIPE FOR SIZES OVER 2". PROVIDE VALVED MANUAL AIR VENTS AND DRAINS AT EACH PIECE OF EQUIPMENT AND AT EACH SUPPLY AND RETURN BRANCH. PROVIDE DRAINS AT ALL LOW POINTS AND VENTS AT ALL HIGH POINTS. PROVIDE GAUGES, GAUGE COCKS, THERMOMETERS, THERMOWELLS, SHUTOFF VALVES, BALANCING VALVES, STRAINERS, CONTROL VALVES, CONTROL VALVE BYPASSES, AND PETE'S PLUGS AT EACH PIECE OF EQUIPMENT FOR OPERATION, MAINTENANCE AND BALANCING PURPOSES. PROVIDE CALIBRATED BALANCING VALVES (CIRCUIT SETTERS) FOR EACH PIECE OF EQUIPMENT ON THE RETURN SIDE AND FOR EVERY RETURN BRANCH AND MAIN. PITCH PIPING TO ALLOW FOR DRAINAGE.
 - F. HYDRONIC PIPING VALVES: USE GATE, BALL, AND BUTTERFLY VALVES FOR SHUT-OFF DUTY, AND GLOBE, BALL, AND BUTTERFLY VALVES FOR THROTTLING DUTY. INSTALL SHUT-OFF DUTY VALVES AT EACH BRANCH CONNECTION TO SUPPLY MAINS AND AT SUPPLY CONNECTION TO EACH PIECE OF EQUIPMENT. INSTALL THROTTLING DUTY VALVES AT EACH BRANCH CONNECTION TO RETURN MAINS AND AT RETURN CONNECTIONS TO EACH PIECE OF EQUIPMENT.
 - G. STEAM PIPING (LESS THAN 15 PSIG): SCHEDULE 40 STEEL PIPE. STEAM CONDENSATE PIPING (LESS THAN 15 PSIG): SCHEDULE 80 STEEL PIPE. PITCH PIPING DOWN AND IN THE DIRECTION OF FLOW. INSTALL DRIP LEGS AT EVERY RISE IN STEAM PIPING. AT THE ENTRANCE AND EXIT OF EVERY PIECE OF EQUIPMENT AND AT THE END OF EVERY STEAM MAIN. SIZE STEAM TRAPS AT DOUBLE THE CONDENSING RATE OF THE PIECE OF EQUIPMENT IT SERVES UNLESS OTHERWISE NOTED. INSTALL VACUUM BREAKERS AT EVERY PIECE OF EQUIPMENT. PROVIDE PRESSURE GAUGES, THERMOMETERS, PRESSURE GAUGE COCKS, THERMOWELLS, SHUTOFF VALVES, UNIONS, BALANCING VALVES, CHECK VALVES, STRAINERS, STEAM TRAPS, CONTROL VALVES, CONTROL VALVE BYPASSES, STEAM TRAP BYPASSES FOR EACH PIECE OF EQUIPMENT FOR OPERATION, MAINTENANCE AND BALANCING PURPOSES.
 - H. NEOPRENE CONNECTORS SHALL BE 150 LB. FLEXIBLE NEOPRENE AND NYLON TWIN SPHERE CONNECTORS WITH GALVANIZED FLOATING FLANGES FOR PIPES 2-1/2" AND LARGER AND SCREWED GALVANIZED FEMALE UNION CONNECTORS FOR PIPES 2" AND SMALLER. PROVIDE CONTROL RODS AND/OR CABLES AS RECOMMENDED BY MANUFACTURER. PROVIDE CONNECTORS IN WATER PUMP SUCTION AND DISCHARGE PIPING AND WHERE OTHERWISE INDICATED.

MOTORIZED DAMPERS

1. MOTORIZED DAMPERS (INCLUDING ECONOMIZER DAMPERS) SHALL BE CLASS 1 TYPE AND SHALL HAVE AN AIR LEAKAGE RATE NOT GREATER THAN 4CFM/FT² OF DAMPERS SURFACE AREA AT 1.0 INCH WATER GAUGE AND SHALL BE LABELED BY AN APPROVED AGENCY WHEN TESTED IN ACCORDANCE WITH AMCA 5000.
2. OUTDOOR AIR INTAKE DAMPERS SHALL BE INSTALLED WITH AUTOMATIC CONTROLS CONFIGURED TO CLOSE WHEN THE SPACE IS UNOCCUPIED INCLUDING WARM UP PERIODS. DAMPER MAY OPEN WHEN SERVED WITH EXHAUST SYSTEMS AND ECONOMIZER OPERATIONS.

GRAVITY DAMPERS

1. GRAVITY DAMPERS SHALL HAVE AN AIR LEAKAGE RATE NOT GREATER THAN 20 CFM/FT² WHERE NOT LESS THAN 24" IN EITHER DIMENSION AND 40 CFM/FT² WHERE LESS THAN 24" IN EITHER DIMENSION. LEAKAGE RATE AT 1" WATER GAUGE WHEN TESTED IN ACCORDANCE WITH AMCA 5000 FOR SUCH PURPOSE. DAMPERS MUST BE LABELED BY AN APPROVED AGENCY.

ECONOMIZERS

1. ECONOMIZERS SHALL BE PROVIDED WITH FAULT DETECTION AND DIAGNOSTICS MONITORED BY THE SYSTEM T-STAT OR BUILDING BAS SYSTEM. FAULT DETECTION SYSTEM TO BE PER THE CURRENT ENERGY CODE

PIPE INSULATION:

1. FURNISH AND INSTALL INSULATION AS SPECIFIED BELOW. GLASS/MINERAL FIBER INSULATION SHALL COMPLY WITH ASTM C 553 AND ASTM C 1290, FLEXIBLE ELASTOMERIC INSULATION SHALL COMPLY WITH ASTM C 534. FOR INTERIOR PIPING, FURNISH AND INSTALL PVC JACKETING OVER PIPE INSULATION WHERE INSULATION IS SUBJECT TO DAMAGE. FOR EXTERIOR PIPING, FURNISH AND INSTALL ALUMINUM JACKETING OVER PIPE INSULATION.
2. CONDENSATE DRAIN PIPING: GLASS FIBER WITH SEALED VAPOR BARRIER JACKET, 1/2" THICK FOR ALL PIPE SIZES.
3. REFRIGERATION SUCTION AND HOT GAS PIPING: GLASS FIBER WITH ALL SERVICE JACKET, 1/2" THICK FOR PIPE SIZES 1-1/4" AND LOWER, 1" THICK FOR PIPE SIZES 1-1/2" AND LARGER. REFRIGERATION SUCTION PIPING: FLEXIBLE ELASTOMERIC 1/2" THICK FOR PIPE SIZES 1-1/4" AND LOWER.
4. HEATING HOT WATER SUPPLY AND RETURN PIPING: GLASS FIBER WITH ALL SERVICE JACKET, 1" THICK FOR PIPE SIZES 1-1/4" AND LOWER, 1-1/2" THICK FOR PIPE SIZES 1-1/2" TO 4", 2" THICK FOR PIPE SIZES 5" AND LARGER.
5. HEATING HOT WATER EXPANSION/COMPRESSION TANKS AND AIR SEPARATORS: GLASS FIBER WITH SEALED VAPOR BARRIER JACKET 1-1/2" THICK. HEATING HOT-WATER HEAT EXCHANGERS: GLASS FIBER WITH SEALED VAPOR BARRIER JACKET, 2" THICK.
6. CHILLED WATER SUPPLY AND RETURN PIPING: GLASS FIBER WITH SEALED VAPOR BARRIER JACKET, 1/2" THICK FOR PIPE SIZES 1-1/4" AND LOWER, 1" THICK FOR PIPE SIZES 1-1/2" TO 4", 1-1/2" THICK FOR PIPE SIZES 5" AND LARGER.
7. CHILLED WATER PUMPS: GLASS FIBER WITH SEALED VAPOR BARRIER JACKET, 2" THICK. CHILLED WATER EXPANSION/COMPRESSION TANKS AND AIR SEPARATORS: FLEXIBLE ELASTOMERIC OR GLASS FIBER WITH SEALED VAPOR BARRIER JACKET 1" THICK.
8. CONDENSER AND COOLING TOWER WATER PIPING: GLASS FIBER WITH ALL SERVICE JACKET, 1/2" THICK FOR PIPE SIZES 1-1/4" AND LOWER, 1" THICK FOR PIPE SIZES 1-1/2" TO 4", 1-1/2" THICK FOR PIPE SIZES 5" AND LARGER.
9. LOW PRESSURE STEAM AND STEAM CONDENSATE: GLASS FIBER WITH ALL SERVICE JACKET, 2-1/2" THICK FOR PIPE SIZES 3/4" AND LOWER, 3" THICK FOR PIPE SIZES 1" TO 3", 4" THICK FOR PIPE SIZES 4" AND LARGER.

DUCT INSULATION AND ACOUSTICAL LINING:

1. FURNISH AND INSTALL INSULATION AND/OR LINING WHERE SHOWN ON PLANS OR SPECIFIED BELOW. ALL DUCT SIZES NOTED ON DRAWINGS ARE AIRWAY SIZES WITHOUT SOUND LINING INCLUDED; ADJUST SHEET METAL SIZES ACCORDINGLY.
2. DUCT SOUND LINING: (NOT REQUIRED)
3. DUCT INSULATION:
 - A. OUTDOOR DUCTWORK: SUPPLY, RETURN, ENERGY RECOVERY EXHAUST, 1-1/2" GLASS/MINERAL-FIBER BOARD LINER AND 2" FLEXIBLE GLASS FIBER WRAP OR 2" GLASS/MINERAL-FIBER BOARD LINER AND 1-1/2" FLEXIBLE GLASS FIBER WRAP FOR A TOTAL OF A MINIMUM R-12 MINIMUM. PROVIDE WITH ALL-SERVICE VAPOR BARRIER JACKET, AND FIELD APPLIED, WATERPROOF 0.024" MINIMUM THICKNESS ALUMINUM JACKET.
 - B. INSULATED FLEXIBLE DUCT: UL 181, CLASS 1, 2-PLY VINYL FILM, BLACK POLYMER FILM, MULTIPLE LAYERS OF ALUMINUM LAMINATE, OR ALUMINUM LAMINATE AND POLYESTER FILM WITH LATEX ADHESIVE, SUPPORTED BY HELICALLY WOUND, SPRING-STEEL WIRE; FIBROUS-GLASS INSULATION; POLYETHYLENE OR ALUMINIZED VAPOR BARRIER FILM. ALL SUPPLY AND RETURN AIR DUCTWORK CONNECTIONS TO EACH AIR SUPPLY OUTLET AND RETURN INLET: 5' LENGTH MAXIMUM LENGTH.

TEMPERATURE CONTROLS

1. UNLESS OTHERWISE NOTED ALL T-STATS TO BE 7 DAY PROGRAMMABLE WITH AUTO-CHANGE OVER WITH A MINIMUM 5 ° DEAD-BAND. T-STAT SHALL BE CAPABLE OF PROGRAMING OCCUPIED HOURS WITH SETBACK TEMPERATURE OF 55°F AND 85°F, WITH UP TO 2 HOUR TEMPORARY OVERRIDE OPERATION. T-STAT SHALL HAVE AUTOMATIC START CAPABILITIES THAT AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM TO BRING THE SPACE TO THE DESIRED OCCUPANT TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY. T-STAT SHALL BE CAPABLE OF MAINTAINING PROGRAMING FOR 10 HOURS IN THE EVENT OF A POWER FAILURE.
 - A. MANUFACTURE: HONEYWELL
2. PROVIDE ALL INTERFACE CONNECTIONS AND CONTROL DEVICES REQUIRED BETWEEN FACTORY SUPPLIED CONTROLS OF EQUIPMENT AND THE TEMPERATURE CONTROL. CONTRACTOR'S CONTROLS AS REQUIRED IN THE CONTRACT DOCUMENTS SO AS TO FURNISH THE OWNER WITH A COMPLETE AND WORKING TEMPERATURE CONTROL SYSTEM.
3. ALL THERMOSTATS TO BE DIGITAL AND 7-DAY PROGRAMMABLE WITH AUTOMATIC CHANGE OVER AND NIGHT SETBACK WITH SMART START CONTROLS.

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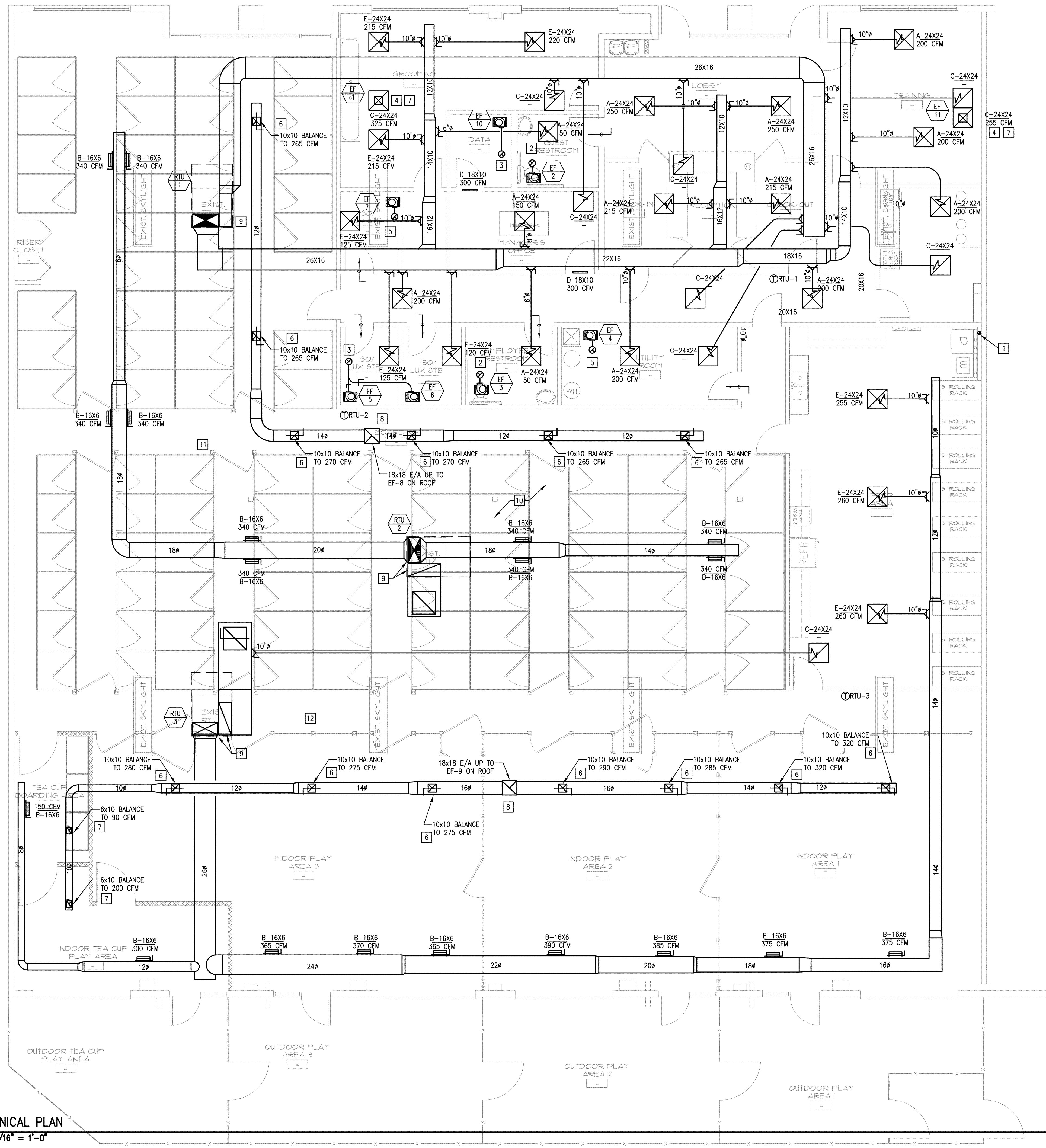
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SUITE 118
HILLSBORO, OR.

DATE:07/26/2019

MO.1
MECHANICAL
SPECIFICATIONS



- ### GENERAL MECHANICAL NOTES
1. ALL DUCT ROUTING IS DIAGRAMMATICAL. NOT ALL OFFSETS, TRANSITIONS AND TURNS HAVE BEEN SHOWN FOR CLARITY.
 2. ALL DUCTWORK TO BE SEALED TO MEET THE CURRENT ADOPTED ENERGY CODE.
 3. PROVIDE VOLUME DAMPER AT EACH DUCT BRANCH.
 4. CONTRACTOR MAY SUBSTITUTE DUCT SIZES AS REQUIRED FOR A COMPLETE INSTALLATION AS LONG AS SUBSTITUTE SIZE HAS EQUAL CROSS-SECTIONAL AREA AS DESIGN.
 5. COORDINATE FINAL GRILLE LOCATIONS WITH ELECTRICAL AND ARCH RCPs.
 6. ALL EXHAUST PIPES, VENTS, AND FLUES TO BE DISTANCED A MIN OF 10'-0" FROM ANY FRESH AIR INTAKE.
 7. ALL DUCTWORK INSIDE THE BUILDING ENVELOPE SHALL NOT HAVE INTERNAL OR EXTERNAL INSULATION.
 8. ALL EXPOSED ROUND DUCT TO BE SPIRAL.
 9. SPIRAL MOUNTED DIFFUSERS SHALL BE PROVIDED WITH SUPPLY PLENUM BOX MOUNTED DOWNWARD AT 45°.

- ### MECHANICAL KEY NOTES
- 1 4" DRYER EXHAUST UP THRU ROOF. MAINTAIN 10'-0" CLEAR TO MECHANICAL AIR INLETS. PROVIDE WITH DRYER VENT ROOF CAP AND DRYER VENT BOX. VERIFY INSTALLATION WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
 - 2 6" EA UP THRU ROOF. TERMINATE WITH GOOSENECK OR ROOF CAP. MAINTAIN 10'-0" CLEAR TO OUTSIDE AIR INLETS.
 - 3 10" EA UP THRU ROOF. TERMINATE WITH GOOSENECK OR ROOF CAP. MAINTAIN 10'-0" CLEAR TO OUTSIDE AIR INLETS.
 - 4 10x10 EA UP TO EXHAUST FAN ON ROOF.
 - 5 8" EA UP THRU ROOF. TERMINATE WITH GOOSENECK OR ROOF CAP. MAINTAIN 10'-0" CLEAR TO OUTSIDE AIR INLETS.
 - 6 10X10 EXHAUST OPENING ON TOP OF DUCT WITH BALANCING DAMPER. COVER OPENING WITH BIRD SCREEN AND BALANCE PER PLANS.
 - 7 10X6 EXHAUST OPENING ON TOP OF DUCT WITH BALANCING DAMPER. COVER OPENING WITH BIRD SCREEN AND BALANCE PER PLANS.
 - 8 EXHAUST UP TO EXHAUST FAN ON ROOF. TRANSITION TO UNIT CONNECTION SIZE IN VERTICAL.
 - 9 SUPPLY AND RETURN AIR DUCT UP TO ROOFTOP UNIT ON ROOF. TRANSITION TO UNIT CONNECTION SIZE IN VERTICAL.
 - 10 DEMO EXISTING HVAC, AND EXHAUST FANS, PLUS ALL DUCT, DIFFUSERS AND ACCESSORIES. COORDINATE WITH G.C. TO PATCH ALL UNUSED BUILDING OPENINGS. EXISTING RTU'S TO BE REUSED. M.C. SHALL VERIFY THE EXACT CAPACITY, LOCATION AND CONDITION PRIOR TO STARTING ANY WORK.
 - 11 38X14 RETURN DUCT. PROVIDE 34X34 RETURN AIR OPENING ON TOP OF DUCT COVER OPENING WITH BIRD SCREEN.
 - 12 38X16 RETURN DUCT. PROVIDE 34X34 RETURN AIR OPENING AND BALANCING DAMPER ON TOP OF DUCT. COVER OPENING WITH BIRD SCREEN.

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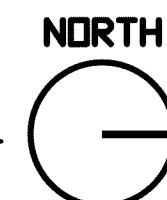
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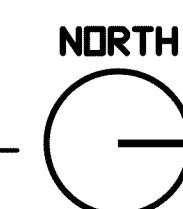
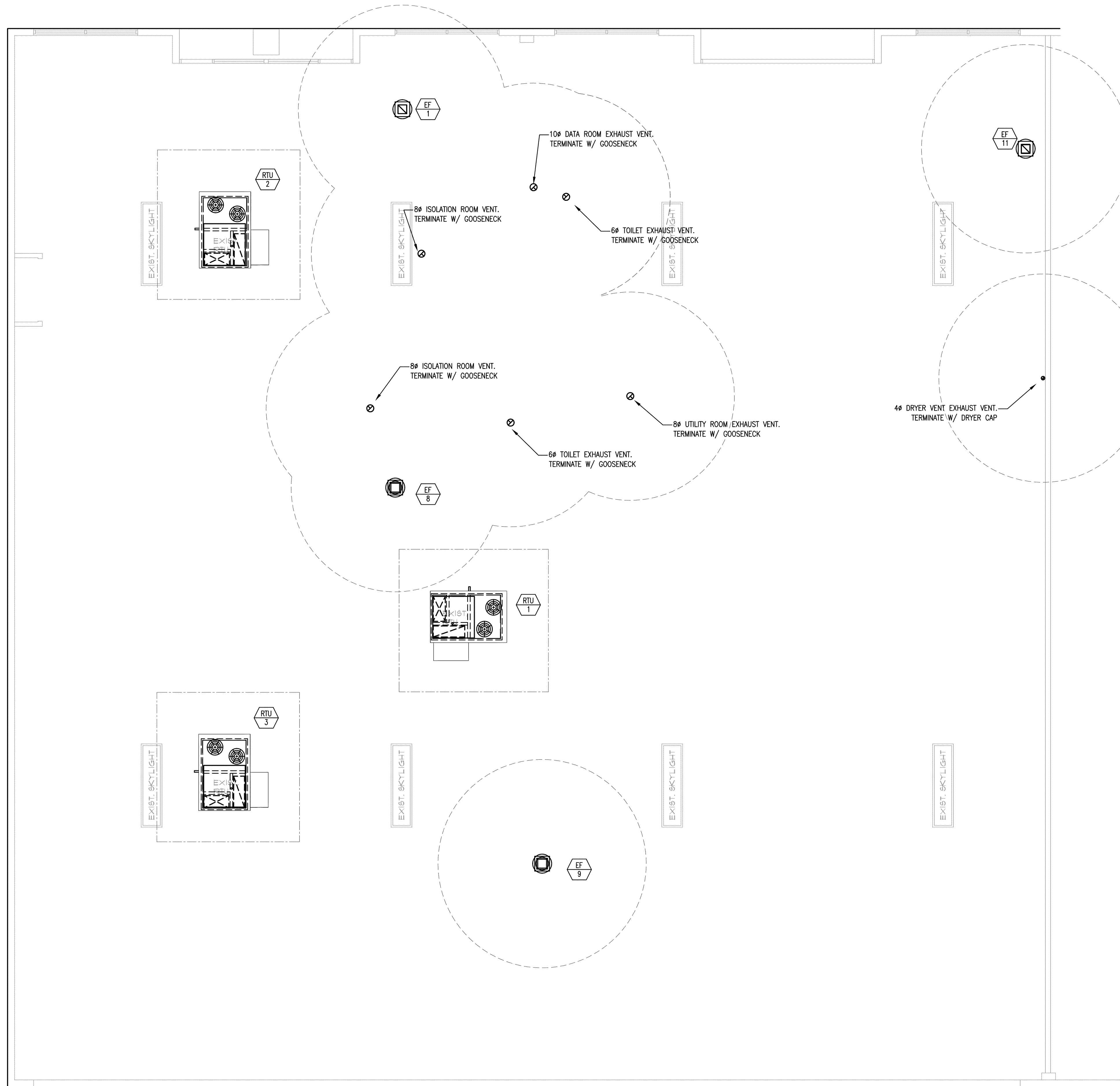
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M1.0
MECHANICAL PLAN

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





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M2.0
MECHANICAL ROOF PLAN

DIFFUSERS, REGISTERS, AND GRILLES									
TAG	SERVICE	TYPE	DAMPER AT AIR TERMINAL	BLADE ANGLE OR CORE	CONSTRUCTION MATERIAL	FINISH	MANUFACTURER	MODEL (BASIS OF DESIGN)	NOTES
A	SUPPLY	24"x24" SQ. DIFFUSER	SEE NOTES	N.A.	STEEL	#26 WHITE	TITUS	TMS	1, 2, 3, 4, 5, 6
B	SUPPLY	GRILLE	SEE NOTES	ADJUSTABLE	STEEL	#26 WHITE	TITUS	300RL	1, 2, 4, 5, 6
C	RETURN/EXHAUST	24"x24" SQ. DIFFUSER	SEE NOTES	N.A.	STEEL	#26 WHITE	TITUS	PAR	1, 2, 3, 4, 5
D	TRANSFER	DOOR GRILLE	N.A.	N.A.	ALUMINUM	PER ARCH	TITUS	CT-700L	1, 2, 3, 4, 5
E	SUPPLY	24"x24" SQ. DIFFUSER VAV	SEE NOTES	N.A.	STEEL	#26 WHITE	ACUTHERM	TF-HC	1, 2, 3, 4, 5, 6, 7
NOTES: 1. FURNISH AND INSTALL VOLUME DAMPER FOR AIR FLOW BALANCING PURPOSES IN EACH DUCT TAKE-OFF TO A DIFFUSER, REGISTER OR GRILLE. 2. PROVIDE OPPOSED BLADE DAMPER OR REMOTELY OPERATED VOLUME DAMPER PER THE SPECIFICATIONS, FOR DIFFUSERS LOCATED IN CEILINGS THAT WILL NOT ALLOW ACCESS TO THE VOLUME DAMPER IN THE DUCT TAKE-OFF (SEE NOTE 1). 3. COORDINATE BORDER TYPES, PLASTER FRAMES, & MOUNTING METHODS WITH THE CEILING TYPE/WALL CONSTRUCTION AT EACH DIFFUSER, REGISTER, & GRILLE LOCATION. 4. FURNISH AND INSTALL DIFFUSERS, REGISTERS, AND GRILLES MANUFACTURED BY ONE OF THE FOLLOWING MANUFACTURERS: TITUS, PRICE, CARNES, KRUEGER, METALAIRE, OR NAILOR. 5. FINAL DIFFUSER COLORS SHALL BE AS INDICATED ON ARCHITECTURAL DRAWINGS AND SPECIFICATIONS. 6. PROVIDE OPTIONAL ISULATION BACK ON DIFFUSERS AND PLENUM BOXES. 7. VAV DIFFUSER TO LIMIT HEATING AND COOLING PROVIDE WITH OPTIONAL PRESSURE RELIEF COLLAR									

EXHAUST FAN (EF) SCHEDULE														
TAG	AREA SERVED	LOCATION	CFM	E.S.P. (IN. WC)	FAN RPM	DRIVE TYPE	FAN TYPE	ELECTRICAL		PLAN CODE(S) OF EQUIP. TO INTERLOCK WITH	WEIGHT (LBS.)	MANUFACTURER	MODEL (BASIS OF DESIGN)	NOTES
								HP or WATTS	VOLTS/PH/HZ					
EF-1	GROOMING	ROOF	325	0.5	1415	DIRECT	BI	1/10 HP	115/1/60	TIMECLOCK	100	GREENHECK	G-090-VG	3, 4, 5, 7
EF-2	GUEST RESTROOM	CEILING	75	0.25	881	DIRECT	FC	14 W	115/1/60	LIGHTS	15	GREENHECK	SP-A90	1, 3, 8
EF-3	EMPLOYEE RESTROOM	CEILING	75	0.25	881	DIRECT	FC	14 W	115/1/60	LIGHTS	15	GREENHECK	SP-A90	1, 3, 8
EF-4	UTILITY ROOM	CEILING	75	0.25	881	DIRECT	FC	14 W	115/1/60	LIGHTS	15	GREENHECK	SP-A90	1, 3, 8
EF-5	ISO/LUX SUITE	CEILING	125	0.25	927	DIRECT	FC	128 W	115/1/60	WALL SPEED CONTROLLER	15	GREENHECK	SP-B150	1, 2, 3
EF-6	ISO/LUX SUITE	CEILING	125	0.25	927	DIRECT	FC	128 W	115/1/60	WALL SPEED CONTROLLER	15	GREENHECK	SP-B150	1, 2, 3
EF-7	ISO/LUX SUITE	CEILING	125	0.25	862	DIRECT	FC	128 W	115/1/60	WALL SPEED CONTROLLER	15	GREENHECK	SP-B150	1, 2, 3
EF-8	BOARDING	ROOF	1,600	0.75	1637	DIRECT	BI	1/2 HP	115/1/60	TIMECLOCK	100	GREENHECK	G-123-VG	3, 4, 5, 7
EF-9	PLAY 1,2,3 & TEACUP	ROOF	2,335	0.75	1529	DIRECT	BI	1 HP	115/1/60	TIMECLOCK	100	GREENHECK	G-143-VG	3, 4, 5, 7
EF-10	DATA	CEILING	300	0.25	848	DIRECT	FC	224 W	115/1/60	T-STAT	40	GREENHECK	SP-A510-VG	1, 3, 6, 7
EF-11	TRAINING	ROOF	255	0.5	1593	DIRECT	BI	1/10 HP	115/1/60	TIMECLOCK	100	GREENHECK	G-080-VG	3, 4, 5, 7
NOTES: 1. CEILING MOUNTED EXHAUST FAN. PROVIDE WITH INTEGRAL BACKDRAFT DAMPER AND ROOF CAP. SUPPORT FROM STRUCTURE ABOVE WITH NEOPRENE VIBRATION ISOLATORS. 2. PROVIDE WALL MOUNTED SPEED CONTROLLER WITH MAX SETTING AT 125 CFM (ISOLATION OCCUPIED) MARKED AND MINIMUM SETTING AT 55 CFM(NORMAL OCCUPIED) MARKED. 3. E.C. TO SUPPLY ALL 3Ø FAN MOTORS WITH MAGNETIC CONTACT STARTERS. ALL 1Ø FAN MOTORS TO BE SUPPLIED WITH INTERNAL DISCONNECTING MEANS AND AUTO RESET THERMAL PROTECTION. 4. FAN TO RUN CONTINUOUSLY DURING OCCUPIED HOURS VIA TIME CLOCK. E.C. TO PROVIDE AND INSTALL TIME CLOCK. 5. SUPPLY DIRECT DRIVE FAN MOTORS WITH SPEED CONTROLLERS FOR BALANCING. FURNISH WITH ROOF 14" ROOF CURB AND INTEGRAL GRAVITY BACKDRAFT DAMPER. COORDINATE CURB WITH ACTUAL ROOF CONSTRUCTION. 6. FAN SPEED TO MODULATE VIA INTERLOCK WITH T-STAT. FURNISH WITH VARIABLE SPEED MOTOR WITH TEMPERATURE CONTROL INPUTS. 7. PROVIDE MOTOR MOUNTED SPEED CONTROLLER FOR BALANCING. 8. PROVIDE WITH REMOTE MOUNTED SPEED CONTROLLER FOR BALANCING.														

ROOF TOP HVAC UNIT (RTU) SCHEDULE																											
TAG	AREA SERVED	COOLING					HEATING - GAS				SUPPLY FAN				COND TEMP.	REFRIGERANT		COMPRESSOR(S)		ELECTRICAL			WEIGHT (LBS.)	MANUFACTURER	MODEL (BASIS OF DESIGN)	NOTES	
		NOM. TONS	MBH		EAT DB/WB	EER	IEER	MBH INPUT	MBH OUTPUT	STAGES	THERM EFF (%)	CFM	SPEEDS	MIN OA CFM		E.S.P. (IN. WC)	TYPE	CAPACITY (LBS.)	TYPE	QUANT.	VOLTS/PH/HZ	MCA					MOCP
			TOTAL	SENSIBLE																							
RTU-1	OFFICE	8.5	103.6	98.6	85/67	12	13.8	224	184	2	82	3400	2	1020	1.5	95	R410A	31	SCROLL	2	208/3/60	45	50	1300	CARRIER	48HCTE09	1,2,3,4,5,6
RTU-2	BOARDING	8.5	103.6	98.6	85/67	12	13.8	224	184	2	82	3400	2	1095	1	95	R410A	31	SCROLL	2	208/3/60	41	50	1300	CARRIER	48HCTE09	1,2,3,4,5,6
RTU-3	INDOOR PLAY AREAS	10	119	109	85/67	12	14.3	250	205	2	80	4000	2	2240	1.5	95	R410A	36	SCROLL	2	208/3/60	57	60	1500	CARRIER	48HCTE11	1,2,3,4,5,6
<div>• ALL RTUS REQUIRED TO BE FURNISHED WITH FILTER RACK WITH THROWAWAY FILTERS, ANTI-CYCLE CONTROL, BELT DRIVE SUPPLY FAN WITH VARIABLE PITCH SHEAVE (UNLESS OTHERWISE NOTED), HAIL GUARDS, FACTORY 14" ONE-PIECE ROOF CURB, CONDENSATE OVERFLOW SWITCH AND LOCKING REFRIGERANT ACCESS PORT CAPS.</div> <div>• EXTERNAL STATIC PRESSURE LISTED REPRESENTS STATIC PRESSURE REQUIRED FOR DUCTWORK AND DIFFUSERS OUTSIDE THE HVAC UNIT COMPLETELY INDEPENDENT OF ANY PRESSURE DROP THROUGH THE HVAC EQUIPMENT INCLUDING BUT NOT LIMITED TO FILTERS, COILS AND ECONOMIZERS. THE FAN AND MOTOR SHALL BE SIZED APPROPRIATELY TO MEET THIS DEFINITION OF EXTERNAL STATIC PRESSURE.</div> <div>• COORDINATE WEIGHTS, CURBS AND OPENINGS WITH G.C., AND ELECTRICAL REQUIREMENTS WITH E.C.</div>																											
NOTES: <div>1. FURNISH AND INSTALL UP 14" ONE-PIECE ROOF CURB MOUNTED ON CONCRETE SLAB. COORDINATE SLAB DIMENSIONS WITH G.C. AND ARCHITECT.</div> <div>2. HACR TYPE OVERCURRENT PROTECTION DEVICES, DISCONNECT SWITCHES, AND MOUNTED AND WIRED GFI RECEPTACLES ON A SEPARATE CIRCUIT WITH SEPARATE DISCONNECT SWITCHES, ARE FURNISHED AND INSTALLED BY EC.</div> <div>3. INSTALL SMOKE DETECTORS IN THE SUPPLY AND RETURN AIR DUCTS (INSIDE OR IN WEATHER RATED ENCLOSURES) FOR ALL ROOF TOP UNITS. SMOKE DETECTORS AND TEST PORT FURNISHED AND INSTALLED BY M.C. AND WIRED BY THE ELECTRICAL CONTRACTOR.</div> <div>4. PROVIDE ROOF TOP UNITS WITH TWO SPEED INDOOR FANS, WITH DIFFERENTIAL ENTHALPY CONTROLLED ECONOMIZERS AND BAROMETRIC RELIEF, DAMPERS SHALL BE ULTRA LOW LEAK, PROVIDE WITH HAIL GUARDS AND WEATHER HOODS. ECONOMIZERS TO HAVE FAULT DETECTION.</div> <div>5. PROVIDE 7 DAY PROGRAMABLE T-STAT WITH ECONOMIZER FAULT DETECTION DISPLAY. T-STAT TO BE 7 DAY PROGRAMABLE WITH AUTO-CHANGE OVER AND NIGHT SETBACK AND SMART START CAPABILITIES.</div> <div>6. UNITS SHALL HAVE COASTAL COATINGS, AND STAINLESS STEEL HEAT EXCHANGERS.</div>																											

SEQUENCE OF OPERATION:

RTU'S WITH ECONOMIZERS (RTU-1, RTU-2, RTU-3,)

THERMOSTAT:
PROVIDE WITH PROGRAMMABLE THERMOSTAT.
RUN CONDITIONS – SCHEDULED:
THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:

- OCCUPIED MODE: THE UNIT SHALL MAINTAIN
 - A 75 °F (ADJ.) COOLING SETPOINT
 - A 70°F (ADJ.) HEATING SETPOINT.
- UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN
 - A 85°F (ADJ.) COOLING SETPOINT.
 - A 55°F (ADJ.) HEATING SETPOINT.

POWER FAILURE:
UNIT SHALL HAVE BATTERY BACK UP TO MAINTAIN ALL PROGRAMMED SET POINTS FOR UP TO 10 HOURS IN THE EVENT OF A POWER FAILURE.

RETURN AIR SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A RETURN AIR SMOKE DETECTOR STATUS.

SUPPLY AIR SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SUPPLY AIR SMOKE DETECTOR STATUS.

ECONOMIZERS; SHALL BE PROVIDED WITH FAULT DETECTION AND DIAGNOSTICS MONITORED BY THE SYSTEM T-STAT

SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR.

OPTIMAL START:
THE UNIT SHALL USE AN OPTIMAL START ALGORITHM FOR MORNING START-UP. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM-UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING COMFORT CONDITIONS BY THE START OF SCHEDULED OCCUPIED PERIOD.

UNOCCUPIED OVERRIDE:
A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.

COOLING STAGES:
THE CONTROLLER SHALL MEASURE THE TEMPERATURE AND STAGE THE COOLING TO MAINTAIN ITS COOLING SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

THE COOLING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
- AND THE ECONOMIZER (IF PRESENT) IS DISABLED OR FULLY

- OPEN.
- AND THE TEMPERATURE IS ABOVE COOLING SETPOINT.
 - AND THE SUPPLY FAN STATUS IS ON.
 - AND THE HEATING IS NOT ACTIVE.
- GAS HEATING STAGES:
THE CONTROLLER SHALL MEASURE THE TEMPERATURE AND STAGE THE HEATING TO MAINTAIN ITS HEATING SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.
- THE HEATING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
 - AND THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT.
 - AND THE SUPPLY FAN STATUS IS ON.
 - AND THE COOLING IS NOT ACTIVE.
- ECONOMIZER:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE ECONOMIZER DAMPERS IN SEQUENCE TO MAINTAIN A SETPOINT 2°F LESS THAN THE ZONE COOLING SETPOINT. THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION OF 10% (ADJ.) OPEN WHENEVER OCCUPIED.
- THE ECONOMIZER SHALL BE ENABLED OPEN WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
 - AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE.
 - AND THE SUPPLY FAN STATUS IS ON.
 - THE ECONOMIZER SHALL CLOSE WHENEVER:
 - MIXED AIR TEMPERATURE DROPS FROM 45°F TO 40°F (ADJ.).
 - OR ON LOSS OF SUPPLY FAN STATUS.
 - OR THE FREEZESTAT (IF PRESENT) IS ON.
- THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF. IF OPTIMAL START UP IS AVAILABLE, THE MIXED AIR DAMPER SHALL OPERATE AS DESCRIBED IN THE OCCUPIED MODE EXCEPT THAT THE OUTSIDE AIR DAMPER SHALL MODULATE TO FULLY CLOSED.
- ECONOMIZERS SHALL BE PROVIDED WITH FAULT DETECTION AND DIAGNOSTICS MONITORED BY THE SYSTEM T-STAT
- MIXED AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE MIXED AIR TEMPERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT) OR PREHEATING CONTROL (IF PRESENT).
- ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS GREATER THAN 90 °F (ADJ.).
 - LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 45 °F (ADJ.).

OUTSIDE AIR VENTILATION TABLE																	
ROOM # OR DESCRIPTION	OCCUPANCY DESCRIPTION*	AREA (SF)*	2012 OMSC TABLE 403.3 VALUES					HVAC UNIT DATA		ROOM DATA			COMPLIES WITH IMC TABLE 403.3	EXHAUST DATA			
			OCC LOAD FACTOR (OCC PER 1000 SF)*	NO. OF OCC (IF ** APPLIES, USE NEXT COLUMN)	ARCHITECTS SEATING COUNT	OA VENTILATION RATE (CFM/OCC)	AREA VENTILATION RATE (CFM/SQFT)	PLANCODE(S) OF OA SUPPLY EQUIPMENT	SUPPLY EQUIPMENT % OA	ROOM SUPPLY SA (CFM)	ACTUAL OA DELIVERED BY HVAC UNIT*** (CFM)	TABLE 403.3 MIN REQ'D OA (CFM)		REQUIRED EXHAUST (CFM)	ACTUAL EA DELIVERED BY HVAC UNIT*** (CFM)	PLANCODE(S) OF EA EXHAUST EQUIPMENT	
LOBBY	Offices - Main Entry Lobbies	360	10	4		5	0.06	RTU-1	30%	500	150	52.0	YES	-	-		
RECEPTION CHECK IN/OUT	Offices - Reception Areas	241	30	8		5	0.06	RTU-1	30%	430	129	68.1	YES	-	-		
GROOMING	Specialty - Pet Shops	359	10	4		7.5	0.18	RTU-1	30%	650	195	118.3	YES	323.1	325	EF-1	
GUEST RESTROOM	Public - Shower Room or Toilet Room	63	0	0		0	0	RTU-1	30%	50	15	0.0	YES	75	75	EF-2	
MANAGER OFFICE	Offices - Office spaces	121	5	1		5	0.06	RTU-1	30%	150	45	15.3	YES	-	-		
TRAINING	Specialty - Pet Shops	278	10	3		7.5	0.18	RTU-1	30%	400	120	90.7	YES	250.2	255	EF-11	
PREP	Offices - Office spaces	330	5	2		5	0.06	RTU-3	56%	775	434	37.3	YES	-	-		
LUXURY SUITE 1	Specialty - Pet Shops	48	10	1		7.5	0.18	RTU-1	30%	125	38	20.2	YES	43.2	125	EF-5	
LUXURY SUITE 2	Specialty - Pet Shops	48	10	1		7.5	0.18	RTU-1	30%	125	38	20.2	YES	43.2	125	EF-6	
LUXURY SUITE 3	Specialty - Pet Shops	48	10	1		7.5	0.18	RTU-1	30%	120	36	20.2	YES	43.2	125	EF-7	
CORRIDOR	Public - Corridors and utilities	356	0	0		0	0.06	RTU-1	30%	400	120	26.7	YES				
EMPLOYEE RESTROOM	Public - Shower Room or Toilet Room	76	0	0		0	0	RTU-1	30%	50	15	0.0	YES	75	75	EF-3	
DATA	Unoccupied	47	0	0		0	0	RTU-1	30%	0	0	0.0	YES	-	-		
UTILITY	Public - Corridors and utilities	145	0	0		0	0.06	RTU-1	30%	200	60	10.9	YES	75	75	EF-4	
BREAK	Offices - Office spaces	144	5	1		5	0.06	RTU-1	30%	200	60	17.1	YES	-	-		
INDOOR TEACUP PLAY	Specialty - Pet Shops	220	10	3		7.5	0.18	RTU-3	56%	300	168	77.6	YES	198	200	EF-9	
TEACUP BOARDING	Specialty - Pet Shops	99	10	1		7.5	0.18	RTU-3	56%	150	84	31.7	YES	89.1	90	EF-9	
INDOOR PLAY 1	Specialty - Pet Shops	707	10	8		7.5	0.18	RTU-3	56%	900	504	234.1	YES	636.3	640	EF-9	
INDOOR PLAY 2	Specialty - Pet Shops	637	10	7		7.5	0.18	RTU-3	56%	775	434	209.0	YES	573.3	575	EF-9	
INDOOR PLAY 3	Specialty - Pet Shops	922	10	10		7.5	0.18	RTU-3	56%	1100	616	301.2	YES	829.8	830	EF-9	
BOARDING CENTRAL	Specialty - Pet Shops	974	10	10		7.5	0.18	RTU-2	56%	1300	728	312.9	YES	876.6	890	EF-8	
BOARDING CORRIDOR CENTRAL	Public - Corridors and utilities	1774	0	0		0	0.06	RTU-2	56%	600	336	133.1	YES	-			
RISER CLOSET	Unoccupied	14	0	0		0	0	-		0	0	0.0	YES				
BOARDING SW	Specialty - Pet Shops	785	10	8		7.5	0.18	RTU-2	56%	1100	616	251.6	YES	706.5	710	EF-8	
BOARDING CORRIDOR SW	Public - Corridors and utilities	507	0	0		0	0.06	RTU-2	56%	400	224	38.0	YES	-			
							TOTAL OA CFM:			10800	5165	2085.9		4837.5	5115		
AIR DISTRIBUTION	EFFECTIVENESS (Ez)																
Ceiling supply of warm air and ceiling return		0.8															
* - PER 2014 OMSC IMC, TABLE 403.3, REQUIRED OUTDOOR VENTILATION AIR.																	
** - PER ARCHITECTS SEATING PLAN, EXCEPTION TO SECTION 403.3.																	
*** - BASED ON RTU AIR HANDLER OUTSIDE AIR PERCENTAGE																	

PLUMBING SYMBOL LIST	
	ELBOWS/RISERS UP AND ELBOW/RISER DOWN
	TEES, POINTING UP AND TEE, POINTING DN
	ECCENTRIC REDUCERS, BOTTOM HORIZONTAL, TOP HORIZONTAL, AND CONCENTRIC REDUCER
	90 DEGREE ELBOW
	UNION
	FLOW DIRECTION ARROW
	BLIND FLANGE
	EXPANSION JOINT
	TRIPLE DUTY VALVE – SHUT–OFF VALVE, BALANCING VALVE, AND CHECK VALVE.
	BALL VALVE
	GATE OR GENERIC VALVE
	GAS COCK/PLUG VALVE
	GAS COCK
	CHECK VALVE
	VARIABLE FLOW VALVE
	PRESSURE GAUGE
	PRESSURE/TEMPERATURE RELIEF VALVE
	SUCTION DIFFUSER
	NATURAL GAS PRESSURE REGULATOR OR PRESSURE REDUCING VALVE
	ELECTRICALLY OPERATED 2–WAY VALVE
	SOLENOID 2–WAY VALVE
	PUMP
	AUTOMATIC AIR VENT
	AIR GAP
	FLOW SWITCH
	PRESSURE SWITCH
	FLOW SENSOR
	TEMPERATURE SENSOR
	PRESSURE SENSOR
	FLOOR DRAIN
	FLOOR CLEAN OUT
	NATURAL GAS (NG)
	DOMESTIC COLD WATER (CW)
	DOMESTIC HOT WATER (HW)
	DOMESTIC HOT WATER RECIRCULATION (HWR)
	SANITARY
	VENT

ABBREVIATIONS:	
AC	AIR CONDITIONING
AD	ACCESS DOOR
AF	AIR FOIL
AHU	AIR HANDLING UNIT
A/AMP	AMPERE
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ATC	AUTOMATIC TEMPERATURE CONTROL
ATM	ATMOSPHERE
BDD	BACK–DRAFT DAMPER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR CENT CENTER OR CENTRIFUGAL
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CO	CARBON MONOXIDE
CONN	CONNECTION
CUH	CABINET UNIT HEATER
D	DRAIN
DB	DRY BULB (TEMPERATURE)
DEG	DEGREE
DDC	DIRECT DIGITAL CONTROL
DIA	DIAMETER
DIM	DIMENSION
DP	DIFFERENTIAL PRESSURE
EA	EACH OR EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EMER	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
ERL	EXISTING TO BE RELOCATED
ERS	EXISTING, REMOVE FROM SERVICE
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EUH	ELECTRICAL UNIT HEATER
EWT	ENTERING WATER TEMPERATURE
EX	EXISTING
EXH	EXHAUST
EXT	EXTERNAL
EXP	EXPANSION
F	FAHRENHEIT
FA	FREE AREA OR FIRE ALARM
FC	FLEXIBLE CONNECTION
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
F.LD.	FIRE DAMPER
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLDR	FLOOR DRAIN
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FS	FLOW SWITCH
FT	FEET
G	GAS
GA	GAUGE
GAL	GALLONS
GALV	GALVANIZED
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRADE
HB	HOSE BIB (CONNECTION)
HD	HEAD
HP	HORSEPOWER OR HIGH POINT
HR	HOUR
HRU	HEAT RECOVERY UNIT
HTG	HEATING
HZ	HERTZ (CYCLES PER SECOND)
ID	INSIDE DIAMETER
IN	INCHES
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LB	POUND
LF	LINEAR FEET
LD	LINEAR DIFFUSER
LP	LOW POINT
LRA	LOCKED ROTOR AMPS
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPS
MIN	MINIMUM
MU	MAKE–UP WATER MUA MAKE–UP AIR
N	NEW
NC	NOISE CRITERIA OR NORMALLY CLOSED
NO	NORMALLY OPEN
NOM	NOMINAL
OA	OUTSIDE AIR
PCF	POUNDS PER CUBIC FOOT
PD	PRESSURE DROP
PH	PHASE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
REL	RELOCATED
RET	RETURN
RH	RELATIVE HUMIDITY
RLA	RUNNING LOAD AMPS
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF–TOP UNIT
SA	SUPPLY AIR
SCT	SATURATED CONDENSING TEMPERATURE
SD	SMOKE DETECTOR OR SMOKE DAMPER
SE	SMOKE EXHAUST
SEN	SENSIBLE
SFD	COMBINATION SMOKE / FIRE DAMPER
SHC	SENSIBLE HEAT CAPACITY
SP	STATIC PRESSURE
SF	SQUARE FEET
SS	STAINLESS STEEL
SUP	SUPPLY
T	TEMPERATURE OR THERMOSTAT
TA	TRANSFER AIR
TSTAT	THERMOSTAT
TON	12,000 BTUH (COOLING CAPACITY)
TYP	TYPICAL
UC	UNDERCUT (DOOR)
V	VOLTS
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
(ALL ABBREVIATIONS SHOWN MAY NOT APPEAR ON DRAWINGS)	

GENERAL NOTES	
1. PLUMBING GENERAL NOTES ON THESE DRAWINGS ARE A PART OF THE PLUMBING SPECIFICATIONS TO THE SAME EXTENT AS IF WRITTEN HEREIN FULL.	WALL HYDRANTS, ETC., REQUIRING DOMESTIC WATER CONNECTIONS THERETO FROM THE DOMESTIC WATER SERVICE.
2. ALL WORK AND MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF LOCAL AND STATE GOVERNING CODES, AND HEALTH DEPARTMENT REGULATIONS. PLUMBING SHALL BE INSTALLED PER THE 2017 OREGON PLUMBING SPECIALTY CODE AS AMENDED.	A. FURNISH AND INSTALL BLIND FLANGE FROM COMBINED WATER SERVICE, EXTENSION BY FIRE PROTECTION CONTRACTOR.
3. THE INTENT OF THESE DRAWINGS IS TO FURNISH THE OWNER WITH A PLUMBING INSTALLATION READY FOR USE AND COMPLETE IN EVERY ASPECT.	9. FURNISH AND INSTALL ALL PLUMBING FIXTURES, EQUIPMENT, APPLIANCES, COMPLETE WITH ALL NECESSARY AND REQUIRED TRIMMINGS, ACCESSORIES, COMPONENTS AND APPURTENANCES INCLUDING BUT NOT LIMITED TO P–TRAPS, BACKFLOW DEVICES, AIR CHAMBERS, STOPS AND SUPPLIES, HANGERS, SUPPORTS, ANCHORS, CARRIERS, TAILPIPES, TEMPERING VALVES, ETC.
4. PLUMBING CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO BIDDING TO VERIFY ALL EXISTING FIELD CONDITIONS, EQUIPMENT, DIMENSIONS, ETC., AND SHALL INCLUDE ALL REQUIRED CHANGES IN HIS BID FOR A COMPLETE OPERATING SYSTEM. BY SUBMITTING A BID, THE CONTRACTOR ACKNOWLEDGES THAT HE HAS VISITED THE JOB SITE, VERIFIED ALL EXISTING FIELD CONDITIONS, AND HAS INCLUDED ALL REQUIRED CHANGES IN HIS BID TO FURNISH AND INSTALL A COMPLETE OPERATING SYSTEM.	10. ALL PIPING SHALL BE SUPPORTED FROM STRUCTURAL MEMBERS OF THE BUILDING, OR AS APPROVED BY THE ARCHITECT OR OWNER'S REPRESENTATIVE. PLACE ALL HANGERS ON EIGHT (8) FOOT CENTERS. A. PIPES ONE (1) INCH IN DIAMETER OR LESS: SOLID OR SPLIT RING TYPE B. PIPES LARGER THAN ONE (1) INCH: STANDARD WEIGHT CLEVIS HANGERS C. INSULATED PIPING: SEMI–CIRCULAR SHIELD.
5. FURNISH AND INSTALL A COMPLETE AND OPERABLE SOIL, WASTE AND VENT SYSTEM WITH FINAL CONNECTIONS TO ALL FIXTURES, APPLIANCES, DRAINS, EQUIPMENT, STRUCTURES, ETC., REQUIRING DRAINAGE. CONNECTIONS THERETO TO CONVEYANCE TO THE PUBLIC SEWER SYSTEM.	11. PERFORMANCE REQUIREMENTS: A. COMPONENTS AND INSTALLATION SHALL BE CAPABLE OF WITHSTANDING THE FOLLOWING WORKING PRESSURE, UNLESS OTHERWISE INDICATED: A.1. DOMESTIC WATER PIPING: 125 PSIG A.2. SANITARY WASTE AND VENT PIPING: 10’ HEAD OF WATER A.3. STORM DRAINAGE PIPING: 10’ HEAD OF WATER A.4. FORCE–MAIN: 100 PSIG.
6. FURNISH AND INSTALL A COMPLETE AND OPERABLE STORM DRAINAGE SYSTEM WITH FINAL CONNECTIONS TO ALL ROOF DRAINS, OVERFLOW ROOF DRAINS, EQUIPMENT, STRUCTURES, ETC., REQUIRING DRAINAGE. CONNECTIONS THERETO TO CONVEYANCE TO THE PUBLIC SEWER SYSTEM OR STORM DETENTION/RETENTION POND. A. HORIZONTAL DRAINAGE PIPING SHALL BE INSTALLED AT UNIFORM SLOPES NOT LESS THAN THE FOLLOWING: B. PIPING LESS THAN FOUR (3) INCHES: 1/4 INCH PER LINEAL FOOT. C. PIPING THREE (3) INCHES AND LARGER: 1/8 INCH PER LINEAL FOOT. D. UNLESS OTHERWISE INDICATED ON DRAWINGS, UNDERGROUND DRAINAGE PIPING SHALL BE A MINIMUM OF FOUR (4) INCHES. E. PIPING SHALL BE A MINIMUM OF FOUR (4) INCHES. F. VENT PIPING SHALL BE MINIMALLY SLOPED BACK TO DRAINAGE PIPING.	12. CONTRACTOR SHALL PROVIDE ACCESS PANELS TO ACCESS ANY VALVES OR ANY PLUMBING ITEMS REQUIRING ACCESS FOR MAINTENANCE. CONTRACTOR SHALL PROVIDE TO THE GENERAL CONTRACTOR ALL LOCATION AND SIZES OF ACCESS PANELS FOR APPROVAL BY THE ARCHITECT. CONTRACTOR SHALL PROVIDE ACCESS PANELS TO THE GENERAL CONTRACTOR FOR INSTALLATION.
7. CONTRACTOR SHALL EXTEND ALL HOUSE DRAINS TO A POINT FIVE (5) FEET OUTSIDE OF THE FOUNDATION WALL. TERMINATE WITH A PLUGGED STUB FOR EXTENSION BY SITE UTILITY CONTRACTOR. A. HORIZONTAL DRAINAGE PIPING SHALL BE INSTALLED AT UNIFORM SLOPES NOT LESS THAN THE FOLLOWING: B. PIPING LESS THAN FOUR (3) INCHES: 1/4 INCH PER LINEAL FOOT. C. PIPING THREE (3) INCHES AND LARGER: 1/8 INCH PER LINEAL FOOT. D. UNLESS OTHERWISE INDICATED ON DRAWINGS, UNDERGROUND DRAINAGE PIPING SHALL BE A MINIMUM OF FOUR (4) INCHES. E. HORIZONTAL DRAINAGE PIPING INCLUDING ELBOWS AND DRAIN BODIES SHALL BE INSULATED AND PVC JACKETED.	13. CONTRACTOR SHALL PROVIDE CLEAN–OUTS AT ALL SANITARY LINES, STORM DRAINS AND CONDENSATE DRAINS AS LISTED BELOW AND REQUIRED BY AUTHORITY HAVING JURISDICTION: A. ALL HORIZONTAL DRAINS AND NOT MORE THAN 100FT PART. B. AT THE END OF ALL HORIZONTAL DRAINS. C. AT ALL CHANGES OF DIRECTION MORE THAN 45 DEGS. D. AT THE BASE OF EACH WASTE/SOIL STACK E. A TWO–WAY CLEANOUT IS TO BE PROVIDED OUTSIDE OF THE BUILDING NEAR THE CONNECTION OF THE BUILDING DRAINS AND AND BUILDING SEWER.
8. FURNISH AND INSTALL A COMPLETE AND OPERABLE DOMESTIC WATER DISTRIBUTION SYSTEM WITH FINAL CONNECTIONS TO ALL PLUMBING FIXTURES, APPLIANCES, EQUIPMENT,	14. CONTRACTOR SHALL PROVIDE SHUT–OFF VALVES AT EACH WATER BRANCH OF MORE THAN TWO FIXTURES TO ALLOW ISOLATION.

INSPECTIONS AND TESTS	NATURAL GAS NOTES
1. TESTING SHALL BE DONE IN THE PRESENCE OF GOVERNING AUTHORITY AND OWNER'S REPRESENTATIVE. PROVIDE FIVE (5) DAYS NOTICE TO THE OWNER, ARCHITECT OF RECORD AND GOVERNING AUTHORITY. PROVIDE ALL NECESSARY EQUIPMENT, MATERIAL AND LABOR TO PERFORM TESTS.	1. EVERY ATTEMPT HAS BEEN MADE TO VERIFY EXISTING GAS PRESSURE PRIOR TO BID.
2. ROUGHED–IN PLUMBING: THE DRAINAGE AND VENT PIPING SYSTEMS SHALL BE TESTED UPON COMPLETION OF ROUGHED–IN PIPING INSTALLATION, BY USING WATER OR AIR TO PROVE WATERTIGHT.	2. CONTRACTOR SHALL VERIFY EXISTING GAS SERVICE WITH UTILITY PRIOR TO BID AND CONSTRUCTION. IF GAS PRESSURE BEFORE METER IS LESS THAN PRESSURE SHOWN ON DRAWINGS, CONTRACTOR SHALL NOTIFY PRIOR TO BID.
3. WATER TEST: WATER TEST SHALL BE APPLIED TO THE DRAINAGE SYSTEM EITHER IN ITS ENTIRETY OR IN SECTIONS AFTER PIPING HAS BEEN ROUGHED–IN. DRAINAGE SYSTEM SHALL NOT BE TESTED WITH LESS THAN TEN (10) FOOT HEAD OF WATER. THE WATER SHALL BE KEPT IN THE SYSTEM OR SECTION BEING TESTED FOR AT LEAST FIFTEEN (15) MINUTES BEFORE INSPECTION STARTS. TESTING OF THE SYSTEM SHALL CONFIRM THAT THE SYSTEM IS TIGHT AT ALL POINTS.	3. CONTRACTOR SHALL COORDINATE LOCATION AND SIZE OF GAS METER WITH GAS UTILITY AND OWNER.
4. AIR TEST: AIR TEST SHALL BE MADE BY ATTACHING AN AIR COMPRESSOR TESTING APPARATUS TO A SUITABLE OPENING AFTER CLOSING ALL OTHER INLETS AND OUTLETS TO THE SYSTEM. FORCE AIR INTO THE SYSTEM UNTIL THERE IS A UNIFORM GAUGE PRESSURE OF FIVE (5) PI OR SUFFICIENT TO BALANCE A COLUMN OF MERCURY TEN (10) INCHES IN HEIGHT. PRESSURE SHALL BE HELD WITHOUT INTRODUCTION OF ADDITIONAL AIR FOR A PERIOD OF AT LEAST FIFTEEN (15) MINUTES.	4. EACH PIECE OF GAS FIRED EQUIPMENT SHALL BE PROVIDED WITH A GAS PRESSURE REGULATING VALVE AND SHUT–OFF VALVE AS SHOWN IN DETAIL. VENT PIPING FROM PRV SHALL VENT TO THE OUTDOORS AND BE WEATHER AND INSECT PROOF.
5. WATER SUPPLY SYSTEM: WATER SUPPLY SYSTEM SHALL BE TESTED AND PROVED WATERTIGHT UPON COMPLETION OF A SECTION OR THE ENTIRE SYSTEM. SYSTEM SHALL BE TESTED UNDER A WATER PRESSURE OF AT LEAST 1.5 TIMES THE SYSTEM PRESSURE, BUT AT LEAST 100 PSI AT A MINIMUM BY AIR OR WATER. TESTING PRESSURE SHALL BE MAINTAINED FOR A LEAST FIFTEEN (15) MINUTES AND WATER USED FOR TEST SHALL BE FROM POTABLE WATER.	5. PROVIDE EACH PIECE GAS FIRED EQUIPMENT SHALL BE PROVIDE WITH A 12" DIRT LEG.
	6. ALL GAS PIPING SHALL BE SCHEDULE 40 STEEL PIPE, UNLESS OTHERWISE NOTED.
	7. PRIOR TO INITIAL OPERATION, GAS LINES SHALL BE PRESSURE TESTED AT 1.5 TIMES THE RATED MAXIMUM PRESSURE BUT NOT LESS THAN 3PSIG. THE TEST DURATION SHALL NOT BE LESS THAN 1/2 HOUR FOR EACH 500 CUBIC FEET OF PIPE VOLUME OR AS NOTED PER LOCAL CODES.

DISINFECTION OF POTABLE WATER SYSTEM
1. SYSTEM (OR PART THEREOF) SHALL BE FILLED WITH A CHLORINE SOLUTION CONTAINING AT 50 PARTS PER MILLION OF CHLORINE, VALVED OFF AND ALLOWED TO STAND FOR 24 HOURS OR FILLED WITH A CHLORINE SOLUTION CONTAINING 200 PARTS PER MILLION OF CHLORINE AND ALLOWED TO STAND FOR THREE (3) HOURS.
2. AFTER REQUIRED (STANDING) TIME, SYSTEM SHALL BE FLUSHED WITH CLEAN POTABLE WATER UNTIL CHLORINE LEVEL IS WITHIN ACCEPTABLE LIMITS FOR POTABLE WATER.

FLUSHING OF SYSTEMS
1. CHLORINATED WATER SUPPLY: IF WATER SUPPLY SERVING SYSTEM IS CHLORINATED FROM COMMUNITY WATER SYSTEM, SYSTEM SHALL BE FLUSHED WITH CLEAN, POTABLE WATER UNTIL NO DIRTY WATER APPEARS AT THE POINT OF OUTLET.
2. NON–CHLORINATED WATER SUPPLY: WATER SUPPLY SYSTEM SHALL BE FLUSHED WITH CLEAN, POTABLE WATER UNTIL NO DIRTY WATER APPEARS AT THE POINT OF OUTLET.

SEAL:

THIS DOCUMENT IS
PRELIMINARY AND
NOT FOR
REGULATORY
APPROVAL,
PERMITTING OR
CONSTRUCTION.
08/02/19

NO DATE REMARKS
REVISIONS

CAMP
BOW WOW
2900 SE CORNELIUS PASS RD.
SUITE 118
HILLSBORO, OR.

DATE:07/26/2019

P0.0
PLUMBING SYMBOLS AND
ABBREVIATIONS

PLUMBING SPECIFICATIONS

GENERAL REQUIREMENTS:

- THE GENERAL REQUIREMENTS OF THE ARCHITECTURAL SPECIFICATIONS ARE A PART OF THESE SPECIFICATIONS. WHERE AN INCONSISTENCY EXISTS BETWEEN THE WORDING OR INTENT, THIS DIVISION SHALL TAKE PRECEDENCE.
- THE STANDARD FORM OF GENERAL CONDITIONS ISSUED BY THE AMERICAN INSTITUTE OF ARCHITECTS DOCUMENT A201, LATEST EDITION, SHALL FORM PART OF THIS CONTRACT.
- SPECIFICATIONS AND DRAWINGS ARE INTENDED TO BE COOPERATIVE. WHAT IS CALLED FOR BY EITHER SHALL BE AS BINDING AS IF CALLED FOR BY BOTH. ANY WORK OR MATERIALS NOT SPECIFICALLY MENTIONED THOUGH REQUIRED TO MAKE THE JOB COMPLETE, SHALL BE FURNISHED BY THE CONTRACTOR AT HIS EXPENSE.

LAWS, ORDINANCES, FEES, AND INSPECTIONS:

- THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES AND REGULATIONS APPLYING TO THE WORK AS DRAWN AND SPECIFIED. IF THE CONTRACTOR OBSERVES THAT THE DRAWINGS AND SPECIFICATIONS DO NOT COMPLY WITH ANY OF THE APPLICABLE LAWS, ORDINANCES, RULES AND REGULATIONS, HE SHALL PROMPTLY NOTIFY THE ENGINEER IN WRITING WHEN SUBMITTING HIS BID. ANY NECESSARY CHANGES IN THE WORK SHALL BE ADJUSTED AS PROVIDED FOR IN THE CONTRACT. IF THE CONTRACTOR PERFORMS ANY WORK CONTRARY TO SUCH LAWS, ORDINANCES, RULES AND REGULATIONS, HE SHALL BEAR ALL COSTS FOR CORRECTING THIS WORK.
- ALL CONTRACTORS SHALL APPLY, PROCURE AND PAY FEES FOR ALL PERMITS AND INSPECTIONS OR OTHER OBLIGATIONS THAT THE CITY, COUNTY, STATE OR UTILITIES MAY REQUIRE. IN ORDER FOR HIM TO DO HIS WORK.
- EQUIPMENT AND APPLIANCES SHALL BE INSTALLED AS REQUIRED BY THE TERMS OF THEIR APPROVAL, IN ACCORDANCE WITH THE CONDITIONS OF THE LISTING, THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND THE CODE. MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT THE TIME OF INSPECTION.

TRADE JURISDICTION AND COORDINATION OF WORK:

- THIS CONTRACTOR SHALL FURNISH ALL LABOR AND MATERIALS NECESSARY FOR THE COMPLETE FULFILLMENT OF THIS WORK, FOR WORK OTHER THAN THAT WHICH IS GENERALLY ACCEPTED BY HIS TRADE. SUBLET ALL LABOR OR MATERIALS NECESSARY TO A CONTRACTOR ENGAGED IN THAT TRADE SO THAT THERE IS NO DELAY OR STOPPAGE OF WORK.
- THE CONTRACTOR SHALL CONFER WITH OTHER TRADES WHOSE WORK MAY AFFECT HIS INSTALLATION, AVOID INTERFERENCE BEFORE STARTING THE INSTALLATION. ALL CHANGES IN THE WORK OF THIS CONTRACTOR CAUSED BY HIS NEGLIGENCE TO COORDINATE WITH OTHER TRADES SHALL BE MADE BY HIM AT HIS OWN EXPENSE.

WORKMANSHIP, MATERIALS, AND PRODUCTS:

- ALL MATERIALS SHALL BE NEW AND OF FIRST QUALITY. ALL LABOR SHALL BE EXECUTED IN A NEAT, WORKMANLIKE MANNER AND SHALL BE PERFORMED BY MECHANICS SKILLED IN THEIR RESPECTIVE TRADES.
- BASIS-OF-DESIGN PRODUCTS: WHERE A SPECIFIC MANUFACTURER'S PRODUCT IS NAMED, INCLUDING MAKE OR MODEL NUMBER OR OTHER DESIGNATION, THIS ESTABLISHES THE SIGNIFICANT QUALITIES RELATED TO TYPE, FUNCTION, DIMENSION, IN-SERVICE PERFORMANCE, PHYSICAL PROPERTIES, APPEARANCE, AND OTHER CHARACTERISTICS, FOR PURPOSES OF EVALUATING COMPARABLE PRODUCTS, OF OTHER NAMED MANUFACTURERS. THE DRAWINGS AND SPECIFICATIONS INDICATE SIZES, PROFILES, DIMENSIONS, AND OTHER CHARACTERISTICS THAT ARE BASED ON THE PRODUCT NAMED.
- WHERE THE TERM "PROVIDE" IS INDICATED ON THE DRAWINGS AND SPECIFICATIONS; THIS MEANS FURNISH AND INSTALL THE EQUIPMENT OR SYSTEM, COMPLETE AND READY FOR THE INTENDED USE.
- PROVIDE "PLENUM RATED" EQUIPMENT WHERE REQUIRED BY LOCAL CODE.

CUTTING AND PATCHING:

- EACH CONTRACTOR SHALL DO HIS OWN CUTTING AND PATCHING. WHEN OPENINGS ARE REQUIRED THROUGH BEARING WALLS, FURNISH AND INSTALL THE NECESSARY STEEL IF STRUCTURALLY REQUIRED. THIS CONTRACTOR SHALL NOT ENDANGER ANY WORK BY CUTTING, DIGGING OR OTHER METHODS, AND SHALL NOT CUT OR ALTER THE WORK OF OTHER TRADES WITHOUT CONSENT OF THE CONSTRUCTION MANAGER, ARCHITECT, AND/OR ENGINEER.

CLEAN UP:

- UPON COMPLETION OF THE INSTALLATION OF THE PLUMBING WORK, CLEAN INSTALLED SURFACES ACCORDING TO WRITTEN INSTRUCTIONS OF MANUFACTURER OR FABRICATOR OF THE PRODUCT INSTALLED, USING ONLY CLEANING MATERIALS SPECIFICALLY RECOMMENDED. IF SPECIFIC CLEANING MATERIALS ARE NOT RECOMMENDED, USE CLEANING MATERIALS THAT ARE NOT HAZARDOUS TO HEALTH OR PROPERTY AND THAT WILL NOT DAMAGE EXPOSED SURFACES.
- CLEAN PLUMBING SYSTEM COMPONENTS BY REMOVING VISIBLE SURFACE CONTAMINANTS AND DEPOSITS. MARK POSITION OF ALL VALVES AND PLUMBING DEVICES BEFORE CLEANING, AND RESTORE TO THEIR MARKED POSITION ON COMPLETION. CLEAN ENTIRE SYSTEM OF RUBBISH, PLASTER, DIRT, ETC., BEFORE INSTALLING FIXTURES. REPLACE FILTERS AND SCREENS WITH NEW FILTERS AND SCREENS.

- FLUSH PIPING SYSTEMS WITH CLEAN WATER. REMOVE AND CLEAN OR REPLACE STRAINER SCREENS.
- REPAIR MARRED AND DAMAGED FACTORY-PAINTED FINISHES WITH MATERIALS AND PROCEDURES TO MATCH ORIGINAL FACTORY FINISH.

PROJECT CLOSEOUT PROCEDURES AND WARRANTY:

- AT PROJECT CLOSEOUT, THE CONTRACTOR SHALL SUBMIT RECORD DRAWINGS ("AS-BUILT" DRAWINGS) OF INSTALLED DUCTWORK, PIPING, AND EQUIPMENT AS IT WAS ACTUALLY INSTALLED. SUBMIT "AS-BUILT" DRAWINGS AT MINIMUM 1/8" = 1'-0" SCALE. SUBMIT ONE (1) COPY TO ARCHITECT AND ONE (1) TO ENGINEER.
- THIS CONTRACTOR SHALL PREPARE AND FURNISH TO THE OWNER, TWO BOUND COPIES OF A TYPED WRITTEN LIST OF ALL EQUIPMENT, THE EQUIPMENT MANUFACTURERS OPERATING INSTRUCTIONS, AND A SCHEDULE OF VALVES INSTALLED UNDER THIS CONTRACT. EACH PIECE OF EQUIPMENT LISTED SHALL BE DESCRIBED BY THE DRAWING DESIGNATION NUMBER. THE VALVE SCHEDULE SHALL INDICATE VALVE IDENTIFICATION NUMBER, LOCATION, AND PURPOSE.
- THIS CONTRACTOR SHALL GUARANTEE HIS WORK TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL CERTIFICATE. ANY REPAIRS OR REPLACEMENT DURING THE PERIOD SHALL BE MADE WITHOUT COST TO THE OWNER, UPON THE OWNER'S REQUEST.

SUBMITTALS:

- THIS CONTRACTOR SHALL SUBMIT TO THE OWNER FOR APPROVAL COMPLETE LISTS INCLUDING CATALOG CUTS, ETC., AND WHERE APPLICABLE DIMENSIONED SHOP DRAWINGS OF ALL MATERIALS, FIXTURES AND EQUIPMENT TO BE FURNISHED AND INSTALLED UNDER THIS CONTRACT. INCLUDE PIPING LAYOUTS AND PIPING PENETRATION PLAN LAYOUTS. SUBMIT TWO (2) COPIES OF SHOP DRAWINGS FOR REVIEW, DRAWN TO A MINIMUM SCALE OF 1/8" = 1'-0". DO NOT ORDER EQUIPMENT, FABRICATE PIPING OR INSTALL EQUIPMENT, BEFORE RECEIVING SHOP DRAWINGS REVIEWED BY THE OWNER. ENGINEER IS NOT CONTRACTED TO REVIEW SHOP DRAWINGS.
- REQUIRED ITEMS TO BE SUBMITTED SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
 - MAJOR EQUIPMENT ITEMS: PUMPS, HOT WATER HEATERS, INSTANTANEOUS WATER HEATERS, ETC.
 - PIPING MATERIALS, FITTINGS, AND VALVES.
 - PLUMBING FIXTURES.
- CONTRACTOR SHALL BE FINANCIALLY LIABLE FOR ANY REQUIRED ENGINEERING REVIEW DUE TO ANY PROPOSED PRODUCT CHANGE AND/OR VOLUNTARY "VALUE ENGINEERING" DURING THE BIDDING PROCEDURE AND THE SUBMITTAL PROCESS. CONTRACTOR SHALL BE FINANCIALLY LIABLE FOR ANY REQUIRED ENGINEERING REVIEW DUE TO SUPPLIER'S OR MANUFACTURERS REQUIREMENTS TO HAVE AN ENGINEER SIGN OFF ON SUBMITTALS.

SCOPE OF WORK:

- PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, FACILITIES, TRANSPORTATION, FEES AND SERVICES NECESSARY TO FURNISH, INSTALL AND COMPLETE THE PLUMBING SYSTEM(S) WORK AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN. WORKMANSHIP SHALL BE COMPLETE IN EVERY ASPECT, TESTED, APPROVED AND SATISFACTORY TO THE ARCHITECT/ENGINEER AND IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL LAWS GOVERNING THIS INSTALLATION, INCLUDING THE FIRE MARSHALL.
- THE DRAWINGS INDICATE DIAGRAMMATICALLY THE EXTENT AND LOCATION OF THE WORK INCLUDED. WORK INDICATED, BUT HAVING MINOR DETAILS OBVIOUSLY OMITTED, SHALL BE PROVIDED, INCLUDING THESE DETAILS, WITHOUT EXTRA COST.
- INTENT: IT IS THE DECLARED AND ACKNOWLEDGED INTENT OF THESE SPECIFICATIONS TO PROVIDE A COMPLETE PLUMBING SYSTEM(S), INCLUSIVE OF ALL REQUIRED PARTS AND ACCESSORIES COMPLETE AND READY FOR USE AS DESCRIBED, BUT NOT LIMITED TO THE FOLLOWING:
 - COMBINED WATER SERVICE (DOMESTIC AND FIRE PROTECTION).
 - DOMESTIC WATER SERVICE AND DISTRIBUTION.
 - DOMESTIC HOT WATER.
 - DOMESTIC HOT WATER RETURN.
 - SANITARY DRAINAGE SYSTEM.
 - KITCHEN DRAINAGE SYSTEM.
 - STORM DRAINAGE SYSTEM.
 - PLUMBING FIXTURES.
 - PLUMBING EQUIPMENT.
 - PLUMBING SPECIALTIES.
 - CHILLED WATER PIPING.

PLUMBING IDENTIFICATION:

- IDENTIFICATION FOR ALL PIPING SYSTEM(S) SHALL COMPLY WITH ANSI A13.1 FOR SIZE OF LETTERING AND BACKGROUND COLOR FIELD.
- PIPING SYSTEM(S): IDENTIFICATION SHALL INCLUDE THE CONTENTS OF THE PIPING SYSTEM(S) AND AN ARROW INDICATING THE DIRECTION OF FLOW. HAZARDOUS PIPING SYSTEM(S) SHALL ALSO CONTAIN INFORMATION ADDRESSING THE NATURE OF THE HAZARD. IDENTIFICATION SHALL BE REPEATED AT MAXIMUM INTERVALS OF TWENTY-FIVE (25) FEET AND AT EACH POINT WHERE PIPING PASSES THROUGH A WALL, FLOOR OR ROOF. COLOR OF THE PIPE IDENTIFICATION SHALL BE DISCERNIBLE AND CONSISTENT THROUGHOUT THE BUILDING.
- EQUIPMENT: IDENTIFICATION SHALL INCLUDE SYSTEM NUMBER, CAPACITY, FLOW, RATE, STATIC PRESSURE, PUMP HEAD, HORSEPOWER, VOLTAGE, ETC.
- VALVE TAGS: PROVIDE BRASS VALVE TAGS AND BRASS "S" HOOK FASTENERS WITH VALVE NUMBER AND TYPE OF SERVICE NOTED ON TAG. PROVIDE DUPLICATE CHARTS, THE CHART SHALL BE FOR ALL VALVES AND SHALL INDICATE VALVE IDENTIFICATION NUMBER, LOCATION AND PURPOSE.

MATERIALS:

- ALL MATERIALS SHALL BE NEW AND OF FIRST CLASS PRODUCTS OF MANUFACTURERS SPECIFIED HEREIN AND OR AS APPROVED BY THE ARCHITECT/ENGINEER OF RECORD.
- THE DESIGN INTENT, SPACE REQUIREMENTS, PERFORMANCE, ETC., ARE BASED ON PRODUCTS OF THE MANUFACTURER(S) INDICATED IN THESE SPECIFICATIONS. UNLESS NOTED OTHERWISE COMPARABLE PRODUCTS OF OTHER MANUFACTURER(S) MAY BE SUBMITTED FOR REVIEW TO THE ARCHITECT/ENGINEER OF RECORD. PRODUCTS INSTALLED WITHOUT APPROVAL OF THE ARCHITECT/ENGINEER SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
- MANUFACTURER(S) IDENTIFICATION OF MATERIAL: EACH LENGTH OF PIPE, PIPE FITTING, EQUIPMENT, DEVICE AND APPURTENANCE IN THE FIRE PROTECTION SYSTEM SHALL HAVE CAST, STAMPED OR INDELIBLY MARKED ON IT THE MARKER'S MARK OR NAME, WEIGHT, CLASS OF PRODUCT AND STANDARD THAT APPLIES.
- WELDING: QUALITY PROCEDURES AND PERSONNEL ACCORDING TO ASME BOILER AND PRESSURE VESSEL CODE: SECTION IX.
- PIPING MATERIALS SHALL BEAR LABEL, STAMP, OR OTHER MARKINGS OF SPECIFIED TESTING AGENCY.
- ELECTRICAL COMPONENTS, DEVICES AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.

PIPING MATERIALS:

DOMESTIC WATER SERVICE

BELOW GRADE:

- DOMESTIC WATER SERVICE (2-1/2 INCH AND SMALLER): SOFT COPPER TUBE, ASTM B88, TYPE K, WATER TUBE.
 - FITTINGS: ASME B16.18 CAST-COPPER ALLOY OR B16.22 WROUGHT-COPPER, SOLDER-JOINT PRESSURE TYPE.
- DOMESTIC WATER SERVICE (3 INCH AND LARGER): DUCTILE-IRON PIPE, PUSH-ON-JOINT, AWWA C151, BELL AND SPIGOT END.
 - FITTINGS: AWWA C110, STANDARD PATTERN, AWWA C111, RUBBER.
- DOMESTIC WATER SERVICE (3 INCH AND LARGER): DUCTILE-IRON PIPE, MECHANICAL-JOINT, AWWA C110, FLANGED ENDS.
 - FITTINGS: AWWA C110, STANDARD PATTERN.
 - GLANDS: AWWA C111, DUCTILE IRON GLANDS.
 - GASKETS: AWWA C111, RUBBER.
 - BOLTS: AWWA C111, STEEL BOLTS.

DOMESTIC WATER DISTRIBUTION

- DOMESTIC WATER DISTRIBUTION (3 INCH AND SMALLER): HARD COPPER TUBE, ASTM B88, TYPE L, WATER TUBE, DRAWN TEMPER.
 - PRESSURE FITTINGS: ASME B16.18 OR B16.22.
 - BRONZE FLANGES: ASME B16.24, CLASS 150.
 - UNIONS: MSS SP-123.
 - GROOVED-END FITTINGS: ASTM B75 COPPER TUBE OR ASTM B584 BRONZE CASTINGS.
- DOMESTIC WATER DISTRIBUTION (4 INCH AND LARGER): STEEL PIPE, ASTM A53, TYPE E, GRADE A, SCHEDULE 40, GALVANIZED.
 - NIPPLES: ASTM A733, MADE OF ASTM A53 OR ASTM A106, SCHEDULE 40 GALVANIZED.
 - MALLEABLE-IRON UNIONS: ASME B16.39, CLASS 150.
 - GRAY-IRON THREADED FITTINGS: ASME B16.4, CLASS 125, GALVANIZED, STANDARD PATTERN.
 - CAST-IRON FLANGES: ASME B16.1, CLASS 125.
 - CAST-IRON FLANGED FITTINGS: ASME B16.1, CLASS 125, GALVANIZED
 - GROOVED END FITTINGS: ASTM A47, GALVANIZED, MALLEABLE-IRON CASTING, ASTM A106 GALVANIZED STEEL PIPE.

ALL CAST IRON SOIL PIPE AND FITTINGS SHAL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.

SOIL, WASTE AND VENT PIPING
BELOW GRADE:

- UNDERGROUND SOIL, WASTE AND VENT PIPING: CAST IRON, SERVICE CLASS, BELL-AND-SPIGOT ENDS FOR GASKETED JOINTS.
 - PIPE AND FITTINGS: ASTM A74.
 - GASKETS: ASTM C564, RUBBER.
- UNDERGROUND SOIL, WASTE AND VENT PIPING (IF ALLOWED): PVC
 - PIPE: ASTM D2665-1996.
 - FITTINGS: ASTM D2949-1987
- UNDERGROUND SOIL, WAST AND VENT PIPING (BELOW FOUNDATION WALLS: DUCTILE IRON GRAVITY SEWER PIPE, BELL-AND SPIGOT ENDS FOR PUSH-ON JOINTS.
 - PIPE: ASTM A746, FOR PUSH-ON JOINTS.
 - STANDARD FITTINGS: AWWA C110, DUCTILE IRON GRAY IRON, FOR PUSH-ON JOINTS.
 - COMPACT FITTINGS: AWWA C153, DUCTILE IRON, FOR PUSH-ON JOINTS.
 - GASKETS: AWWA C111, RUBBER.

ABOVE GRADE:

- ABOVEGROUND SOIL, WASTE AND VENT PIPING: CAST IRON, SERVICE CLASS, BELL-AND-SPIGOT ENDS.
 - PIPE AND FITTINGS: ASTM A74 SERVICE CLASS.
 - GASKETS: ASTM C564, RUBBER.
 - CALKING MATERIALS: ASTM B29, PURE LEAD AND OAKUM OR HEMP FIBER.
- ABOVEGROUND SOIL, WASTE AND VENT PIPING (IF ALLOWED): CAST IRON, HUBLESS.
 - PIPE AND FITTINGS: ASTM A888 OR CISPI 301.
 - SOVENT STACK FITTINGS: ASME B16.45 OR ASSE 1043, HUBLESS, CAST IRON, AERATOR AND DEAERATOR DRAINAGE FITTINGS.
 - SHIELDED COUPLINGS: ASTM C1277, ASSEMBLY OF METAL SHIELD OR HOUSING, CORROSION RESISTANT FASTENERS, AND RUBBER SLEEVE WITH INTEGRAL, CENTER PIPE STOP.
 - STANDARD, SHIELDED, STAINLESS STEEL COUPLINGS: CISPI 310, WITH STAINLESS STEEL CORRUGATED SHIELD, STAINLESS STEEL BANDS AND TIGHTENING DEVICES, ASTM AC564, RUBBER SLEEVE.
 - HEAVY-DUTY, SHIELDED, STAINLESS STEEL COUPLINGS: WITH STAINLESS STEEL SHIELD, STAINLESS STEEL BANDS AND TIGHTENING DEVICES, ASTM C564, RUBBER SLEEVE.
- ABOVEGROUND SOIL, WASTE AND VENT PIPING (IF ALLOWED): SOLID-WALL PVC, DRAIN, WASTE, AND VENT.
 - PIPE: ASTM 2665.
 - PVC SOCKET FITTINGS: ASTM D2665, SOCKET TYPE, MADE TO ASTM D 3311, DRAIN WASTE, AND VENT PATTERNS.
 - SOLVENT CEMENT: USE PVC SOLVENT CEMENT THAT HAS A VOC CONTENT OF 510 G/L OR LESS WHEN CALCULATED ACCORDING TO CFR 59, SUBPART D (EPA METHOD 24).
 - ADHESIVE PRIMER: USE ADHESIVE PRIMER THAT HAS A VOC CONTENT OF 550 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).

GAS PIPING:

- SCHEDULE 40 STEEL PIPE. FOR PIPE SIZES 2" AND SMALLER, PROVIDE ALL SCREWED AND/OR WELDED PIPING AS REQUIRED BY APPLICABLE BUILDING CODE. FOR PIPE SIZES LARGER THAN 2", PROVIDE ALL WELDED PIPING AS REQUIRED BY APPLICABLE BUILDING CODE. GROUND ALL GAS PIPING. INSTALL DRIP LEGS AND SHUTOFF VALVES IN GAS PIPING BEFORE EACH CONNECTION TO EQUIPMENT. INSTALL VENT PIPING FROM PRV VALVES TO THE OUTDOORS WITH WEATHER-PROOF AND INSECT-PROOF OUTDOOR TERMINATION DEVICES.

STORM DRAINAGE PIPING

BELOW GRADE:

- UNDERGROUND SOIL, WASTE AND VENT PIPING: CAST IRON, SERVICE CLASS, BELL-AND-SPIGOT ENDS FOR GASKETED JOINTS.
 - PIPE AND FITTINGS: ASTM A74.
 - GASKETS: ASTM C564, RUBBER.
- UNDERGROUND SOIL, WASTE AND VENT PIPING (IF ALLOWED): PVC TYPE PSM SEWER PIPE, BELL-AND SPIGOT ENDS FOR GASKETED JOINTS.
 - PIPE: ASTM D3034, SDR 35.
 - FITTINGS: ASTM D3034, PVC WITH BELL ENDS.
 - GASKETS: ASTM F477, ELASTOMERIC SEALS.
- UNDERGROUND SOIL, WAST AND VENT PIPING (BELOW FOUNDATION WALLS: DUCTILE IRON GRAVITY SEWER PIPE, BELL-AND SPIGOT ENDS FOR PUSH-ON JOINTS.
 - PIPE: ASTM A746, FOR PUSH-ON JOINTS.
 - STANDARD FITTINGS: AWWA C110, DUCTILE IRON GRAY IRON, FOR PUSH-ON JOINTS.
 - COMPACT FITTINGS: AWWA C153, DUCTILE IRON, FOR PUSH-ON JOINTS.
 - GASKETS: AWWA C111, RUBBER.

ABOVE GRADE:

- ABOVEGROUND SOIL, WASTE AND VENT PIPING: CAST IRON, SERVICE CLASS, BELL-AND-SPIGOT ENDS.
 - PIPE AND FITTINGS: ASTM A74 SERVICE CLASS.
 - GASKETS: ASTM C564, RUBBER.
 - CALKING MATERIALS: ASTM B29, PURE LEAD AND OAKUM OR HEMP FIBER.
- PIPE AND FITTINGS: ASTM A74 SERVICE CLASS.
- LEAD AND OAKUM: ASTM B29, PURE LEAD AND OAKUM OR HEMP FIBER.
- ABOVEGROUND SOIL, WASTE AND VENT PIPING (IF ALLOWED): CAST IRON, HUBLESS.
 - PIPE AND FITTINGS: ASTM A888 OR CISPI 301.
 - SOVENT STACK FITTINGS: ASME B16.45 OR ASSE 1043, HUBLESS, CAST IRON, AERATOR AND DEAERATOR DRAINAGE FITTINGS.
 - SHIELDED COUPLINGS: ASTM C1277, ASSEMBLY OF METAL SHIELD OR HOUSING, CORROSION RESISTANT FASTNERS, AND RUBBER SLEEVE WITH INTEGRAL, CENTER PIPE STOP.
 - STANDARD, SHIELDED, STAINLESS STEEL COUPLINGS: CISPI 310, WITH STAINLESS STEEL CORRUGATED SHIELD, STAINLESS STEEL BANDS AND TIGHTENING DEVICES, ASTM AC564, RUBBER SLEEVE.
 - HEAVY-DUTY, SHIELDED, STAINLESS STEEL COUPLINGS: WITH STAINLESS STEEL SHIELD, STAINLESS STEEL BANDS AND TIGHTENING DEVICES, ASTM C564, RUBBER SLEEVE.
- ABOVEGROUND SOIL, WASTE AND VENT PIPING (IF ALLOWED): SOLID-WALL PVC, DRAIN, WASTE, AND VENT.
 - PIPE: ASTM 2665.
 - PVC SOCKET FITTINGS: ASTM D2665, SOCKET TYPE, MADE TO ASTM D 3311, DRAIN WASTE, AND VENT PATTERNS.
 - SOLVENT CEMENT: USE PVC SOLVENT CEMENT THAT HAS A VOC CONTENT OF 510 G/L OR LESS WHEN CALCULATED ACCORDING TO CFR 59, SUBPART D (EPA METHOD 24).
 - ADHESIVE PRIMER: USE ADHESIVE PRIMER THAT HAS A VOC CONTENT OF 550 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).

CLEANOUTS:

- FCO (FINISHED AREAS): ADJUSTABLE FLOOR CLEANOUT, LACQUERED CAST IRON BODY, SECONDARY CLOSURE PLUG, STAINLESS STEEL COMBINED ROUND (SQUARE IN TILED AREAS) COVER AND PLUG TOP ASSEMBLY, STAINLESS STEEL VANDAL RESISTANT SECURITY SCREWS.
- FCO (UNFINISHED AREAS): ADJUSTABLE FLOOR CLEANOUT, LACQUERED CAST IRON BODY, SECONDARY BRASS CLOSURE PLUG, SCORATED COMBINED DUCTILE IRON ROUND COVER AND PLUG TOP ASSEMBLY, STAINLESS STEEL VANDAL RESISTANT SECURITY SCREWS.
- WCO (FINISHED AREAS): LACQUERED CAST IRON CLEANOUT WITH LARGE ACCESS AREA AND THREADED PLUG, STAINLESS STEEL 6 INCH ROUND (SQUARE IN TILED AREAS) COVER AND FRAME ASSEMBLY, STAINLESS STEEL VANDAL RESISTANT SECURITY SCREWS.

VALVES:

- GATE VALVE: (4 INCH AND LARGER) IRON BODY, BRONZE TRIM, BOLTED BONNET, OUTSIDE SCREW AND YOKE (OS&Y), SOLID WEDGE, REPLACEABLE SEAT RINGS, 100 PERCENT FACTORY TESTED.
- BUTTERFLY VALVE: (2-1/2 INCH TO 3 INCH) HEAVY DUTY CONSTRUCTION, PHENOLIC BACKED LOW FRICTION CARTRIDGE LINER, BUBBLE TIGHT SEAL, EXTENDED NECK, STREAMLINE DISC, WAFER BODY, BI-DIRECTIONAL SERVICE, GEAR OPERATORS, 100 PERCENT FACTORY TESTED.
- BALL VALVE (1/2 INCH TO 2-1/2 INCH) FULL PORT OPENING, 2 PIECE BRASS BODY, BLOW OUT PROOF STEM, TFE SEATS, TFE WITH ADJUSTABLE STEM PACKING GLAND, FREE-FLOATING CHROME PLATED BRASS BALL, 100 PERCENT FACTORY TESTED.
- THERMOSTATIC MIXING VALVE (TMV): THERMOSTATIC CONTROLLER WITH SWIVEL ACTION CHECK STOPS, REMOVABLE CARTRIDGE WITH STRAINER, STAINLESS STEEL PISTON AND LIQUID FILL THERMAL MOTOR BELLONS. ELEMENT MOUNTED OUT OF WATER, VOLUME CONTROL SHUT-OFF VALVE, 3 INCH BIMETAL DIAL THERMOMETER, BRASS PIPE, FITTINGS AND UNIONS TO CABINET UNIONS. ALL INTERIOR PARTS IN STANDARD ROUGH BRONZE FINISH, BOTTOM SUPPLIES, TOP OUTLET, SURFACE MOUNTED CABINET 16 GAUGE STEEL WITH BAKED WHITE ENAMEL FINISH, 12 GAUGE HINGED DOOR WITH CYLINDER LOCK, SPARE CARTRIDGE.
- BALANCING VALVE: DEZINCIFICATION RESISTANT BRASS BODY, BONNET AND TRIM, NON-RISING STEM, SCREWED BONNET, PARABOLIC REGULATING DISK, DOUBLE REGULATING (MEMORY STOP) DEVICE, FLOW MEASUREMENT ACCURACY, SUPPLIED WITH TWO DUSEAL TEST POINTS, END CONNECTIONS THREADED TO ANSI B1.20 AND SOLDER END TO ANSI B16.18, DRAIN PLUG, PRE-FORMED INSULATION.

SCALDING PROTECTION:

- PROVIDE SCALDING PROTECTION AT EACH PUBLIC LAVATORY AND SINK. INSTALL WATTS LF USG-B (OR EQUAL) THERMOSTATIC MIXING VALVE.

PLUMBING FIXTURES:

- PLUMBING FIXTURES AND TRIMMINGS HAVE BEEN SELECTED AS A BASE FOR THIS INSTALLATION, EXCEPT WHERE OTHERWISE SPECIFIED, BUT OTHER MAKES WHICH ARE EQUAL AND APPROVED MAY BE USED. CONTRACTOR SHALL SUBMIT FOR ARCHITECT/ENGINEER'S APPROVAL PORTFOLIO ILLUSTRATING AND DESCRIBING IN DETAIL THE FIXTURES, TRIMMINGS AND VALVES CONTRACTOR CONTEMPLATES USING, GIVING NAMES AND CATALOG NUMBERS OR IDENTIFYING DESCRIPTION.
 - PLUMBING FIXTURES SHALL BE OF THE BEST QUALITY, GRADE "A", AND SHALL HAVE MANUFACTURER'S GUARANTEE LABEL OR TRADEMARK INDICTING FIRST QUALITY.
- INSTALL/PROVIDE FLUSH VALVES AND/OR FLUSH VALVE WITH HANDLE ON LEFT SIDE OF FIXTURE, EXCEPT IN ACCESSIBLE (ADA) STALLS WHERE HANDLES SHALL BE LOCATED ON THE WIDE SIDE OF STALL.
- SET ALL FLOOR FIXTURES ON A WHITE TILE SETTERS GROUT TO FORM A SOLID WATER TIGHT BASE.
- CAULK ALL FIXTURES WATER TIGHT TO WALL AND FLOOR USING CLEAR SILICONE CAULK NEAT AND SMOOTHLY SET IN PLACE AND EXCESS CLEANED FROM WALL OR FIXTURE.

HANGERS AND SUPPORTS:

- STEEL PIPE HANGERS AND SUPPORTS: MSS SP-58, TYPES 1 THROUGH 58, FACTORY-FABRICATED COMPONENTS. REFER TO EXECUTION SECTION "HANGER AND SUPPORT APPLICATIONS."
 - GALVANIZED, METALLIC COATINGS: PRE-GALVANIZED OR HOT DIPPED.
 - NON-METALLIC COATINGS: PLASTIC COATING, JACKET, OR LINER.
 - PADDED HANGERS: HANGER WITH FIBERGLASS OR OTHER PIPE INSULATION PAD OR CUSHION FOR SUPPORT OF BEARING SURFACE OF PIPING.
- TRAPEZE PIPE HANGERS: MSS SP-69, TYPE 69, SHOP OR FIELD FABRICATED PIPE-SUPPORT ASSEMBLY MADE FROM STRUCTURAL STEEL SHAPES WITH MSS-SP-58 HANGER RODS, NUTS, SADDLES, AND U-BOLTS.
- METAL FRAMING SYSTEMS: MFMA-3, SHOP OR FIELD FABRICATED PIPE SUPPORT ASSEMBLY MADE OF STEEL CHANNELS AND OTHER COMPONENTS.
- THERMAL HANGER SHIELD INSERTS: 100-PSIG MINIMUM, COMPRESSIVE STRENGTH INSULATION INSERT ENCASED IN SHEET METAL SHIELD.
- FASTENER SYSTEMS:
 - POWDER ACTUATED FASTENERS: THREADED STEEL STUD, FOR USE IN HARDENED PORTLAND CEMENT CONCRETE WITH PULLOUT, TENSION, AND SHEAR CAPACITIES APPROPRIATE FOR SUPPORTED LOADS AND BUILDING MATERIALS WHERE USED.
 - MECHANICAL EXPANSION ANCHORS: INSERT WEDGE TYPE, ZINC COATED OR STAINLESS STEEL, FOR USE IN HARDENED PORTLAND CEMENT CONCRETE WITH PULLOUT, TENSION, AND SHEAR CAPACITIES APPROPRIATE FOR SUPPORTED LOADS AND BUILDING MATERIALS WHERE USED.
- EQUIPMENT SUPPORTS: WELDED, SHOP OR FIELD FABRICATED EQUIPMENT SUPPORT MADE FROM STRUCTURAL STEEL SHAPES.
- MISCELLANEOUS MATERIALS:
 - STRUCTURAL STEEL: ASTM A 46/A 36M, STEEL PLATES, AND BARS; BLACK AND GALVANIZED.
 - GROUT: ASTM C 1107, FACTORY-MIXED AND PACKAGED, DRY, HYDRAULIC-CEMENT, NON-SHRINK AND NON-METALLIC GROUT, SUITABLE FOR INTERIOR AND EXTERIOR APPLICATIONS.
 - PROPERTIES: NON-STAINING, NON-CORROSIVE, AND NON-GASEOUS.
 - DESIGN MIX: 5000-PSI, 28-DAY COMPRESSIVE STRENGTH.
- PERFORMANCE REQUIREMENTS:
 - DESIGN SUPPORTS FOR MULTIPLE PIPES CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, SYSTEM CONTENTS, AND COMPONENTS.
 - DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND COMPONENTS.
 - DESIGN SEISMIC-RESTRAINT (IF APPLICABLE) HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT, AND OBTAIN APPROVAL FROM AUTHORITIES HAVING JURISDICTION.

INSULATION:

- THERMAL INSULATION MATERIALS SHALL MEET THE PROPERTY REQUIREMENTS OF THE FOLLOWING SPECIFICATIONS AS APPLICABLE TO THE SPECIFIC PRODUCT OR END USE:
 - ASTM C547, ASTM C585, AND ASTM C1136.
- INSULATION MATERIALS SHALL MEET THE MINIMUM REQUIREMENTS OF IECC (LATEST EDITION).
- INSULATION MATERIALS SHALL HAVE A MAXIMUM FLAME SPREAD INDEX OF 25 AND A MAXIMUM SMOKE DEVELOPED INDEX OF 50 WHEN TESTED IN ACCORDANCE WITH THE FOLLOWING TESTING STANDARDS:
 - ASTM E84, UL 723 AND NFPA 255.
- INSULATION SHALL BE FIBERGLASS PIPE INSULATION, ONE-PIECE, HINGED SECTION, WITH FACTORY APPLIED WHITE POLYMER FACING, TWO-COMPONENT ADHESIVE CLOSURE SYSTEM, AND MATCHING PRESSURE SENSITIVE TAPE. MANUFACTURER'S DATA REGARDING THICKNESS CONSTRAINTS IN RELATION TO OPERATING TEMPERATURE SHALL BE FOLLOWED. STAPLING IS NOT ALLOWED TO COMPLETE THE CLOSURE.
- MOLDED CLOSED CELL POLYETHYLENE FOAM INSULATION IN NOT ALLOWED OR APPROVED.
- COVER ALL OF THE FOLLOWING PIPE TYPES LISTED WITH PREMOLDED PIPE INSULATION OF THICKNESS INDICATED, 4 LB. DENSITY AND ASJ JACKET.

PIPE TYPE (INCHES)	INSULATION THICKNESS (INCHES)
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DOMESTIC COLD WATER
PIPE 1 INCH AND SMALLER
PIPE 1 AND LARGER

1/2
1

DOMESTIC HOT WATER
PIPE 1-1/2 INCH AND SMALLER
PIPE 1-1/2 INCH LARGER

1
1-1/2

DOMESTIC HOT WATER (CIRCULATING)
PIPE 1-1/2 INCH AND SMALLER
PIPE 1-1/2 INCH LARGER

1
1-1/2

STORM LEADERS (INCLUDING DRAIN BODY AND HORIZONTAL PIPE)
ALL SIZES

1/2

- FOR HEAT TRACED & HOT WATER TEMPERATURE MAINTENANCE PIPING 1-1/4 INCHES AND SMALLER, USE INSULATION THAT IS OVERSIZED BY 1/4 INCH TO ALLOW ROOM FOR INSTALLING OVER THE HEATING CABLES. FOR PIPES THREE INCHES AND LARGER, THE THICKNESS OF INSULATION SHALL BE EQUAL TO THE PIPE DIAMETER WITH ONE (1) HEATING CABLE OR 1/3 THE PIPE DIAMETER WITH TWO (2) RUNS OF HEATING CABLE.

SEAL:

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08/02/19

NO DATE REMARKS

REVISIONS

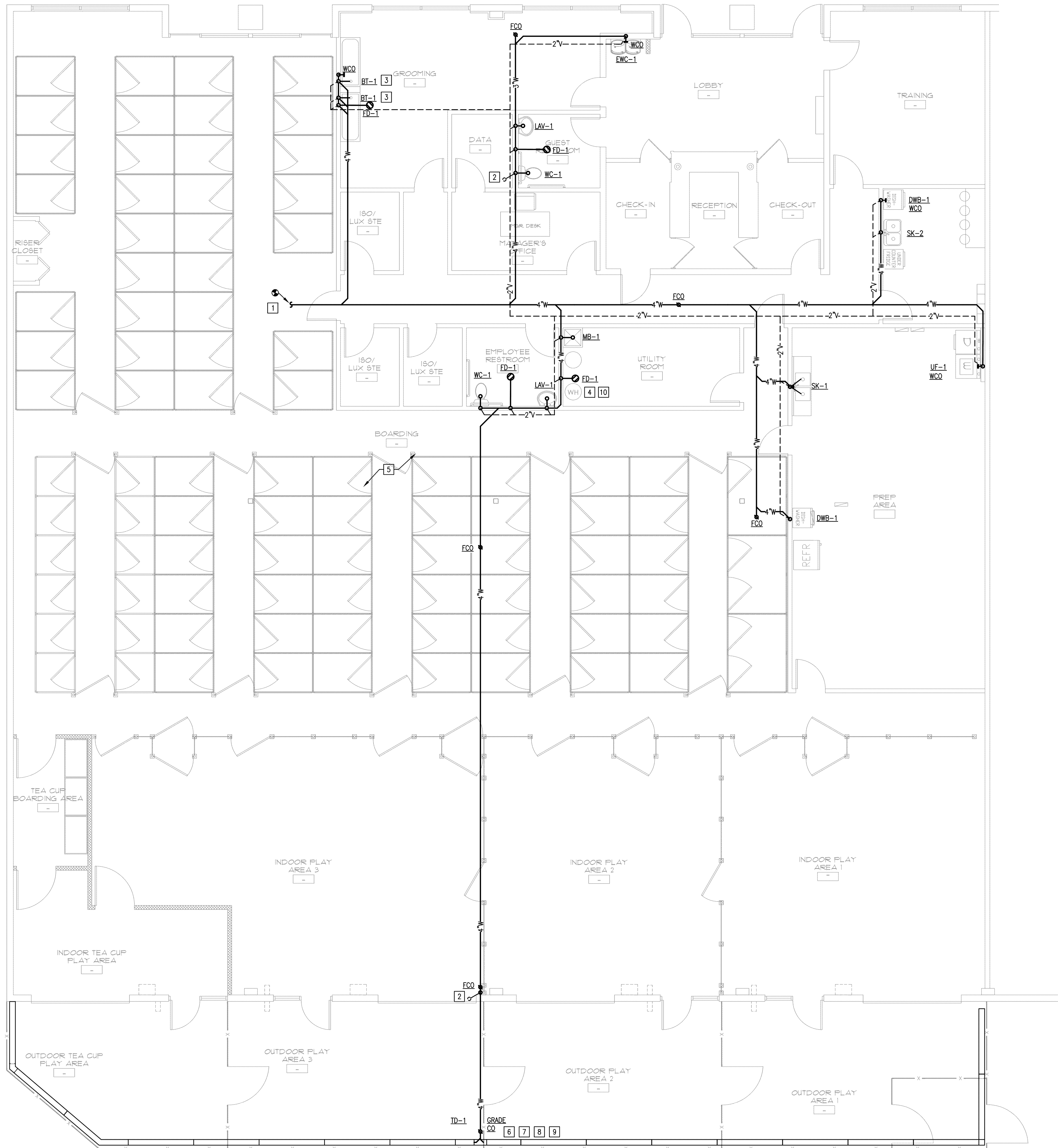
CAMP
BOW WOW

2900 SE CORNELIUS PASS RD.
SUITE 118
HILLSBORO, OR.

DATE:07/26/2019

P0.1

PLUMBING SPECIFICATIONS



GENERAL PLUMBING NOTES

1. ALL PIPING SHOWN IS FOR DIAGRAMMATIC PURPOSES ONLY. VERIFY IN FIELD EXACT ROUTING AND CONDITIONS.
2. ALL SANITARY PIPING TO BE SLOPED AT 1/4" PER LINEAR FOOT. 4" TO 6" PIPE MAY BE SLOPED AT 1/8" PER LINEAR FOOT WITH PRIOR APPROVAL BY THE AUTHORITY HAVING JURISDICTION.
3. SEE RISER DIAGRAMS FOR ADDITIONAL PIPE SIZES.
4. PROVIDE CLEANOUTS AT THE BASE OF EACH SANITARY STACK AND AT ANY CHANGE OF DIRECTION GREATER THAN 45° OR AS REQUIRED BY AHJ. NOT ALL REQUIRED CLEANOUTS SHOWN ON PLANS.
5. PROVIDE A TRAP PRIMER FOR EACH FLOOR DRAIN. ROUTE 1/2" CW LINE FROM FLOOR DRAIN TO NEAREST MAIN.

PLUMBING KEY NOTES

1. CONNECT TO EXISTING 4" WASTE LINE. P.C. TO FIELD VERIFY INVERT AND CAPACITY, AND EXACT LOCATION PRIOR TO STARTING ANY WORK.
2. 4" VTR. MAINTAIN A MIN 10' CLEAR TO ALL OUTSIDE AIR INLETS.
3. FURNISH AND INSTALL HAIR TRAP UNDER ALL PET WASH BATH TUBS INCLUDING LAUNDRY TRAYS.
4. PIPE WATER HEATER DRAIN PAN AND T&P FULL SIZE TO NEAREST APPROVED INDIRECT WASTE RECEPTACLE.
5. DEMO ALL UNUSED SANITARY AND VENT LINES BACK TO MAINS. CAP WITH CLEANOUTS. NO DEAD END SHALL REMAIN.
6. P.C. TO PROVIDE A CONTINUOUS LINEAR TRENCH DRAIN WITH A HEAVY DUTY HEEL PROOF GRATE AT DOG PLAY AREA PERIMETER. COORDINATE FINAL GRATE SELECTION WITH TENANT. COORDINATE REINFORCEMENTS AND CONCRETE ENCASEMENT WITH G.C.
7. P.C. SHALL VERIFY TRENCH DRAIN IS INSTALLED OVERHANG/COVER SO THAT IT IS PROTECTED FROM RAIN WATER. TRENCH DRAIN SHALL CONNECT TO SANITARY.
8. P.C. SHALL VERIFY SANITARY INVERT PRIOR TO STARTING ANY WORK.
9. TRENCH DRAIN SHALL BE COMBINATION WASTE AND VENT. PROVIDE RELIEF VENTS AS REQUIRED BY AHJ.
10. VENT WATER HEATER THRU ROOF WITH MANUFACTURES CONCENTRIC VENT KIT. INSTALL WATER HEATERS COMBUSTION AIR AND FLUE VENT PER MANUFACTURES INSTALLATION INSTRUCTIONS.

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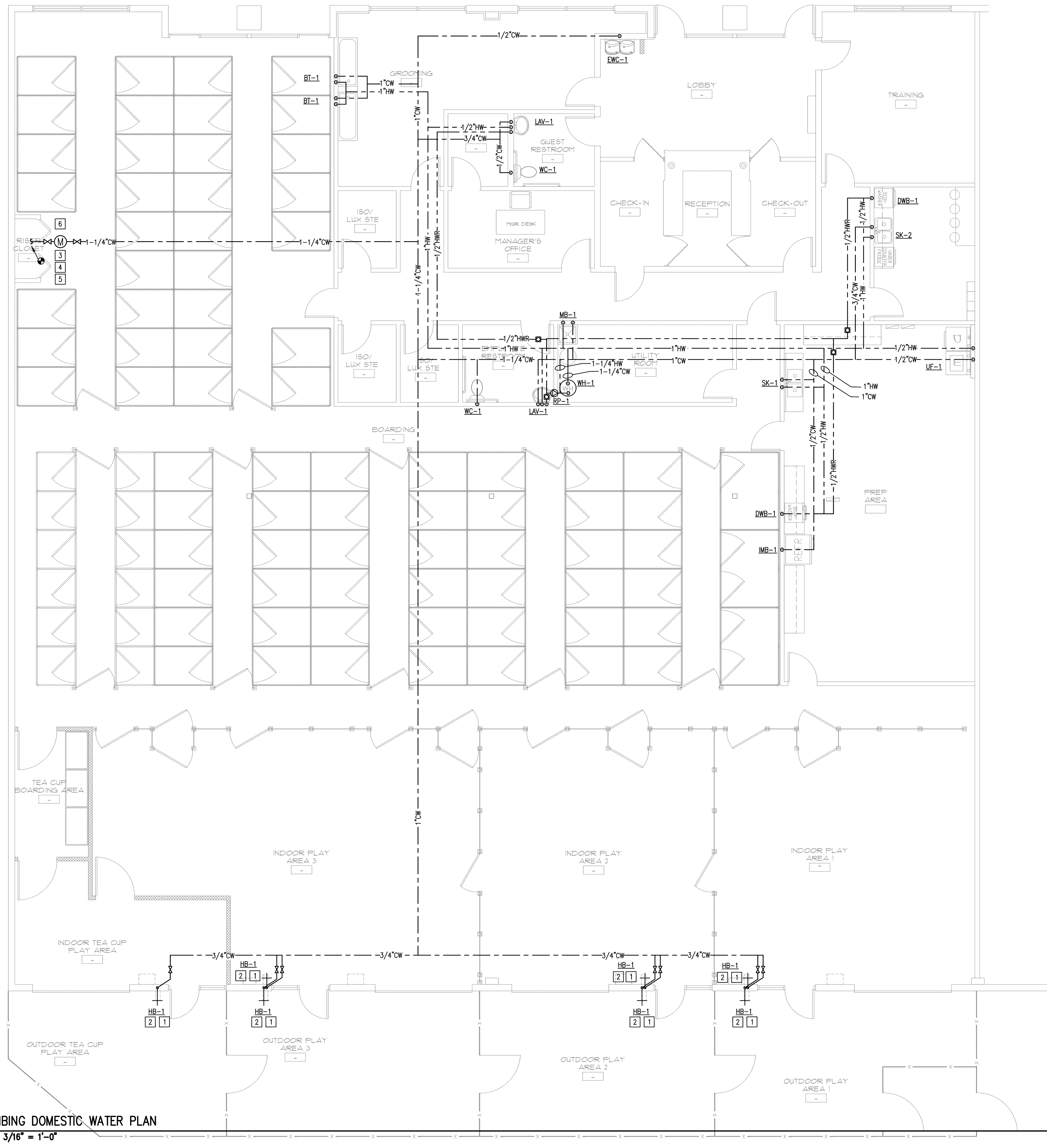
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SUITE 118
HILLSBORO, OR.

DATE:07/26/2019

P1.0
PLUMBING WASTE AND
VENT PLAN

1 PLUMBING WASTE AND VENT PLAN
P1.0 SCALE: 3/16" = 1'-0"

NORTH



GENERAL PLUMBING NOTES

1. ALL PIPING SHOWN IS FOR DIAGRAMMATIC PURPOSES ONLY. VERIFY IN FIELD EXACT ROUTING AND CONDITIONS.
2. PROVIDE SHUT-OFF VALVES AT MINIMUM ON ALL PLUMBING LINES OF 2 OR MORE FIXTURES.
3. SEE RISER DIAGRAMS FOR ADDITIONAL PIPE SIZES.
4. PROVIDE A TRAP PRIMER FOR EACH FLOOR DRAIN. ROUTE 1/2" CW LINE FROM FLOOR DRAIN TO NEAREST MAIN.
5. PROVIDE WATER HAMMER ARRESTORS, ASSE 1010 OR PDI-WH-201 ON ALL QUICK CLOSING VALVES.

PLUMBING KEY NOTES

- 1 PROVIDE VACUUM BREAKER AT ALL HOSE BIBS.
- 2 HOSE BIB FOR HOSE REEL @ 6' A.F.F. COORDINATE WITH OWNER FOR EXACT LOCATION OF HOSE BIBS. OWNER TO FURNISH HOSE REELS.
- 3 CONNECT NEW 1-1/4" CW DISTRIBUTION LINE TO EXISTING 2-1/2" WATER SERVICE. DRAWINGS ASSUME BUILDING HAS AN AVAILABLE 40 GPM AND 40 PSI AVAILABLE FOR DISTRIBUTION. P.C. TO FIELD VERIFY EXISTING WATER SERVICE PRIOR TO STARTING ANY WORK.
- 4 P.C. SHALL VERIFY WITH CITY/AHJ THAT ALL EXISTING METER & BACKFLOW DEVICES COMPLY WITH AHJ REQUIREMENTS PRIOR TO STARTING ANY WORK.
- 5 PROVIDE PRESSURE REDUCING VALVE IF PRESSURE IS FOUND TO BE GREATER THAN 80 PSI.
- 6 P.C. TO INSTALL LANDLORD SUPPLIED DOMESTIC SUBMETER WITH REMOTE READOUT. P.C. AND OWNER TO COORDINATE METER INSTALLATION WITH LANDLORD PRIOR TO STARTING ANY WORK.

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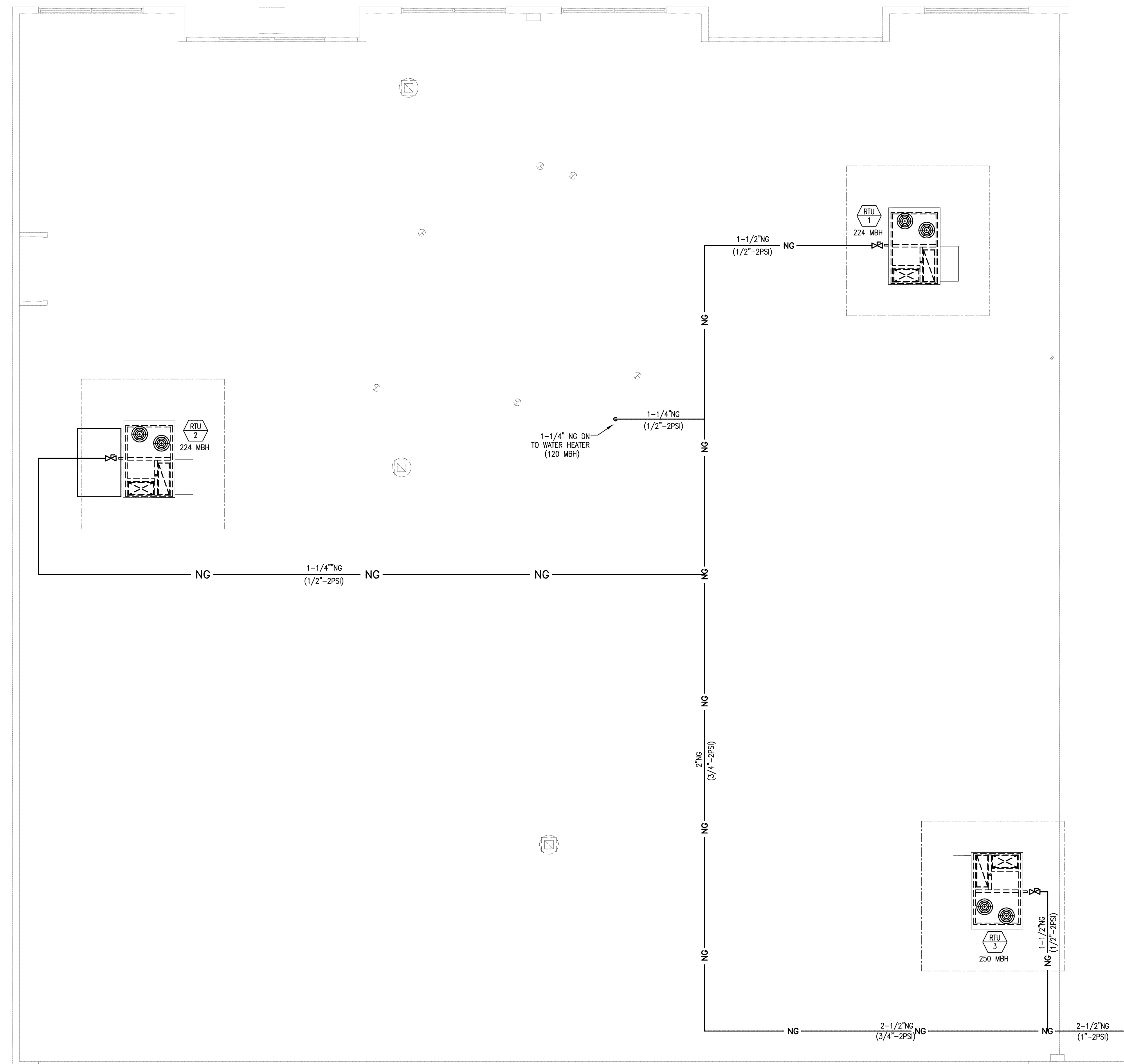
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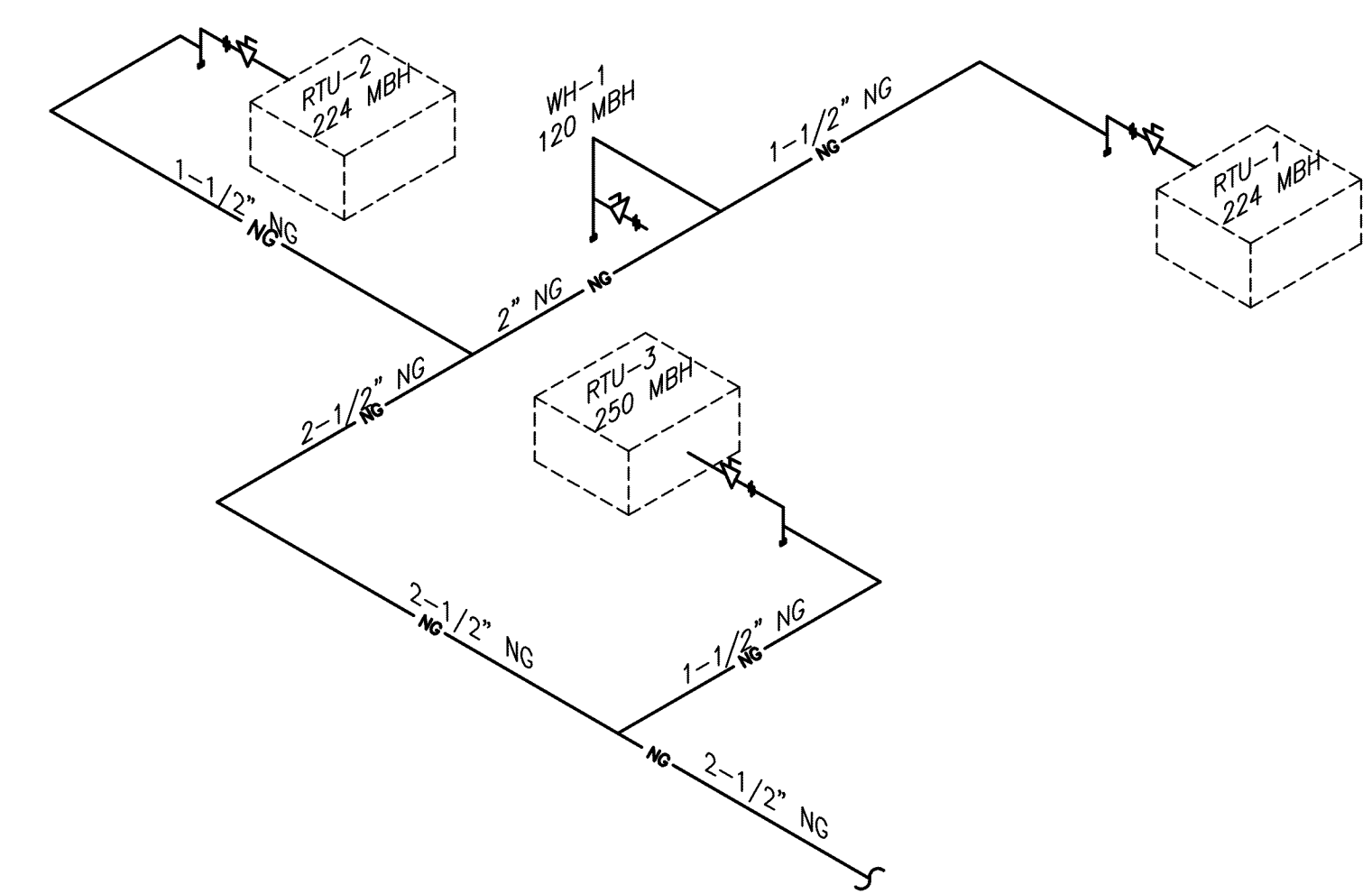
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P1.1
PLUMBING DOMESTIC
WATER PLAN

NORTH

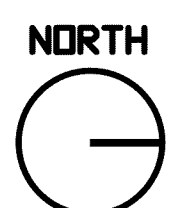


- ### GAS PIPING NOTES
1. A NEW GAS METER SHALL BE FURNISHED AND INSTALLED AT THE METER BANK. CONTRACTOR SHALL COORDINATE WITH UTILITY FINAL SIZE LOCATION AND PRESSURE OF GAS METER.
 2. PIPING SIZED AT 7 IN. W.C. (0.5 IN W.C. PRESSURE DROP), AND 2 PSI. 2 PSI (1 PSI PRESSURE DROP) SIZING SHOWN IN PARENTHESES. () CONTRACTOR SHALL VERIFY WITH UTILITY AVAILABLE GAS PRESSURE PRIOR TO STARTING ANY WORK.
 3. PROVIDE SHUT-OFF VALVE AND PRESSURE REGULATING VALVE AT EACH GAS FIRED APPLIANCE.
 4. ALL GAS PIPING SHALL BE ROUTED ALONG THE ROOF UNLESS OTHERWISE SPECIFIED.
 5. GAS PIPING SUPPORT SHALL BE FIELD LOCATED BY CONTRACTOR. MAXIMUM SPACING BETWEEN SUPPORTS SHALL BE 10 FT OR AS REQUIRED BY AHJ.
 6. NEW GAS METER: LONGEST LENGTH < 350 FT. TOTAL CONNECTED LOAD 818 MBH.



2 GAS RISER DIAGRAM
SCALE: N.T.S.

PROVIDE NEW 2-1/2" GAS LINE TO EXISTING METER. EXISTING METER LOCATED APPROX. 125' FROM TENANT SPACE. P.C. TO COORDINATE ACTUAL METER PRESSURE, AND CAPACITY PRIOR TO STARTING ANY WORK.

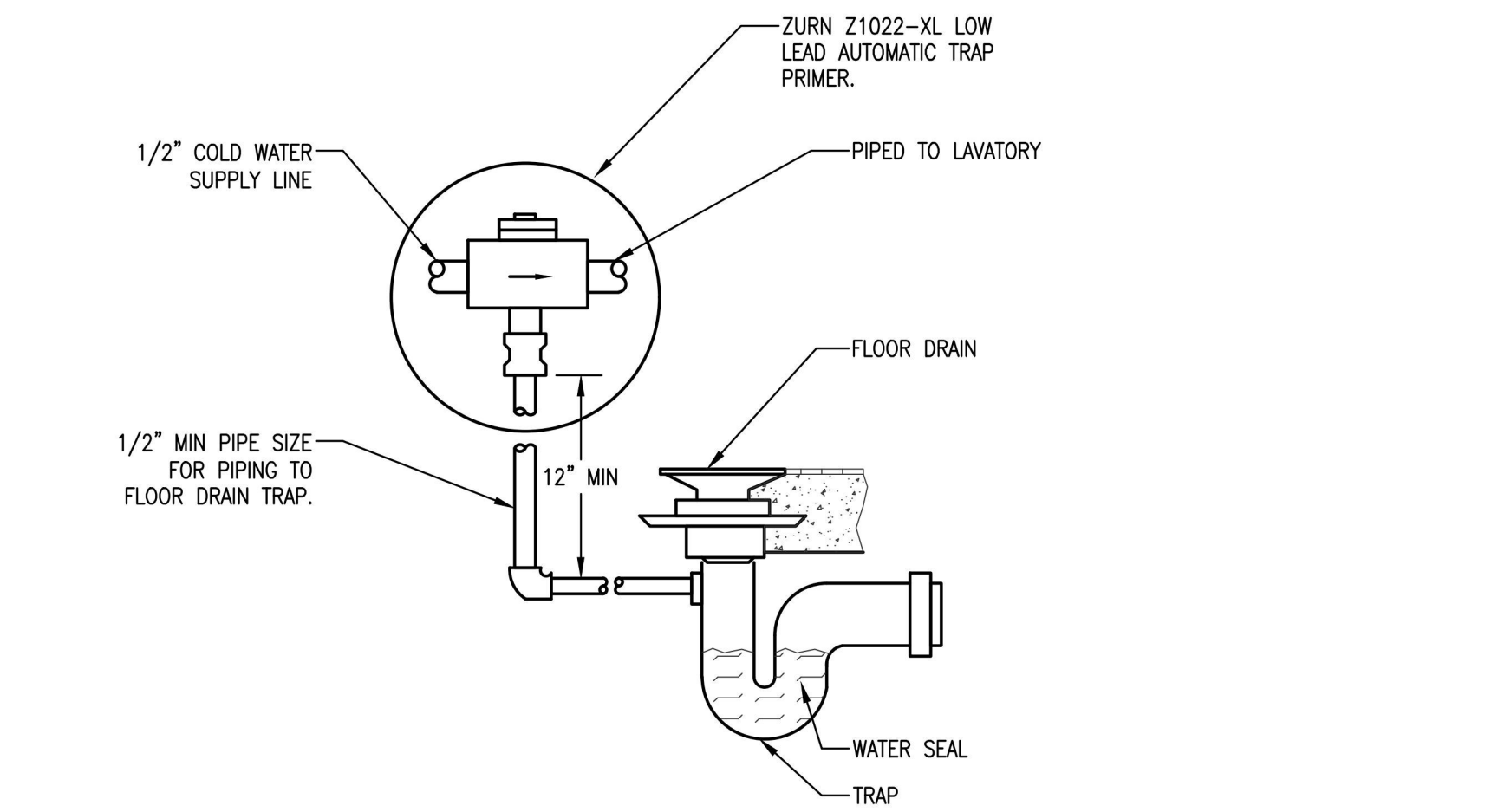


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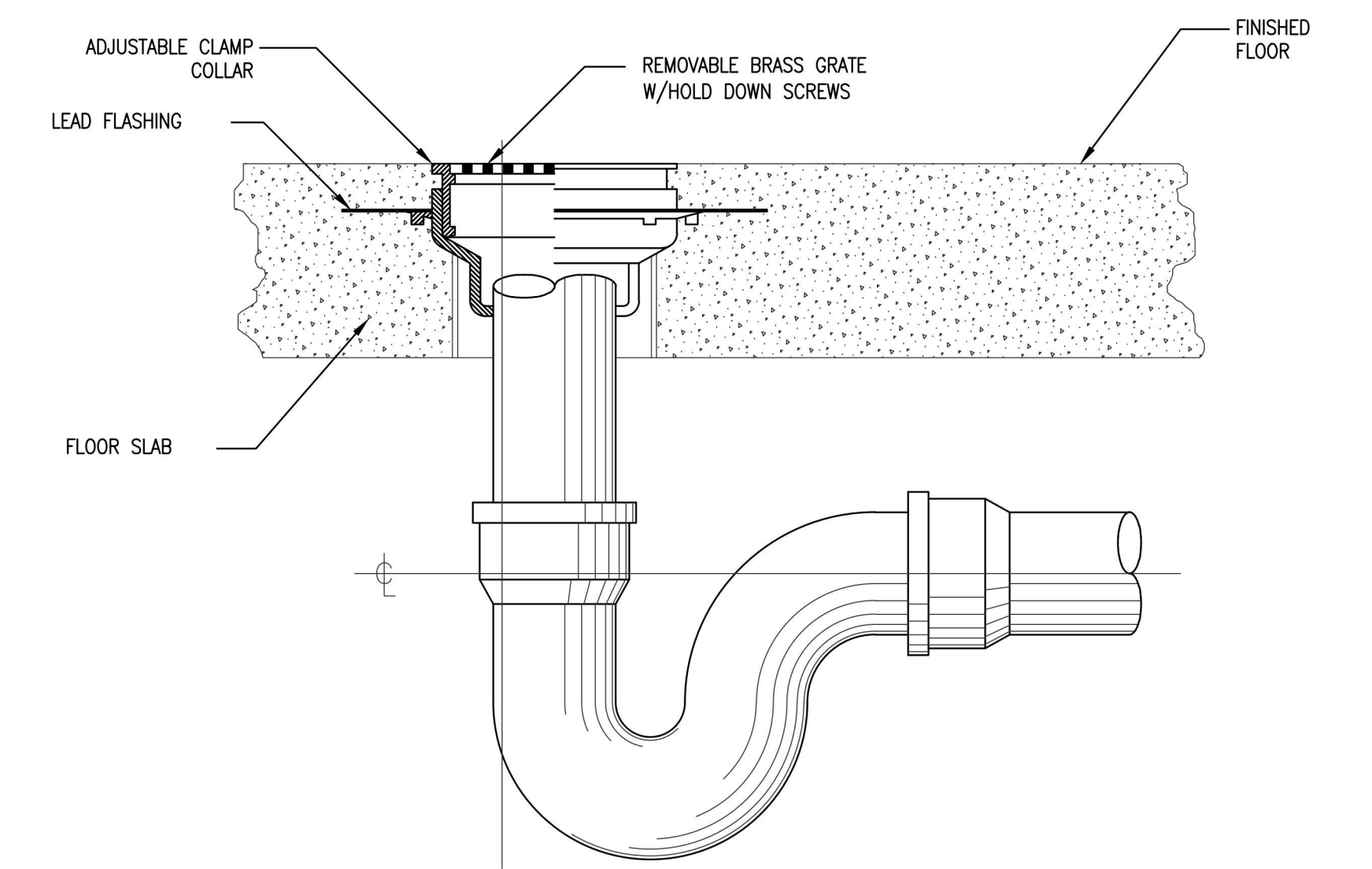
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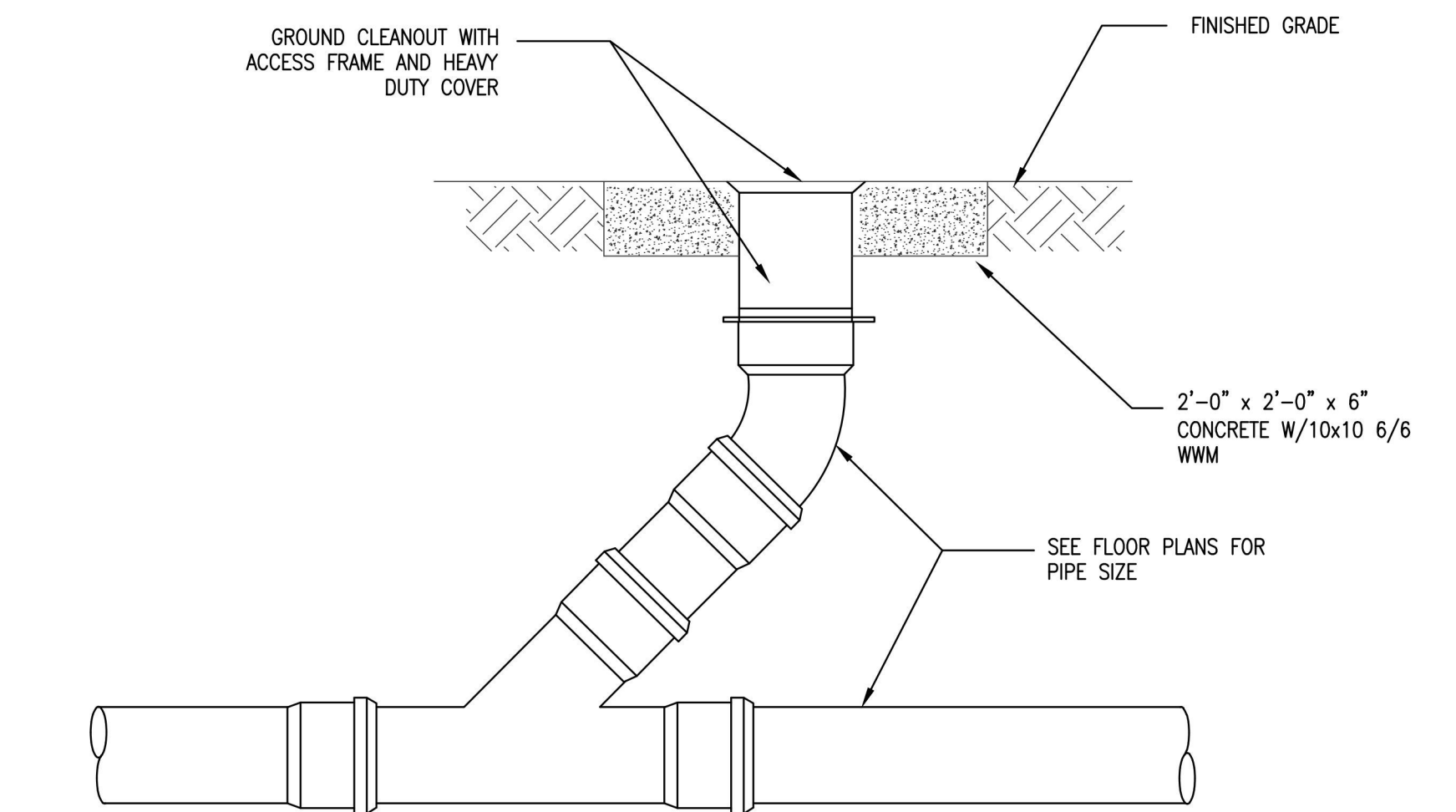
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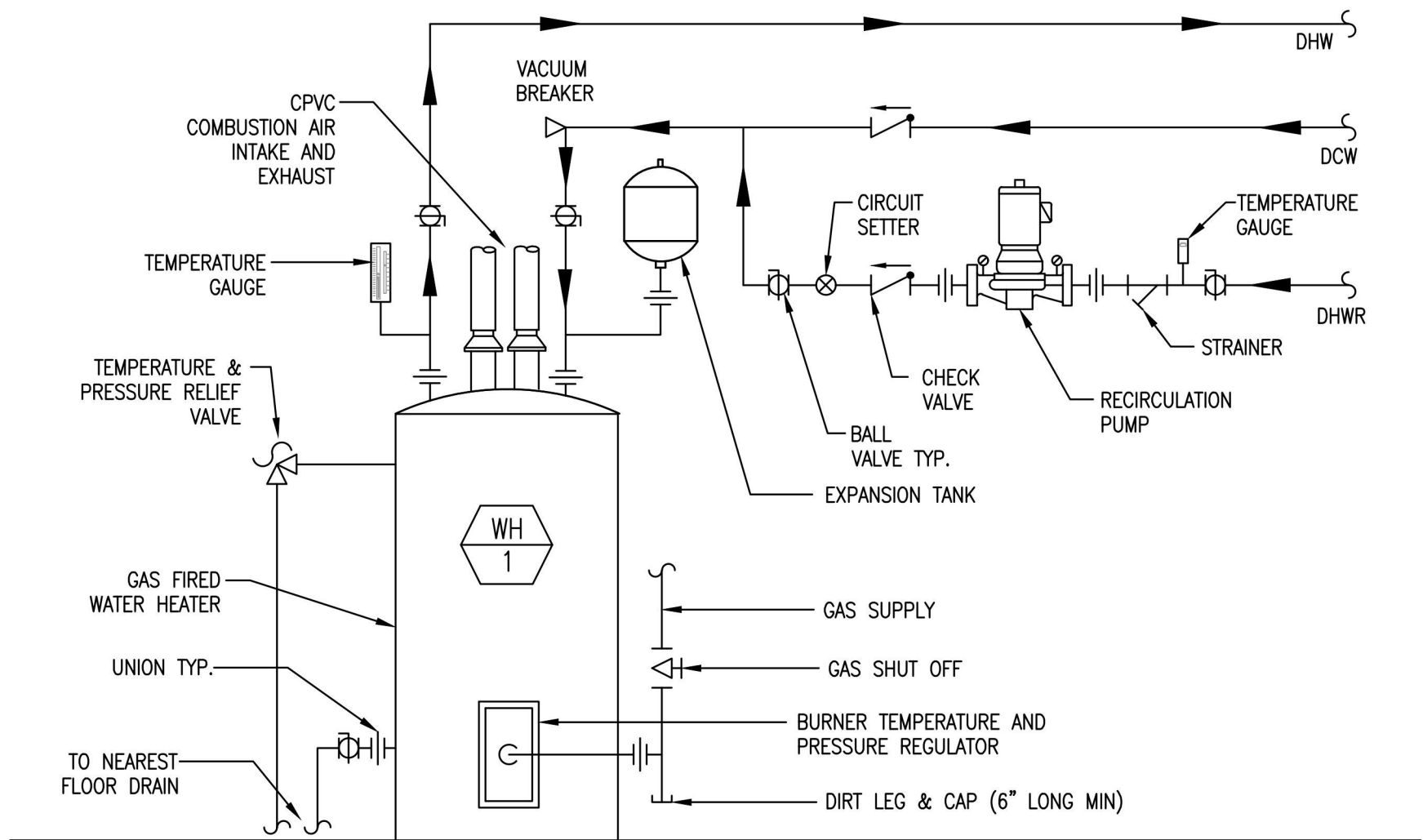
1 TRAP PRIMERS
P2.0 SCALE: NONE



2 FLOOR DRAIN DETAIL
P2.0 SCALE: NONE



3 FLOOR CLEAN-OUT DETAIL
P2.0 SCALE: NONE



4 GAS WATER HEATER DETAIL WITH RECIRCULATION PUMP
P2.0 SCALE: NONE

PLUMBING FIXTURE SCHEDULE										
DESIGNATION	FIXTURE	MANUFACTURER	MODEL #	FAUCET/VALVE		FIXTURE DESCRIPTION	CONNECTION SCHEDULE			
				MANUFACTURER	MODEL NUMBER		WASTE	VENT	CW	HW
WC-1	WATER CLOSET	AMERICAN STANDARD	CHAMPION PRO 244AA.104(LEFT) 211AA.105 (RIGHT)	-	-	16 1/2" HIGH VITREOUS CHINA WATER CLOSET W/ ELONGATED BOWL (HANDICAP) LOW CONSUMPTION FLUSH TANK (1.28GPF) WATER SENSE SEAT HEAVY DUTY (NO LID) (OPEN FRONT SS SELF SUSTAINING HINGE) - CHURCH MODEL 295SSCT MOUNT FLUSH CONTROL ON WIDE SIDE OF STALL	3"	2"	1/2"	--
LAV-1	LAVATORY	AMERICAN STANDARD	"LUCERNE" 0356.439	CHICAGO FAUCETS	3502-E2805ABCP	ADA WALL HUNG LAVATORY. VITREOUS CHINA, SINGLE FAUCET HOLE, CONCEALED ARMS SUPPORT CARRIER. DEARBORN 507-1 1-1/4" P TRAP W/ CO. CR 19-1/2"x3/8" CP ANGLE STOP. 1-12A 3/8"x1/2" LAV. RISER. 760-1 DEARBORN GRID DRAIN WITH REMOVABLE BASKET STRAINER. TRUEBRO 102E-Z WHITE COVER KITS. PROVIDE WITH THERMOSTATIC MIXING VALVE WATTS LFUSG-B SET TO 110 DEGREES MAX. SINGLE HOLE METERING FAUCET 0.5 GPM VANDAL PROOF NON AERATING SPRAY.	2"	1 1/4"	1/2"	1/2"
FD-1	FLOOR DRAIN	JOSAM	30000-50	-	-	CAST IRON FLOOR DRAIN W/ 5" NICKALOY STRAINER TOP PROVIDE AUXILIARY INLET FITTING FOR TRAP PRIMER CONNECTION	3"	2"	--	--
SK-1	TWO COMP. SINK	EAGLE GROUP	414-16-2-18	FURNISHED BY G.C.	FURNISHED BY G.C.	FURNISHED BY G.C. TWO COMPARTMENT SINK. STAND ALONE 18 GAUGE TYPE 304 STAINLESS STEEL. FAUCET: WALL MOUNTED 1 GPM PRE RINSE FAUCET WITH LEVER HANDLES AND WALL BUCKET AND DECK MOUNTED FAUCET. DRAIN: 3-1/2" LIFT-UP STRAINERS WITH 1-1/2" TAILPIECE. ACCESSORIES: FLEXIBLE SUPPLY LINES WITH LOOSE KEY STOPS, P-TRAP WITH CLEANOUT PLUG WASTE TO WALL, ESCUTCHEONS. INSTALLED BY P.C.	2"	1 1/2"	1/2"	1/2"
SK-2	TWO COMP. SINK			FURNISHED BY G.C.	FURNISHED BY G.C.	FURNISHED BY G.C. TWO COMPARTMENT SINK. PROVIDE WITH THERMOSTATIC MIXING VALVE WATTS LFUSG-B SET TO 110 DEGREES MAX. DRAIN: 3-1/2" LIFT-UP STRAINERS WITH 1-1/2" TAILPIECE. ACCESSORIES: FLEXIBLE SUPPLY LINES WITH LOOSE KEY STOPS, P-TRAP WITH CLEANOUT PLUG WASTE TO WALL, ESCUTCHEONS. INSTALLED BY P.C.	2"	1 1/2"	1/2"	1/2"
MB-1	MOP BASIN (24"x36")	EL MUSTEE	65M	FIAT	830-AA	FLOOR-MOUNTED MOP BASIN, ONE PIECE MOLDED HIGH IMPACT STRUCTURAL FIBERGLASS, WHITE COLOR, SELF DRAINING SHELF WITH REMOVABLE STRAINER, 24"x36"x10" HEAVY GAUGE STAINLESS STEEL WALL GUARDS. PROVIDE WITH MOP HANGER, CHROME PLATED WITH VACCUUM BREAKER AND INTREGRAL STOPS.	3"	2"	1/2"	1/2"
UF-1	WASHING MACHINE BOX	WATER-TITE	W4700	-	-	WASHING MACHINE OULET BOX WHITE POWDER COAT ON STEEL 1/2" CW AND HW SUPPLY CONNECTIONS WITH WATER HAMMER ARRESTORS AND 2" DRAIN OUTLET. SURFACE MOUNT. COORDINATE INSTALLATION WITH ARCHITECT.	2"	1 1/2"	1/2"	1/2"
FCO	FLOOR CLEANOUT	JOSAM	56050	-	-	FLOOR CLEANOUT - PROVIDE SCREW COVER MATCH SIZE OF PIPE. GASKETED PLUG, CAST IRON FRAME AND COVER COORDINATE EXACT CONFIGURATION WITH ACTUAL FLOORING	--	--	--	--
WCO	WALL CLEANOUT	ZURN	Z1446	-	-	WALL CLEANOUT - PROVIDE SCREW COVER MATCH SIZE OF PIPE.	--	--	--	--
DWB-1	DISH WASHING MACHINE BOX	GUY GRAY	MDWB1AB	-	-	WASHING MACHINE BOX WHITE POWDER COATED STEEL WITH QUARTER TURN BALL VALVES AND WATER HAMMER ARRESTOR. DRAIN: 2" OPEN RECEPTOR LOCATED BEHIND FIXTURE	2"	1 1/2"	1/2"	1/2"
BT-1	DOG WASH BATH TUB	FURNISHED BY OWNER		FURNISHED BY OWNER		DOG WASH BATHTUB: 24"x58" SOLID 20 GAUGE STAINLESS STEEL WITH DRAIN AND NON SLIP PET RAMP. INSTALLED BY P.C.	3"	2"	1/2"	1/2"
IMB-1	ICE MACHINE BOX	GUY GRAY	MIB1HAAB	-	-	ICE MACHINE BOX WHITE POWDER COATED STEEL WITH QUARTER TURN BALL VALVES WITH ARRESTERS.	--	--	1/2"	--
HT-1	HAIR INTERCEPTOR	ZURN	Z1175	-	-	HAIR INTERCEPTOR. FURNISH WITH FILTER SIZED APROPRIATELY FOR PET HAIR. VERIFY ACCESS REQUIRMENTS WITH DOG WASH INSTALATION REQUIREMENTS.	1-1/2"	--	--	--
HB-1	HOSE BIBB	WOODFORD	65	-	-	FROST-PROOF, ANTI-SIPHON HOSE BIB (ASSE 1019-B), REPLACEABLE SEAT, ONE PIECE VALVE ASSEMBLY SINGLE HANDLE , LENGTH TO MATCH WALL THICKNESS, MAX 125 PSI	--	--	3/4"	--
RP-1	RECIRCULATOR PUMP	TACO	008-IQ	-	-	DOMESTIC HOT WATER RECIRCULATION PUMP 2 GPM AT 15 FT. HD. 1/25 HP, 115 VOLTS, 0.84 FULL LOAD AMPS.	--	--	--	--
TD-1	TRENCH DRAIN	ZURN	Z886-FGF	-	-	LINEAR TRENCH DRAIN SYSTEM. P.C. IS RESPONSIBLE TO COORDINATION CONCRETE ENCASEMENT AND REINFORCMENT WITH ARCH. AND G.C. 5.5" WIDE REVEAL TRENCH DRAIN SYSTEM WITH DUCTILE IRON FRAME AND SLOTTED GRATE. COORDINATE SLOTTED GRATE SELECTION WITH OWNER PRIOR TO STARTING ANY WORK.	3"	--	--	--

WATER HEATER (WH) SCHEDULE											
EQUIPMENT TAG	LOCATION	CAPACITY GALLONS	INPUT HEATING			RECOVERY GPH 100° (F) RISE	ELECTRICAL		MANUFACTURER	MODEL NUMBER	REMARKS
			BTU/HR	E(T)	W.C.		VOLTS/PH/Hz	F.L.A.			
WH-1	UTILITY ROOM	60	120000	95%	4.4-14"	138	120/1/60	3.00	A.O. SMITH	BTH-120	1, 2, 3
NOTES: 1. DISCONNECT SWITCHES AND POWER SOURCE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR. 2. AIR INTAKE AND EXHAUST VENT PIPING FURNISHED AND INSTALLED BY PLUMBING CONTRACTOR. 3. GAS PIPING FURNISHED AND INSTALLED BY PLUMBING CONTRACTOR.											

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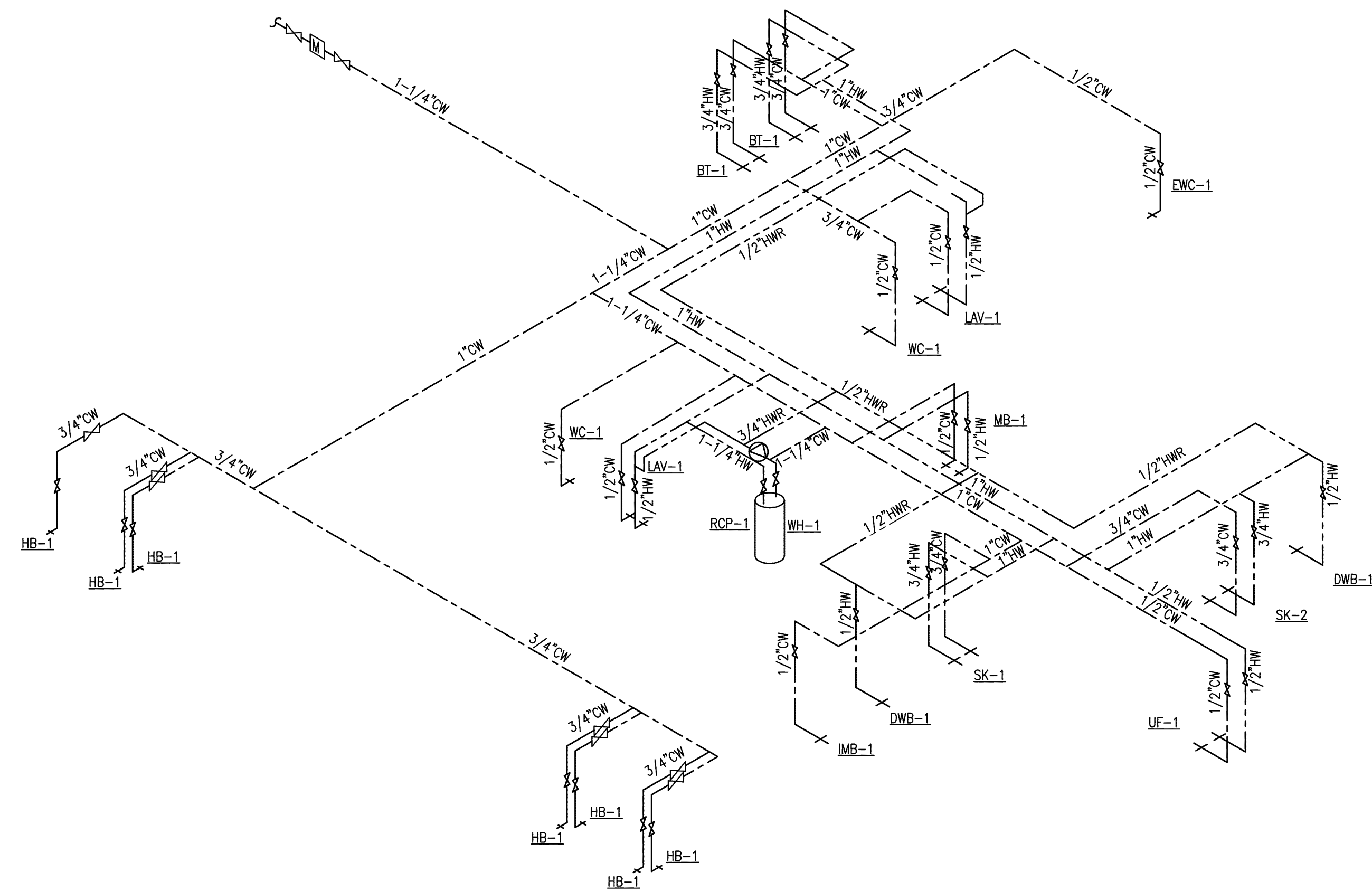
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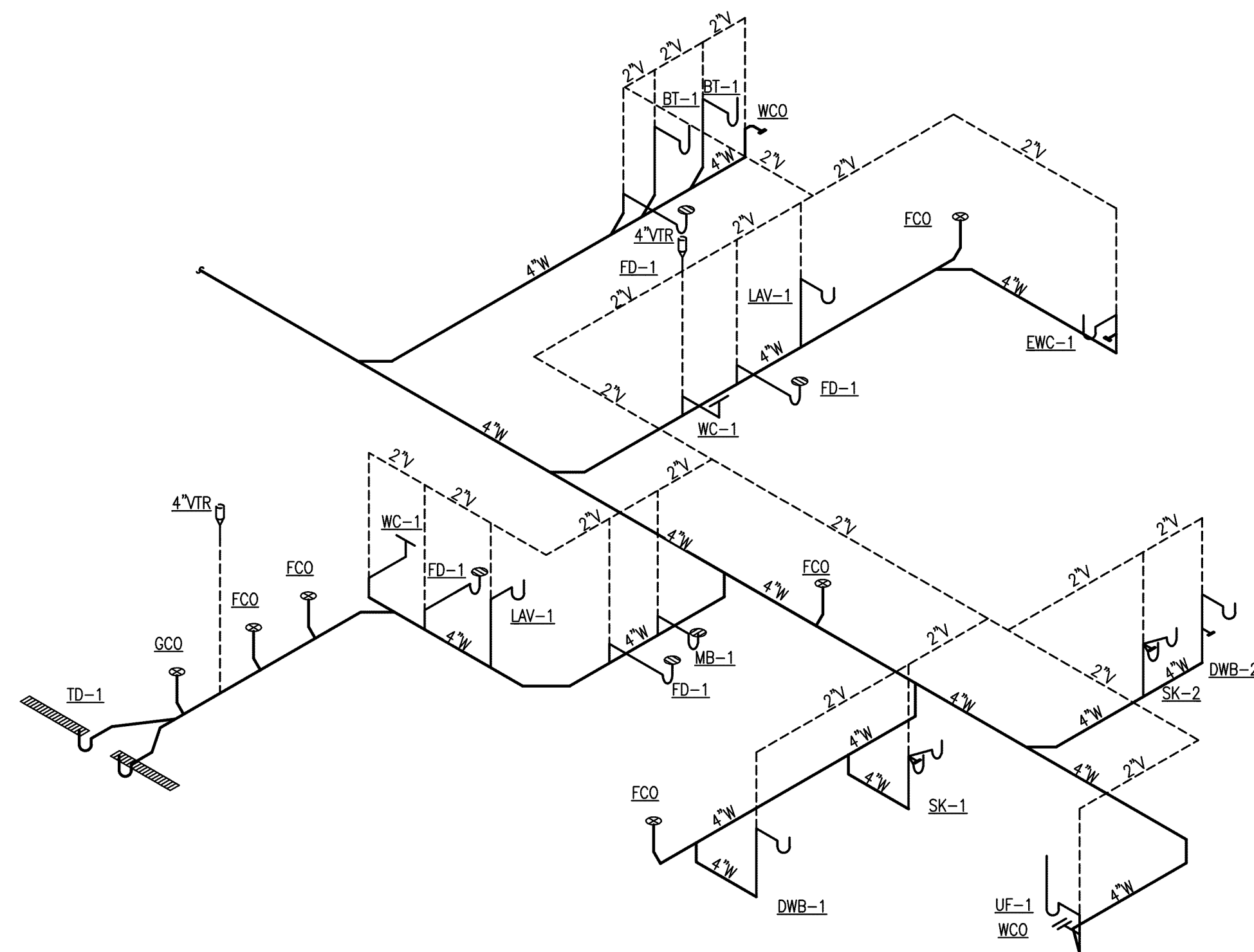
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P2.0
PLUMBING SCHEDULES



1 PLUMBING DOMESTIC WATER ISOMETRIC
P3.0 SCALE: N.T.S.



2 PLUMBING SANITARY ISOMETRIC
P3.0 SCALE: N.T.S.

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P3.0
PLUMBING RISERS

1 DESIGN CRITERIA

A. CRITERIA

1. DESIGNED USING 2014 OREGON STRUCTURAL SPECIALTY CODE (OSSC)

2. RISK CATEGORY TYPE (IBC TABLE 1604.5)
- = II

B. ROOF LOADS

1. GROUND SNOW LOAD

2. SNOW EXPOSURE FACTOR, Ce(TERRAIN CATEGORY B)

3. SNOW IMPORTANCE FACTOR, IS

4. THERMAL FACTOR, CT (HEATED FACILITY)

5. ROOF SNOW/LIVE LOAD

6. ROOF DEAD LOAD

7. ROOF DEFLECTIONS TL

8. ROOF DEFLECTIONS LL
- = 25 PSF

= 1.0

= 1.0

= 1.0

= 25 PSF

= 20 PSF

= L/240

= L/180

C. SEISMIC LOADS

1. MAPPED SPECTRAL RESPONSE ACC. FOR SHORT PERIOD, SS

2. MAPPED SPECTRAL RESPONSE ACC. FOR 1-SEC PERIOD, S1

3. DESIGN SPECTRAL RESPONSE ACC. COEFF. AT SHORT PERIOD, SDS

4. DESIGN SPECTRAL RESPONSE ACC. COEFF. AT 1-SEC PERIOD, SD1

5. BUILDING SITE CLASS (IBC TABLE 1613.5.2)

6. SEISMIC DESIGN CATEGORY (IBC TABLE 1613.5.6(1 & 2))

7. SITE COEFFICIENT, FA (IBC TABLE 1613.5.3(1))

8. SITE COEFFICIENT, FV (IBC TABLE 1613.5.3(1))

9. SEISMIC IMPORTANCE FACTOR, IE

10. SEISMIC COEFFICIENT FORCE FACTOR, CS (ALLOWABLE)

11. RESPONSE MODIFICATION FACTOR, R

12. BASIC SEISMIC-FORCE -RESISTING SYSTEM

13. ANALYSIS PROCEDURE USED
- = 0.988 G

= 0.439 G

= 0.728 G

= 0.457 G

= D

= D

= 1.185

= 1.561

= 1.00

= 0.051 (ASCE 07-10)

= 2.0

= MECHANICAL AND ELECTRICAL COMPONENTS

= SEISMIC DEMANDS ON NON-STRUCTURAL COMPONENTS

D. WIND LOADS

1. WIND IMPORTANCE FACTOR, IW

2. BASIC WIND SPEED (3-SECOND GUST)

3. WIND EXPOSURE

4. WIND PRESSURE WALL (COMPONENTS & CLADDING)

5. WIND UPLIFT PRESSURE ROOF (COMPONENTS & CLADDING)
- = 1.00

= 110 MPH

= C

= 36.21 PSF

= 21.64 PSF

2 GENERAL STRUCTURAL NOTES

- A. ALL ELEVATIONS AND HEIGHTS GIVEN ARE FROM THE FINISHED FLOOR DATUM ELEVATION, WHICH IS SET AT 100'-0".

B. DO NOT SCALE DRAWINGS, CONTACT A.O.R. OR E.O.R. FOR DIMENSION CLARIFICATIONS PRIOR TO CONSTRUCTION.

C. VERIFY ALL OPENINGS, BUILDING DIMENSIONS, COLUMN GRID LOCATIONS AND DIMENSIONS WITH OWNER PRIOR TO POURING OF ANY CONCRETE FOUNDATIONS OR CONSTRUCTION.

D. THE ENGINEER OF RECORD IS NOT RESPONSIBLE FOR ANY DEVIATIONS FROM THESE PLANS UNLESS SUCH CHANGES ARE AUTHORIZED IN WRITING TO THE STRUCTURAL ENGINEER OF RECORD.

E. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE SHORING AND/OR TEMPORARY STRUCTURAL STABILITY FOR ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR FINAL CONFIGURATION.

F. NOTCHING AND/OR CUTTING OF ANY STRUCTURAL MEMBER IN THE FIELD IS PROHIBITED, UNLESS PRIOR CONSENT IS GIVEN BY THE STRUCTURAL ENGINEER OF RECORD.

G. IT IS NECESSARY THAT THE STRUCTURAL DRAWINGS BE USED IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS TO HAVE A COMPLETE SCOPE OF WORK INVOLVED IN THIS PROJECT.

3 EXISTING CONDITIONS

- A. CONTRACTOR SHALL VERIFY ANY AND ALL APPLICABLE EXISTING CONDITIONS, CONSTRUCTION, DIMENSIONS AND ELEVATIONS AND IMMEDIATELY NOTIFY ARCH. AND EOR OF ANY DISCREPANCIES BEFORE PROCEEDING WITH ANY CONSTRUCTION.

ABBREVIATIONS

(E)	EXISTING	HT.	HEIGHT
(F)	FUTURE	HVAC	HEATING VENTILATING AND AIR
(N)	NEW		CONDITIONING
(R)	RENOVATE	I.D.	INSIDE DIAMETER
C	CENTERLINE	IN.	INCH
Ø	DIAMETER OR ROUND	INSUL	INSULATION
⊥	PERPENDICULAR	INT.	INTERIOR
SQ	SQUARE	JOINT	JOINT
#	NUMBER OR POUND	K.O.	KNOCKOUT
@	AT	L.F.	LINEAL FEET OR FOOT
A.B.	ANCHOR BOLT	L.L.V.	LONG LEG VERTICAL
A.F.F.	ABOVE FINISH FLOOR	L.L.H.	LONG LEG HORIZONTAL
ABV.	ABOVE	L.P.	LOW POINT
ADJ.	ADJUSTABLE	LSL	LAMINATED STRAND LUMBER
AGG.	AGGREGATE	LAM.	LAMINATE
ALT.	ALTERNATIVE	LVL	LAMINATED VENEER LUMBER
ALUM.	ALUMINUM	LBS.	POUNDS
APPROX.	APPROXIMATE	M.B.	MACHINE BOLT
ARCH.	ARCHITECTURAL	M.H.	MANHOLE
B.O.	BOTTOM OF	M.O.	MASONRY OPENING
B.O.C.	BOTTOM OF CONCRETE	MAX.	MAXIMUM
B/T	BETWEEN	MECH.	MECHANICAL
B.N.	BOUNDARY NAIL(ING)	MET.	METAL
B.U.	BUILT-UP	MFR.	MANUFACTURER
BD.	BOARD	MIN.	MINIMUM
BLDG.	BUILDING	MISC.	MISCELLANEOUS
BLK.	BLOCK	MTD	MOUNTED
BM.	BEAM	MTRL	MATERIAL
BOT.	BOTTOM	N	NORTH
C.C.	CENTER TO CENTER	N.I.C.	NOT IN CONTRACT
C.I.	CAST IRON	N.S.	NEAR SIDE
C.I.P.	CAST IN PLACE	N.T.S.	NOT TO SCALE
CMU	CONCRETE MASONRY UNIT	NO	NUMBER
C.O.	CONCRETE OPENING	NOM.	NOMINAL
CLG.	CEILING	N.S.	NEAR SIDE
CLR.	CLEAR	O/H	OVERHEAD
CNTRSK.	COUNTERSUNK	O	OVER
COL.	COLUMN	O.A.	OVER ALL
CONC.	CONCRETE	O.C.	ON CENTER
CONT.	CONTINUOUS	O.D.	OUTSIDE DIAMETER
CORR.	CORRIDOR	O.H.	OPPOSITE HAND
CW/	COORDINATE WITH	OPNG.	OPENING
D.	DEEP	OPP.	OPPOSITE
D.B.A.	DEFORMED BAR ANCHOR	OZ	OUNCE
D.F.	DOUGLAS FIR	PART.	PARTICLE
DET.	DETAIL	P/L	PROPERTY LINE
DIA.	DIAMETER	PL	PLATE
DIAG.	DIAGONAL	PLYWD.	PLYWOOD
DIM.	DIMENSION	PRE-ENG.	PRE-ENGINEERED METAL BUILDING
DN.	DOWN	PT.	POINT
DWG.	DRAWING	P.S.L.	PARALLEL STRAND LUMBER
E.B.	EXPANSION BOLT	R	RADIUS OR RISER
E.B.E.	ECCENTRICALLY BRACED FRAME	R.D.	ROOF DRAIN
E.J.	EXPANSION JOINT	R.O.	ROUGH OPENING
E.N.	EDGE NAIL(ING)	REF.	REFERENCE (CW/)
E.A.	EACH	REIN.	REINFORCE(D)
EL.	ELEVATION	REQ'D.	REQUIRED
ELEC.	ELECTRICAL	RM.	ROOM
ELEV.	ELEVATOR	S.C.	SOLID CORE
EOR	ENGINEER OF RECORD	S.F.	SQUARE FEET OR FOOT
EQ.	EQUAL	S.S.	STAINLESS STEEL
EQUIP.	EQUIPMENT	SCHED.	SCHEDULE
E.S.	EDGE SCREW(ING)	SECT.	SECTION
EXP.	EXPANSION	SHT.	SHEET
EXT.	EXTERIOR	SIM.	SIMILAR OR SIMILAR TO
F.B.	FLAT BAR	SPECS.	SPECIFICATIONS
F.D.	FLOOR DRAIN	SQ.	SQUARE
F.O.	FACE OF	STD.	STANDARD
F.O.C.	FACE OF CURB/CONCRETE	STRUC.	STRUCTURAL
F.O.F.	FACE OF FINISH	SUSP.	SUSPENDED
F.O.M.	FACE OF MASONRY	SYM.	SYMMETRICAL
F.O.S.	FACE OF STUDS	T&G.	TONGUE & GROOVE
F.O.T.	FACE OF TREAD	T.O.B.	TOP OF BEAM
FDN.	FOUNDATION	T.O.C.	TOP OF CURB/CONCRETE
FIN.	FINISH	T.O.D.	TOP OF DECK
FL.	FLOOR(ING)	T.O.M.	TOP OF MASONRY
FLASH.	FLASHING	T.O.S.	TOP OF SLAB
F.S.	FAR SIDE	T.O.W.	TOP OF WALL
FT.	FOOT OR FEET	THK.	THICKNESS
FTG.	FOOTING	TJI	TRUSS JOIST I-JOIST
FTW.	FIRE TREATED WOOD	TYP.	TYPICAL
FURR.	FURRING	U.B.C.	UNIFORM BUILDING CODE
GA.	GAUGE OR GAGE	U.O.N.	UNLESS OTHERWISE NOTED
GALV.	GALVANIZED	U.O.O.	UNLESS NOTED OTHERWISE
GSN	GENERAL STRUCTURAL NOTES	V.I.F.	VERIFY IN FIELD
GYP.	GYPSUM	VERT.	VERTICAL
H.	HIGH	W/	WITH
H.C.A.	HEADED CONCRETE ANCHOR	W/O	WITHOUT
H.S.S.	HOLLOW STRUCTURAL STEEL	WD.	WOOD
H.P.	HIGH POINT	W.	WIDE
HORIZ.	HORIZONTAL	W.P.	WORK POINT
HR.	HOUR	W.W.F.	WELDED WIRE FABRIC

SHEET LIST

SHEET NUMBER	SHEET NAME
S1.0	GENERAL STRUCTURAL NOTES
S2.0	PARTIAL ROOF FRAMING PLAN
S3.0	STRUCTURAL DETAILS

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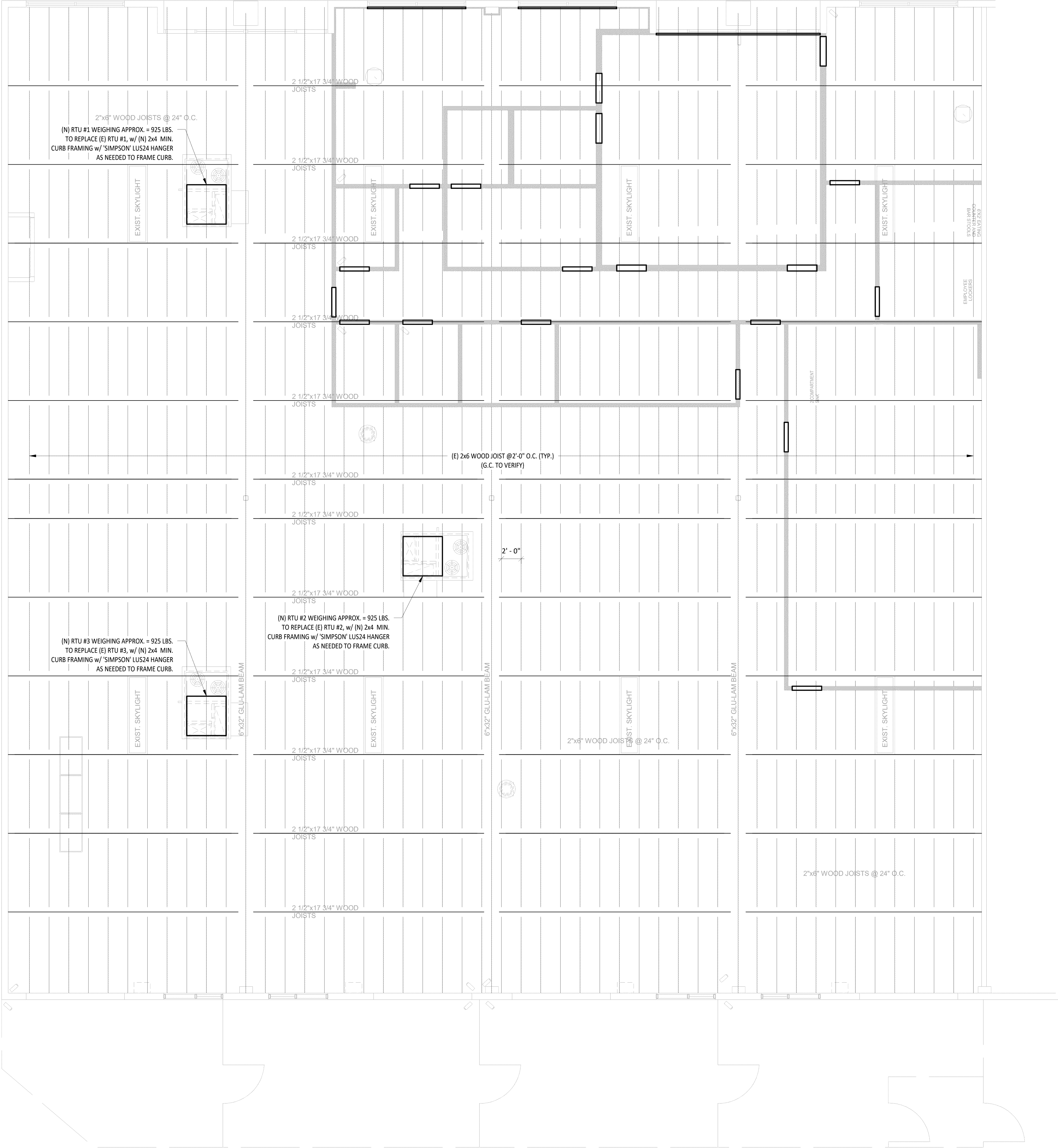
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WOW

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S1.0
GENERAL
STRUCTURAL
NOTES

CHEC



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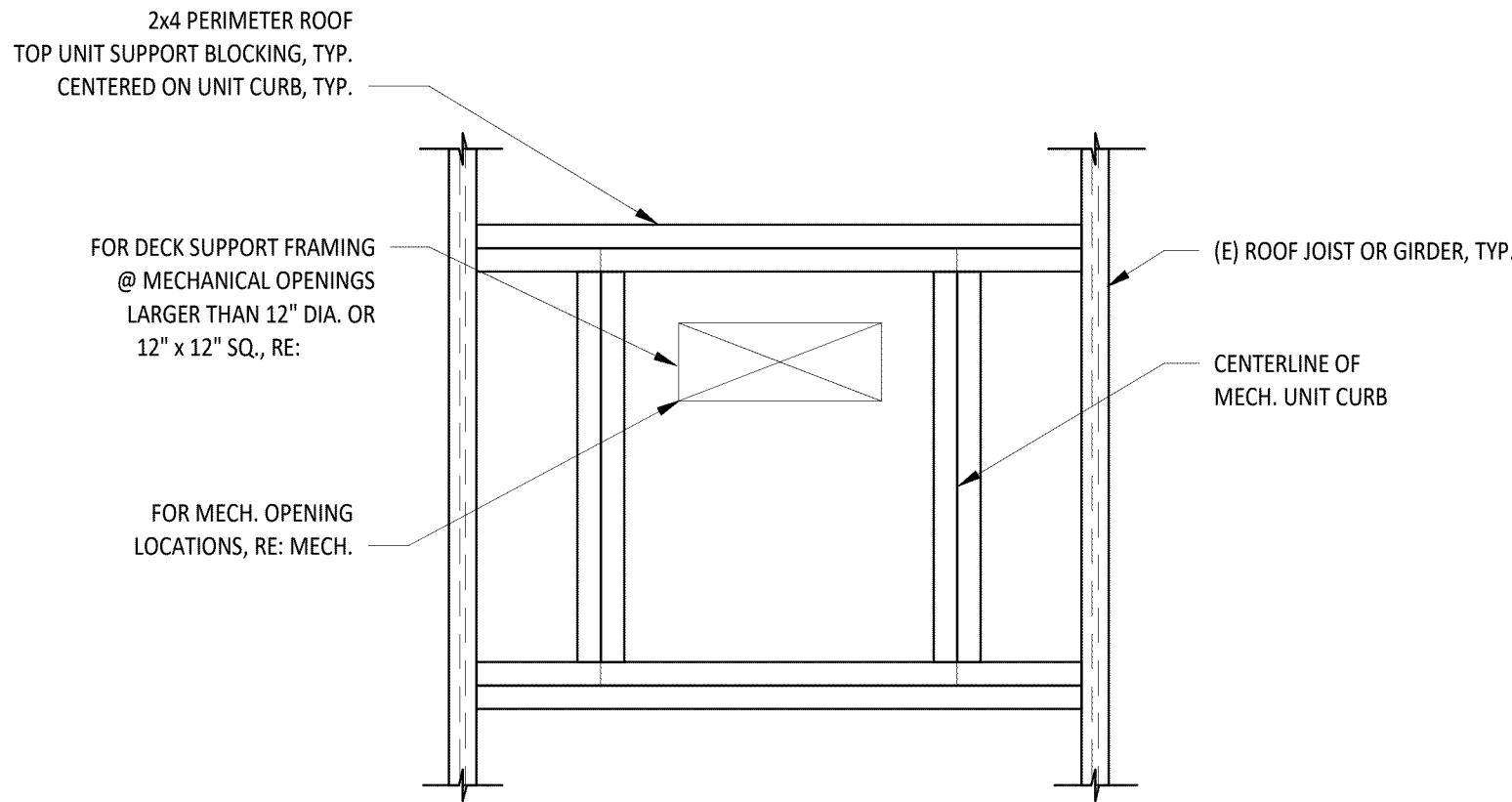
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S2.0
PARTIAL ROOF
FRAMING PLAN

CHEC



1 TYPICAL FRAMED ROOF OPENING
1" = 1'-0"

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DATE: 08-06-2019

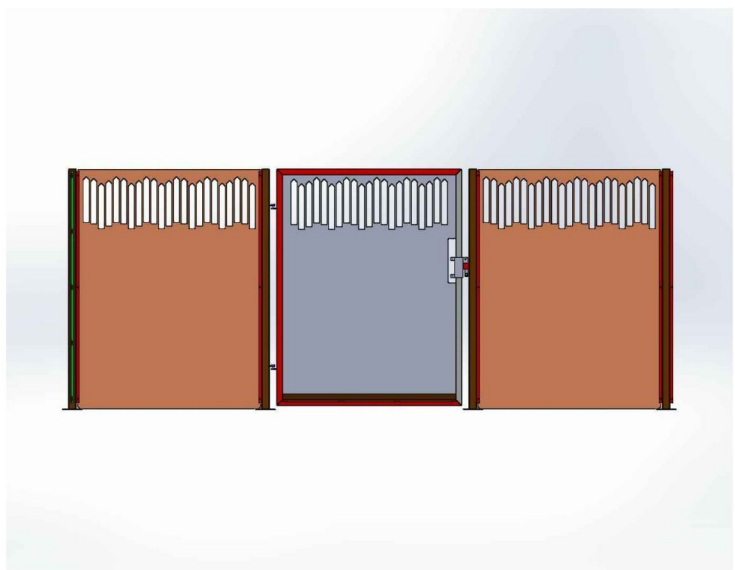
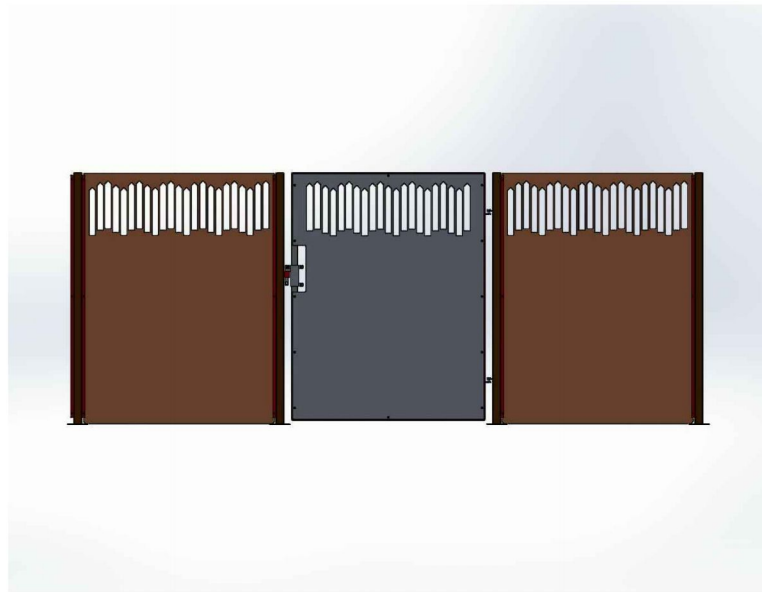
S3.0
STRUCTURAL
DETAILS

CHEC

FENCE



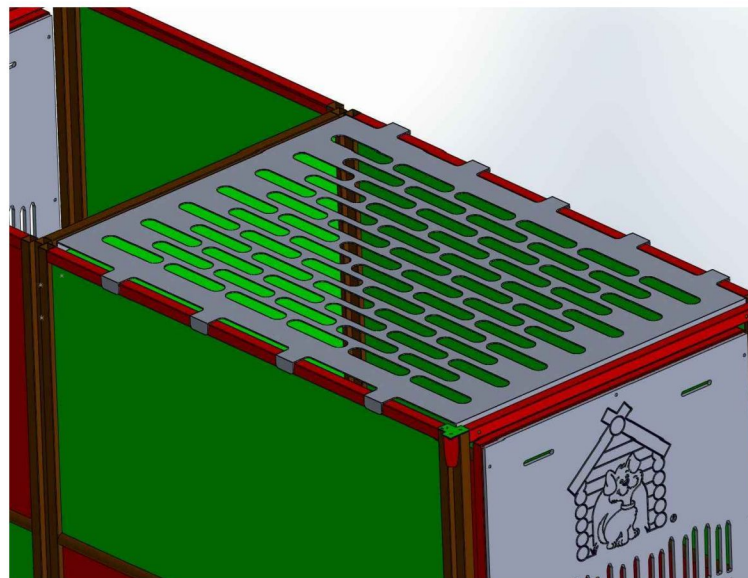
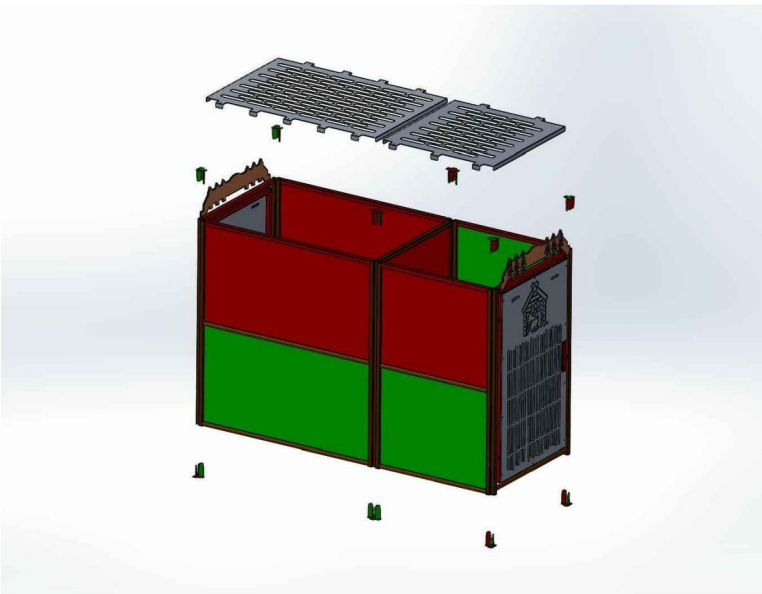
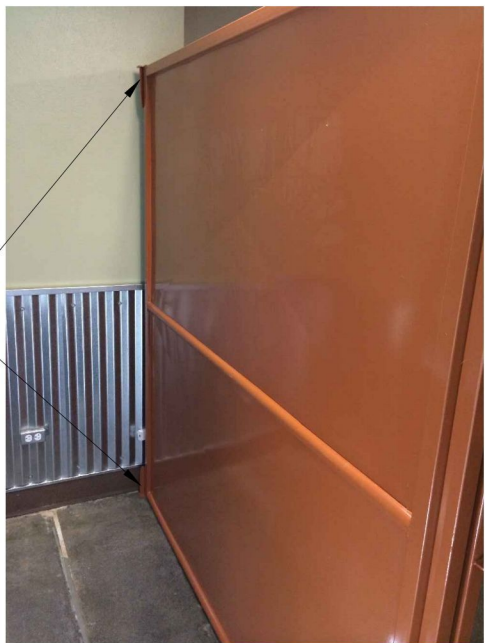
FENCE GATE
HINGE POST AND GATE COME AS ONE PIECE



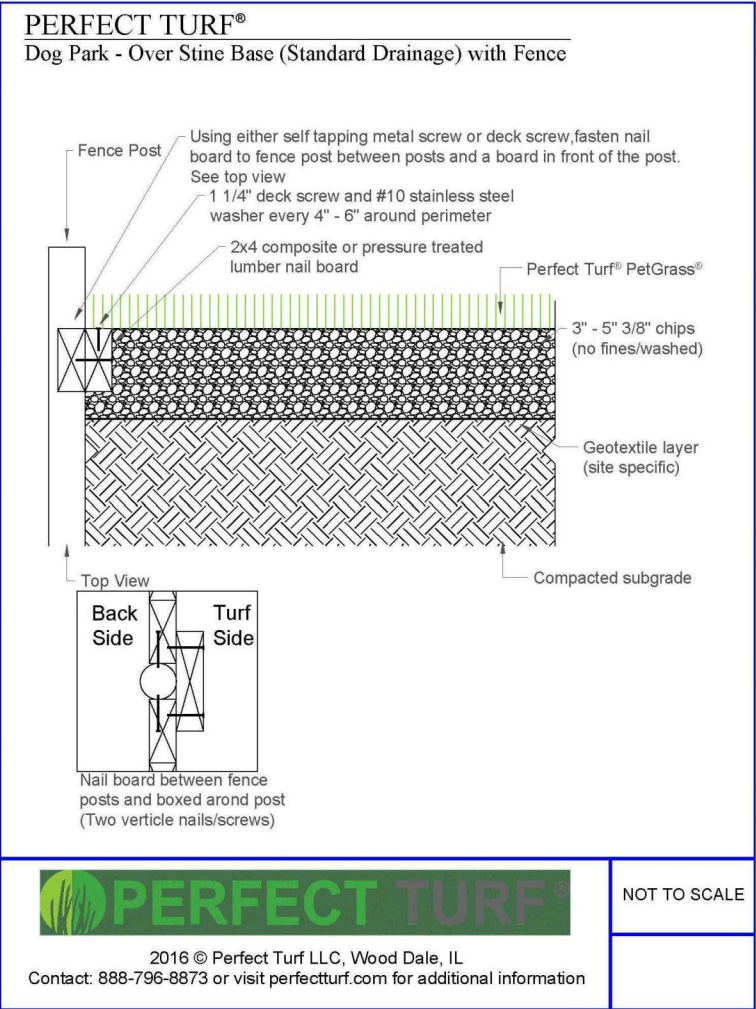
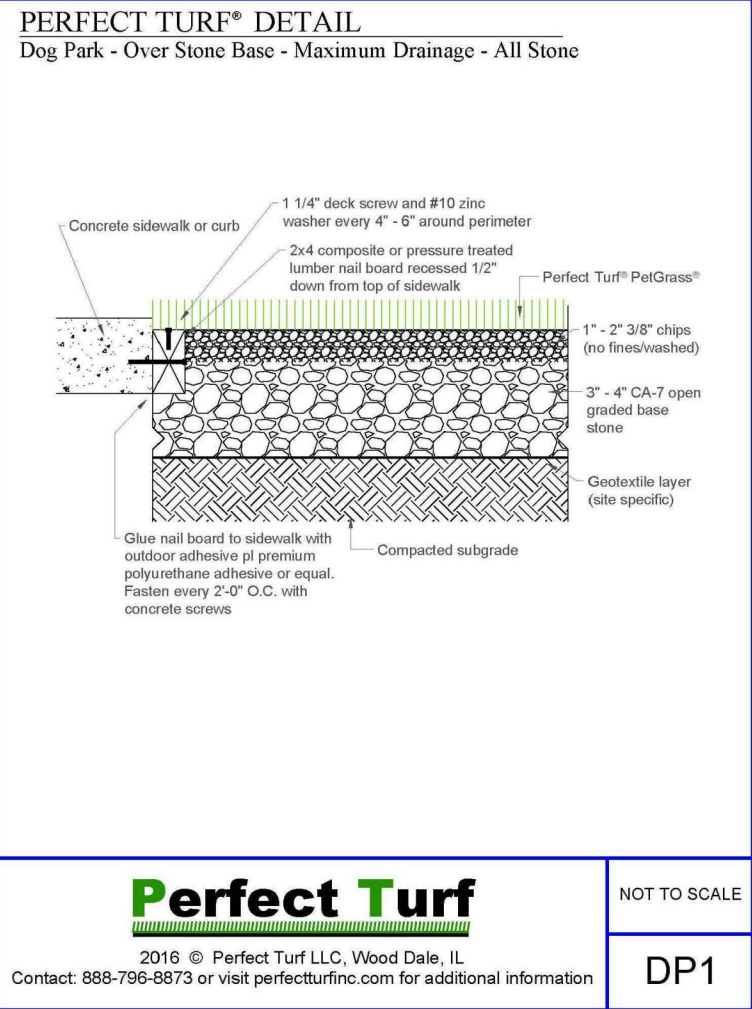
CABIN



3WAY OR 4WAY CLIP DOES
AT TOP AND BOTTOM OF
EACH CABIN CONNECTION
POINT

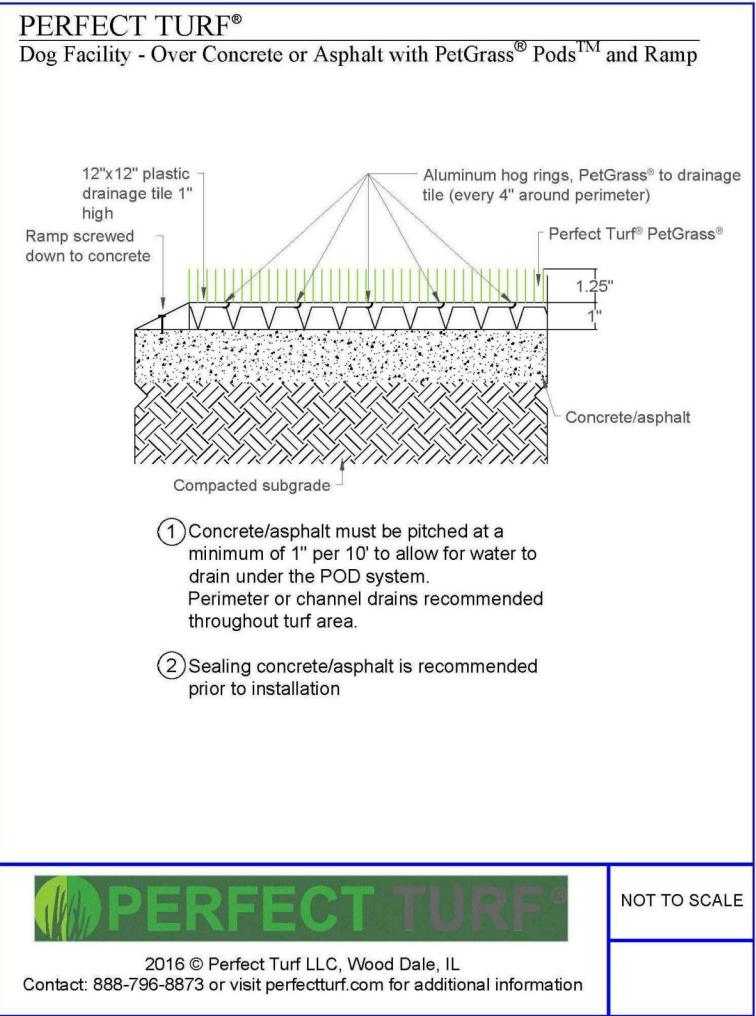
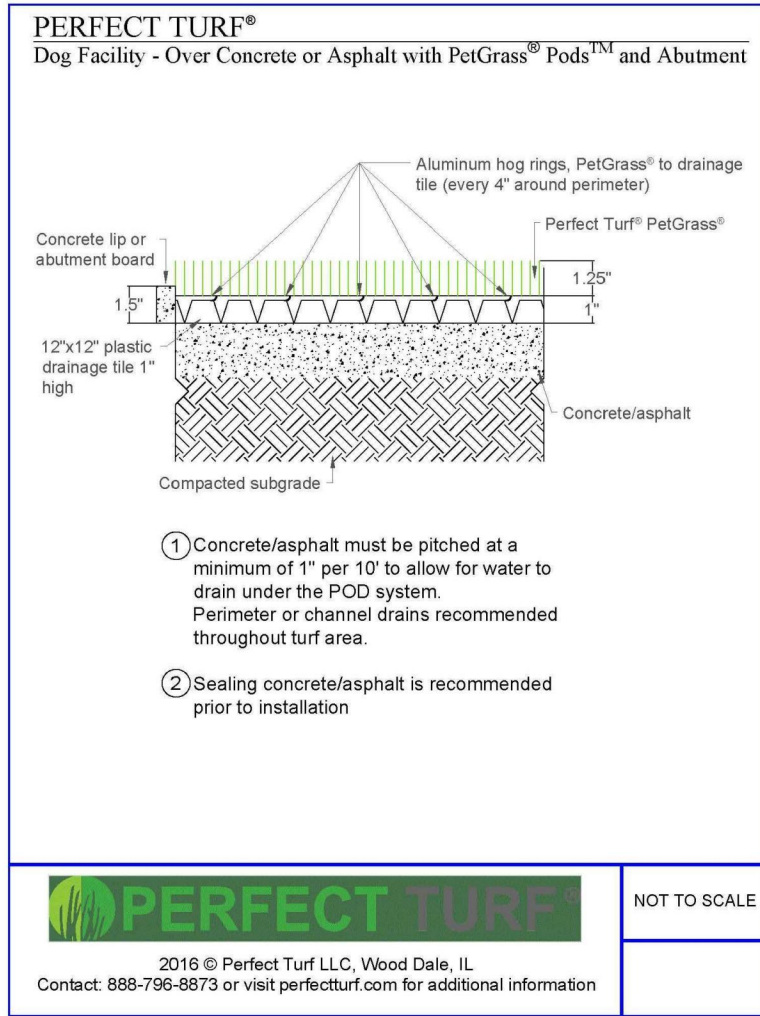


OWNER FURNISHED CONTRACTOR INSTALLED		
ITEM	DESCRIPTION	NOTES
GT	GROOMERS TUB	INCLUDES SHAMPOO MIXING DEVICE & WIRE RACK
DW	DISHWASHER	COMMERCIAL, 220v/240v 30amp; RESIDENTIAL, 120v 20 AMP
W	WASHING MACHINE	
R	REFRIGERATOR	
D	DRYER	COMMERCIAL, 220v/240v 30amp
DCIF	DOG CABINS/INTERIOR FENCE	REQUIRES FORKLIFT w. 8' FORKS TO UNLOAD
MB	MARKERBOARDS	
LH	LEASH HOLDERS	
LFM	LOG TRIM FRAME AROUND MIRRORS	IN ALL RESTROOMS OPEN TO THE PUBLIC
PTH	PAPER TOWEL HOLDER	IN ALL RESTROOMS OPEN TO THE PUBLIC
ESB	EMERGENCY SUPPLY BOX	
SBH	SPRAY BOTTLE HOLDER	
AF	ARTWORK AND FRAMES	
LF	LOG FURNITURE	
SM	SPARTAN SINGLE STATION SOAP MIXING UNIT @ MOP SINK FAUCET	
SS	SHADE SAILS	WILL NEED TO PROVIDE VINYL COVERED CABLE TO COMPLETE
RS	CLEAR REFRIGERATION STRIPS	8" WIDE x 1/2" THICK CLEAR STRIPS, 80% OVERLAP AT ALL PLAY YARD DOORS



OVER STONE BASE-(MAX. DRAINAGE)

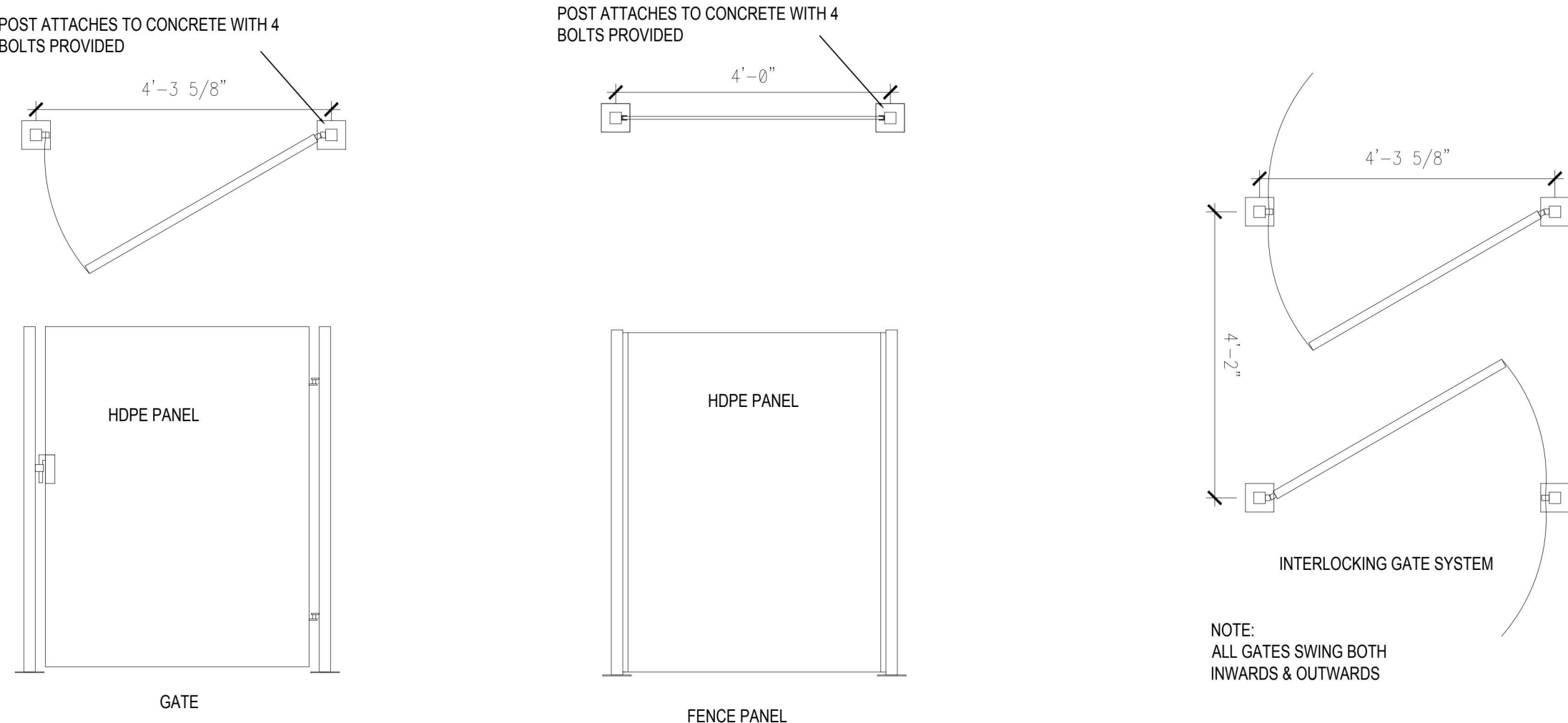
OVER STONE BASE-(STANDARD DRAINAGE)



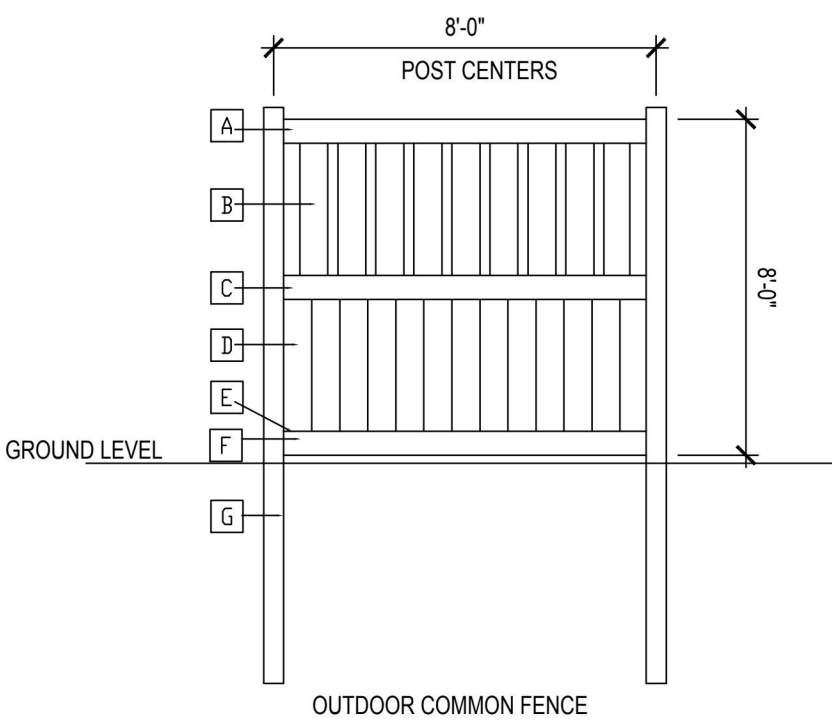
OVER CONCRETE OR ASPHALT-ABUTMENT

OVER CONCRETE OR ASPHALT-RAMP

3 TURF DETAILS



7 FEET HIGH / 8 FEET WIDE
INTERIOR FENCE
-COUNTRY ESTATES MANTAU
-COLOR: WHITE



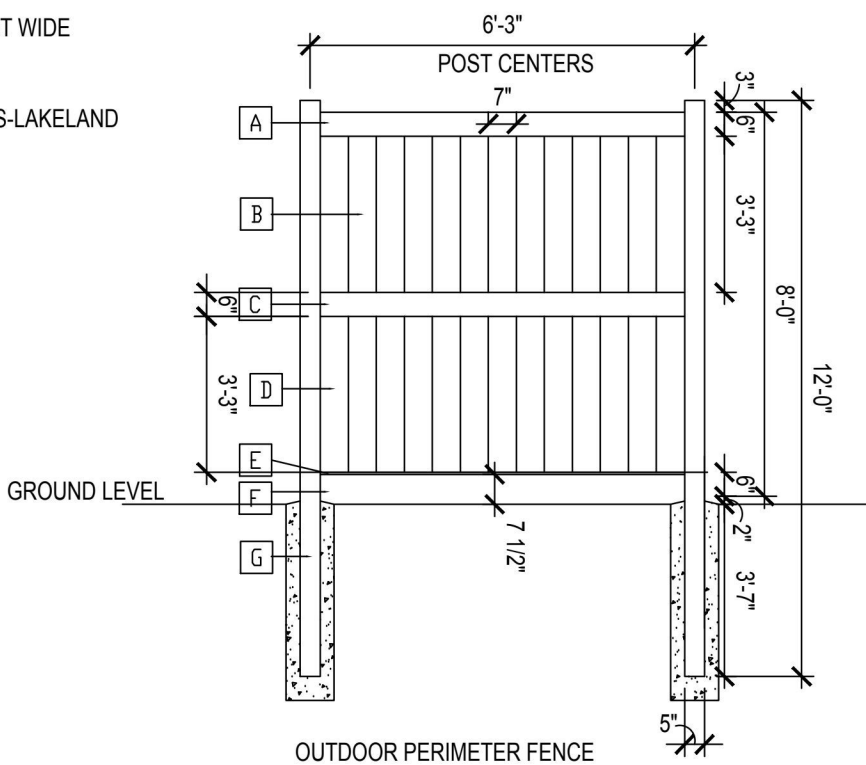
NOTE:
GAP BETWEEN BOTTOM OF FENCE PANEL & GRADE SHALL
NOT EXCEED 3". STEP FENCE PANELS AS REQUIRED TO
FOLLOW GRADE.

- A. TOP RAIL
- B. TOP PICKETS
- C. MIDDLE RAIL
- D. BOTTOM PICKETS
- E. BOTTOM RAIL
- F. KICK PLATE
- G. POST

NOTE:
SCREWS ADDED TO SECTIONS FOR SECURING
EVERY OTHER VERTICAL INTO THE RAILS AS IN 6" HVHZ
RATED STYLE

OBTAIN FENCE MATERIALS FROM COUNTRY ESTATES
CONTACT SID GERMAN AT:
P: (225) 324-7070
E: SG@CEFFENCE.COM

8 FEET HIGH / 6 FEET WIDE
PERIMETER FENCE
-COUNTRY ESTATES-LAKELAND
-COLOR: WHITE



NOTE:
REFER TO SPECIFICATIONS FOR MORE INFORMATION ON
FENCING

NOTE:
CONTRACTOR IS RESPONSIBLE FOR QUOTING AND
INSTALLING FENCE TO MEET OR EXCEED THE WIND
RATING REQUIREMENTS THE MANUFACTURER
RECOMMENDS WHERE THE INSTALLATION IS TO OCCUR.

SEAL:

THIS DOCUMENT IS NOT
FOR REGULATORY
APPROVAL, PERMITTING,
OR CONSTRUCTION.

FOR
INFORMATIONAL
PURPOSES
ONLY

8/15/2019 ISSUE FOR PERMIT
NO DATE REMARKS

REVISIONS

CAMP
BOW WOW

2900 SE CORNELIUS PASS RD.
SUITE 118
HILLSBORO, OR.

DATE: 8/16/2019

SP-1
SPECIFICATIONS

THE TERMS "GENERAL CONTRACTOR", "CONTRACTOR", OR "SUBCONTRACTOR" REFER TO THOSE ENGAGED TO PERFORM THE WORK.

25. THE TENANT'S ARCHITECT, WITHOUT INVALIDATING THE CONTRACT, MAY ORDER EXTRA WORK, ALTER, ADD TO, OR DEDUCT FROM THE CONTRACT WORK, IF THE INTENT IS TO ADHERE TO A PREVIOUSLY AGREED UPON DESIGN WITHOUT

- [illegible]

53. ALL THE FLOOR FINISHES WITHIN THE PREMISES, OR AT THE TRANSITION BETWEEN LANDLORD FLOOR FINISHES AND TENANT'S FLOOR FINISHES (AT ENTRY OR REAR DOOR, IF APPLICABLE) ARE TO BE SMOOTH AND LEVEL TO AVOID TRIPPING HAZARDS. WHERE THERE IS A CHANGE IN FLOOR FINISHES, A SMOOTH AND LEVEL TRANSITION IS REQUIRED. SUCH COVER IS TO BE LEVEL AND SMOOTH WITH TENANT'S FLOOR FINISH ELEVATION AND WILL NOT PROJECT ABOVE SUCH FLOOR FINISH ELEVATION. IF THE EXISTING SLABS ARE NOT LEVEL, THE GENERAL CONTRACTOR IS REQUIRED TO COMPLETE EXTENSIVE FLASH PATCHING THROUGHOUT TO OBTAIN A SMOOTH AND LEVEL CONCRETE SLAB.
54. SHOULD AN EXPANSION JOINT OCCUR IN THE LEASED PREMISES, GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION AFFECTED BY SUCH JOINT, INCLUDING FURNISHING AND INSTALLING A LEVEL, SLAB HEIGHT JOINT. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, CONSTRUCTION AND MAINTENANCE OF ALL SUCH EXPANSION JOINTS IN A MANNER CONSISTENT WITH ACCEPTABLE CONSTRUCTION DESIGN PRACTICES.

55. ANY SCAFFOLDING, SAFETY RAILINGS, BARRICADES AND / OR PROTECTION DEVICES REQUIRED FOR THE PROJECT WILL BE FURNISHED AND PAID FOR BY THE GENERAL CONTRACTOR AS PART OF THE BASE BID. PROTECTION OF WORK IN PLACE - WORK IN PLACE THAT IS SUBJECT TO INJURY BECAUSE OF OPERATIONS BEING CARRIED ON ADJACENT AREAS SHALL BE COVERED BY THE GENERAL CONTRACTOR. PROTECTION SHALL BE CONSTRUCTED IN A MANNER SUCH THAT, UPON COMPLETION, THE ENTIRE WORK WILL BE DELIVERED TO THE OWNER IN PROPER, WHOLE, AND UNMISLENT CONDITION. ALL SUCH WORK SHALL BE COORDINATED WITH THE TENANT'S REPRESENTATIVE. THE TENANT'S ARCHITECT IS NOT RESPONSIBLE FOR JOB SITE SAFETY OR EXISTING CONDITIONS AT THE JOB SITE. SINCE ALL WORK IS GENERAL CONTRACTOR FOR THE TENANT "TIE-OUT", THEIR REPRESENTATIVES WILL BE REQUIRED TO DO ALL SUPERVISION, OBSERVATIONS AND JOB SITE SAFETY.

56. THE STRUCTURAL SYSTEM OF THE BUILDING HAS BEEN DESIGNED TO CARRY A MAXIMUM LIVE LOAD AS SPECIFIED IN THE LANDLORD'S CRITERIA, AND THE LANDLORD'S OR TENANT'S GENERAL CONTRACTOR AND / OR THEIR SUBCONTRACTOR AND / OR ANY AND ALL MATERIAL SUPPLY HANDLERS NOT TO IMPOSE AN ADDITIONAL LOAD ON ANY OF THE TENANT'S WORK ON A TEMPORARY OR PERMANENT BASIS WHICH CAN EXCEED SUCH SPECIFIED LOAD.
- ANY ALTERATIONS, ADDITIONS, DRILLING, WELDING OR OTHER ATTACHMENT OR REINFORCEMENT TO LANDLORD'S STRUCTURE SHALL ACCORD WITH THE FOLLOWING CRITERIA: THE TENANT SHALL OBTAIN THE LANDLORD'S GENERAL CONTRACTOR OBTAINING LANDLORD'S PRIOR WRITTEN APPROVAL, AND THIS CONTRACTOR SHALL LEAVE LANDLORD'S STRUCTURE AS STRONG AS, OR STRONGER THAN, THE ORIGINAL DESIGN AND WITH FINISHES UNIMPAIRED. ONLY UTILIZE LANDLORD'S DESIGNATED ROOFING CONTRACTOR FOR ALL ROOF PENETRATIONS, FLASHING AND COUNTER FLASHING.

58. SPRINKLER SYSTEM DESIGN AND / OR LAYOUT MODIFICATION, (IF APPLICABLE) TO BE PROVIDED BY THE DESIGNATED SPRINKLER SUBCONTRACTOR AND ALL SUBMISSIONS TO THE FIRE MARSHALL AND BUILDING INSPECTOR FOR THE NECESSARY APPROVAL ARE THE RESPONSIBILITY OF THE SPRINKLER SUBCONTRACTOR. GENERAL CONTRACTOR TO VERIFY WITH THE LANDLORD OR LANDLORD'S CRITERIA IF SPRINKLER CONTRACTOR IS TO BE LANDLORD'S APPROVED OR DESIGNATED CONTRACTOR. SPRINKLER HEAD SPACING TO CONFORM WITH THE LATEST N.F.P.A. STANDARDS (PART 1) AND (PART 2) REQUIREMENTS. SPRINKLER HEAD BRANCH LINE, DROPS AND HEADS ARE THE RESPONSIBILITY OF THE SPRINKLER SUBCONTRACTOR AND THE DESIGN MUST BE SUBMITTED FOR LANDLORD AND REFLECTED CEILING PLANS. APPROVALS BY LANDLORD, LANDLORD'S INSURANCE UNDERWRITER AND THE BUILDING INSPECTOR AND FIRE MARSHALL WILL BE REQUIRED.

59. THE MECHANICAL SUBCONTRACTOR IS RESPONSIBLE FOR VISITING THE SITE PRIOR TO SUBMITTING A BID FOR THE PROJECT. THE MECHANICAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE FIRE DEPARTMENT'S SCOPE OF WORK, CONTRACTOR TO ENGINEER (UNLESS A FIRE ALARM DRAWING IS LIMITED TO A PART OF THESE CONSTRUCTION DOCUMENTS), FURNISH AND INSTALL ANY ALL REQUIRED FIRE ALARM, SMOKE EVACUATION, SMOKE DETECTOR SYSTEMS, SMOKE DETECTOR, SMOKE DETECTOR, SMOKE DETECTOR, SMOKE DETECTOR, SMOKE DETECTOR, SMOKE DETECTOR, LANDLORD REQUIREMENTS AND FIRE MARSHAL SPECIFICATION, WHETHER SUCH WORK IS OR IS NOT SHOWN IN THE CONSTRUCTION DOCUMENTS. IF A SMOKE EVACUATION AND / OR DETECTION SYSTEM OCCURS FOR THE PROJECT, THE MECHANICAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE SMOKE DETECTOR SYSTEMS TO BE COMPLETED DURING CONSTRUCTION PHASE TO POINT OF NEW PANELS. IF SMOKE DETECTORS ARE REQUIRED TO BE INSTALLED TO LANDLORD REQUIREMENTS, THE MECHANICAL SUBCONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH LANDLORD APPROVED AGENTS FOR PURCHASE AND INSTALLATION OF DETECTORS AT G.C. EXPENSE. G.C. AND THE FIRE DEPARTMENT SHALL BE RESPONSIBLE FOR THE LANDLORD'S CONNECTION TO THE LANDLORD'S FIRE ALARM JUNCTION BOX AND PERFORM WORK CONTRACTOR'S EXPENSE.

60. THE GENERAL CONTRACTOR WILL FURNISH AND INSTALL A COMPLETE MECHANICAL SYSTEM TO INCLUDE BUT NOT BE LIMITED TO MECHANICAL EQUIPMENT, INSTALLED AND MOUNTED WITH DISCONNECT AND WIRING, HANGERS AND DUNNAGE FOR SAME (INCLUDING THE HIRING OF A LOCAL STRUCTURAL ENGINEER TO DESIGN SUCH DUNNAGE HANGERS), DUCTWORK, COLLARS, DIFFUSERS, REGISTERS, CONTROLS, TIME CLOCKS, ETC., WHETHER OR NOT SUCH WORK IS OR IS NOT SHOWN OR Delineated IN THE CONTRACT DOCUMENTS. GENERAL CONTRACTOR'S MECHANICAL CONTRACTOR(S) ARE REQUIRED TO COORDINATE WITH ALL OTHER CONTRACTORS ON JOB TO MAINTAIN TENANT'S CEILING HEIGHT, LIGHT FIXTURE LOCATION, SPRINKLER BRANCH LINES, ETC.

61. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING ALL TOILET ACCESSORIES, AS WELL AS THE NEW TOILET ROOM(S), DRINKING FOUNTAIN AND SERVICE SINK IF APPLICABLE, IN THESE PREMISES UNLESS OTHERWISE NOTED ON THE EXISTING CONDITIONS SHEET. THE TOILET ACCESSORIES TO BE INSTALLED SHALL COMPLY WITH THE LATEST A.D.A. / C.B.I. / ANSI REGULATIONS AS REQUIRED BY LOCAL BUILDING AGENCIES AND PLUMBING CODES. THE GENERAL CONTRACTOR TO FURNISH AND INSTALL NEW TOILET EXHAUST WITH ASSOCIATED DUCTWORK, ROOF PENETRATIONS, EXHAUST FAN, EXHAUST DUCTWORK, EXHAUST FAN ELECTRICAL, HOOD/UPK AND PANEL CONNECTIONS, OR REFURBISH EXISTING LIGHT EXHAUST FAN UNIT(S) TO LIKE NEW CONDITION. (WHERE NOTED ON THE PLANS), WHETHER SUCH WORK IS SHOWN OR NOT SHOWN IN THE CONSTRUCTION DOCUMENTS, THE TOILET ACCESSORIES TO BE FURNISHED AND INSTALLED BY THE GENERAL CONTRACTOR, BUT WITH THE EXCEPTIONS AND MOUNTING HEIGHTS HANDICAPPED ACCESSIBLE, UTILIZING ABOVE SPECIFICATIONS ON A.S.T. GUIDELINE.

62. THE GENERAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL SUBCONTRACTOR TO ENGINEER AND INSTALL ALL NECESSARY MISC. STRUCTURAL STEEL SHAPES, SHAPES TO BE INSTALLED WHERE DIRECTED BY THE LANDLORD'S REPRESENTATIVE FOR ADDITIONAL MECHANICAL UNIT ROOF TOP SUPPORT AND THE SUPPORT OF INTERIOR MECHANICAL EQUIPMENT, DUCTWORK, COLLARS, DIFFUSERS, REGISTERS, EXHAUSTS, FANS, ETC.
63. ALL GYPSUM BOARD TO BE 5/8" THICK, FIRE CODE "X" BOTH SIDES (WATER RESISTANT IN TOILET ROOMS) AND ALL METAL STUDS TO BE 3 1/2" METAL STUDS - MINIMUM GAUGE AS PER CODE AT 16" O.C. TO UNDERSIDE OF DECK.

- ABOVE, UNLESS OTHERWISE NOTED. DEMISING WALL FIRE RATING TO BE CONFIRMED BY GENERAL CONTRACTOR RESPONDING TO LANDLORD AND CODE REQUIREMENTS. SEE CONTRACT DOCUMENTS FOR WALL INDICATIONS, ALL PENETRATIONS FOR SUPPLY OR RETURN AIR, ETC., TO HAVE PROPERLY INSTALLED FIRE DAMPERS MEETING THE LATEST FIRE DEPARTMENT REQUIREMENTS, BASED ON SPECIFIC LOCATION OF TENANT'S SPACE IN BUILDING. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR OBTAINING APPROVAL FROM THE BUILDING AND ELECTRICAL INSPECTORS FOR ALL CONCEALED WORK PRIOR TO CLOSING UP WALLS, FLOORS, CEILINGS.

- BE FIRE RESISTANT AND NONCOMBUSTIBLE AS SPECIFIED BY LOCAL CODES.

65. ALL METAL FRAMING, GYPSUM BOARD, PARTITIONS, SOFFITS AND FACADES BY THE GENERAL CONTRACTOR, UNLESS OTHERWISE NOTED.

66. ALL GYPSUM BOARD TO BE FIRE TAPED AND SPACKLED THREE (3) COATS, SANDED AND READY TO RECEIVE PAINT OR WALL COVERING. ALL EXISTING GYPSUM BOARD TO BE REPAIRED TO "LIKE NEW" CONDITION. UNLESS OTHERWISE NOTED.

67. ALL DOORS, METAL BUCKS, TRIMMED OPENINGS AND HARDWARE, INCLUDING LOCKS, TO BE PROVIDED BY THE GENERAL CONTRACTOR UNLESS OTHERWISE NOTED.

68. ALL SWITCH / OUTLET PLATES / COVERS TO BE FINISHED IN SAME COLOR / WALL COVERING AS ADJACENT WALL FINISHES, UNLESS NOTED OTHERWISE. FACTORY PAINTED GRILLES, DIFFUSERS, METAL TRIM (BUCKS, ETC.),

- ACCESSORIES, SWITCH AND OUTLET PLATES, ETC., ARE TO BE PAINTED TO MATCH ADJACENT SURFACE IN AN ENAMEL, CLEANABLE FINISH, OR AS SPECIFIED ON THE CONTRACT DOCUMENTS.

69. THE GENERAL CONTRACTOR IS RESPONSIBLE TO CUT AND FRAME ALL OPENINGS FOR OTHER TRADES, SUCH AS MECHANICAL, SPRINKLER, PLUMBING, ELECTRICAL, FIXTURE CONTRACTOR, THROUGH PARTITIONS AND STRUCTURAL WALLS. ALL PENETRATIONS THROUGH RATED WALLS, WITH DUCTS OR PIPING, TO BE FILLED AT OPENING WITH "FIRESTOPPING" MATERIALS TO MAINTAIN THE INTEGRITY OF THE SPECIFIED RATING OF THE WALL.

70. GENERAL CONTRACTOR AND ALL SUBCONTRACTORS ARE REQUIRED TO FURNISH THE FOLLOWING MINIMUM COVERAGE AND LIMITS OF LIABILITY. IF TENANT'S REQUIREMENTS ARE MORE STRINGENT, GENERAL CONTRACTOR IS REQUIRED TO ADHERE TO THE MOST STRINGENT REQUIREMENTS.

- A. WORKMAN'S COMPENSATION, AS REQUIRED BY STATE LAW, AND INCLUDING EMPLOYER'S LIABILITY INSURANCE WITH A LIMIT OF NOT LESS THAN \$2,000,000 AND ANY INSURANCE REQUIRED BY ANY EMPLOYEE BENEFITS ACTS OR OTHER STATUTES APPLICABLE WHERE THE WORK IS TO BE PERFORMED AS WILL PROTECT THE CONTRACTOR AND SUBCONTRACTORS FROM ANY AND ALL LIABILITY UNDER THE AFOREMENTIONED ACTS.

- B. COMPREHENSIVE GENERAL LIABILITY INSURANCE (INCLUDING CONTRACTOR'S PROTECTIVE LIABILITY) IN AN AMOUNT NOT LESS THAN \$2,000,000 FOR ANY ONE OCCURRENCE WHETHER INVOLVING BODILY INJURY LIABILITY (OR

- LIMIT OF \$3,000,000. SUCH INSURANCE SHALL PROVIDE FOR EXPLOSION, COLLAPSE AND UNDERGROUND COVERAGE. SUCH INSURANCE SHALL INSURE THE TENANT, THE LANDLORD AND THE GENERAL CONTRACTOR AGAINST ANY AND ALL CLAIMS FOR BODILY INJURY, INCLUDING DEATH RESULTING THEREFROM AND DAMAGE TO OR DESTRUCTION OF PROPERTY OF ANY KIND WHATSOEVER AND TO WHOMEVER BELONGING AND ARISING FROM IT'S OPERATIONS UNDER THE CONTRACT AND WHETHER SUCH OPERATIONS ARE PERFORMED BY THE TENANT, GENERAL CONTRACTOR OR ANY OF THEIR SUBCONTRACTORS, OR BY ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY ANY OF THEM.

- THE GIVING OF OR FAILURE TO GIVE DIRECTIONS BY THE ARCHITECT / ENGINEER, ITS CONSULTANTS, AND THE AGENTS AND EMPLOYEES OF ANY OF THEM, PROVIDED SUCH GIVING OR FAILURE TO GIVE IS THE PRIMARY CAUSE OF THE LOSS, SHALL NOT BE CONSIDERED A BREACH OF CONTRACT OR A VIOLATION OF ANY STANDARD ON THE CONTRACTOR'S POLICY OR POLICIES OF COMPREHENSIVE OR COMMERCIAL GENERAL LIABILITY INSURANCE, SUCH INSURANCE SHALL INCLUDE PRODUCTS AND COMPLETED OPERATIONS AND CONTRACTUAL LIABILITY COVERAGE. THE CONTRACTOR SHALL MAINTAIN SUCH INSURANCE THROUGHOUT THE TERM OF ANY CONTRACT WITH THE ARCHITECT / ENGINEER AND CONSULTANTS, AND SHALL PROVIDE THAT THE ARCHITECT / ENGINEER BE GIVEN THIRTY DAYS, UNQUALIFIED WRITTEN NOTICE PRIOR TO ANY CANCELLATION THEREOF, IF THE FOREGOING REQUIREMENTS ARE NOT MET. THE CONTRACTOR SHALL MAINTAIN SUCH INSURANCE THROUGHOUT THE TERM OF ANY CONTRACT WITH THE ARCHITECT / ENGINEER, ITS CONSULTANTS, EMPLOYEES, AGENTS AND ALL OTHER STATE INSURERS. THE CONTRACTOR SHALL MAINTAIN SUCH INSURANCE THROUGHOUT THE TERM OF ANY CONTRACT WITH THE ARCHITECT / ENGINEER, ITS CONSULTANTS, EMPLOYEES, AGENTS AND ALL OTHER STATE INSURERS. THE CONTRACTOR, BUT NOT THE ARCHITECT / ENGINEER, SHALL BE RESPONSIBLE FOR THE PAYMENT OF ALL LOSSES WHICH WOULD HAVE BEEN INDEMNIFIED AND INSURED AGAINST BY THE CONTRACTOR, BUT WERE NOT.

71. IF A REAR EXIT DOOR EXISTS THEN THE GENERAL CONTRACTOR IS REQUIRED TO FURNISH AND INSTALL AN APPROVED AUDIBLE TYPE PANIC BAR ASSEMBLY FOR REAR EXIT DOOR(S), PAINT OUTSIDE OF DOOR AS PER LANDLORD'S REQUIREMENTS (UNLESS WORK IS PREVIOUSLY COMPLETED BY LANDLORD) AND GENERAL CONTRACTOR WILL PLACE TENANT'S NAME IN TYPE, SIZE AND LOCATION ON OUTSIDE OF DOOR AS PER LANDLORD'S TYPICAL DESIGN REQUIREMENTS. IF DOOR IS IN NEED OF REPAIR OR REPLACEMENT, GENERAL CONTRACTOR TO COMPLETE SUCH WORK, AND INCLUDE COSTS IN BID TO TENANT.

72. ALL PAYMENTS MADE TO THE GENERAL CONTRACTOR FOR THIS PROJECT ARE TO BE ALLOCATED FOR THIS PROJECT ONLY, FOR PAYMENTS TO SUBCONTRACTORS, MATERIAL SUPPLIERS AND AGENTS AUTHORIZED BY THE SPECIFIC CONTRACTOR TO PERFORM WORK OR SUPPLY MATERIALS TO THIS PROJECT ONLY. PAYMENTS TO GENERAL CONTRACTOR BY TENANT, UNLESS CONTRACT STATES OTHERWISE, THE GENERAL CONTRACTOR MUST PURCHASE ALL MATERIALS FROM SPECIFIED VENDORS, AND MUST DOCUMENT ALL PURCHASES FOR WHICH A PAYMENT BY TENANT IS MADE.

73. THE GENERAL CONTRACTOR IS REQUIRED TO SUBMIT PARTIAL WAIVERS OF LIENS FOR ITS WORK AS WELL AS SUBCONTRACTORS OR MATERIAL SUPPLIERS, UPON THE REQUEST OF THE TENANT OR THE TENANT'S ARCHITECT AND THE REQUEST FOR THE FINAL 10% RETENTION ON THIS PROJECT MUST INCLUDE SIGNED AND EXECUTED WAIVERS OF LIEN INDICATING 100% COMPLETION AND 100% PAYMENT IN FULL (WITH FULL WARRANTY) BY ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS, INCLUDING COMPLETION OF ALL PUNCHLIST ITEMS.

74. ALL WORK THAT NEEDS TO BE COMPLETED BY THE GENERAL CONTRACTOR BELOW OR ABOVE THE PREMISES MAY HAVE TO BE DONE IN OTHER TENANT'S DEMISED PREMISES AND SUCH WORK NEEDS TO BE DONE IN COORDINATION WITH THE TENANTS BELOW, OR ABOVE, INCLUDING ANY OVERTIME WORK OR PAYMENT FOR SECURITY THAT MAY BE NECESSARY. THE COST FOR THIS WORK, INCLUDING OVERTIME, MUST BE INCORPORATED IN THE BASE BID TO THE TENANT. THE GENERAL CONTRACTOR TO INCLUDE IN ITS BASE BID, ALL COSTS IN COMPLETING BELOW SLAB WASTE PIPING, OVERHEAD DOMESTIC WATER LINES, VENT LOOPS OR PENETRATIONS THROUGH ROOF AS WELL AS ALL SECURITY COSTS, REPAIRS TO WALLS, CLEANING, FLOORS IN TENANT'S SPACE, LANDLORD'S SPACE OR ADJOINING TENANT'S SPACES.

75. THE CONSTRUCTION DRAWINGS LISTED IN THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED BASED ON THE BEST INFORMATION AVAILABLE TO TENANT DURING PREPARATION OF THE CONTRACT DOCUMENTS. IN THE EVENT THAT PROBLEMS ARISE DURING THE COURSE OF THE PROJECT, DUE TO UNKNOWN SITE CONDITIONS OR CODE AND LANDLORD REQUIREMENTS (IF ANY) THAT CONFLICT WITH THE CONTRACT DOCUMENTS, THE GENERAL CONTRACTOR SHALL INFORM THE TENANT'S ARCHITECT IMMEDIATELY. ANY CHANGES THAT WILL BE REQUIRED, WILL BE DELINEATED BY TENANT ARCHITECT.

76. THE GENERAL CONTRACTOR IS REQUIRED TO ADHERE TO ALL NEW REQUIREMENTS, WHETHER STATED OR NOT ON THESE CONTRACT DOCUMENTS. FOR THE LATEST A.D.A. LAW EFFECTIVE JANUARY 26, 1992. THIS LAW IS A CIVIL RIGHTS LAW AND THE EXCLUSION OF REQUIREMENTS BY THE LOCAL CODE OFFICIALS DOES NOT RELIEVE THE TENANT OR THE GENERAL CONTRACTOR OF ADHERING TO THE NECESSARY WORK, EITHER DURING CONSTRUCTION OR AFTER OCCUPANCY.

77. QUALITY STANDARDS: ALL SUCH WORK SHALL BE PERFORMED IN A FIRST-CLASS WORKMANLIKE MANNER AND SHALL BE IN GOOD AND USABLE CONDITION AT THE DATE OF COMPLETION THEREOF. GENERAL CONTRACTOR SHALL REQUIRE ALL PERSONS PERFORMING ANY WORK TO BE QUALIFIED AND CAPABLE OF PERFORMING SUCH WORK. ALL DEFECTS IN WORKMANSHIP AND MATERIALS FOR ONE (1) YEAR FROM THE DATE OF ISSUANCE OF THE CERTIFICATE OF OCCUPANCY. TENANT SHALL ALSO REQUIRE ANY SUCH PERSON TO BE RESPONSIBLE FOR THE REPLACEMENT OR REPAIR OF ANY SUCH DEFECTS. GENERAL CONTRACTOR SHALL REQUIRE ANY SUCH PERSON, WHOSE WORK SHALL BECOME DEFECTIVE WITHIN ONE (1) YEAR AFTER COMPLETION OF THE WORK, THE CORRECTION OF SUCH WORK SHALL INCLUDE, WITHOUT ADDITIONAL CHARGE, THE COSTS OF REPAIRS AND REPLACEMENTS WITH SUCH REMOVAL, REPLACEMENT AND REPAIR OF ANY PART OF THE WORK WHICH MAY BE DAMAGED OR DISTURBED BY ANY, ALL WARRANTIES OR GUARANTEES AS TO MATERIALS OR WORKMANSHIP ON OR WITH RESPECT TO TENANT'S WORK. GENERAL CONTRACTOR SHALL REQUIRE ANY SUCH PERSON TO BE RESPONSIBLE FOR THE REPLACEMENT OR REPAIR OF ANY SUCH DEFECTS. LANDLORD AND TENANT, AS THEIR RESPECTIVE INTERESTS APPEAR AND CAN BE DIRECTLY ENFORCED BY EITHER. GENERAL CONTRACTOR TO HAVE THIS CLAUSE IN EVERY SUBCONTRACTOR AGREEMENT FOR THE PROJECT AND IF SUCH CLAUSE IS NOT INCLUDED, IT WILL NOT RELIEVE THE GENERAL CONTRACTOR OF ANY REQUIREMENTS OR WORK STATED HEREIN.

78. TENANT'S WORK SHALL BE COORDINATED WITH THAT OF LANDLORD AND OTHER TENANTS IN THE BUILDING TO SUCH EXTENT THAT TENANT'S WORK WILL NOT INTERFERE WITH OR DELAY COMPLETION OF OTHER CONSTRUCTION WORK IN THE BUILDING.

79. CONTRACTOR IS TO VERIFY THAT THIS SPACE IS ASBESTOS FREE. NO ASBESTOS WORK IS TO BE COMPLETED BY THIS CONTRACTOR UNLESS SPECIFICALLY NOTED IN THESE CONTRACT DOCUMENTS. IF ASBESTOS IS UNCOVERED, NOTIFY THE TENANT'S REPRESENTATIVE IMMEDIATELY AND STOP ALL WORK. LANDLORD IS RESPONSIBLE FOR ALL ASBESTOS TESTING, FILING AND REMOVAL.

80. THE GENERAL CONTRACTOR, AT THE POINT OF "SUBSTANTIAL COMPLETION" AND "TURNOVER" OF PREMISES TO TENANT, MUST COMPLETE, AT GENERAL CONTRACTOR'S COST AND EXPENSE (FINAL PAYMENT CANNOT BE REQUESTED TO TENANT BY THIS GENERAL CONTRACTOR UNLESS ALL OF THIS WORK NOTED IS COMPLETED):

- A) FINAL INSPECTIONS BY ALL BODIES HAVING JURISDICTION NECESSARY FOR FINAL COMPLETION, CERTIFICATE OF OCCUPANCY OR COMPLETION, WHICHEVER IS APPLICABLE.

- B) THE GENERAL CONTRACTOR TO FINALIZE ALL APPLICABLE LANDLORD AND TENANT PUNCH LISTS AND / OR REQUIREMENTS, PAY ALL APPLICABLE LANDLORD AND / OR TENANT CHARGES ALLOCATED TO THE SATISFACTION OF BOTH THE LANDLORD AND THE TENANT.

- C) FINALIZE CHANGES ON PLANS AND SPECIFICATIONS AND MARK ALL APPROVED LANDLORD, BUILDING DEPARTMENT, FIRE MARSHALL AND TENANT CHANGES ON A SET OF PRINTS FOR BOTH TENANT AND TENANT'S ARCHITECT AND FORWARD SUCH INFORMATION TO BOTH PARTIES VIA OVER NIGHT DELIVERY. MARKS SHALL BE COMPLETED USING A CLOUD PROCEDURE WITH A RED FELT TIP PEN TO EASILY DISTINGUISH CHANGES FROM ORIGINAL WORK.

- D) PREPARE A WRITTEN OPERATING PROCEDURE FOR STORE MANAGEMENT FOR MECHANICAL EQUIPMENT AND CHANGE FILTERS FOR EQUIPMENT, ON DAY OF TURNOVER, IF APPLICABLE.

- E) PAY IN FULL ALL MATERIAL SUPPLIERS AND FIXTURE CONTRACTORS THAT TENANT PREVIOUSLY SELECTED OR WHO MAY BE SPECIFIED ON THESE CONTRACT DOCUMENTS WITH REQUESTS FOR WARRANTIES GATHERED, FOR TURNOVER TO TENANT FOR RECORD PURPOSES.

- F) TURN OVER ALL KEYS TO STORE MANAGEMENT.

81. GUARANTEES FOR ALL WORK BY SUBCONTRACTORS SHALL BE FOR A PERIOD OF ONE YEAR, FROM THE DATE OF COMPLETION OF THE WORK UNLESS OTHERWISE NOTED. AT THE TIME OF FINAL SUBMITTAL FOR ALL COSTS BY THE GENERAL CONTRACTOR TO THE LANDLORD, INCLUDING BASE BID, EXTRAS AND CREDITS, THE GENERAL CONTRACTOR'S

- SUBCONTRACTORS SHALL FURNISH TO THE TENANT A WRITTEN GUARANTEE, SAYING: "I, THE SUBCONTRACTOR, HAVE COMPLETED THE WORK DESCRIBED IN THE ATTACHED CONTRACT. I GUARANTEE THE WORK FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF WORK, UNLESS OTHERWISE NOTED. IF SUCH WORK AFFECTS TENANT'S OTHER WORK, TENANT'S OTHER WORK IS TO BE COMPLETED BY THE SUBCONTRACTOR AT NO COST TO THE LANDLORD OR TENANT."

82. UPON COMPLETION OF WORK, THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS ARE TO OBTAIN A CERTIFICATE OF COMPLETION AND APPROVAL FROM THE BUILDING DEPARTMENT, OR OTHER AUTHORITIES HAVING JURISDICTION, AND SUBMIT SAME TO THE TENANT'S ARCHITECT. FINAL PAYMENT WILL NOT BE ISSUED BY THE TENANT PRIOR TO RECEIPT OF SUCH CERTIFICATES.

83. UPON COMPLETION OF ALL CONSTRUCTION AND PRIOR TO TURNOVER OF THE SPACE, THE GENERAL CONTRACTOR IS RESPONSIBLE FOR HAVING THE SPACE CLEANED. ANY CLEANING WHICH IS NOT DONE AT THE TIME OF TURNOVER AND NEEDS TO BE DONE BY THE TENANT, WILL BE BACK CHARGED TO THE GENERAL CONTRACTOR.

**THIS DOCUMENT IS NOT
FOR REGULATORY
APPROVAL, PERMITTING,
OR CONSTRUCTION.**

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SPECIFICATIONS