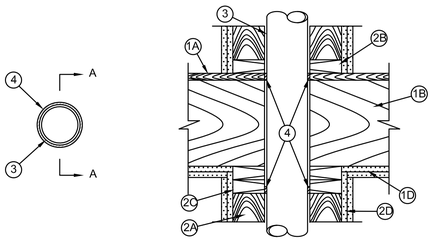
System No. F-C-1009

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 and 2 Hr (See Item 1)	F Rating — 1 and 2 Hr (See Item 1)
T Rating — 1/4 Hr	FT Rating — 1/4 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 1 and 2 Hr (See Item 1)
L Rating At 400 F — 4 CFM/sq ft	FTH Rating — 1/4 Hr
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — 4 CFM/sq ft



SECTION A-A

1. Floor-Ceiling Assembly — The 1 or 2 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The F Rating of the firestop system is equal to the rating of the floor-ceiling assembly. The general construction features of the floor-ceiling assembly are summarized below:
   A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the Individual Floor-Ceiling Design. Diam of opening to be max 1 in. (25 mm) larger than diam of pipe. As an alternate, the opening may be square-cut with a max dimension 1 in. (25 mm) greater than the diam of the pipe.
   B. Wood Joists* — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   C. Furring Channels — (Not Shown) —(As required) Resilient galvanized steel furring installed in accordance with the manner specified in the individual L500 Series Designs in the Fire Resistance Directory.
   D. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in the individual Floor-Ceiling Design. Diam of opening to be max 1 in. (25 mm) larger than diam of pipe.
2. Chase Wall — (Optional) - The through penetrant (Item 3) may be routed through a 1 or 2 hr fire-rated single, double or staggered wood stud/gypsum board chase wall having a fire rating consistent with that of the floor-ceiling assembly. Depth of chase wall to be min 1 In. greater than the diameter of the through penetrant. The chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Nom 2 by 4 in. (51 by 102 mm). 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs. Nom 2 by 4 in. (51 by 102 mm) studs are allowed for through-penetrants (Item 3) not exceeding nom 2 in. (51 mm) diam.
   B. Sole Plate — Nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Diam of opening is to be max 1 in. (925 mm) larger than diam of pipe. As an alternate, the opening may be square-cut with a max dimension 1 in. (25 mm) greater than the diam of the pipe, Plates may be discontinuous over opening, terminating at two opposing edges of opening, Max length of discontinuity to be 1 in. (25 mm) greater than diam of through penetrant.
   C. Top Plate — The double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm), 2 by 6 in. (51 by 152 mm) or two sets of parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Diam of opening is to be max 1 in. (25 mm) larger than diam of pipe. As an alternate, the opening may be square-cut with a max dimension 1 In. (25 mm) greater than the diam of the pipe. Plates may be discontinuous over opening, terminating at two opposing edges of opening. Max length of discontinuity to be 1 in. (25 mm) greater than diam of through penetrant.
   D. Steel Plate — When lumber plates are discontinuous, nom 1-1/2 in. (38 mm) wide No. 20 gauge (or heavier) galv steel plates shall be installed to connect each discontinuous lumber plate and to provide a form for the fill material. Steel plates sized to lap 2 in, (51 mm) onto each discontinuous lumber plate and secured to lumber plates with steel screws or nails.
   E.Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.
3. Through Penetrants — One metallic pipe, conduit or tubing to be installed within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of floor assembly. The annular space within the firestop system shall be min 0 in. (point contact) to max 1 in. (25 mm). The following types and sizes of metallic pipes or conduits may be used:
   A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B.Iron Pipe — Nom 4 in. (102 mm) diam or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or steel conduit.
   D. Copper Tubing — Nom (102 mm) 4 in. diam (or smaller) Type L (or heavier) copper tubing.
   E.Copper Pipe — Nom (102 mm) 4 in. diam (or smaller) Regular (or heavier) copper pipe.
4. Fill, Void or Cavity Material* — Sealant — Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with the top surface of the floor or the sole plate. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with bottom surface of ceiling or lower top plate.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP601S, CFS-S SIL GG, CP606, FS-One Sealant or FS-ONE MAX Intumescent Sealant
   (Note: L Ratings apply only when FS-ONE Sealant is used.)

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

WOOD FLOOR/CEILING FIRE STOP DETAIL (NON-INSULATED METALLIC PIPE)

SCALE : NO SCALE

3

System No. F-C-5088

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 or 2 Hr (See Item 1)	F Rating — 1 or 2 Hr (See Item 1)
T Rating — 1 or 2 Hr (See Item 1)	FT Rating — 1 or 2 Hr (See Item 1)
	FH Rating — 1 or 2 Hr (See Item 1)
	FTH Rating — 1 or 2 Hr (See Item 1)

SECTION A-A

1. Floor-Ceiling Assembly — The 1 or 2 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The Ratings of the firestop system are equal to the rating of the floor-ceiling and wall assemblies. The general construction features of the floor-ceiling assembly are summarized below:
   A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of opening shall be 7 in. (178 mm).
   B. Wood Joists* — Nom 10 in (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   C. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in the individual Floor-Ceiling Design. Max diam of opening shall be 7 in. (178 mm).
   D. Furring Channels — (Not Shown) (As required) Resilient galvanized steel furring Installed In accordance with the manner specified In the individual L500 Series Designs in the Fire Resistance Directory.
1,1, Chase Wall — (Not Shown, Optional) — The through penetrants (Item 2) may be routed through a 1 or 2 hr fire-rated single, double or staggered wood stud/gypsum wallboard chase wall having a fire rating consistent with that of the floor-ceiling assembly. The chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Nom 2 by 8 in. (51 by 203 mm) lumber or double nom 2 by 6 in. (51 by 152 mm) lumber studs.
   B.Sole Plate — Nom 2 by 8 in. (51 by 203 mm) lumber or parallel 2 by 6 in. (51 by 152 mm) lumber plates, tightly butted. Max diam of opening shall be 7 in. (178 mm).
   C. Top Plate — The double top plate shall consist of two nom 2 by 8 in. (51 by 203 mm) lumber plates or two sets of nom 2 by 6 in. (51 by 152 mm) lumber plates tightly butted. Max diam of opening is 7 in. (178 mm).
   D. Gypsum Board* — Thickness, type, number or layers and fasteners shall be as specified In individual Wall and Partition Designs.
2. Through Penetrants — One metallic pipe or tubing to be installed concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B.Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
   D. Copper Pipe — Nom 4 In. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. Pipe Covering — Nom 1 in. (25 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) glass fiber units jacketed on the outside with an all-service jacket. Longitudinal joints sealed with metal fasteners or factory-applied, self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the edge of the periphery of the opening shall be min of 0 in. (point contact) to a max of 1/2 In. (29 mm).
4. Fill, Void or Cavity Material* — Sealant — Min 3/4 in. (19 mm) thickness of fill material applied within annulus flush with top surface of floor or sole plate. Min 5/8 in. (16 mm) thickness of fill material applied within annulus flush with bottom surface of ceiling or bottom surface of lower top plate. A min 1/2 in. (13 mm) bead of fill material is applied to area of point contact on both sides of floor ceiling assembly.

HILTI INC — FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

WOOD FLOOR/CEILING FIRE STOP DETAIL (INSULATED METALLIC PIPE)

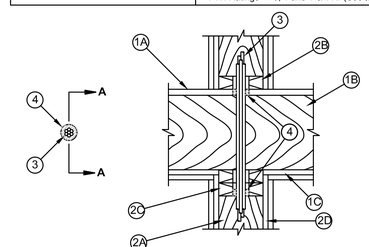
SCALE : NO SCALE

2

System No. F-C-3012

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 0, 1 and 1-3/4 Hr (See Item 3)	FT Ratings — 0, 1 and 1-3/4 Hr (See Item 3)
	FH Ratings — 1 and 2 Hr (See Item 1)
	FTH Ratings — 0, 1 and 1-3/4 Hr (See Item 3)



SECTION A-A

1. Floor-Ceiling Assembly — The 1 or 2 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:
   A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the Individual Floor-Ceiling Design. Max diam of opening for 1 or 2 hr assembly is 2-1/2 in. (64 mm) or 2 in. (51 mm), respectively.
   B. Wood Joists* — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   C. Furring Channels — (Not Shown) — (As required) - Resilient galvanized steel furring installed in accordance with the manner specified in the individual L500 Series Designs in the Fire Resistance Directory.
   D. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in the individual Floor-Ceiling Design. Max diam of opening for 1 or 2 hr assembly is 2-1/2 in. (64 mm) or 2 in. (51 mm), respectively.
   The F Rating of the firestop system is equal to the rating of the floor-ceiling assembly.
2. Chase Wall — (Optional) - The through penetrant (Item 3) shall be routed through a fire-rated single, double or staggered wood stud/gypsum wallboard chase wall having a fire rating consistent with that of the floor-ceiling assembly. The chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Nom 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.
   B.Sole Plate — Nom 2 by 6 in. (51 by 152 mm) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening for 1 or 2 hr rated assembly is 2-1/2 in. (64 mm) or 2 in. (51 mm), respectively.
   C. Top Plate — The double top plate shall consist of two nom 2 by 6 in. (51 by 152 mm) or two sets of parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Max diam of opening for 1 or 2 hr rated assembly is 2-1/2 in. (64 mm) or 2 in. (51 mm), respectively.
   D. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.
3. Cables — In 1 hr fire-rated assemblies, aggregate cross-sectional area of cables in opening to be max 45 percent of the cross-sectional area of the opening (max 2 in. (51 mm) diam bundle). Cables to be rigidly supported on both sides of floor assembly. Any combination of the following types and sizes of copper conductors may be used:
   A. RG 59 coaxial cable with single copper conductor, cellular polyethylene cellular foam insulation and polyvinyl chloride (PVC) jacket.
   B.Max 8/C No. 22 AWG telephone cable with polyvinyl chloride (PVC) jacketing.
   C. Max 2/C No. 12 AWG cable with polyvinyl chloride (PVC) insulation and jacketing.
   D. Max 3/C with ground No. 2/0 AWG aluminum or copper Type SER cable with polyvinyl chloride (PVC) insulation.
   E.Max 3/C with ground No. 2/0 AWG Type NM cable with polyvinyl chloride (PVC) Insulation.
   F.Max 3/C No. 12 AWG MC (BX) cable with polyvinyl chloride (PVC) insulation.
   G. Max 1 in. diam metal clad TEK cable with PVC jacket.
   H. Max 4/C with ground No. 300 kcmil (or smaller) aluminum SER cable with PVC insulation and jacket.
   I. Through Penetrating Product* - Any cables, Metal-Clad Cable+ or Armored Cable+ currently Classified under the Through Penetrating Products category.
   See Through Penetrating Product (XHLY) category in the Fire Resistance Directory for names of manufacturers.
   The T Rating is 1 and 1-3/4 hr for 1 and 2 hr rated assemblies, respectively, for cables 3A through 3G. The T Rating is 0 hr for cables 3H and 3I.
4. Fill, Void or Cavity Material* — Sealant — Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with top surface of floor or sole plate, Min 5/8 in. (16 mm) thickness of fill material also applied within the annulus, flush with bottom surface of ceiling or lower top plate.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS611A Sealant or FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

WOOD FLOOR/CEILING FIRE STOP DETAIL (CABLE BUNDLES)

SCALE : NO SCALE

1

BCS Design, Inc.

WWW.BCSARCHITECTS.COM
19920 West 161st Street
Olathe, Kansas 66062
Phone: (913) 780-4820
Fax: (913) 780-5088

MEP ENGINEER:

JSC ENGINEERS
MO COA NO. 2012009798 / KS COA NO. E-2818
1925 CENTRAL STREET, SUITE 201
KANSAS CITY, MO 64108
phone: (816) 272-5269, smuk jsmothers@jscengineers.com

Summit Point Apartment Phase II

504 NE Chipman Road
Lee's Summit, Missouri 64063

STATE OF MISSOURI
JUSTIN R. SMOTHERS
NUMBER PE-2012003568
PROFESSIONAL ENGINEER
02-08-2022
professional seal

PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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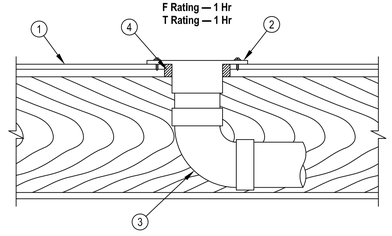
SHEET NO.

FIRE STOP DETAILS

MEP001

System No. F-C-2203

F Rating — 1 Hr
T Rating — 1 Hr



1. Floor-Ceiling Assembly — The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:
   A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of opening shall be 5 in. (127 mm).
   B. Wood Joist* — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   C. Gypsum Board* — Nom 5/8 in. (16 mm) thick, 4 ft (1.2 m) wide as specified in the individual Floor-Ceiling Design.
2. Closet Flange — Acrylonitrile butadiene styrene (ABS) or polyvinyl chloride (PVC) closet stub sized to accommodate drain pipe. Closet flange installed over drain piping within floor opening with flange secured to plywood floor with steel screws. Diam of circular opening through flooring (Item 1A) to be max 1/2 in. (13 mm) larger than outside diam of closet flange.
3. Drain Piping — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 acrylonitrile butadiene styrene (ABS) or polyvinyl chloride (PVC) drain pipe and 90 degree elbow for use in vented (drain, waste or vent) piping systems. Pipe installed concentrically within firestop system.
4. Fill, Void or Cavity Materials*—Sealant — Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with the bottom surface of floor. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant
5. Water Closet — (Not Shown)—Floor mounted vitreous china water closet.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

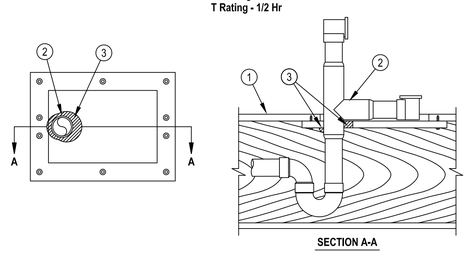
FIRE-RATED FLOOR PENETRATION WATER CLOSET FLANGE

SCALE : NO SCALE

5

System No. F-C-2204

F Rating - 1 Hr
T Rating - 1/2 Hr



SECTION A-A

1. Floor — Ceiling Assembly — The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in theUL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:
   A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Rectangular cutout in flooring to accommodate the bathtub drain piping (Item 2) to be max 8 in. by 12 in. (203 by 305 mm). Cutout to be patched on underside of subfloor using one layer of min 3/4 in. (19 mm) thick plywood or min 5/8 in. (16 mm) thick gypsum board (Item 1C) sized to lap min 2 in. (51 mm) beyond each edge of rectangular cutout. Patch split into two pieces at opening and hole-sawed for bathtub drain piping. Diam of opening hole sawed through patch to accommodate drain piping (Item 2) to be 1 in. (25 mm) larger than outside diam of drain piping and positioned such that the annular space between drain piping and periphery of opening is min 0 in. (point contact) to max 1 in. (25 mm). Two pieces positioned around drain piping, with cut edges tightly butted, and screw-attached to underside of subfloor with 1-1/4 in. (32 mm) long steel screws spaced max 6 in. (152 mm) OC.
   B. Wood Joists* — Nom 10 in. (154 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   C. Gypsum Board* — Nom 5/8 in. (16 mm) thick, 4 ft (122 cm) wide as specified in the individual Floor-Ceiling Design.
2. Drain Piping — Nom 1-1/2 in. (38 mm, or smaller) diam Schedule 40 acrylonitrile butadiene styrene (ABS) or polyvinyl chloride (PVC) pipe and drain fittings cemented together and provided with ABS or PVC bathtub waste/overflow fittings. Annular space shall be min 0 in. (point contact) to max 1 in.
3. Fill Void or Cavity Materials* — Min 5/8 in. (16 mm) depth or fill material applied within the annulus, flush with both surfaces of plywood or gypsum board patch. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE-MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

FIRE-RATED FLOOR PENETRATION TUB DRAIN

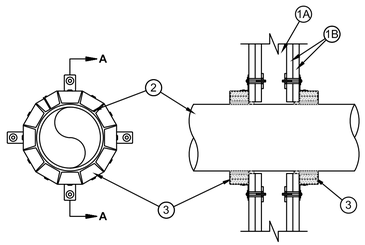
SCALE : NO SCALE

4

Classified by Underwriters Laboratories, Inc. to UL 1479

System No. W-L-2078

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 0, 1 and 2 Hr (See Items 2 and 3)
L Rating At Ambient — 3 CFM/sq ft
L Rating At 400 F — Less Than 1 CFM/sq ft



SECTION A-A

1. Wall Assembly — The fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs In the UL fire Resistance Directory and shall include the construction features noted below:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick gypsum board, as specified In the individual Wall and Partition Design. Max diam of opening is 11-1/2 in. (292 mm).
   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through-Penetrants — One nonmetallic pipe, conduit or tubing to be installed within the firestop system. The annular space between pipe and periphery of opening shall be min 0 in. (point contact) to max 1/2 in. (13 mm). Pipe or conduit to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes may be used:
   A. Polyvinyl Chloride (PVC) Pipe — Nom 10 in. (254 mm) diam (or smaller) Schedule 40 solid-core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 10 in. (254 mm) diam (or smaller) SDR13.5 CPVC pipe for use In closed (process or supply) piping systems.
   C. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom 6 in. (152 mm) diam (or smaller) Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems
   D. Flame Retardant Polypropylene (FRPP) Pipe — Nom 6 in. (152 mm) diam (or smaller) Schedule 40 FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   E. Polyvinylidene Fluoride (PVDF) Pipe — Nom 4 in. (102 mm) diam (or smaller) PVDF pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   When max 6 in. diam pipe is used, T Rating is equal to the hourly fire rating of the wall. When nom 8 In. or 10 In. (203 or 254 mm) diam pipe Is used, T Rating is 0 hr.
3. Firestop Device* — Firestop Collar — Firestop collar shall be installed in accordance with the accompanying installation instructions. Collar to be installed and latched around the pipe and secured to both sides of the wall using the anchor hooks provided with the collar. (Minimum two anchor hooks for 1-1/2 and 2 In. (38 and 51 mm) diam pipes, three anchor hooks for 3 and 4 In. (76 and 102 mm) diam pipes, four anchor hooks for 6 In. (152 mm) diam pipes, ten anchor hooks for 8 In. (203 mm) diam pipes and twelve anchor hooks for 10 In. (254 mm) diam pipes. The anchor hooks are to be secured to the surface of wall with 3/16 in. (4,8 mm) diam by 2-1/2 in. (64 mm) long steel toggle bolts along with washers. As an alternate for pipe sizes of nom 4 in. diam or less, min No. 10 by 1-1/2 in. (254 by 38 mm) long drywall or laminate screws with min 3/4 in. (19 mm) steel washers may be used. When the drywall or laminate screw is used, T Rating shall not exceed 1 hr.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 643 50/1.5"N, CP 643 63/2"N, CP 643 90/3"N, CP 643 110/4"N, CP 643 160/6"N, CP 644 200/8" andCP 644 250/10" Firestop Collars
4. Fill, Void or Cavity Material* — Sealant - (Not Shown) — Min 1/2 In. (13 mm) thickness of sealant applied within the annular space for nom 8 In. and 10 in. (203 and 254 mm) diam pipes, flush with each side of wall. Sealant In annular space is optional for max 6 In. (152 mm) diam pipes. A min 1/4 In. (6 mm) thickness of sealant is required within the annular space, flush with each side of wall, to attain the L Ratings for max 6 in. (152 mm) diam pipes.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

GYPSUM/STUD MEMBRANE FIRE STOP DETAIL (NON-METALLIC PIPES)

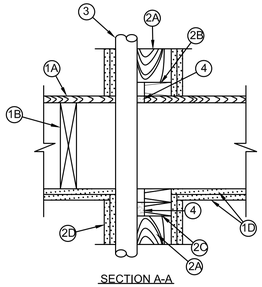
SCALE : NO SCALE

3

Classified by Underwriters Laboratories, Inc. to UL 1479

System No. F-C-2081

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1 and 2 Hr (See Item 1)



SECTION A-A

1. Floor-Ceiling Assembly — The 1 or 2 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory, The F and T Ratings of the firestop system is equal to the rating of the floor-ceiling and wall assemblies. The general construction features of the floor-ceiling assembly are summarized below:
   A. Flooring System — Lumber or plywood subfloor with finish floor or lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Diam of opening shall be 1/2 in. (13 mm) larger than the nom diam of through-penetrant (Item 3).
   B. Wood Joists* — For 1 hr fire-rated floor-ceiling assemblies nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped. For 2 hr fire-rated floor-ceiling assemblies, nom 2 by 10 in. (51 by 254 mm) lumber joists spaced 16 in. (406 mm) OC with nom 1 by 3 in. (25 by 76 mm) lumber bridging and with ends firestopped.
   C. Furring Channels — (Not Shown) — (As required) - Resilient galvanized steel furring installed in accordance with the manner specified in the individual L500 Series Designs in the Fire Resistance Directory.
   D. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in the individual Floor-Ceiling Design. Diam of opening shall be 1/2 in. (13 mm) larger than the nom diam of through-penetrant (Item 3).
2. Chase Wall — (Optional) - The 1 or 2 hr fire-rated single wood stud/gypsum wallboard chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Nom 2 by 4 in. (51 by 102 mm) lumber studs.
   B. Sole Plate — Nom 2 by 4 in. (51 by 102 mm) lumber plates. Diam of opening shall be 1/2 In. (13 mm) larger than the nom diam of through-penetrant (Item 3).
   C. Top Plate — The double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm) lumber plates. Diam of opening shall be 1/2 in. (13 mm) larger than the nom diam of through-penetrant (Item 3).
   D. Gypsum Board — Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.
3. Through-Penetrants — One nom 1 in. (25 mm) diam crosslinked polyethylene (PEX) SDR 9 tube for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Diam of opening through flooring system and through sole and top plates of chase wall to be max 1-1/2 in. (38 mm). Pipe to be rigidly supported on both sides of floor-ceiling assembly.
4. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or sole plate and a min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with the bottom surface of the ceiling or lower top plates.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

WOOD FLOOR/CEILING FIRE STOP DETAIL (NON-METALLIC PIPE)

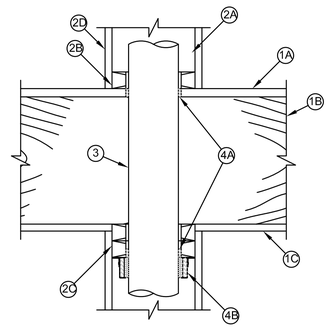
SCALE : NO SCALE

2

Classified by Underwriters Laboratories, Inc. to UL 1479

System No. F-C-2030

F Ratings — 1 and 2 Hr (See tem 1)
T Ratings — 0, 3/4, 1, 1-1/2 and 2 Hr (See Item 3)



System tested with a pressure differential of 2.5 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.
1. Floor-Ceiling Assembly — The 1 or 2 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the

rating of the floor-ceiling and wall assemblies. The general construction features of the floor-ceiling assembly are summarized below:

Design. Diam of opening shall be 1 in. (25 mm) larger than the nom diam of through-penetrant (Item 3).
   B. Joists — Nom 10 In. (254 mm) deep (or deeper) lumber, steel or combinaltion lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with end firestopped.
   C. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in the individual Floor-Ceiling Design. Diam of opening shall be 1 in. (25 mm) larger than the nom diam of through-penetrant (Item 3).
   D. Furring Channels — (Not Shown) (As required) - Resilient galvanized steel furring installed in accordance with the manner specified in the individual L500 Series Designs in the Fire Resistance Directory
2. Chase Wall — (Optional) - The through penetrant (Item 3) may be routed through a 1 or 2 hr fire-rated single, double or staggered wood stud/gypsum wallboard chase wall having a fire rating consistent with that of the floor-ceiling assembly. The chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Nom 2 by 6 in. (51 by 152 mm) or double nom 2 by 4 in. (51 by 102 mm) lumber studs.
   B. Sole Plate — Nom 2 by 6 in. (51 by 152 mm) (or larger) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Diam of opening shall be 1 in. (25 mm) larger than the nom diam of through-penetrant (Item 3).
   C. Top Plate — The double top plate shall consist of two nom 2 by 6 in. (51 by 152 mm) (or larger) or parallel 2 by 4 in. (51 by 102 mm) lumber plates, tightly butted. Diam of opening shall be 1 in. (25 mm) larger than the nom diam of through-penetrant (Item 3),
   D. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.
3. Through-Penetrants — One nom 1-1/2 in. (38 mm), 2 In. (51 mm), 3 In. (76 mm) or 4 in. (102 mm) diam nonmetallic pipe to be installed within the firestop system. Diam of opening through flooring system and through sole and top plates of chase wall to be max 2-1/8 in. (54 mm), 2-5/8 In. (67 mm), 4 In. (102 mm) or 5 In. (127 mm) for nom 1-1/2 In. (38 mm), 2 In. (51 mm), 3 In. (76 mm) or 4 In. (102 mm) diam nonmetallic pipe sizes, respectively. Pipe to be rigidly supported on both sides of the floor-ceiling assembly. The T Rating is dependent on the size of the through-penetrant. For 2 hr rated assemblies, the T Rating is 2 hr for 1-1/2 In. (38 mm) diam (and smaller) pipes and 1-1/2 hr for pipes greater than 1-1/2 In. (38 mm) diam. For 1 hr rated assemblies, the T rating is 1 hr for 1-1/2 In. (38 mm) diam (and smaller) pipes, 3/4 hr for 2 In. (51 mm) diam pipes and 0 hr for pipes greater than 2 In. (51 mm) diam. The following types of nonmetallic pipes may be used:
   A. Polyvinyl Chloride (PVC) Pipe — Schedule 40 solid-core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   C. Acrylonitrile Butadiene Styrene (ABS) pipe — Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   D. Flame Retardant Polypropylene(FRPP) Pipe — Schedule 40 FRPP pipe for use In closed (process or supply) or vented (drain, waste or vent) piping system,
4. Firestop System — The details of the firestop system shall be as follows:
   A. Fill, Void or Cavity Material* — Sealant — Min 3/4 in. (19 mm) thickness of fill material to be installed within the annular space between the pipe and the flooring (Item 1A) or sole plate. Min 5/8 in. (16 mm) thickness applied within the annular space, flush with the bottom surface of ceiling or lower top plate.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealantor FS-ONE MAX Intumescent Sealant.
   B. Firestop Device* — Firestop Collar — Firestop collar shall be installed in accordance with the accompanying installation instructions. Collar to be installed and latched around the pipe and secured to underside of ceiling or chase wall top plate (Item 2C) using the anchor hooks provided with the collar. (Minimum 2 anchor hooks for 1-1/2 (38 mm) and 2 In. (51 mm) diam pipes and 3 anchor hooks for 3 In. (76 mm) diam pipes). The anchor hooks are to be secured to the ceiling with min 3/16 in. (5 mm) diam steel toggler bolts or to the chase wall top plate with min No. 12 by min 1 in. (25 mm) long steel wood screws in conjunction with steel washers,
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 643 50/1.5"N, CP643 63/2"N, CP 643 90/3"N or CP643 110/4"N Firestop Collar

** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

WOOD FLOOR/CEILING FIRE STOP DETAIL (NON-METALLIC PIPES)

SCALE : NO SCALE

1

BCS Design, Inc.
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MEP ENGINEER:
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1925 CENTRAL STREET, SUITE 201
KANSAS CITY, MO 64108
phone: (816) 272-0269, email: jsmothers@jscengineers.com

Summit Point Apartment Phase II

504 NE Chipman Road
Lee's Summit, Missouri 64063

JUSTIN R. SMOTHERS
NUMBER PE-2012003568
STATE OF MISSOURI
PROFESSIONAL ENGINEER
02-08-2022
professional seal

PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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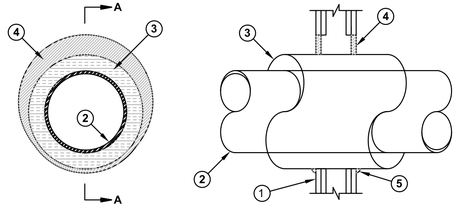
FIRE STOP DETAILS

MEP002

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-L-5029

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)	F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)
T Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)	FT Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
L Rating At Ambient — 4 CFM/Sq Ft	FH Ratings — 1, 2 and 3 Hr (See Items 1, 2 and 4)
L Rating At 400 F — Less Than 1 CFM/Sq Ft	FTH Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
	L Rating At Ambient — 4 CFM/Sq Ft
	L Rating At 400 F — Less Than 1 CFM/Sq Ft



SECTION A-A

1. Wall Assembly — The 1, 2 or 3 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide for 1 and 2 hr F and FH rating and 3-1/2 In. (89 mm) wide for 3 hr F and FH rating and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Min 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design, Max diam of opening is 18-5/8 In. (473 mm).
   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants — One metallic pipe or tubing to be installed within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing. When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper tube shall not exceed 4 In. (102 mm).
   D. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe. When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper pipe shall not exceed 4 in. (102 mm).
3. Pipe Covering* — Nom 1, 1-1/2 or 2 in. (25, 38 or 51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. For 1 and 2 hr F and FH Ratings, the annular space between insulated penetrant and periphery of opening shall be min 0 in. (point contact) to max 1-7/8 in. (48 mm). For 3 hr F and FH Ratings, the annular space shall be min 0 in. (point contact) to max 1-1/4 in. (32 mm).
   See Pipe and Equipment Covering — Materials (BRGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
   The hourly T, FT, FTH Ratings of the firestop system are 1/2 hr for 1 hr rated walls and 1 hr for 2 hr rated walls. For 3 hr rated walls, the hourly T, FT and FTH Ratings when steel and iron pipes are used are 1 hr. For 3 hr rated walls, the hourly T, FT and FTH Ratings when copper penetrants are used are 1-1/4 hr for 2 in. (51 mm) thick pipe covering and 0 hr for pipe covering thickness less than 2 in. (51 mm).
3A. Pipe Covering* — (Not Shown) — As an alternate to Item 3, max 2 in. (51 mm) thick cylindrical calcium silicate (min 14 pcf) units sized to the outside diam of the pipe or tube may be used. Pipe Insulation secured with stainless steel bands or min 18 AWG stainless steel wire spaced max 12 In. (305 mm) OC. When the alternate pipe covering is used, the T and FT Rating shall be as specified in item 3 above.
   See Pipe and Equipment Covering — Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. Fill, Void or Cavity Material* — Sealant — For 1 and 2 hr F and FH Rating, min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. For 3 hr F and FH Rating, min 1 in. (25 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact location between pipe covering and gypsum board, a min 1/2 In. (13 mm) diam bead of fill material shall be applied at the pipe covering/gypsum board interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

GYPSUM/STUD MEMBRANE FIRE STOP DETAIL (INSULATED METALLIC PIPE)

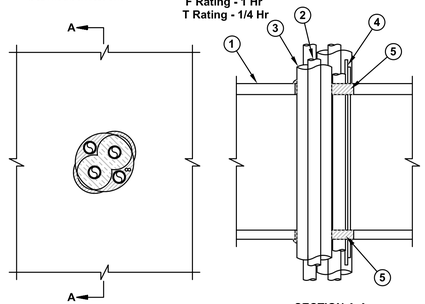
SCALE : NO SCALE

3

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. F-C-8032

F Rating - 1 Hr
T Rating - 1/4 Hr



SECTION A-A

1. Floor-Ceiling Assembly - The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:
   A. Flooring System - Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of opening shall be 5 in.
   B. Wood Joists* - Nom 10 in. deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   C. Gypsum Board* - Nom 4 ft wide by 5/8 in. thick as specified in the individual Floor-Ceiling Design. Gypsum board secured to wood joists or furring channels as specified in the individual Floor-Ceiling Design.

1A. Chase Wall - (Optional, Not Shown) - The through penetrants (Item 2) may be routed through a 1 hr fire rated single, double or staggered wood stud/gypsum board chase wall. Depth of chase wall stud cavity to be min 1/2 In. greater than diameter of opening cut in sole and top plates to accommodate the through penetrant (Item 2). The chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs - Nom 2 by 4 in., 2 by 6 in. or double nom 2 by 4 in. lumber studs.
   B. Sole Plate - Nom 2 by 4 in., 2 by 6 in. or parallel 2 by 4 in. lumber plates, tightly butted. Max diam of opening is 5 in.
   C. Top Plate - The double top plate shall consist of two nom 2 by 4 in., two nom 2 by 6 in. or two sets of parallel 2 by 4 in. lumber plates, tightly butted. Max diam of opening is 5 in.
   D. Gypsum Board* - Thickness, type, number of layers and fasteners shall be as specified in the individual Wall and Partition Design.

2. Through Penetrants - One or more pipes, conduits, tubing and cables to be installed concentrically or eccentrically within the opening. The space between any penetrant to be min 0 in. (point contact) to max 1 in. The space between any penetrant and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. Pipes, conduits, tubing and cables to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Copper Tube - Nom 3/4 in. diam (or smaller) Type L (or heavier) copper tube.
   B. Copper Pipe - Nom 3/4 in. diam (or smaller) Regular (or heavier) copper pipe.
   C. Steel Pipe - Nom 3/4 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
   D. Iron Pipe - Nom 3/4 In. diam (or smaller) cast or ductile iron pipe.
   E. Conduit - Nom 3/4 in. diam (or smaller) steel electrical metallic tubing (EMT) or steel conduit.

3. Tube Insulation - Plastics* - Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. Tube insulation to be installed on one or more of the metallic pipes or tubes.
   See Plastics* (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.

4. Cables - Max of two 4 pair No. 18 AWG (or smaller) cable with PVC insulation and jacket materials

5. Fill, Void or Cavity Materials*-Sealant - Min 3/4 in. thickness of sealant applied within the annulus flush with the top surface of the floor or sole plate and min 5/8 in. thickness of sealant applied within the annulus flush with the bottom surface of gypsum board or lower top plate. A min 1/2 in. diameter bead of sealant applied at the penetrant/subflooring or sole plate interface and the penetrant/gypsum board or top plateinterface at point contact locations.

HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC - CP 606 Flexible Firestop Sealant

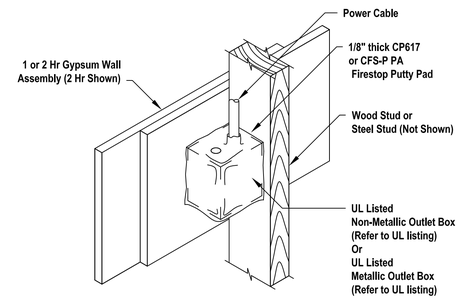
*Bearing the UL Classification Mark

GYPSUM/STUD MEMBRANE FIRE STOP DETAIL (MULTIPLE PENETRANTS)

SCALE : NO SCALE

2

Wall Opening Protective Materials (CLIV, CLIV7)



CP 617(-L, -XL) or CFS-P PA Firestop Putty Pads, for use with flush device UL Listed Metallic Outlet Boxes installed with steel mud rings or UL Listed Nonmetallic Outlet Boxes in framed wall assemblies as specified below. When protective material is used on outlet boxes on both sides of the wall as directed, the horizontal separation between outlet boxes on opposite sides of the wall may be less than 24 in, provided that the boxes are not installed back-to-back (unless otherwise indicated). Installation shall comply with the National Electrical Code (NFPA 70). Min 1/8 in. thick (CP 617) or min 0.2 in. (CFS-P PA) thick moldable putty pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the stud) and conduit fittings/connectors and to completely seal against the stud and gypsum board in the wall cavity unless otherwise noted below. When CFS-P PA is used, the putty pads may be installed with the release liner intact on the outside of the pad with the exception of any overlaps, in which case the liner is to be removed from the bottom layer at the overlap location. The box composition, max device dimensions, hourly rating, type of stud and type of faceplate are specified below.

CP 617(-L, -XL) or CFS-P PA Firestop Putty Pads, for use with max 4 by 4 by max 2-1/8 in. flush device UL Listed Metallic Outlet Boxes installed with steel cover plates in 1 and 2 hr. fire rated gypsum wallboard wall assemblies framed with min 3-1/2 in. deep wood or steel studs and constructed as specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the Fire Resistance Directory.

CFS-P PA Moldable Putty Pads, for use with max 4 by 4 by 2-1/8 in. flush device UL Listed Metallic Outlet Boxes installed with steel or plastic cover plates in 2 hr fire rated gypsum board wall assemblies framed with min 3-1/2 In. deep steel studs and constructed of the materials and in the manner specified in the individual U400 and V400 Series Wall and Partition Designs in the Fire Resistance Directory. An additional 3/4 in. ball of putty pad material shall be used to plug the end of each electrical metallic tube or conduit at its connection to the box.

FIRE-RATED MEMBRANE PENETRATION ELECTRICAL OUTLET BOX

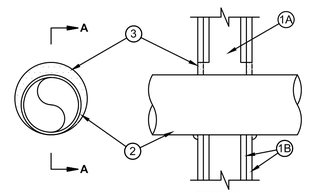
SCALE : NO SCALE

4

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-L-1054

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings —1 and 2 Hr (See Items 1 and 3)	F Ratings — 1 and 2 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating at Ambient — Less Than 1 CFM/sq ft	FH Ratings —1 and 2 Hr (See Items 1 and 3)
L Rating at 400 F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
	L Rating at Ambient — Less Than 1 CFM/sq ft
	L Rating at 400 F — Less Than 1 CFM/sq ft



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 In. (64 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating Item such that, when the penetrating Item is installed in the opening, a 2 to 3 In. (51 to 76 mm) clearance Is present between the penetrating Item and the framing on all four sides.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening Is 32-1/4 in. (819 mm) for steel stud walls, Max diam of opening Is 14-1/2 In. (368 mm) for wood stud walls.
   The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly.
2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 In. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) , diam steel conduit.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall Interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

GYPSUM/STUD MEMBRANE FIRE STOP DETAIL (NON-INSULATED METALLIC PIPES)

SCALE : NO SCALE

1

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PROJECT NO. : JSC 21-058
DATE : 02.08.2022
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SHEET NO.
FIRE STOP DETAILS
MEP003

MECHANICAL AND PLUMBING SPECIFICATIONS

1. GENERAL PROVISIONS:
   A. PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR THE COMPLETE INSTALLATION OF THE PLUMBING AND MECHANICAL SYSTEMS OUTLINED.
   B. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATIONS OF COMPLIANCE OR APPROVAL AS REQUIRED BY AUTHORITIES.
   C. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.
   D. ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.
   E. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, PIPE, DUCT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.
   F. PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY. PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.
   G. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECT FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.
   H. INSPECTION OF THE SITE: THIS CONTRACTOR SHALL THOROUGHLY ACQUAINT HIMSELF WITH THE MEP DRAWINGS, SPECIFICATIONS, DETAIL, AND THE SITE. THIS CONTRACTOR SHALL NOTIFY THE ARCHITECT OF ANY SPECIAL OR UNUSUAL PROBLEMS, CONFLICTS, OR OBSTRUCTIONS THAT AFFECT HIS BID.
   I. FOR THE PURPOSE OF CLEARNESS AND LEGIBILITY, THE MECHANICAL AND PLUMBING DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND DO NOT SHOW ALL OFFSETS AND FITTINGS REQUIRED FOR INSTALLATION. DO NOT SCALE DRAWINGS. THE SIZE AND LOCATION OF EQUIPMENT IS SHOWN TO SCALE WHEREVER POSSIBLE. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DATA AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATION SECTIONS WHERE MECHANICAL WORK INTERFACES WITH OTHER TRADES.
   J. IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN ITEMS INDICATED ON THE PLANS OR WITH CODE REQUIREMENTS, THE NOTE OR CODE WHICH PRESCRIBES AND ESTABLISHES THE MORE COMPLETE JOB OR HIGHER STANDARD SHALL PREVAIL.
   K. INSTALL MATERIALS AND SYSTEMS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND APPROVED SUBMITTALS. INSTALL MATERIALS IN PROPER RELATION WITH ADJACENT CONSTRUCTION AND WITH UNIFORM APPEARANCE FOR EXPOSED WORK. COORDINATE WITH WORK OF OTHER SECTIONS. COMPLY WITH APPLICABLE REGULATIONS AND CODE REQUIREMENTS. PROVIDE PROPER CLEARANCES FOR SERVICING.
   L. INCLUDE ALL BASIC MATERIALS AND CONSTRUCTION METHODS INCLUDING PIPES, PIPE FITTINGS, AND SPECIALTIES AND SUPPORTING DEVICES, VALVES, PIPE AND VALVE IDENTIFICATION, PUMPS, VIBRATION ISOLATION, ETC.
   M. FURNISH ADEQUATE ACCESS PANELS AND DOORS TO ALLOW FOR FUTURE PIPING ALTERATIONS, REPLACEMENT, AND MAINTENANCE OF PIPING. PROPERLY IDENTIFY ALL ACCESS PANELS AND DOORS.

2. OPERATION AND MAINTENANCE MANUALS:
   A. DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.
   B. ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATING AND MAINTENANCE MANUALS.
   C. ALL LITERATURE LISTED ABOVE AND ALL PAPERS LISTING WARRANTIES, ETC. SHALL BE BOUND IN A 3-RING BINDER AND LABELED WITH THE PROJECT NAME, ADDRESS, ARCHITECT, ENGINEER AND CONTRACTORS.

3. MANUFACTURERS:
   A. MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN.
   B. THE ELECTRICAL SYSTEM DESIGN IS BASED IN PART ON THE SPECIFIED EQUIPMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE ELECTRICAL REQUIREMENTS OF THE EQUIPMENT BEING FURNISHED. ANY CHANGES TO THE ELECTRICAL SYSTEM DUE TO HVAC EQUIPMENT OTHER THAN THE SPECIFIED EQUIPMENT BEING FURNISHED SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

4. MOTORS:
   A. PROVIDE THERMAL OVERLOAD PROTECTION FOR EACH MOTOR PROVIDED BY THIS WORK.

5. PLUMBING:
   A. PROVIDE AN APPROVED WATER HAMMER ARRESTOR FOR EACH PLUMBING FIXTURE SUPPLY AS REQUIRED BY FIXTURE MANUFACTURER.
   B. ALL EXPOSED PIPE IN FINISHED AREAS SHALL BE CHROME PLATED BRASS PIPE, NO FERROUS PIPE.
   C. PROVIDE CLEANOUTS AT EACH CHANGE IN DIRECTION AND AT 100 FOOT INTERVALS IN STRAIGHT RUNS.
   D. PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES AND TRAPS.
   E. CLEANOUTS:
      1. VINYL TILE FLOOR (FCO): JR SMITH #4140, OR EQUAL.
      2. QUARRY TILE FLOOR (FCO): JR SMITH #4200, OR EQUAL.
      3. CARPETED FLOOR (FCO): JR SMITH #4020-Y, OR EQUAL.
      4. UNFINISHED FLOOR (FCO): JR SMITH #4020, OR EQUAL.
      5. WALL (WCO): JR SMITH #4472, OR EQUAL, 24" ABOVE THE FLOOR.
      6. GRADE (GCO): JR SMITH #4256, OR EQUAL, WITH HEAVY DUTY CAST IRON BODY AND COVER.
   F. ALL SEWER PIPING LOCATED INSIDE THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES.
      1. INSTALL 2-1/2" AND SMALLER PIPE AT 1/4" PER FOOT FALL.
      2. INSTALL 3" – 6" PIPE AT 1/8" PER FOOT FALL.
      3. CONDENSATE DRAIN SHALL BE INSTALLED AT 1/8" PER FOOT FALL.
   G. PROVIDE DIELECTRIC UNIONS WITH APPROPRIATE END CONNECTION TO MATCH THE PIPE SYSTEM IN WHICH INSTALLED (SCREWED, SOLDERED, OR FLANGED). PROVIDE DIELECTRIC UNIONS ON ALL PIPING CONNECTIONS TO HOT WATER HEATERS AND EXPANSION JOINTS.
   H. ALL SEWER PIPING LOCATED EXTERIOR TO THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES.
      1. INSTALL 4" AND SMALLER PIPE AT A MINIMUM OF 2% SLOPE.
      2. INSTALL 6" AND LARGER PIPE AT A MINIMUM OF 1% SLOPE.

6. PIPING
   A. DOMESTIC COLD, HOT, AND HOT WATER RECIRCULATING (ABOVEGROUND).
      1. TYPE L HARD DRAWN COPPER TUBING, ASTM B-88 WITH WROUGHT BRONZE SOLDERED FITTINGS.
      2. GATE VALVE: CRANE #428 OR EQUAL.
      3. GLOBE VALVE: CRANE #7 OR EQUAL.
      4. BALL VALVE: CRANE #932 OR EQUAL.
   B. DOMESTIC COLD, HOT, AND HOT WATER RECIRCULATING, 1"–3" (UNDERGROUND).
      1. TYPE K HARD OR SOFT DRAWN COPPER TUBING, ASTM B-88 WITH WROUGHT BRONZE SOLDERING FITTINGS.
      2. IF CIVIL PLANS SPECIFY OTHER MATERIAL BEYOND 10'–0" FROM THE BUILDING THEN MATCH CIVIL PLANS.
   C. FIRE WATER, 3" OR LARGER (UNDERGROUND).
      1. DUCTILE IRON PIPE AND FITTINGS, AWWA C151, CLASS 50, CEMENT LINING, SEALCOATED, AWWA C104. THRUST BLOCKS IN ACCORDANCE WITH NFPA 24.
      2. FOLLOW CIVIL PLANS IF OTHER MATERIAL IS SPECIFIED ON CIVIL.
   D. SANITARY SEWER AND VENTS (UNDERGROUND, ABOVEGROUND).
      1. ASTM D2665 POLYVINYL CHLORIDE (PVC) DWV PIPE, SCHEDULE 40, SOLVENT JOINT.
      2. SEWER LINES SHALL BE LOCATED IN GENERAL AS SHOWN ON THE DRAWINGS. THE EXACT LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR IN SUCH A MANNER AS TO MAINTAIN PROPER CLEARANCES AND SUFFICIENT SLOPE TO ENSURE DRAINAGE.
      3. VENT STACKS SHALL BE EXTENDED FULL SIZE THROUGH THE ROOF AND FLASHED WITH 4 POUND LEAD SHEETS TURNED DOWN INTO THE STACK AT LEAST 2" AND EXTENDED 12" IN ALL DIRECTIONS FROM THE PIPE AT THE ROOF LINE. VENTS THROUGH ROOF SHALL NOT BE LESS THAN 3". PVC PIPING SHALL NOT BE USED FOR VENT PIPING THROUGH THE ROOF. WHERE APPLICABLE FOR ROOFING SYSTEM USED, PROVIDE FLASHING VIA PLEATED EPDM CONE IN LIEU OF LEAD. ALL VENT STACKS IN OR AT OUTSIDE WALLS SHALL BE OFFSET 1'–6" MINIMUM FROM OUTSIDE WALLS BEFORE GOING THROUGH THE ROOF, TO FACILITATE FLASHING.
   E. CONDENSATE DRAIN AND INDIRECT WASTE (ABOVEGROUND)
      1. INDOOR: PVC DWV PIPE, SCHEDULE 40, SOLVENT JOINT.
   F. REFRIGERANT
      1. ASTM B 280, TYPE ACR, HARD DRAWN STRAIGHT LENGTHS, AND SOFT-ANNEALED COILS, SEAMLESS COPPER TUBING.
      2. WROUGHT COPPER, ANSI B16.22, STREAMLINED PATTERN, FITTINGS. BRAZED JOINTS, AWS A 5.8 CLASSIFICATION BAG-1 (SILVER).
      3. TUBING TO BE FACTORY CLEANED, READY FOR INSTALLATION, AND HAVE ENDS CAPPED TO PROTECT CLEANLINESS OF PIPE INTERIORS PRIOR TO SHIPPING.
      4. SIZE AND INSTALLATION OF PIPING SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
   G. ALL PIPE HANGERS AND SUPPORTS SHALL BE STANDARD PRODUCTS OF GRINNELL, FEE AND MASON, OR ANVIL. HANGER SPACING SHALL BE IN ACCORDANCE WITH MSS-SP-69.
   H. SLEEVES
      1. PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK. ALL SLEEVES SHALL BE OF SUFFICIENT SIZE TO PERMIT PIPE MOVEMENT DUE TO EXPANSION AND CONTRACTION AND TO ACCOMMODATE PIPE INSULATION.
      2. INTERIOR PARTITIONS: 16 GAUGE GALVANIZED STEEL, PACK BETWEEN PIPE AND SLEEVE WITH FIRE SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.
      3. ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WATERPROOF SEAL. COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY.
      4. PLUMBING VENTS: FLASH ROOF VENT INTO ROOFING SYSTEM AS REQUIRED BY THE ROOFING CONTRACTOR TO MAINTAIN THE EXISTING ROOF WARRANTY. ALL PLUMBING VENT TERMINALS SHALL TERMINATE A MINIMUM OF 12" ABOVE ROOF OR EQUAL TO HEIGHT OF PARAPET, WHICHEVER IS GREATER.
   I. PROVIDE CHROME PLATED ESCUTCHEONS ON ALL PIPE ENTERING FINISHED AREAS.

7. INSULATION AND DUCT LINING:
   A. ALL INSULATIONS AND ACCESSORIES SHALL HAVE A FIRE HAZARD CLASSIFICATION WITH A FLAME SPREAD RATING OF NOT OVER 25, A FUEL CONTRIBUTION RATING OF NOT OVER 50, AND A SMOKE DEVELOPMENT RATING OF NOT OVER 50, IN ACCORDANCE WITH NFPA.
   B. PIPE INSULATION (ABOVE GRADE):
      1. THE PIPE INSULATION USED SHALL HAVE A THERMAL CONDUCTIVITY OF 0.27 BTU PER IN/HR*SQ-FT*°F OR LESS.
      2. INDOOR: FLEXIBLE CLOSED CELL ELASTOMERIC THERMAL INSULATION, UNSLIT OR PRESLIT WITH PRESSURE SENSITIVE ADHESIVE SYSTEM FOR CLOSURE AND VAPOR SEALING, EQUAL TO ARMSTRONG AP ARMAFLEX OR ARMAFLEX 2000.
      3. OUTDOOR: FLEXIBLE CLOSED CELL POLYETHYLENE FOAM THERMAL INSULATION, UNSLIT OR PRESLIT WITH PRESSURE SENSITIVE ADHESIVE SYSTEM FOR CLOSURE AND VAPOR SEALING, COMPATIBLE WITH HEAT TRACING, EQUAL TO ARMACELL TUNDRA. PROVIDE WITH VAPOR RETARDER AND ALL SERVICE ALUMINUM JACKET.
      4. INSULATION SCHEDULE:
         a. DOMESTIC COLD WATER: 1/2"
         b. DOMESTIC HOT WATER: 1"
         c. REFRIGERANT SUCTION: 1-1/2" FOR PIPING UP TO 1-1/2"ø, 2" FOR PIPING 1-1/2"ø AND LARGER.
   C. DUCTWORK INSULATION:
      1. DUCT LINING: THICKNESS AS SCHEDULED, AIR STREAM SIDE COATED, ASTM C 1071 TYPE II, MINIMUM R-6, ANTI-MICROBIAL COATING, INSTALL PER SMACNA STANDARDS.
      2. DUCT LINING SCHEDULE:
         a. SUPPLY DUCT: 1-1/2"
         b. RETURN AIR DUCT: 1-1/2"
      3. DUCT COVERING: ONLY ALLOWED ON ROUND DUCT VERTICAL DROPS, 3/4 LB/CF, FIBERGLASS BLANKET WITH FACTORY APPLIED VAPOR BARRIER AND FACING. THICKNESS AS SCHEDULED, INSTALLATION IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. DUCT COVERING SHALL BE MINIMUM R-6.
         a. SUPPLY AIR DUCT: 2"

8. TESTING, BALANCING AND CLEANING:
   A. ALL PIPING SHALL BE TESTED FOR LEAKS BEFORE BEING CONCEALED IN WALL CONSTRUCTION OR COVERED WITH INSULATION.
   B. SEWER AND VENT PIPING SHALL BE HYDROSTATICALLY TESTED WITH NO LESS THAN 10 FEET OF HEAD FOR A PERIOD OF NOT LESS THAN 15 MINUTES, PER THE LOCAL PLUMBING CODE, WITH NO LEAKS.
   C. DOMESTIC WATER PIPING SHALL BE HYDROSTATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 60 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.
   D. BEFORE DOMESTIC WATER PIPING IS PLACED IN SERVICE, ALL DOMESTIC WATER DISTRIBUTION SYSTEMS, INCLUDING THOSE FOR COLD WATER AND HOT WATER SYSTEMS, SHALL BE FLUSHED, STERILIZED AND CHLORINATED IN ACCORDANCE WITH THE HEALTH DEPARTMENT REGULATIONS. THE SYSTEMS SHALL BE THOROUGHLY FLUSHED OF ALL DIRT AND FOREIGN MATTER, THEN FILLED WITH WATER TREATED WITH 50 PPM OF CHLORINE. DURING THE FILLING PROCESS, VALVES AND FAUCETS SHALL BE OPENED SEVERAL TIMES TO ASSURE TREATMENT OF THE ENTIRE SYSTEM. THE TREATED WATER SHALL BE LEFT IN THE SYSTEM FOR 24 HOURS AFTER WHICH TIME THE SYSTEM SHALL BE FLUSHED; IF THE RESIDUAL CHLORINE IS NOT LESS THAN 10 PPM, THE FLUSHING SHALL BE REPEATED. AFTER STERILIZATION SAMPLES OF WATER FROM THE SYSTEM SHALL BE APPROVED BY THE BOARD OF HEALTH.
   E. THE INSPECTION AUTHORITY HAVING AJIRSDICTION SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO PERFORMANCE OF ALL TESTS SO THAT THEY TESTS MAY BE WITNESSED IF DEEMED NECESSARY.
   F. DUCTWORK AND PIPING SHALL BE BALANCED BY QUALIFIED BALANCING PERSONNEL WHO HAVE PREVIOUS EXPERIENCE WITH BALANCING PROCEDURES AND ARE FAMILIAR WITH TESTING AND BALANCING PROCEDURES OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).
      1. BALANCING SHALL INCLUDE THE BALANCING OF THE EQUIPMENT AND AIR DISTRIBUTION SYSTEMS TO PROVIDE DESIGN QUANTITIES INDICATED AND VERIFICATION PERFORMANCE OF ALL EQUIPMENT AND AUTOMATIC CONTROLS.
      2. WITH IN 30 DAYS OF THE COMPLETION OF THE TESTING AND BALANCING WORK, SUBMIT THE TEST AND BALANCING REPORT BEARING THE SIGNATURE OF THE TEST AND BALANCE ENGINEER. THE REPORTS SHALL BE CERTIFIED PROOF THAT THE SYSTEMS HAVE BEEN TESTED, ADJUSTED, AND BALANCED IN ACCORDANCE WITH THE REFERENCED STANDARDS; ARE AN ACCURATE REPRESENTATION OF HOW THE SYSTEMS HAVE BEEN INSTALLED AND ARE OPERATING. REPORTS SHALL BE BOUND IN A VINYL BINDER AND THE BINDER LABELLED OR MAY BE AN ELECTRONIC PDF SUBMITTAL.

9. DUCTWORK:
   A. ROUND DUCT SHALL NOT BE SUBSTITUTED FOR RECTANGULAR DUCT.
   B. ALL RECTANGULAR DUCT SHALL BE INTERNALLY INSULATED/LINED.
   C. DUCT SIZES SHOWN ON THE DRAWINGS ARE SHEET METAL SIZES. INCREASE SHEET METAL SIZES ACCORDINGLY TO ACCOUNT FOR THICKNESS OF DUCT INSULATION/LINER.
   D. ALL DUCTWORK UNLESS OTHERWISE INDICATED SHALL BE FABRICATED FROM GALVANIZED SHEET STEEL COMPLYING WITH ASTM A 527, LOCKFORMING QUALITY, WITH G60 ZINC COATING IN ACCORDANCE WITH ASTM A 525, AND MILL PHOSPHATIZED FOR EXPOSED LOCATIONS.
   E. DUCTWORK METAL GAUGES, REINFORCING, ETC SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," LATEST EDITION FOR A 2" WATER GAUGE STATIC PRESSURE.
   F. ALL FITTINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," LATEST EDITION.
   G. RECTANGULAR DUCT:
      1. ELBOWS, UNLESS INDICATED OTHERWISE, SHALL BE CONSTRUCTED WITH CENTERLINE RADIUS OF NOT LESS THAN 1.5 DUCT WIDTH OR SQUARE ELBOWS WITH DOUBLE WALL STREAMLINE ELBOWS.
      2. TAKE-OFF FITTINGS: BRANCH DUCT TAKE-OFF FITTINGS FOR SUPPLY AND EXHAUST DIFFUSER/REGISTERS SHALL INCLUDE AN INTEGRAL MANUAL VOLUME DAMPER WITH LOCKING QUADRANT, DAMPER NOT REQUIRED ON RETURN AIR. FOR RECTANGULAR TO ROUND TAKE-OFFS, UTILIZE A "BUCKLEY" MODEL 3300 & 3300D OR EQUAL.
      3. RETURN AIR ACOUSTIC ELBOWS AND SOUND BOOTS SHALL BE A SQUARE ELBOW WITH NO TURNING VANES.
      4. SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE A MINIMUM 1 TO 3.
   H. ROUND AND OVAL SPIRAL SEAM DUCT:
      1. PROVIDE RADIUS TYPE FITTINGS FABRICATED OF MULTIPLE SECTIONS WITH MAXIMUM 15 DEGREE CHANGE OF DIRECTION PER SECTION. UNLESS SPECIFICALLY DETAILED OTHERWISE, USE 45 DEGREE LATERALS FOR BRANCH TAKEOFF CONNECTIONS. WHERE 90 DEGREE BRANCHES ARE INDICATED PROVIDE CONICAL TYPE TEES.
      2. SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 3.
      3. ROUND LONGITUDINAL SEAM DUCT: USE FOR RIGID METAL DUCT ON LEAVING SIDE OF DUCT IN CONCEALED LOCATIONS FOR EXTENSION TO FLEX FOR DIFFUSERS.
   I. SEAL ALL CONCEALED DUCTWORK JOINTS WITH NON-HARDENING, NON-MIGRATING MASTIC SEALANT, AS RECOMMENDED FOR SEALING SEAMS AND JOINTS IN DUCTWORK. OIL BASED CAULKING AND GLAZING COMPOUNDS SHALL NOT BE ACCEPTABLE. DUCTS SHALL BE SEALED TO THE CLASS LEVEL LISTED BELOW:

(1) UNCONDITIONED SPACES:	CLASS B	CLASS C	CLASS B
(2) CONDITIONED SPACES (PLENUM):	CLASS C	CLASS B	CLASS C
	SUPPLY 2"WC OR LESS	EXHAUST	RETURN

   J. WHETHER SHOWN ON PLANS OR NOT, PROVIDE MANUAL VOLUME DAMPERS IN EACH RUNOUT TO EACH SUPPLY DIFFUSER OR REGISTER. PROVIDE ACCESS PANELS TO DAMPERS LOCATED ABOVE HARD CEILINGS.
   K. PROVIDE AUXILIARY STEEL AS REQUIRED TO ADEQUATELY SUPPORT DUCTWORK.
   L. WHERE DUCTS PASS THROUGH FIRE-RATED FLOORS, WALLS, OR PARTITIONS, PROVIDE FIRESTOPPING BETWEEN DUCT AND WALL.
   M. WHERE DUCTS PASS THROUGH INTERIOR PARTITIONS OR EXTERIOR WALLS, AND ARE EXPOSED TO VIEW, CONCEAL SPACE BETWEEN OPENING AND DUCT OR DUCT INSULATION WITH SHEET METAL FLANGES OF SAME GAUGE AS DUCT. OVERLAP OPENING ON 4 SIDES BY AT LEAST 1-1/2". FASTEN TO DUCT AND WALL.

10. FLEXIBLE DUCT:
   A. ONLY ALLOWED WHERE ABOVE DROP CEILING.
   B. ATCO #086 (R-6), OR EQUAL.
   C. FACTORY APPLIED INSULATION AND VAPOR BARRIER, 1-1/2" THICK.
   D. MAXIMUM LENGTH OF 6'-0".

11. EXPANSION TANK:
   A. DIAPHRAGM-TYPE EXPANSION TANK: SIZE AS INDICATED ON THE DRAWINGS, CONSTRUCTED OF CARBON STEEL FOR 125 PSIG WORKING PRESSURE, 375°F MAXIMUM OPERATING TEMPERATURE. SEPARATE AIR CHARGE FROM THE WATER BY A FLEXIBLE DIAPHRAGM SECURELY SEALED INTO THE TANK. PROVIDE TAPS FOR PRESSURE GAGE AND AIR CHARGING FITTING, AND A DRAIN VALVE. SUPPORT TANK FROM WALL WITH STRUCTURAL STEEL FRAME ADEQUATELY SIZED TO SUPPORT THE WEIGHT. TANK SHALL BE CONSTRUCTED IN ACCORDANCE WITH, TESTED, AND LABELED ASME PRESSURE CODE, SECTION VIII, DIVISION I.

12. ELECTRIC WALL HEATERS
   A. UNIT SHALL INCLUDE ELECTRIC HEATING ELEMENTS WITH SAFETY AND DISCONNECT DEVICES AS REQUIRED BY NEC, INCLUDING RELAYS, CONTROLLERS AND REQUIRED EQUIPMENT TO FORM A COMPLETE AND FUNCTIONAL HEATER.
   B. ELEMENTS SHALL BE HEAVY DUTY ALUMINUM-FINNED, COPPER CLAD STEEL SHEATH. PROVIDE AUTOMATIC RESET THERMAL OVER-HEAT PROTECTION. THERMAL PROTECTOR SHALL BE LINEAR TYPE TO SENSE TEMPERATURES THE ENTIRE LENGTH OF HEATING ELEMENT.
   C. FANS SHALL BE DIRECT DRIVE USING PERMANENT SPLIT CAPACITOR TYPE MOTORS WITH BUILT-IN AUTOMATIC RESET MOTOR OVERLOAD PROTECTION.
   D. FURNISH INTEGRAL FAN DELAY SWITCH TO PREVENT DISCHARGE OF COLD AIR, BY DELAYING START-UP OF THE FAN MOTOR UNTIL HEATING ELEMENTS HAVE WARMED UP. FAN DELAY SWITCH SHALL MAINTAIN MOTOR OPERATION AFTER HEATING ELEMENTS HAVE BEEN DE-ENERGIZED TO DISSIPATE ANY RESIDUAL HEAT.

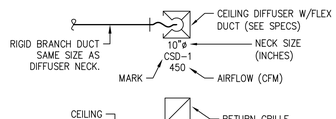
13. AIR HANDLING UNIT AND HEAT PUMP CONDENSING UNIT:
   A. AIR HANDLER SHALL BE FACTORY ASSEMBLED, PRE-WIRED UNIT CONSISTING OF SHEETMETAL CASING, SUPPLY FAN, ELECTRIC RESISTANCE HEATER, AND CONTROLS. CAPACITY SHALL BE AS SCHEDULED..
      1. THE UNIT SHALL BE EQUIPPED WITH THE MANUFACTURER'S STANDARD CONTROLS INCLUDING 24V CONTROL TRANSFORMER, AUTOMATIC SPARK IGNITION, AUTOMATIC GAS VALVE TRAIN, HIGH TEMPERATURE LIMIT SWITCH, AND FAN TIMED DELAY RELAY.
      2. RETURN AIR INLET ON UNIT SHALL BE PROVIDED WITH 1" THROWAWAY TYPE FILTER AND SLIDE IN FRAME, MOUNTED ON THE UNIT.
      3. FAN SHALL BE A DIRECT DRIVE MULTI-SPEED BLOWER, RESILIENTLY MOUNTED IN THE CASING. MOTOR SHALL BE PROVIDED WITH AUTOMATIC THERMAL OVERLOAD PROTECTION.
      4. REFRIGERANT COILS: ALUMINUM FINS BONDED TO SEAMLESS COPPER TUBE BY MEANS OF MECHANICAL EXPANSION. AN EQUALIZING TYPE VERTICAL DISTRIBUTOR SHALL ENSURE EACH COIL CIRCUIT RECEIVES THE SAME AMOUNT OF REFRIGERANT.
      5. ELECTRIC HEAT: ELECTRIC HEATER SHALL BE INSTALLED INTERNAL TO THE AIR HANDLING UNIT. HEATING ELEMENTS SHALL BE CONSTRUCTED OF HEAVY DUTY NICKEL CHROMIUM. EACH HEATER SHALL HAVE AUTOMATICALLY RESET HIGH LIMIT CONTROL OPERATING THROUGH HEATING ELEMENT CONTACTORS. EACH HEATER SHALL BE INDIVIDUALLY FUSED AND SHALL COMPLY WITH ALL NEC REQUIREMENTS. HEATERS SHALL BE UL LISTED.
   B. HEAT PUMP CONDENSING UNIT SHALL BE FACTORY ASSEMBLED AND TESTED AIR-COOLED CONDENSING UNIT CONSISTING OF COMPRESSOR, CONDENSER COIL, FAN, MOTOR, REVERSING VALVE, SOLID-STATE DEFROST CONTROL UTILIZING THERMISTORS, REFRIGERANT RESERVOIR, OPERATING CONTROLS, ETC. CAPACITY AND ELECTRICAL CHARACTERISTICS SHALL BE AS SCHEDULED.
      1. COMPRESSOR: HERMETICALLY SEALED WITH BUILT-IN OVERLOADS AND VIBRATION ISOLATION. COMPRESSOR MOTOR SHALL HAVE THERMAL AND CURRENT SENSITIVE OVERLOAD DEVICES, INTERNAL HIGH PRESSURE PROTECTION, HIGH AND LOW PRESSURE CUTOUT SWITCHES, START CAPACITOR AND RELAY, 2-POLE CONTACTOR, CRANKCASE HEATER, AND TEMPERATURE ACTUATED SWITCH AND TIMER TO PREVENT COMPRESSOR RAPID CYCLE.
      2. COIL SHALL BE COPPER TUBING WITH ALUMINUM FINS: COMPLETE WITH LIQUID ACCUMULATOR AND LIQUID SUBCOOLER. UNIT SHALL INCLUDE FILTER DRYER, SIGHT GLASS, COMPRESSOR SERVICE VALVE, LIQUID LINE SERVICE VALVE, AND REFRIGERANT PIPING EXTENDED TO EXTERIOR OF CASING.
      3. ALUMINUM PROPELLER FAN SHALL BE BELT DRIVEN, WITH PERMANENTLY LUBRICATED FAN MOTOR HAVING THERMAL OVERLOAD PROTECTION.
      4. PROVIDE REVERSING VALVE, SUCTION LINE ACCUMULATOR, DISCHARGE MUFFLER, FLOW CONTROL CHECK VALVE, AND SOLID STATE DEFROST CONTROL UTILIZING THERMISTORS.

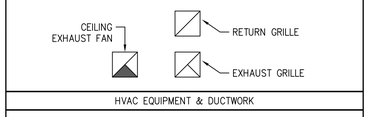
M&P SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS, ETC, ARE NECESSARILY USED ON THE DRAWINGS.

HVAC EQUIPMENT & DUCTWORK

- SPIN-IN FITTING WITH MANUAL VOLUME DAMPER
- BRANCH DUCT WITH 45° RECTANGLE-ROUND BRANCH FITTING AND MANUAL VOLUME DAMPER
- ELBOW WITH TURNING VANES
- RETURN, EXHAUST, OR OUTSIDE AIR DUCT UP
- RETURN, EXHAUST, OR OUTSIDE AIR DUCT DOWN
- SUPPLY AIR DUCT UP
- SUPPLY AIR DUCT DOWN
- MANUAL VOLUME DAMPER
- SQUARE TO ROUND TRANSITION
- DUCT TRANSITION
- M — MOTORIZED DAMPER
- T — THERMOSTAT
- DUCT MOUNTED SMOKE DETECTOR





HVAC EQUIPMENT & DUCTWORK

SYMBOL	DESCRIPTION
SS	SANITARY SEWER (ABOVE GRADE)
SS	SANITARY SEWER (BELOW GRADE)
CD	CONDENSATE DRAIN
V	VENT PIPING
G	G = GAS PIPING LESS THAN 2 PSI
MPG	MPG = GAS PIPING 2 PSI
CW	COLD WATER PIPING
HW	HOT WATER PIPING
HWR	RECIRCULATING HOT WATER
CA	COMPRESSED AIR
	PIPE ELBOW DOWN
	PIPE ELBOW UP
	GATE VALVE
	BACKFLOW PREVENTER
	BALL VALVE
	PLUG VALVE
	FLOOR CLEANOUT (FCO)
	WALL CLEANOUT (WCO)
	FLOOR DRAIN
	FLOOR SINK
	HOSE BIB

ANNOTATION

- # — PLAN WORK NOTE
- RTU 1 — MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
- P-1 — PLUMBING FIXTURE DESIGNATION
- CONNECTION POINT OF NEW WORK TO EXISTING
- A / M1 — DETAIL REFERENCE UPPER NUMBER INDICATED DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER

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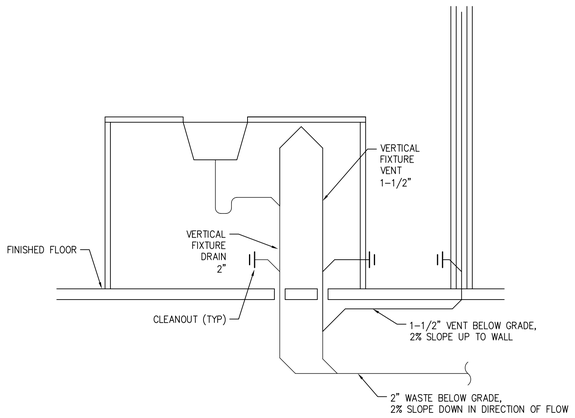
STATE OF MISSOURI
JUSTIN R. SMOTHERS
NUMBER PE-2012003568
PROFESSIONAL ENGINEER
02-08-2022
professional seal

PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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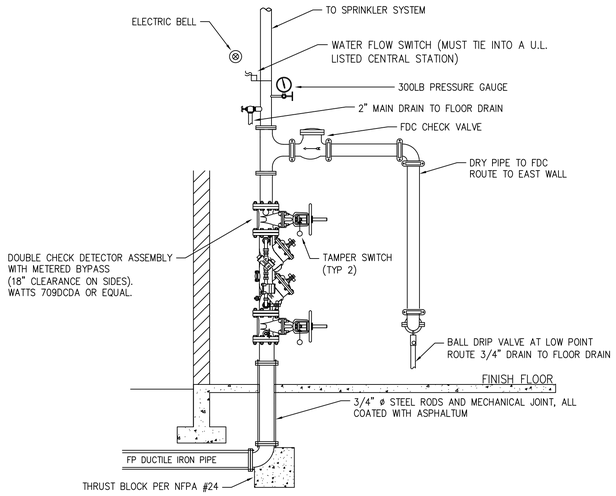
SHEET NO.
MECHANICAL AND PLUMBING - SPECS AND SYMBOLS
MP001



ISLAND VENT

SCALE : NONE

6

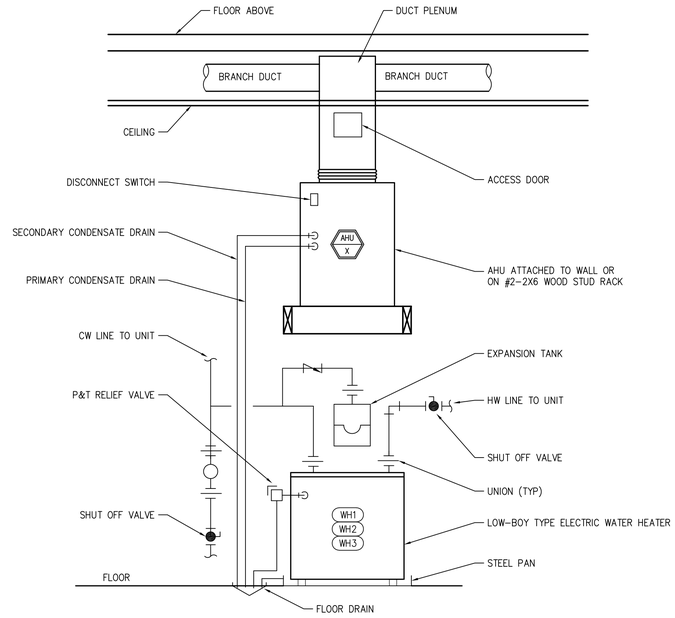


NOTES:
1) SEE NFPA 13 FOR CONNECTIONS PASSING THROUGH OR UNDER FOUNDATION WALLS.
2) ADEQUATE CLEARANCE SHALL BE PROVIDED AROUND FIRE RISER. DIMENSIONS FROM FACE-OF-PIPE SHALL MEASURE A MINIMUM OF 12" OFF THE BACK WALL, 18" ON EACH SIDE, AND 36" CLEAR IN FRONT. ALL VALVES NO MORE THAN 7'-0" AFF.
3) TAMPER SWITCH OR CHAIN & LOCK REQUIRED FOR CONTROL VALVES.
4) MONITORING SYSTEM: PROVIDE A SYSTEM FOR DETECTION OF FLOW AND SUPERVISION OF VALVES, CAPABLE WITH COMMUNICATING WITH OWNER'S MONITORING COMPANY. PROVIDE ALL WIRING. ROUTE COMMUNICATION CABLE TO TELEPHONE EQUIPMENT FOR CONNECTIONS BY OWNER.
5) DRAWING IS SCHEMATIC. ORIENT VALVE SO THAT 36" CLEAR IS IN FRONT OF HANDWHEEL.

FIRE SPINKLER RISER - WET PIPE

SCALE : NO SCALE

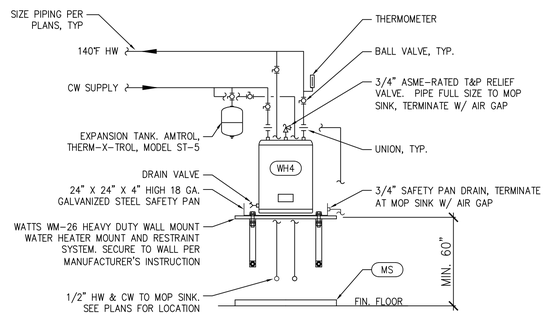
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MECHANICAL CLOSET DETAIL

SCALE : NO SCALE

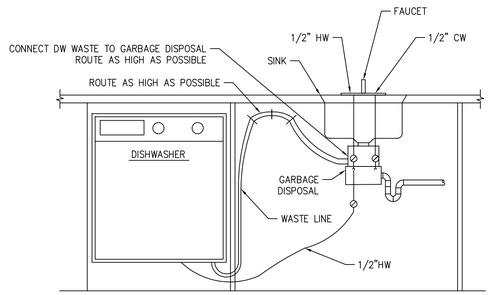
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ELECTRIC WATER HEATER

SCALE : NO SCALE

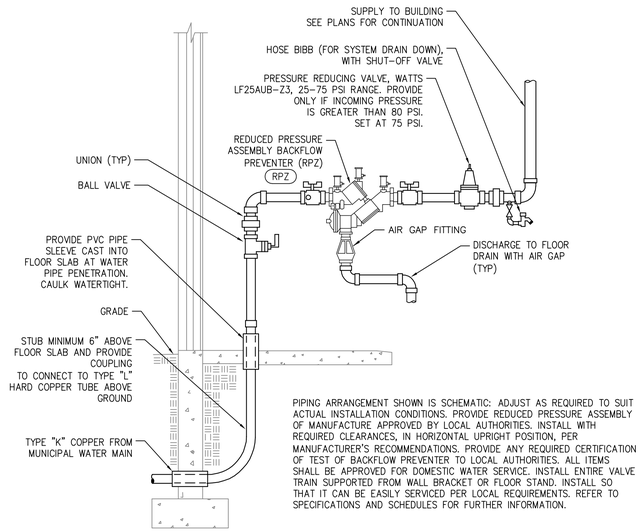
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DISHWASHER DRAIN TO DISPOSAL

SCALE : NONE

2



PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST AS REQUIRED TO SUIT ACTUAL INSTALLATION CONDITIONS. PROVIDE REDUCED PRESSURE ASSEMBLY OF MANUFACTURE APPROVED BY LOCAL AUTHORITIES. INSTALL WITH REQUIRED CLEARANCES, IN HORIZONTAL UPRIGHT POSITION, PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE ANY REQUIRED CERTIFICATION OF TEST OF BACKFLOW PREVENTER TO LOCAL AUTHORITIES. ALL ITEMS SHALL BE APPROVED FOR DOMESTIC WATER SERVICE. INSTALL ENTIRE VALVE TRAIN SUPPORTED FROM WALL BRACKET OR FLOOR STAND. INSTALL SO THAT IT CAN BE EASILY SERVICED PER LOCAL REQUIREMENTS. REFER TO SPECIFICATIONS AND SCHEDULES FOR FURTHER INFORMATION.

DOMESTIC WATER SERVICE ENTRY

SCALE : NO SCALE

1

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SHEET NO.
MECHANICAL AND PLUMBING - DETAILS
MP002

FIXTURE BRANCH CONNECTION SCHEDULE

FIXTURE	COLD WATER	HOT WATER	WASTE	VENT
FLOOR DRAIN	-	-	3"	1-1/2"
ELECTRIC WATER COOLER	1/2"	-	2"	1-1/2"
ICE MAKER BOX	1/2"	-	-	-
LAVATORY/SINK	1/2"	1/2"	1-1/2"	1-1/2"
MOP SINK	1/2"	1/2"	3"	2"
WASHER BOX	1/2"	1/2"	2"	1-1/2"
WATER CLOSET (FLUSH TANK)	1/2"	-	4"	2"
URINAL	3/4"	-	2"	2"
BATHTUB/SHOWER	1/2"	1/2"	2"	1-1/2"
WATER HEATER	3/4"	3/4"	-	-
NOTE:	PIPE SIZES SHOWN ARE MINIMUM. MINIMUM SANITARY SIZE UNDERGROUND IS 2".			

AIR HANDLING UNIT SCHEDULE

MARK	AREA SERVED	MANUFACTURER	MODEL	FLOW	FAN DATA						AHU ELECTRICAL (WITH ELECTRIC HEAT)					ELECTRIC HEAT STRIP				WEIGHT (LBS)	NOTES
					TYPE	QTY	HP	CFM	OUTSIDE AIR (CFM)	ESP (IN. WC)	VOLTAGE	PHASE	HZ	MOCP	MCA	RATED SIZE (kW)	VOLTAGE	PHASE	INPUT (kW)		
AHU-1	CLUBHOUSE	LENNOX	CBA38MV-060-230-6-01	VERTICAL	DIRECT	1	1	2000	300	0.5	240	1	60	90	87	15.0	240	1	15.0	211	A-D
AHU-2	CLUBHOUSE	LENNOX	CBA38MV-060-230-6-02	VERTICAL	DIRECT	1	1	2000	300	0.5	240	1	60	90	87	15.0	240	1	15.0	211	A-D
AHU-3	1 BEDROOM (ADA)	LENNOX	CBA38MV-018/024-230-6-01	VERTICAL	DIRECT	1	1/2	800	-	0.5	240	1	60	40	36	6.0	240	1	6.0	146	A-C
AHU-4	1 BEDROOM	LENNOX	CBA38MV-018/024-230-6-01	VERTICAL	DIRECT	1	1/2	800	-	0.5	240	1	60	40	36	6.0	240	1	6.0	146	A-C
AHU-5	2 BEDROOM (ADA)	LENNOX	CBA38MV-030-230-6-01	VERTICAL	DIRECT	1	1/2	1000	-	0.5	240	1	60	50	47	8.0	240	1	8.0	164	A-C
AHU-6	2 BEDROOM	LENNOX	CBA38MV-030-230-6-01	VERTICAL	DIRECT	1	1/2	1000	-	0.5	240	1	60	50	47	8.0	240	1	8.0	164	A-C
AHU-7	3 BEDROOM (ADA)	LENNOX	CBA38MV-030-230-6-01	VERTICAL	DIRECT	1	1/2	1000	-	0.5	240	1	60	60	52	9.0	240	1	9.0	166	A-C
AHU-8	3 BEDROOM	LENNOX	CBA38MV-030-230-6-01	VERTICAL	DIRECT	1	1/2	1000	-	0.5	240	1	60	60	52	9.0	240	1	9.0	166	A-C

NOTES:
- A. FURNISH ELECTRICAL CONTRACTOR WITH MANUFACUTER'S ELECTRIC HEAT STRIP REPLACEMENT CIRCUIT BREAKER.
- B. PROVIDE UNIT WITH FACTORY MOUNTED DISCONNECT SWITCH AND STARTER.
- C. PROVIDE UNIT WITH SINGLE POINT POWER SOURCE.
- D. PROVIDE UNIT WITH SIDE RETURN UNIT STAND.

CONDENSING UNIT HEAT PUMP SCHEDULE

TAG	BASIS OF DESIGN MFR/MODEL	LOCATION	WEIGHT (LBS)	DIMENSIONS (WxDxH) (IN.)	NOMINAL CAP. (MBH)	ELECTRICAL VOLT	PHASE	HZ	MOCP	MCA	COOLING COIL & MISC. REFR.	AHU	NOTES
CU-1	LENNOX / XP20-060-230A05	GRADE	330	35.5x39.5x45	60	240	1	60	60	34.9	R-410A	AHU-1	A-C
CU-2	LENNOX / XP20-060-230A05	GRADE	330	35.5x39.5x45	60	240	1	60	60	34.9	R-410A	AHU-2	A-C
CU-3	LENNOX / XP20-024-230A05	GRADE	247	35.5x39.5x39	24	240	1	60	30	19.1	R-410A	AHU-3	A-C
CU-4	LENNOX / XP20-024-230A05	GRADE	247	35.5x39.5x39	24	240	1	60	30	19.1	R-410A	AHU-4	A-C
CU-5	LENNOX / XP20-036-230A05	GRADE	280	35.5x39.5x40	36	240	1	60	30	20.8	R-410A	AHU-5	A-C
CU-6	LENNOX / XP20-036-230A05	GRADE	280	35.5x39.5x41	36	240	1	60	30	20.8	R-410A	AHU-6	A-C
CU-7	LENNOX / XP20-036-230A05	GRADE	280	35.5x39.5x42	36	240	1	60	30	20.8	R-410A	AHU-7	A-C
CU-8	LENNOX / XP20-036-230A05	GRADE	280	35.5x39.5x43	36	240	1	60	30	20.8	R-410A	AHU-8	A-C

NOTES:
- A. PROVIDE TIME DELAY ON COMPRESSOR RE-START KIT, CRANKCASE HEATER, AND COMPRESSOR LOCK-OUT WITH AMBIENT BELOW 35F.
- B. MECHANICAL CONTRACTOR SHALL COORDINATE ALL UNIT MOCP'S OF ACTUAL INSTALLED EQUIPMENT WITH ELECTRICAL CONTRACTOR.
- C. PROVIDE MIN. 4" TALL PRE-MANUFACTURED POLYOLEFIN PAD.

OUTDOOR AIR CALCULATIONS

UNIT	AREA (SQ-FT)	OCCUPANCY CLASSIFICATION	OCCUPANT DENSITY, PEOPLE/1000 SQ-FT	SPECIFIED OCCUPANCY	OUTDOOR AIRFLOW RATE PER PERSON (Rp), CFM/PERSON	AREA OUTDOOR AIRFLOW RATE IN BREATHING ZONE (Ra), CFM/SQ-FT	ZONE DISTRIBUTION EFFECTIVENESS (Ez)	REQUIRED AIR FLOW, CFM
F-1	949	ACTIVITY	30	-	5	0.06	0.8	249.1
							TOTAL	249.1
	303	WEIGHT ROOM	10	-	20	0.06	0.8	98.5
	460	RECEPTION	30	-	5	0.06	0.8	120.8
	195	COORIDOR	-	-	-	0.06	0.8	14.6
F-2	497	OFFICE	5	-	5	0.06	0.8	52.8
							TOTAL	286.7

EXHAUST FAN SCHEDULE

MARK	AREA SERVED	MANUFACTURER	MODEL	MOUNTING / TYPE	CFM	ESP (IN)	DRIVE	POWER	ELECTRICAL VOLTS	ELECTRICAL PHASE	WEIGHT	NOTES
EF-1	CLUBHOUSE MEN'S RESTROOM - 111	PANASONIC	FV-1115VK2	CEILING / CABIENT	150	0.2	DIRECT	12.9W	120	1	12	A,B
EF-2	CLUBHOUSE WOMEN'S RESTROOM - 109	PANASONIC	FV-1115VK2	CEILING / CABIENT	150	0.2	DIRECT	12.9W	120	1	12	A,B
EF-3	APARTMENT RESTROOMS	AIRKING	FRAK90	CEILING / CABINET	90	0.2	DIRECT	24.2 W	120	1	13	A,C

NOTES:
- A. PROVIDE INTERNAL CABINET BACKDRAFT DAMPER, CEILING GRILLE, ALL THREAD RODS AND VIBRATION ISOLATORS.
- B. INTERLOCK FAN OPERATION WITH LIGHT SWITCH
- C. PROVIDE WALL SWITCH SEPARATE FROM LIGHT SWITCH. COORDINATE WITH ELECTRICAL CONTRACTOR.

UNIT HEATER SCHEDULE (ELECTRIC)

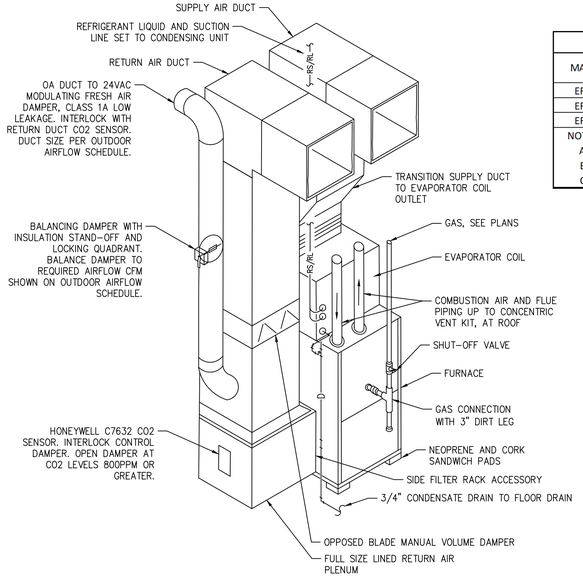
MARK	LOCATION	MANUFACTURER	MODEL	WEIGHT	WATTAGE (kW)	CFM	ELECTRICAL VOLTS	ELECTRICAL PH	ELECTRICAL AMPS	NOTES
EWH-1	RISER ROOM	QMARK	AWH3150F	25	1.5	100	120	1	12.5	A
EWH-2	APARTMENT ENTRY	QMARK	MFQ6008	50	6.0	200	240	1	25	A

NOTES:
- A. PROVIDE WALL MOUNT BRACKET COMPATIBLE WITH WALL TYPE.

GRILLE, REGISTER AND DIFFUSER SCHEDULE

MARK	MANUFACTURER	MODEL	FACE TYPE	MOUNTING TYPE	FACE SIZE (IN.)	MAX NC	NOTES
SUPPLY							
CSD-1A	AIRMATE	A1004	4-WAY DEFLECTION	SURFACE MOUNT	12" x 12"	25	A-F
CSD-1B	AIRMATE	A1004	4-WAY DEFLECTION	SURFACE MOUNT	6" x 6"	25	A-F
CSD-1C	AIRMATE	A1004	4-WAY DEFLECTION	SURFACE MOUNT	10" x 10"	25	A-F
CSD-1D	AIRMATE	A1004	4-WAY DEFLECTION	SURFACE MOUNT	8" x 8"	25	A-F
CSD-2	TITUS	OMNI	PLAQUE FACE	SURFACE MOUNT	24" x 24"	25	A-E
CSD-3	TITUS	TDC	LOUVERED	SURFACE MOUNT	12" x 12"	25	A-E
RETURN							
WRG-1	AIRMATE	170	LOUVERED	SURFACE MOUNT	DUCT + 1.75"	25	A,B,C,E
WRG-2	TITUS	350RL	LOUVERED	SURFACE MOUNT	DUCT + 1.75"	25	A,B,C,E
CRG-1	TITUS	50F	EGGCRATE	SURFACE MOUNT	DUCT + 1.75"	25	A,B,C,E

NOTES:
- A. NECK SIZE SHOWN ON DRAWINGS.
- B. BRANCH DUCT SIZE SHALL BE SAME AS NECK SIZE UNLESS OTHERWISE SHOWN ON DRAWINGS.
- C. BAKED ENAMEL FINISH, WHITE TO MATCH CEILING/WALL COLOR.
- D. PROVIDE OPPOSED BLADE DAMPER WITH OPERATING LEVER ACCESIBLE FROM FACE SIDE OF DIFFUSER.
- E. FRAME TYPE TO MATCH CEILING/WALL CONSTRUCTION, COORDINATE WITH ARCHITECTURAL REFLECTED CEILING PLAN.
- F. PROVIDE UL LISTED CEILING RADIATION DAMPER WITH DUCT TRANSITION, RUSKIN CFD7T-SB OR EQUAL.



NOTE TO CONTRACTOR:
1. ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST AS REQUIRED TO SUIT ACTUAL INSTALLATION CONDITIONS.

FURNACE INSTALLATION DETAIL

1

SCALE : NO SCALE

PLUMBING FIXTURE SCHEDULE

BASIS OF DESIGN. CONFIRM ALL SELECTIONS WITH OWNER AND ARCHITECT PRIOR TO PURCHASE.

FD	FLOOR DRAIN: SIOUX CHIEF 832-3PNR, FLOOR DRAIN, PVC BODY AND CLAMPING COLLAR, ADJUSTABLE 5-1/2" ROUND NICKEL BRONZE STRAINER, WITH TRAP PRIMER CONNECTION.
IMB	ICE MAKER BOX: OATEY 39152, QUARTER TURN BRASS BALL VALVES, COPPER SWEAT CONNECTIONS, WATER HAMMER ARRESTORS.
LAV1	DROP-IN LAVATORY: KOHLER K-R2699-4, THREE FAUCET HOLE, 20.125"X16.5"X7.625" OVAL BASIN, SELF RIMMING, VITREOUS CHINA, WITH SINGLE-HANDLE FAUCET (KOHLER K-45800-4-CP). PROVIDE FLEXIBLE SS RISERS WITH CHROME PLATED STOP VALVES, P-TRAP WITH CLEANOUT AND ESCUTCHEONS.
LAV2	DROP-IN LAVATORY: TOTO LT502, SINGLE FAUCET HOLE, 19"X19"X8.5", ELLIPTICAL BASIN, SELF RIMMING, VITREOUS CHINA, WITH SINGLE-HANDLE FAUCET (MOEN P84346). PROVIDE FLEXIBLE SS RISERS WITH CHROME PLATED STOP VALVES, P-TRAP WITH CLEANOUT AND ESCUTCHEONS.
SINK1	DROP-IN SINK: JUST MANUFACTURING DL-ADA-1933-A-GR, THREE FAUCET HOLE, 33"X19"X6.5", TWO RECTANGULAR BOWLS, SELF RIMMING, STAINLESS STEEL, WITH PULL-DOWN FAUCET (DESIGN HOUSE 595140). PROVIDE GARBAGE DISPOSAL (INSINKERATOR BADGER 5, 120V, 1/2 HP), FLEXIBLE SS RISERS WITH CHROME PLATED STOP VALVES, P-TRAP WITH CLEANOUT AND ESCUTCHEONS.
SINK2	DROP-IN SINK: ELKAY LRAD331965, ADA COMPLIANT, FOUR FAUCET HOLE, 33"X19.5"X6.5", TWO RECTANGULAR BOWLS, STAINLESS STEEL, WITH PULL-DOWN FAUCET AND SOAP DISPENSER (DELTA 19792Z-SPSD-DST). PROVIDE GARBAGE DISPOSAL (INSINKERATOR BADGER 5, 120V, 1/2 HP), FLEXIBLE SS RISERS WITH CHROME PLATED STOP VALVES, P-TRAP WITH CLEANOUT AND ESCUTCHEONS.
SINK3	DROP-IN SINK: JUST MANUFACTURING DL-ADA-1933-A-GR, THREE FAUCET HOLE, 33"X19"X6.5", TWO RECTANGULAR BOWLS, SELF RIMMING, STAINLESS STEEL, WITH PULL-DOWN FAUCET (DESIGN HOUSE 595140). PROVIDE GARBAGE DISPOSAL (INSINKERATOR BADGER 5, 120V, 1/2 HP), FLEXIBLE SS RISERS WITH CHROME PLATED STOP VALVES, P-TRAP WITH CLEANOUT AND ESCUTCHEONS.
BT1	ALCOVE BATHTUB: AMERICAN STANDARD 2574102, 60"X32"X76", HIGH GLOSS ACRYLIC FINISH, TEXTURED FLOOR, WITH TUB OVERFLOW AND INTEGRAL DRAIN. PROVIDE BATHTUB WALL SET (AMERICAN STANDARD 2946.BW), MIXING VALVE (DELTA R10000). PROVIDE TUB SPOUT WITH PULL-UP DIVERTER AND SHOWERHEAD (DELTA T14459). FINISH AS INDICATED ON ARCHITECTURAL.
BT2	ADA COMPLIANT BATHTUB: STERLING 71140115, 60"X30"X72" MODULAR WALL SURROUND, STAINLESS STEEL GRAB BARS, SMOOTH WALL FINISH, HANDICAP SEAT. PROVIDE SHOWER SYSTEM WITH SHOWERHEAD, HAND-HELD SHOWER AND SLIDE BAR (MOEN 8342). FINISH AS INDICATED ON ARCHITECTURAL.
SHWR	ADA TRANSFER SHOWER: FREEDOM APFQ3838BF1PRRFR, 38.5"X37.125"X78.875" (OVERALL DIMENSIONS), ACRYLIC FINISH, SLIP-RESISTANT FLOOR, FACTORY INSTALLED SHOWER SEAT AND GRAB BARS. PROVIDE WITH MIXING VALVE (FREEDOM APFMVLS) AND HANDHELD SHOWER KIT WITH GLIDE BAR (FREEDOM APFHHGBLS).
RPZ1	REDUCED PRESSURE ZONE BACKFLOW PREVENTER: 2", WATTS LF009QT, MEETING ASSE 1013, LEAD FREE CAST BRONZE BODY, QUARTER TURN TESTING COCKS, QUARTER TURN BALL VALVES, AND # 909AG AIR GAP FITTING, DESIGNED FOR HORIZONTAL INSTALLATION.
RPZ2	REDUCED PRESSURE ZONE BACKFLOW PREVENTER: 2", WATTS LF009QT, MEETING ASSE 1013, LEAD FREE CAST BRONZE BODY, QUARTER TURN TESTING COCKS, QUARTER TURN BALL VALVES, AND # 909AG AIR GAP FITTING, DESIGNED FOR HORIZONTAL INSTALLATION.
RPZ3	REDUCED PRESSURE ZONE BACKFLOW PREVENTER: 2", WATTS LF009QT, MEETING ASSE 1013, LEAD FREE CAST BRONZE BODY, QUARTER TURN TESTING COCKS, QUARTER TURN BALL VALVES, AND # 909AG AIR GAP FITTING, DESIGNED FOR HORIZONTAL INSTALLATION.
RPZ4	REDUCED PRESSURE ZONE BACKFLOW PREVENTER: 1", WATTS LF909QT, MEETING ASSE 1013, LEAD FREE CAST BRONZE BODY, QUARTER TURN TESTING COCKS, QUARTER TURN BALL VALVES, AND # 909AG AIR GAP FITTING.
WB	WASHER OUTLET BOX: OATEY 38530, 2" DRAIN OPENING, QUARTER TURN BRASS BALL VALVES, COPPER SWEAT CONNECTIONS.
WC1	FLOOR-MOUNTED WATER CLOSET: KOHLER K-5298-TR-0, VIREOUS CHINA, 1.0 GPF, ELONGATED BOWL, FLOOR MOUNTED W/ 16.5" BOWL HEIGHT, WHITE, VITREOUS CHINA TANK AND COVER CONTAINING FLUSH VALVE, WHITE OPEN-FRONT SEAT, CHROME STOPS, C.P. FLEXIBLE RISER TUBE, BOLT CAPS AND ESCUTCHEONS.
WC2	FLOOR-MOUNTED ADA WATER CLOSET: KOHLER K-3519-TR-0, HANDICAP ACCESSIBLE, VIREOUS CHINA, 1.0 GPF, ELONGATED BOWL, FLOOR MOUNTED W/ 17.125" BOWL HEIGHT, WHITE, VITREOUS CHINA TANK AND COVER CONTAINING FLUSH VALVE, WHITE OPEN-FRONT SEAT, CHROME STOPS, C.P. FLEXIBLE RISER TUBE, BOLT CAPS AND ESCUTCHEONS.
UR	URINAL: KOHLER K-4991-ET, VITREOUS CHINA, WASHOUT WALL URINAL, 0.5 GPF, 27"H X 18"W, FURNISH WITH MANUAL FLUSHOMETER (SLOAN 186-0.5), VANDAL RESISTANT CHROME FINISH HOUSING. MOUNT ADA URINAL 17" FROM FINISHED FLOOR. TRIM: SUITABLE CARRIER WITH STANCHIONS TO FLOOR. PLUMBING CONTRACTOR TO INSTALL.
MS	MOP SINK: ZURN Z1996-24, 24"X24"X10", HIGH-DENSITY COMPOSITE, MOLDED BASIN. PROVIDE WALL MOUNTED SERVICE FAUCET (ZURN Z1996-SF), WITH TWO HANDLES, VACUUM BREAKER AND 1/2" NPT THREAD.
EWC	ELECTRIC WATER COOLER: ELKAY EZSTL8LC, BARRIER FREE TWO-STATION BI-LEVEL WATER COOLER, 8.0 GPH REFRIGERATED, 120V, ADA, FRONT AND SIDE PUSH BARS, CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT, CHROME PLATED LOOSE KEY ANGLE STOP, FLOOR MOUNTED CARRIER AND CANE APRON.
WH1	ELECTRIC WATER HEATER: RHEEM XE30S06ST45U1, 30 GALLON, 3/4" SIDE CONNECTIONS, 46 GALLONS FHR, 21 GPH @ 90°F RISE, 240V/1PH, DUAL 4500W ELEMENTS, NON-SIMULTANEOUS OPERATION.
WH2	ELECTRIC WATER HEATER: RHEEM XE40M06ST45U1, 40 GALLON, 3/4" SIDE CONNECTIONS, 53 GALLONS FHR, 21 GPH @ 90°F RISE, 240V/1PH, DUAL 4500W ELEMENTS, NON-SIMULTANEOUS OPERATION.
WH3	ELECTRIC WATER HEATER: RHEEM XE50M06ST45U1, 50 GALLON, 3/4" SIDE CONNECTIONS, 61 GALLONS FHR, 21 GPH @ 90°F RISE, 240V/1PH, DUAL 4500W ELEMENTS, NON-SIMULTANEOUS OPERATION.
WH4	ELECTRIC WATER HEATER: RHEEM PROE20, 20 GALLON, 3/4" CONNECTIONS, 21 GPH @ 90°F RISE, 240V/1PH, DUAL 4500W ELEMENTS, NON-SIMULTANEOUS OPERATION.

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PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

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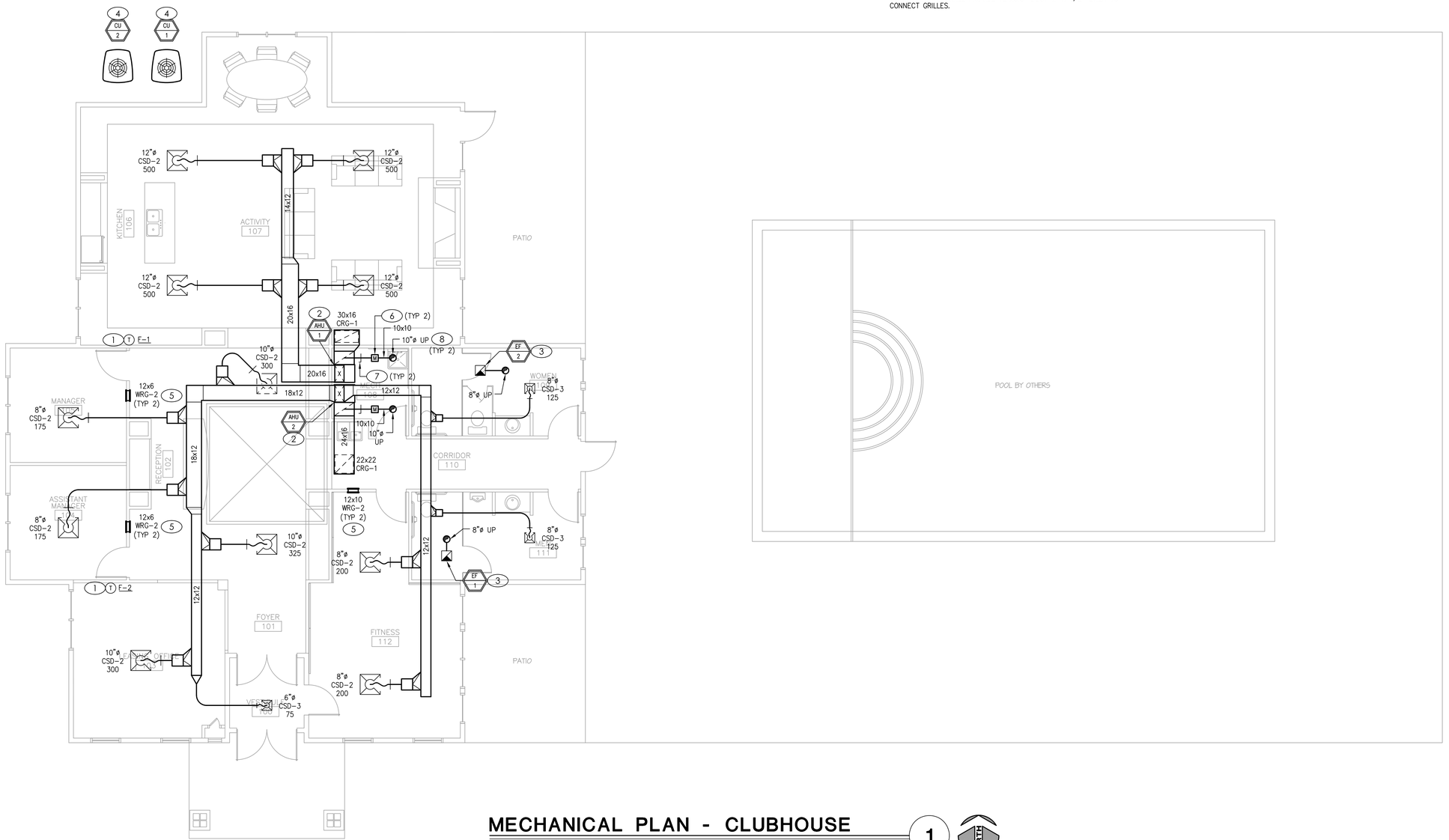
SHEET NO.
MECHANICAL AND PLUMBING - SCHEDULES
MP003

KEYED PLAN NOTES

1. LOCATE THERMOSTAT ON WALL AT 54"AFF. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.
2. INSTALL AIR HANDLER SO THAT IT HAS AN UNOBSTRUCTED PASSAGEWAY DIRECTLY IN FRONT OF THE UNIT. ROUTE FULL SIZE DUCT FROM COIL UP TO CEILING SPACE. CONTINUE DISTRIBUTION AS SHOWN.
3. 8"ø DUCT FROM EXHAUST FAN TO APPROVED ROOF CAP. EXHAUST MUST DISCHARGE OUTDOORS. LOCATE A MINIMUM OF 10'-0" FROM ANY OUTSIDE AIR INTAKE. SEAL ROOF PENETRATION WEATHER TIGHT. COORDINATE ROOF CAP COLOR WITH ARCHITECT.
4. CONDENSING UNIT LEVEL ON GRADE. INSTALL PER MANUFACTURER'S INSTRUCTIONS MAINTAINING RECOMMENDED SERVICE CLEARANCES. ROUTE REFRIGERANT LINES THOUGH WALL 18" AFG. SEAL REFRIGERANT LINE PENETRATIONS OF BUILDING WEATHER TIGHT. PROVIDE ALL RECOMMENDED VALVES, FILTERS, FITTINGS, ETC. AND MAKE ALL NECESSARY CONNECTIONS TO AIR HANDLING UNIT.
5. PROVIDE TRANSFER GRILLE 12" BELOW CEILING ON CORRIDOR/RECEPTION SIDE OF WALL AND TRANSFER GRILLE 12"AFF ON OFFICE/FITNESS SIDE OF WALL. WITHIN WALL PROVIDE 12"X3.5" DUCT WITH 1/2" LINER TO CONNECT GRILLES.

KEYED PLAN NOTES

6. PROVIDE GREENHECK VCD-23 CLASS 1A LOW LEAKAGE CONTROL DAMPER WITH 24V ACTUATOR AND LOW VOLTAGE TRANSFORMER. CONTINUE WITH OUTDOOR AIR DUCT TO RETURN AIR DUCT AT UNIT. AT UNIT, IN RETURN DUCT, PROVIDE HONEYWELL C7632 CO2 SENSOR. INTERLOCK CONTROL DAMPER WITH CO2 SENSOR TO OPEN DAMPER UPON DETECTION OF CO2 LEVELS ABOVE 800PPM. SEE DETAIL ON MP003 FOR ADDITIONAL INFORMATION.
7. PROVIDE MANUAL BALANCING DAMPER. BALANCE TO OUTSIDE AIR CFM SHOWN ON FURNACE SCHEDULE.
8. TRANSITION TO 10"ø DUCT AND ROUTE UP THROUGH ROOF TO ROOF JACK WITH WEATHER CAP. LOCATE A MINIMUM OF 10'-0" FROM ANY EXHAUST VENT. SEAL ROOF PENETRATION WEATHER TIGHT. COORDINATE ROOF CAP COLOR WITH ARCHITECT.



MECHANICAL PLAN - CLUBHOUSE

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

1

NORTH

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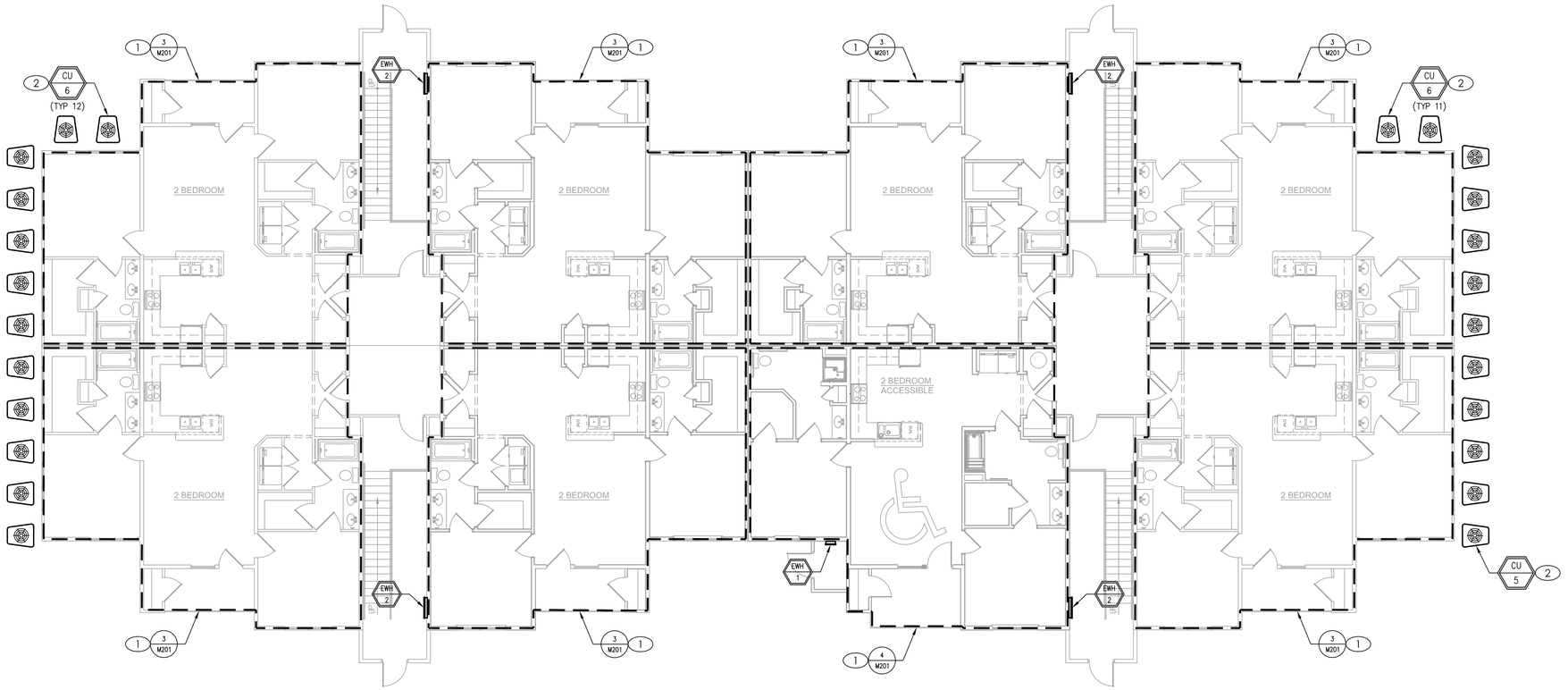
SHEET NO.

MECHANICAL PLAN
CLUBHOUSE BUILDING

M101

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT HVAC PLANS.
2. CONDENSING UNIT LEVEL AT GRADE ON PRE-MANUFACTURED PAD. INSTALL PER MANUFACTURER'S INSTRUCTIONS MAINTAINING RECOMMENDED CLEARANCES. WEATHER SEAL REFRIGERANT LINE PENETRATIONS OF BUILDING. PROVIDE ALL RECOMMENDED VALVES, FILTERS, FITTINGS, ETC. AND MAKE ALL NECESSARY CONNECTIONS BETWEEN CONDENSING UNIT AND INDOOR UNIT.



FIRST LEVEL MECHANICAL PLAN - BUILDING TYPE A

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

1

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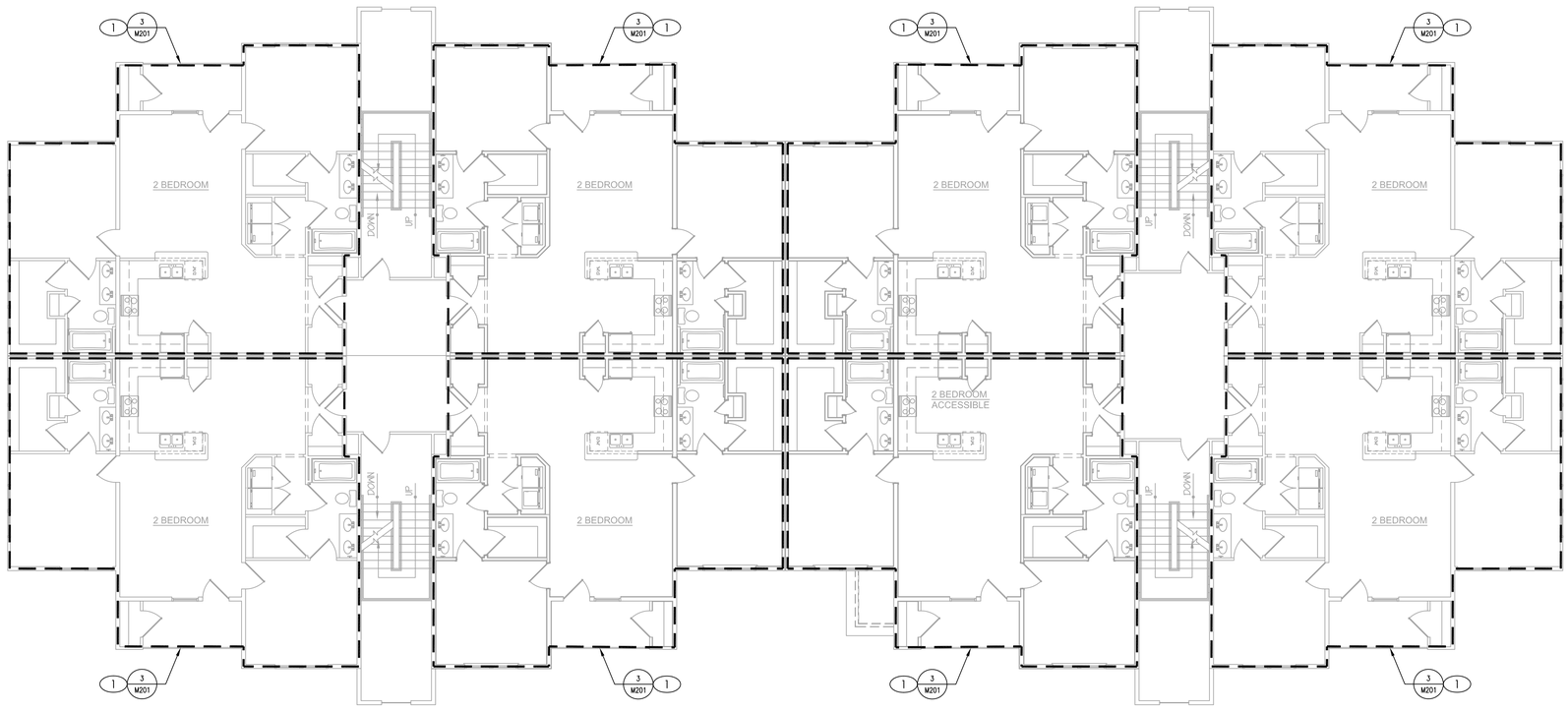
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SHEET NO.
MECHANICAL PLAN
FIRST LEVEL
BUILDING TYPE A
M111

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT HVAC PLANS.



SECOND/THIRD LEVEL MECHANICAL PLAN - BUILDING TYPE A

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

1

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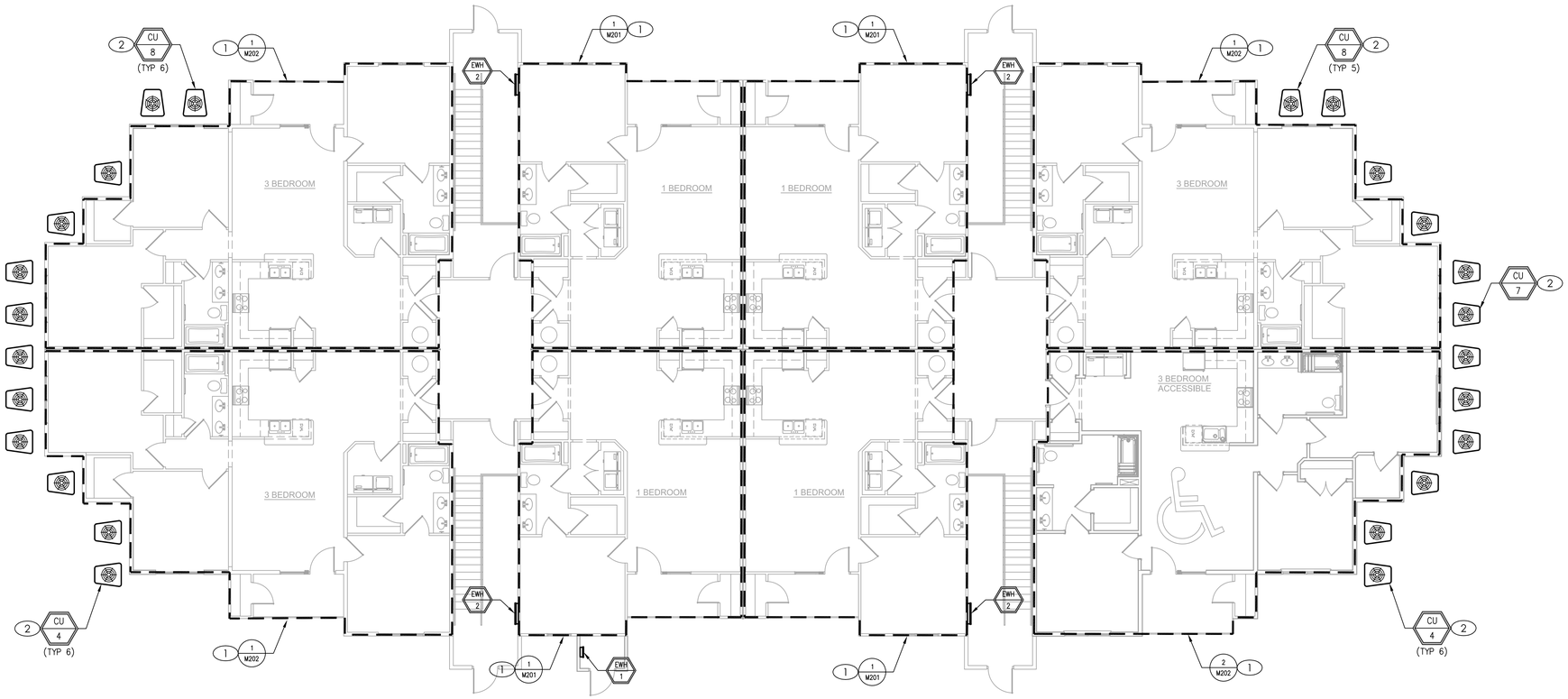
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SHEET NO.
MECHANICAL PLAN
SECOND/THIRD LEVEL
BUILDING TYPE A
M112

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT HVAC PLANS.
2. CONDENSING UNIT LEVEL AT GRADE ON PRE-MANUFACTURED PAD. INSTALL PER MANUFACTURER'S INSTRUCTIONS MAINTAINING RECOMMENDED CLEARANCES. WEATHER SEAL REFRIGERANT LINE PENETRATIONS OF BUILDING. PROVIDE ALL RECOMMENDED VALVES, FILTERS, FITTINGS, ETC. AND MAKE ALL NECESSARY CONNECTIONS BETWEEN CONDENSING UNIT AND INDOOR UNIT.



FIRST LEVEL MECHANICAL PLAN - BUILDING TYPE B

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

1

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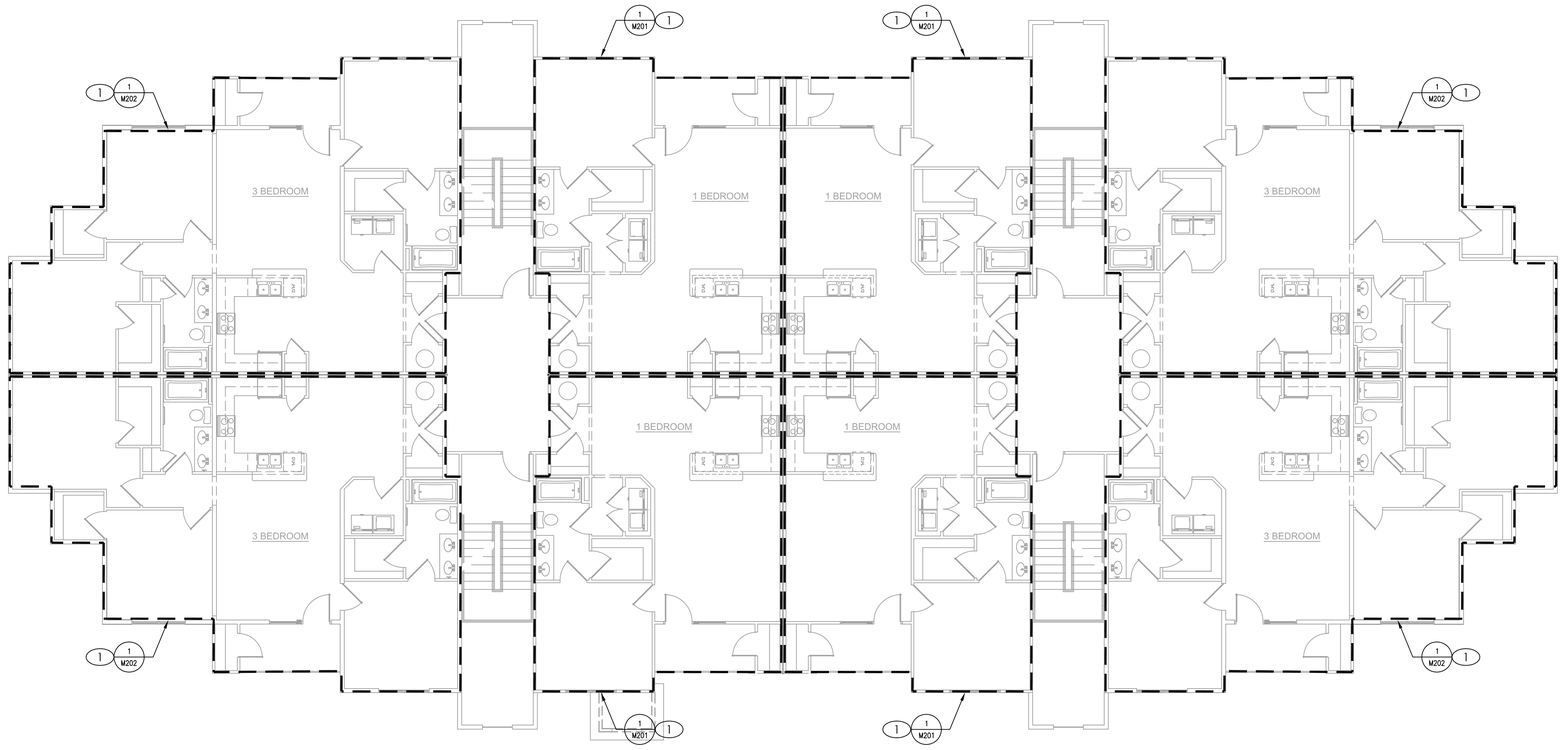
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SHEET NO.
MECHANICAL PLAN
FIRST LEVEL
BUILDING TYPE B
M121

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT HVAC PLANS.



SECOND/THIRD LEVEL MECHANICAL PLAN - BUILDING TYPE B

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

1

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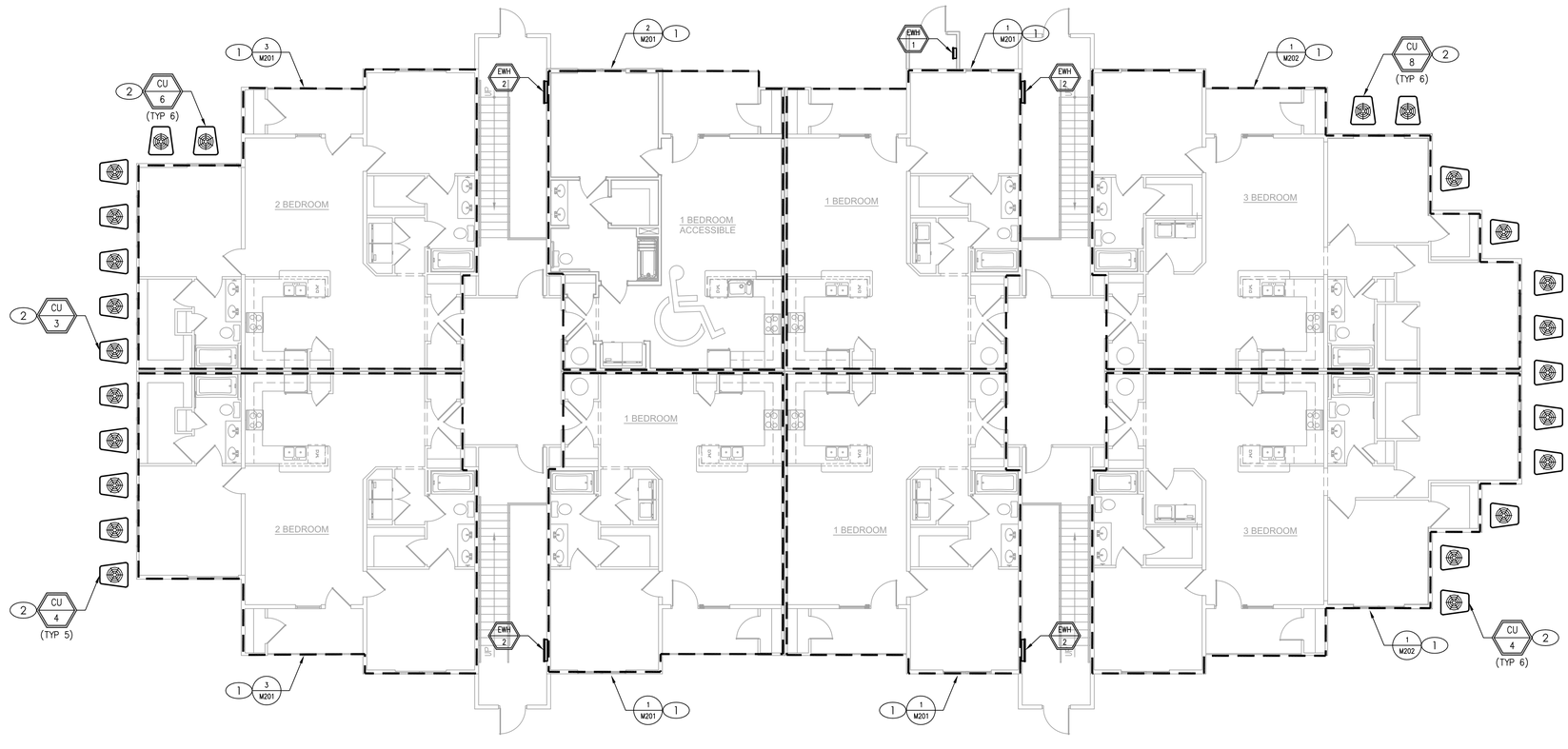
SHEET NO.

MECHANICAL PLAN
SECOND/THIRD LEVEL
BUILDING TYPE B

M122

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT HVAC PLANS.
2. CONDENSING UNIT LEVEL AT GRADE ON PRE-MANUFACTURED PAD. INSTALL PER MANUFACTURER'S INSTRUCTIONS MAINTAINING RECOMMENDED CLEARANCES. WEATHER SEAL REFRIGERANT LINE PENETRATIONS OF BUILDING. PROVIDE ALL RECOMMENDED VALVES, FILTERS, FITTINGS, ETC. AND MAKE ALL NECESSARY CONNECTIONS BETWEEN CONDENSING UNIT AND INDOOR UNIT.



FIRST LEVEL MECHANICAL PLAN - BUILDING TYPE C

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

1

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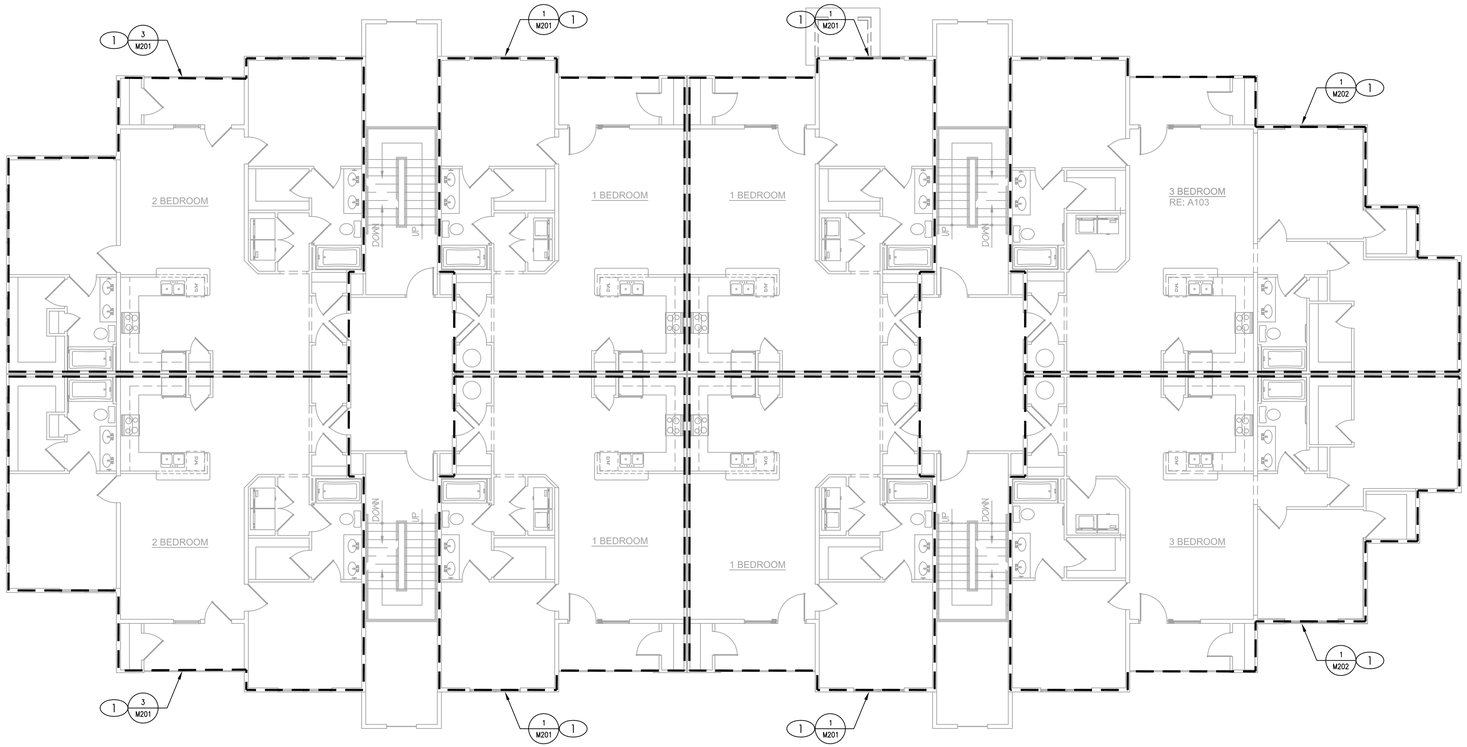
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SHEET NO.
MECHANICAL PLAN
FIRST LEVEL
BUILDING TYPE C
M131

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT HVAC PLANS.



SECOND/THIRD LEVEL MECHANICAL PLAN - BUILDING TYPE C

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

1

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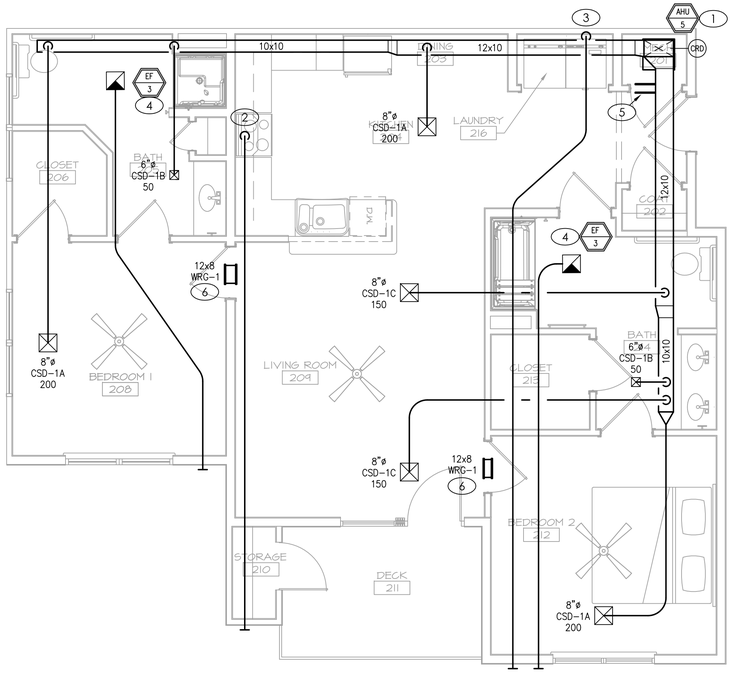
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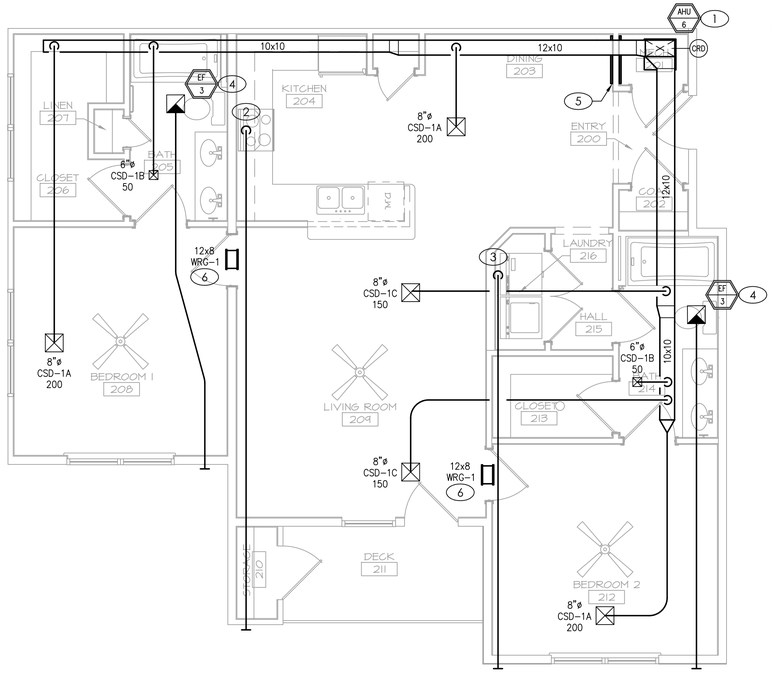
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MECHANICAL PLAN
SECOND/THIRD LEVEL
BUILDING TYPE C

M132



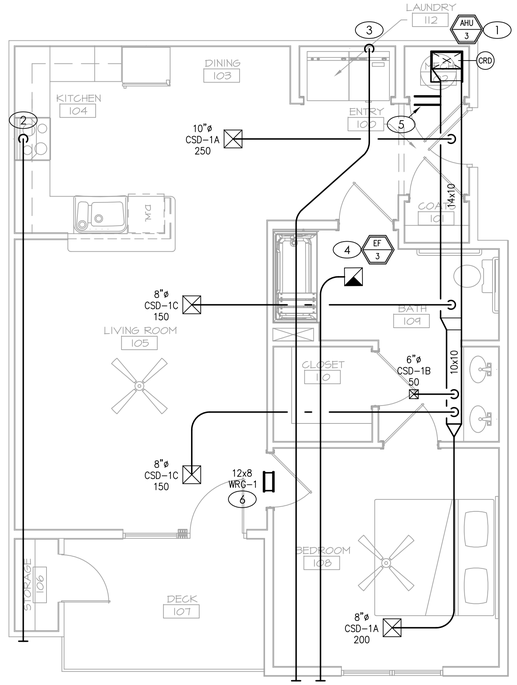
MECHANICAL PLAN - TYP. 2 BEDROOM (ADA) 4

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



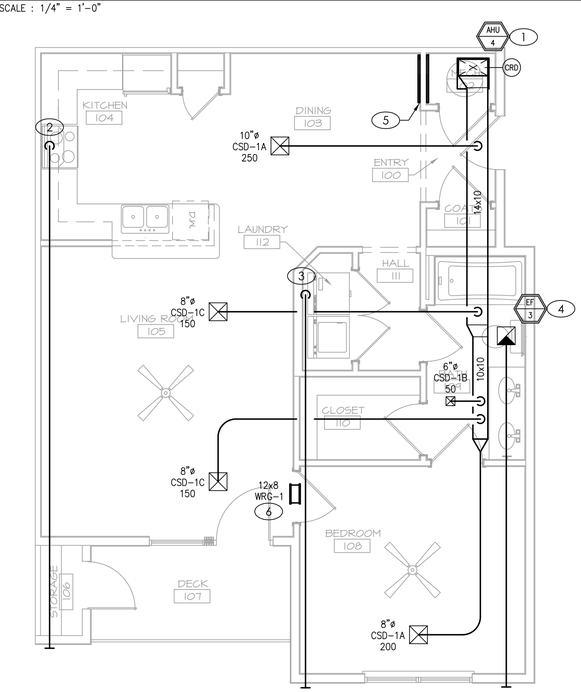
MECHANICAL PLAN - TYP. 2 BEDROOM 3

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



MECHANICAL PLAN - TYP. 1 BEDROOM (ADA) 2

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



MECHANICAL PLAN - TYP. 1 BEDROOM 1

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

KEYED PLAN NOTES

1. AIR HANDLING UNIT MOUNTED ABOVE WATER HEATER. MAKE ALL NECESSARY CONNECTIONS TO CONDENSING UNIT ON GRADE. SEE DETAIL ON SHEET MP002. INSTALL PER MANUFACTURER'S RECOMMENDED CLEARANCES.
2. RESIDENTIAL RANGE HOOD VENT. SIZE VENT PER MANUFACTURER'S WRITTEN INSTRUCTIONS. ROUTE THROUGH WALL AND TERMINATE WITH MANUFACTURER'S APPROVED VENT CAP. PAINT COLOR APPROVED BY ARCHITECT. LOCATE A MINIMUM OF 3'-0" FROM ANY OPERABLE DOOR OR WINDOW.
3. CONNECT 4" FLEXIBLE DRYER VENT WITH CLAMP TO DRYER VENT CONNECTION AT WALL. RUN 4" RIGID DUCT IN CEILING AND THROUGH EXTERIOR WALL, TERMINATE WITH MANUFACTURER'S APPROVED VENT CAP. PAINT COLOR APPROVED BY ARCHITECT. PROVIDE BACKDRAFT DAMPER. RIGID DUCT SHALL BE GALVANIZED STEEL MINIMUM 0.022" (26 GA). INSTALL VENT PER MANUFACTURER'S INSTRUCTIONS ADHERING TO LENGTH AND ELBOW LIMITATIONS.
4. 6"ø DUCT FROM EXHAUST FAN TO APPROVED WALL CAP. EXHAUST MUST DISCHARGE OUTDOORS. LOCATE A MINIMUM FROM OF 10'-0" FROM ANY OUTSIDE AIR INTAKE. SEAL WALL PENETRATION WEATHERTIGHT. COORDINATE WALL CAP COLOR WITH ARCHITECT.
5. PROVIDE 30x20 GRILLE, TYPE CRG-1, HIGH ON WALL WITH FULL SIZE OPENING THROUGH WALL. INSTALL ADDITIONAL 32x20 GRILL ON INTERIOR SIDE OF CLOSET. COORDINATE LOCATION WITH ARCHITECT.
6. PROVIDE RETURN GRILLE ON BOTH SIDES OF WALL FOR RETURN AIR TRANSFER. MOUNT GRILLES 1'-0" BELOW CEILING.

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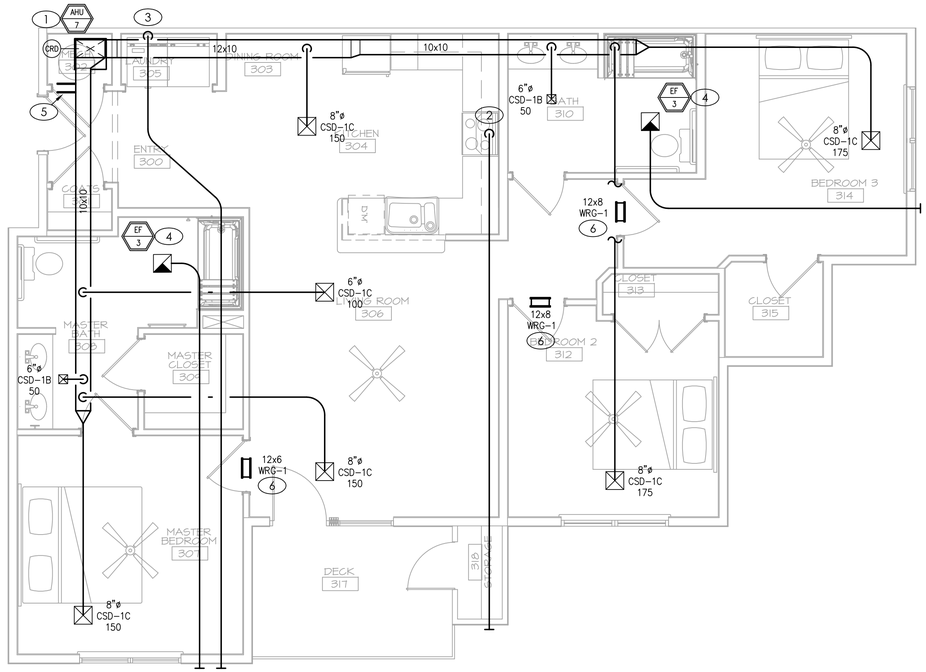
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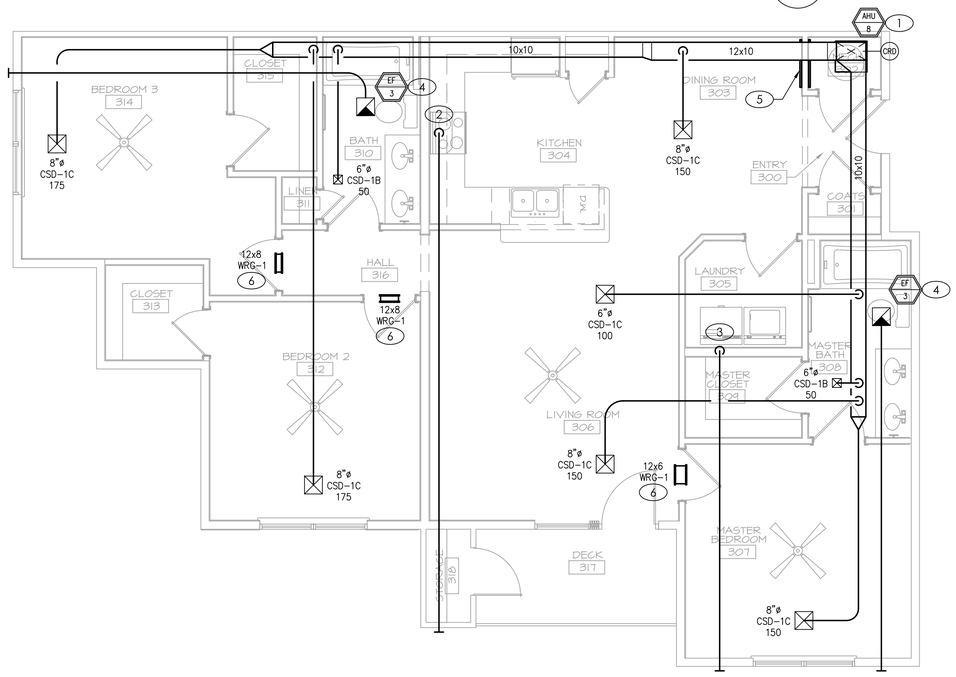
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SHEET NO.
ENLARGED MECHANICAL PLANS
M201



MECHANICAL PLAN - TYP. 3 BEDROOM (ADA) 2

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



MECHANICAL PLAN - TYP. 3 BEDROOM 1

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

KEYED PLAN NOTES

1. AIR HANDLING UNIT MOUNTED ABOVE WATER HEATER. MAKE ALL NECESSARY CONNECTIONS TO CONDENSING UNIT ON GRADE. SEE DETAIL ON SHEET MP002. INSTALL PER MANUFACTURER'S RECOMMENDED CLEARANCES.
2. RESIDENTIAL RANGE HOOD VENT. SIZE VENT PER MANUFACTURER'S WRITTEN INSTRUCTIONS. ROUTE THROUGH WALL AND TERMINATE WITH MANUFACTURER'S APPROVED VENT CAP. PAINT COLOR APPROVED BY ARCHITECT. LOCATE A MINIMUM OF 3'-0" FROM ANY OPERABLE DOOR OR WINDOW.
3. CONNECT 4" FLEXIBLE DRYER VENT WITH CLAMP TO DRYER VENT CONNECTION AT WALL. RUN 4" RIGID DUCT IN CEILING AND THROUGH EXTERIOR WALL, TERMINATE WITH MANUFACTURER'S APPROVED VENT CAP. PAINT COLOR APPROVED BY ARCHITECT. PROVIDE BACKDRAFT DAMPER. RIGID DUCT SHALL BE GALVANIZED STEEL MINIMUM 0.022" (26 GA). INSTALL VENT PER MANUFACTURER'S INSTRUCTIONS ADHERING TO LENGTH AND ELBOW LIMITATIONS.
4. 6"ø DUCT FROM EXHAUST FAN TO APPROVED WALL CAP. EXHAUST MUST DISCHARGE OUTDOORS. LOCATE A MINIMUM FROM OF 10'-0" FROM ANY OUTSIDE AIR INTAKE. SEAL WALL PENETRATION WEATHERTIGHT. COORDINATE WALL CAP COLOR WITH ARCHITECT.
5. PROVIDE 30x20 GRILLE, TYPE CRG-1, HIGH ON WALL WITH FULL SIZE OPENING THROUGH WALL. INSTALL ADDITIONAL 32x20 GRILL ON INTERIOR SIDE OF CLOSET. COORDINATE LOCATION WITH ARCHITECT.
6. PROVIDE RETURN GRILLE ON BOTH SIDES OF WALL FOR RETURN AIR TRANSFER. MOUNT GRILLES 1'-0" BELOW CEILING.

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02-08-2022
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PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

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SHEET NO.
ENLARGED MECHANICAL PLANS
M202

(#) KEYED PLAN NOTES

1. 4" SANITARY TO UTILITY SERVICE. CONTRACTOR SHALL WORK WITH LOCAL WASTE WATER AUTHORITY AND BEAR ALL COST FOR INSTALLATION OF A NEW SEWER LINE CONNECTING INTO THE SEWER MAIN FOR A COMPLETE INSTALLATION. REFER TO CIVIL PLANS FOR CONTINUATION. COORDINATE INVERT ELEVATION WITH EXISTING SITE UTILITIES PRIOR TO START OF WORK.
2. VENT STACK UP TO 3" VENT THROUGH ROOF. LOCATE A MINIMUM OF 3'-0" FROM EDGE OF ROOF AND 10'-0" FROM ANY OUTSIDE AIR INTAKE. COORDINATE PIPE PENETRATION WITH ROOFING CONTRACTOR SO NOT TO VOID ROOF WARRANTY. SEAL ROOF PENETRATION WEATHERTIGHT.
3. PROVIDE 1-1/2" ISLAND VENT. SEE DETAIL ON SHEET MP002 FOR ADDITIONAL INFORMATION.



WASTE & VENT PLAN - CLUBHOUSE

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

1

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SHEET NO.

PLUMBING PLAN
CLUBHOUSE BUILDING

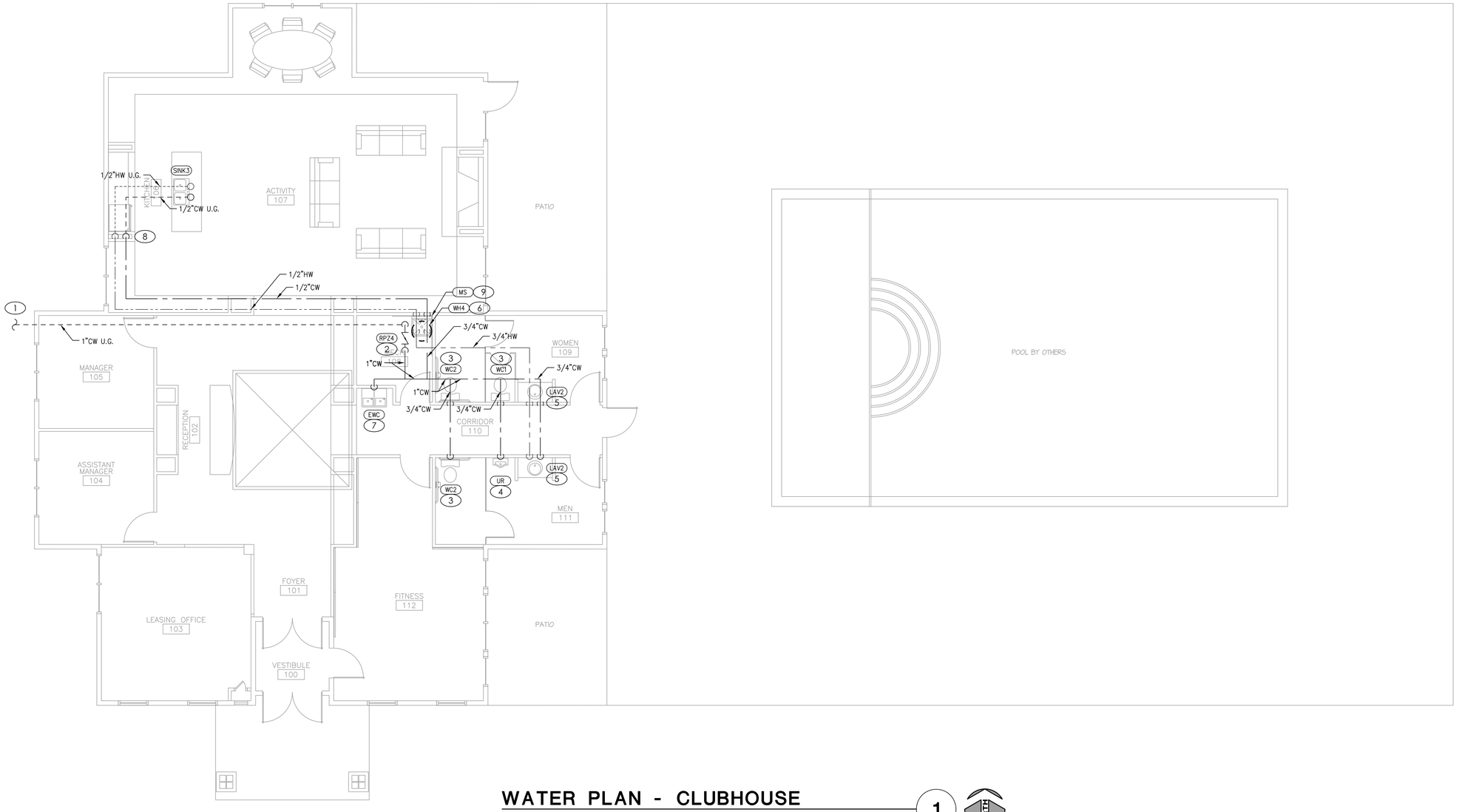
P101

(#) KEYED PLAN NOTES

1. 1" DOMESTIC COLD WATER TO UTILITY SERVICE. SEE CIVIL PLANS FOR CONTINUATION. CONTRACTOR SHALL WORK WITH THE WATER COMPANY FOR THE INSTALLATION OF A NEW WATER MAIN ENTRANCE, INCLUDING TAP, METER, METER PIT, PIPING, ETC. FOR A COMPLETE INSTALLATION.
2. PROVIDE RPZ BACKFLOW PREVENTER IN VERTICAL AS SCHEDULED. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION. INSTALL BACKFLOW PREVENTER 24" ABOVE FINISHED FLOOR (CENTERLINE ELEVATION) AND MINIMUM 12" CLEARANCE FRONT AND BACK. PROVIDE DRAIN FROM BFP TO MOP SINK AND DISCHARGE WITH AIR GAP.
3. PROVIDE 1/2"CW DOWN IN WALL TO WATER CLOSET
4. PROVIDE 3/4"CW DOWN IN WALL TO URINAL.
5. PROVIDE 1/2"CW AND 1/2"HW TO LAVATORY. PROVIDE THERMOSTATIC MIXING VALVE EQUAL TO LEONARD 104. SET HW SUPPLY TEMPERATURE TO 110°F.
6. MOUNT WATER HEATER ABOVE MOP SINK. CONNECT 3/4"HW AND 3/4"CW TO WATER HEATER. ROUTE 3/4" T&P RELIEF FROM WATER HEATER DOWN TO MOP SINK. TERMINATE WITH AIR GAP.

(#) KEYED PLAN NOTES

7. PROVIDE 1/2"CW DOWN IN WALL TO WATER FOUNTAIN.
8. ROUTE 1/2"CW AND 1/2"HW DOWN IN WALL AT THIS LOCATION. CONTINUE WITH 1/2"CW AND 1/2"HW UNDERGROUND TO SINK.
9. PROVIDE 1/2"CW AND 1/2"HW DOWN IN WALL TO MOP SINK.



WATER PLAN - CLUBHOUSE

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

1

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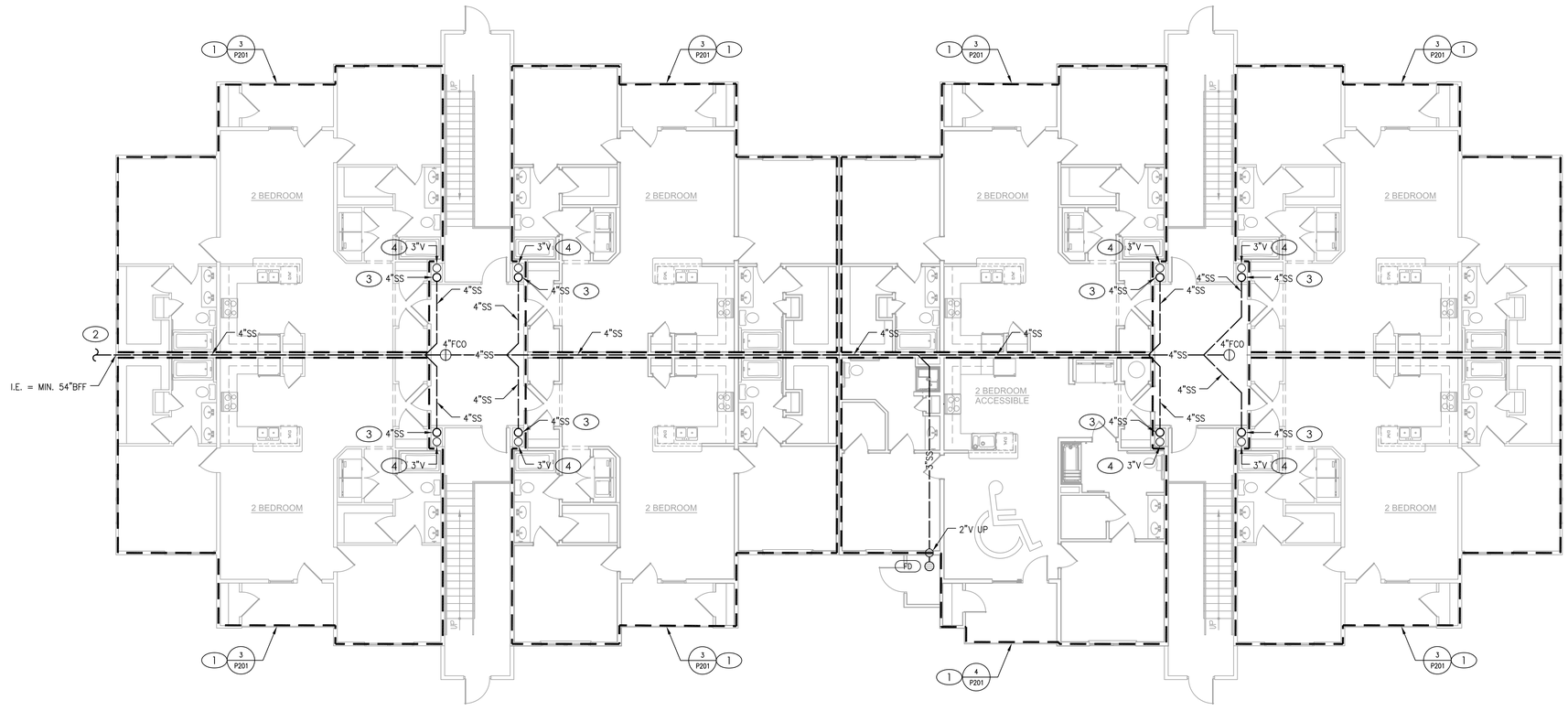
SHEET NO.

PLUMBING PLAN
CLUBHOUSE BUILDING

P102

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. 4" SANITARY TO UTILITY SERVICE. CONTRACTOR SHALL WORK WITH LOCAL WASTE WATER AUTHORITY AND BEAR ALL COST FOR INSTALLATION OF A NEW SEWER LINE CONNECTING INTO THE SEWER MAIN FOR A COMPLETE INSTALLATION. REFER TO CIVIL PLANS FOR CONTINUATION. COORDINATE INVERT ELEVATION WITH EXISTING SITE UTILITIES PRIOR TO START OF WORK.
3. 4"SS RISER. ROUTE SANITARY SEWER LINES FROM UNITS INTO COMMON RISER AND CONTINUE TO MAIN SANITARY LINE BELOW GRADE.
4. 3" VENT RISER. ROUTE VENTS FROM UNITS INTO COMMON RISER AND CONTINUE VENT UP THROUGH ROOF.



FIRST LEVEL WASTE & VENT PLAN - BUILDING A2-1

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

1

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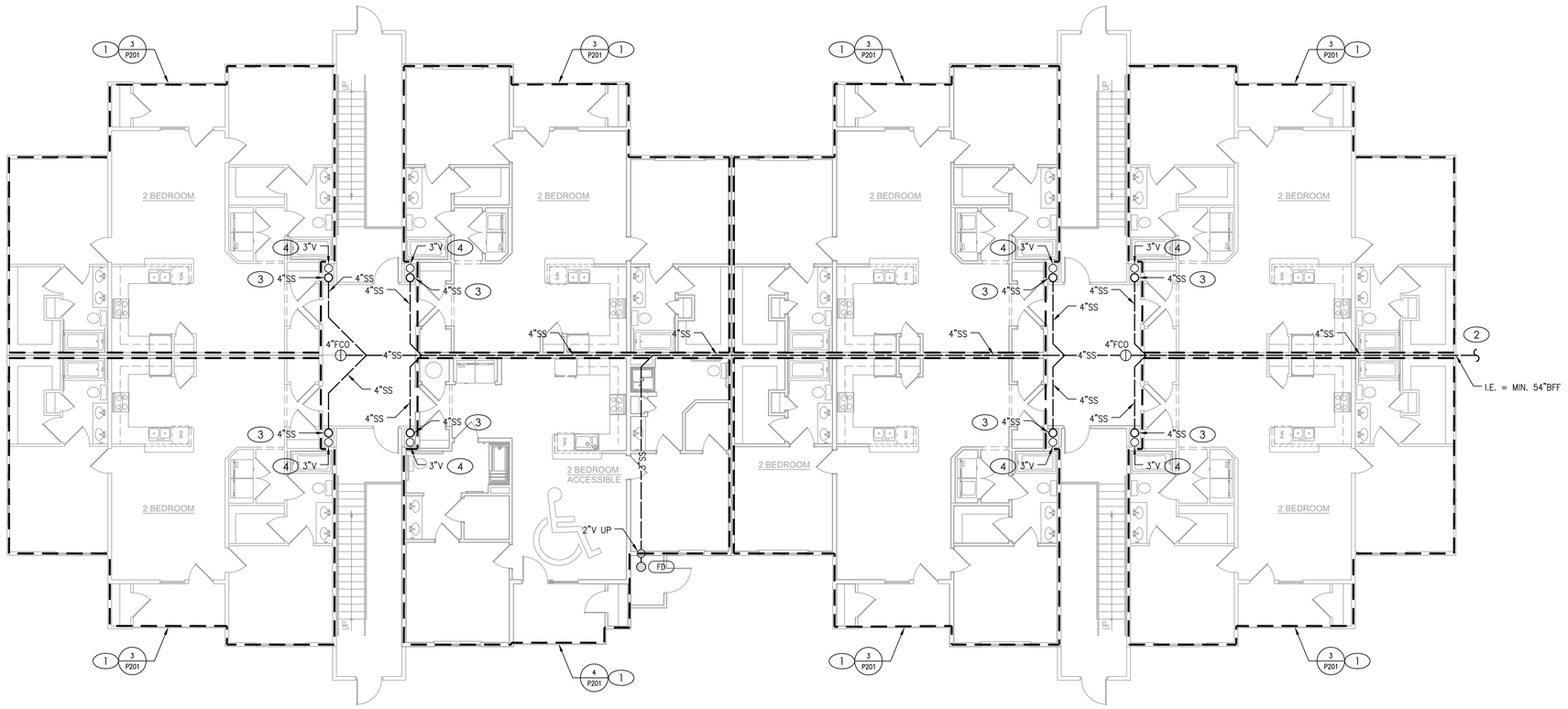
SHEET NO.

PLUMBING PLAN
FIRST LEVEL
BUILDING A2-1

P111

KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. 4" SANITARY TO UTILITY SERVICE. CONTRACTOR SHALL WORK WITH LOCAL WASTE WATER AUTHORITY AND BEAR ALL COST FOR INSTALLATION OF A NEW SEWER LINE CONNECTING INTO THE SEWER MAIN FOR A COMPLETE INSTALLATION. REFER TO CIVIL PLANS FOR CONTINUATION. COORDINATE INVERT ELEVATION WITH EXISTING SITE UTILITIES PRIOR TO START OF WORK.
3. 4"SS RISER. ROUTE SANITARY SEWER LINES FROM UNITS INTO COMMON RISER AND CONTINUE TO MAIN SANITARY LINE BELOW GRADE.
4. 3" VENT RISER. ROUTE VENTS FROM UNITS INTO COMMON RISER AND CONTINUE VENT UP THROUGH ROOF.



FIRST LEVEL WASTE & VENT PLAN - BUILDING A2-2

1

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

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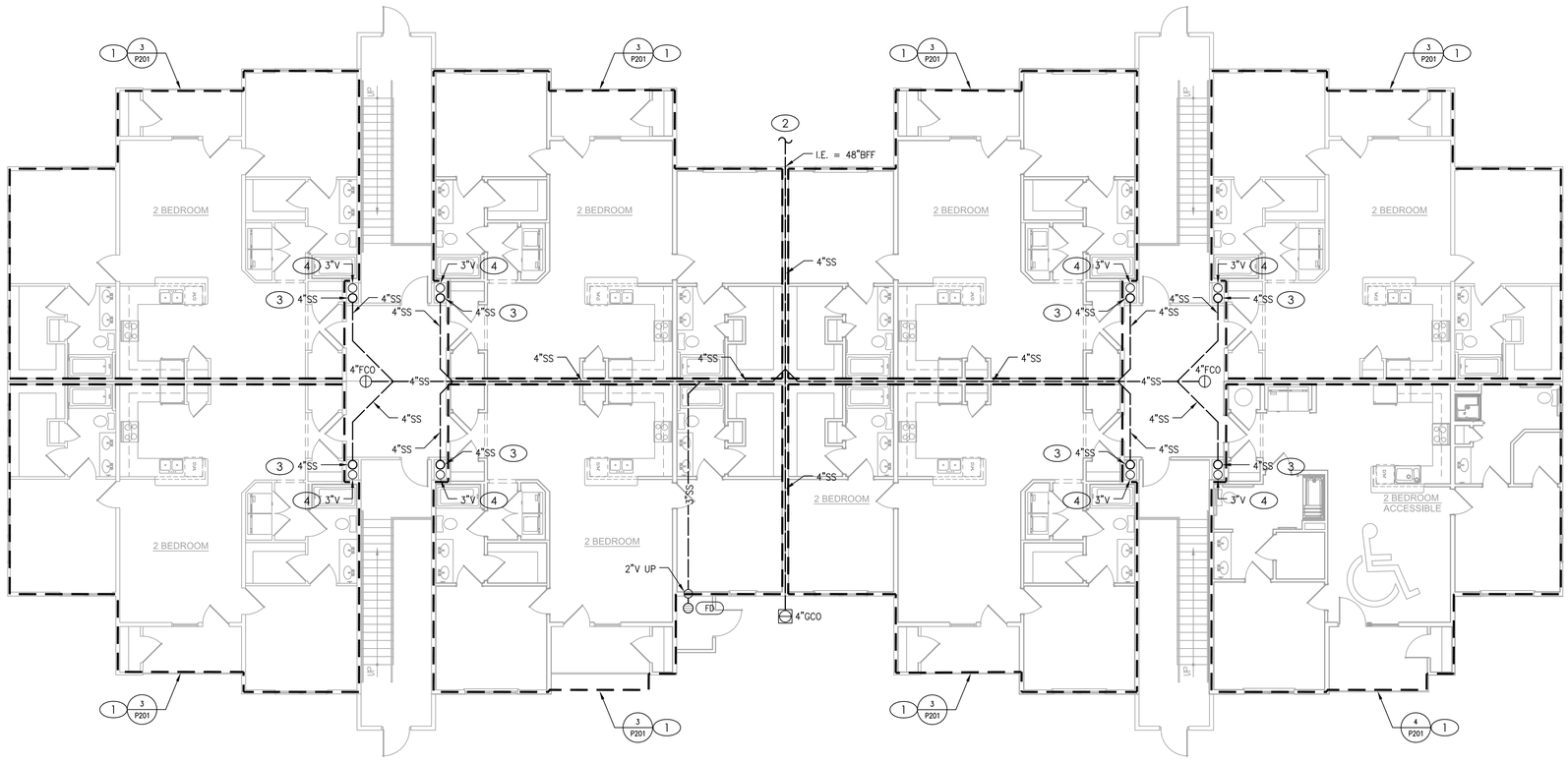
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SHEET NO.
PLUMBING PLAN
FIRST LEVEL
BUILDING A2-2
P111a

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. 4" SANITARY TO UTILITY SERVICE. CONTRACTOR SHALL WORK WITH LOCAL WASTE WATER AUTHORITY AND BEAR ALL COST FOR INSTALLATION OF A NEW SEWER LINE CONNECTING INTO THE SEWER MAIN FOR A COMPLETE INSTALLATION. REFER TO CIVIL PLANS FOR CONTINUATION. COORDINATE INVERT ELEVATION WITH EXISTING SITE UTILITIES PRIOR TO START OF WORK.
3. 4"SS RISER. ROUTE SANITARY SEWER LINES FROM UNITS INTO COMMON RISER AND CONTINUE TO MAIN SANITARY LINE BELOW GRADE.
4. 3" VENT RISER. ROUTE VENTS FROM UNITS INTO COMMON RISER AND CONTINUE VENT UP THROUGH ROOF.



FIRST LEVEL WASTE & VENT PLAN - BUILDING A2-3 (1)

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

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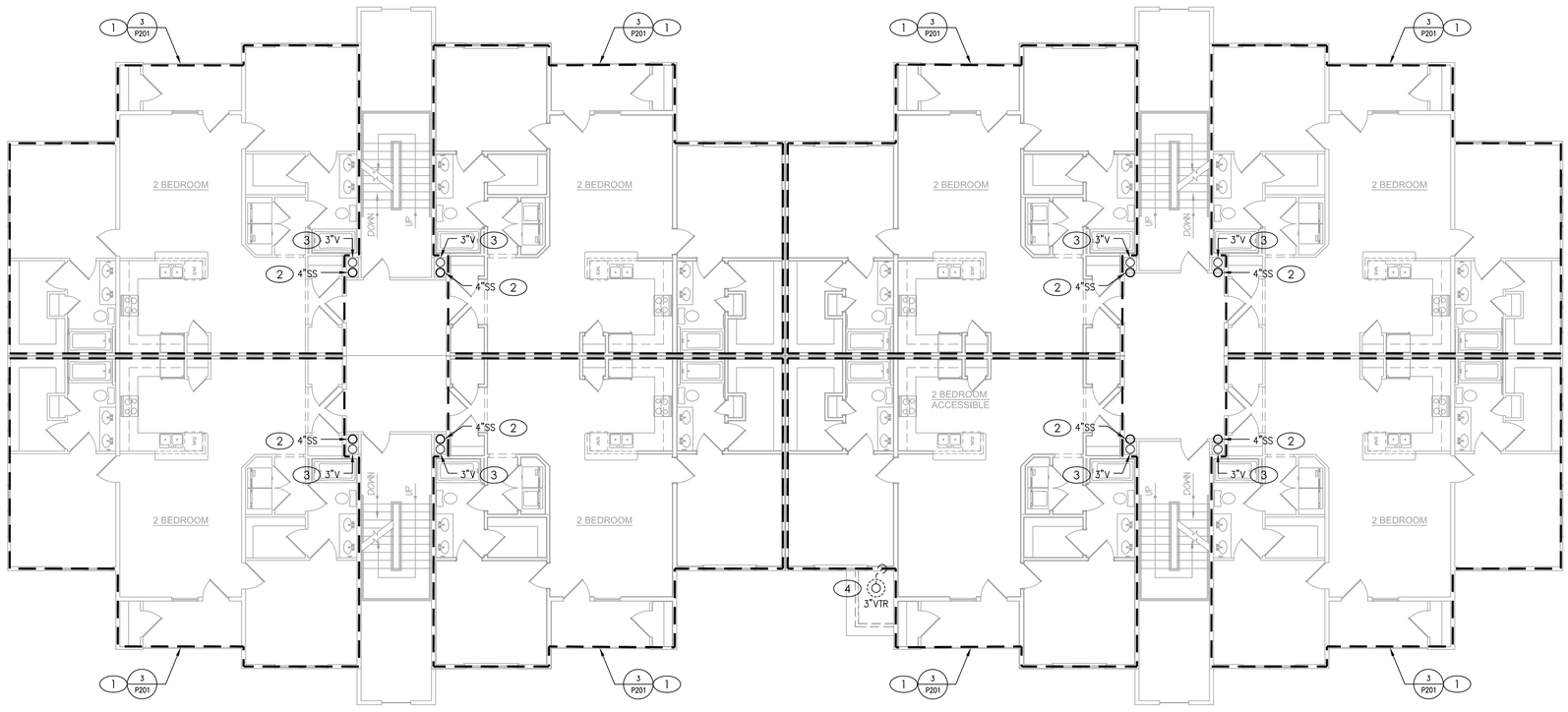
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SHEET NO.
PLUMBING PLAN
FIRST LEVEL
BUILDING A2-3
P111b

KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. 4"SS RISER. ROUTE SANITARY SEWER LINES FROM UNITS INTO COMMON RISER AND CONTINUE TO MAIN SANITARY LINE BELOW GRADE.
3. 3" VENT RISER. ROUTE VENTS FROM UNITS INTO COMMON RISER AND CONTINUE VENT UP THROUGH ROOF.
4. VENT STACK UP TO 3" VENT THROUGH ROOF. LOCATE A MINIMUM OF 10'-0" FROM ANY OUTSIDE AIR INTAKE. COORDINATE PIPE PENETRATION WITH ROOFING CONTRACTOR SO NOT TO VOID ROOF WARRANTY. SEAL ROOF PENETRATION WEATHER TIGHT.



SECOND/THIRD LEVEL WASTE & VENT PLAN - BUILDING TYPE A 1

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

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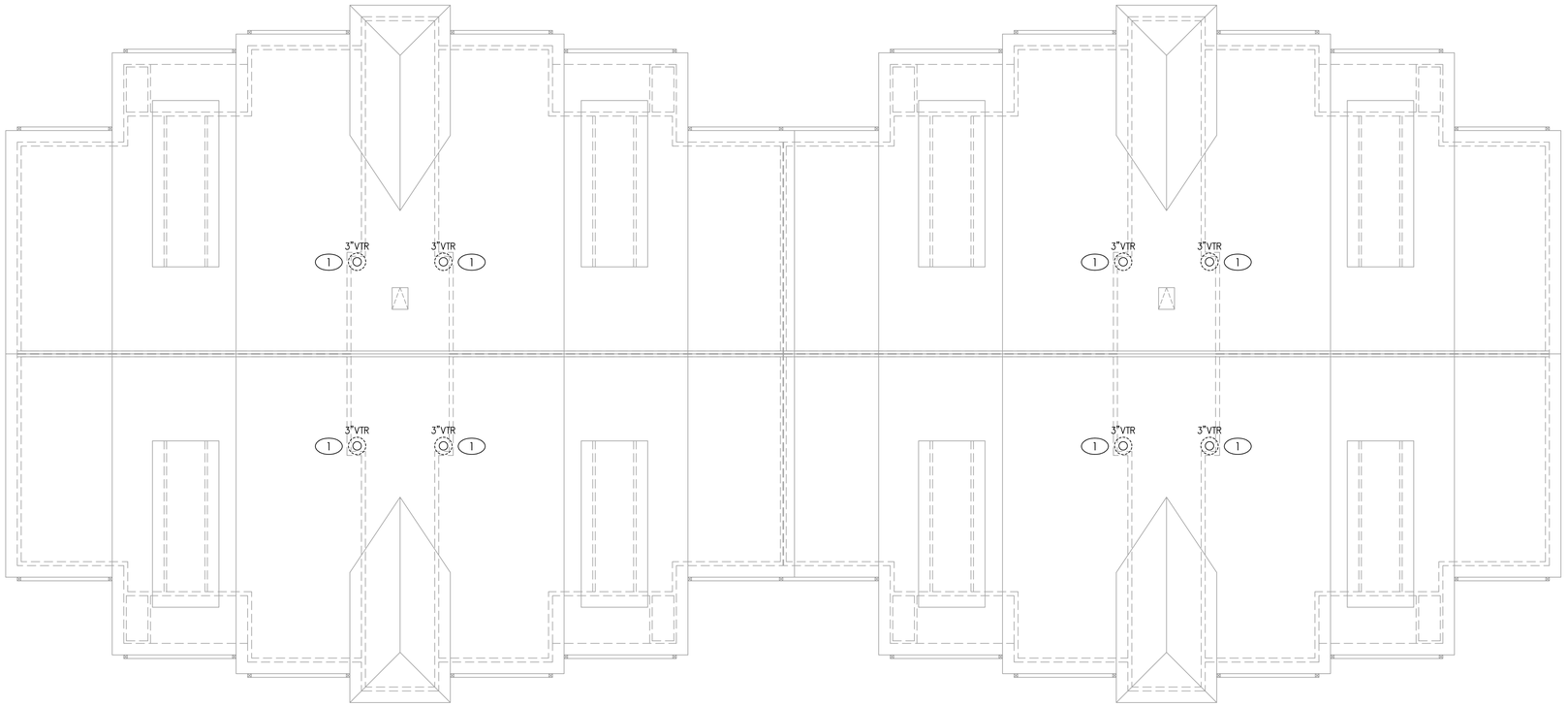
SHEET NO.

PLUMBING PLAN
SECOND/THIRD LEVEL
BUILDING TYPE A

P112

(#) KEYED PLAN NOTES

1. VENT STACK UP TO 3" VENT THROUGH ROOF. LOCATE A MINIMUM OF 3'-0" FROM EDGE OF ROOF AND 10'-0" FROM ANY OUTSIDE AIR INTAKE. COORDINATE PIPE PENETRATION WITH ROOFING CONTRACTOR SO NOT TO VOID ROOF WARRANTY. SEAL ROOF PENETRATION WEATHER TIGHT.



ROOF WASTE & VENT PLAN - BUILDING TYPE A (1)

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

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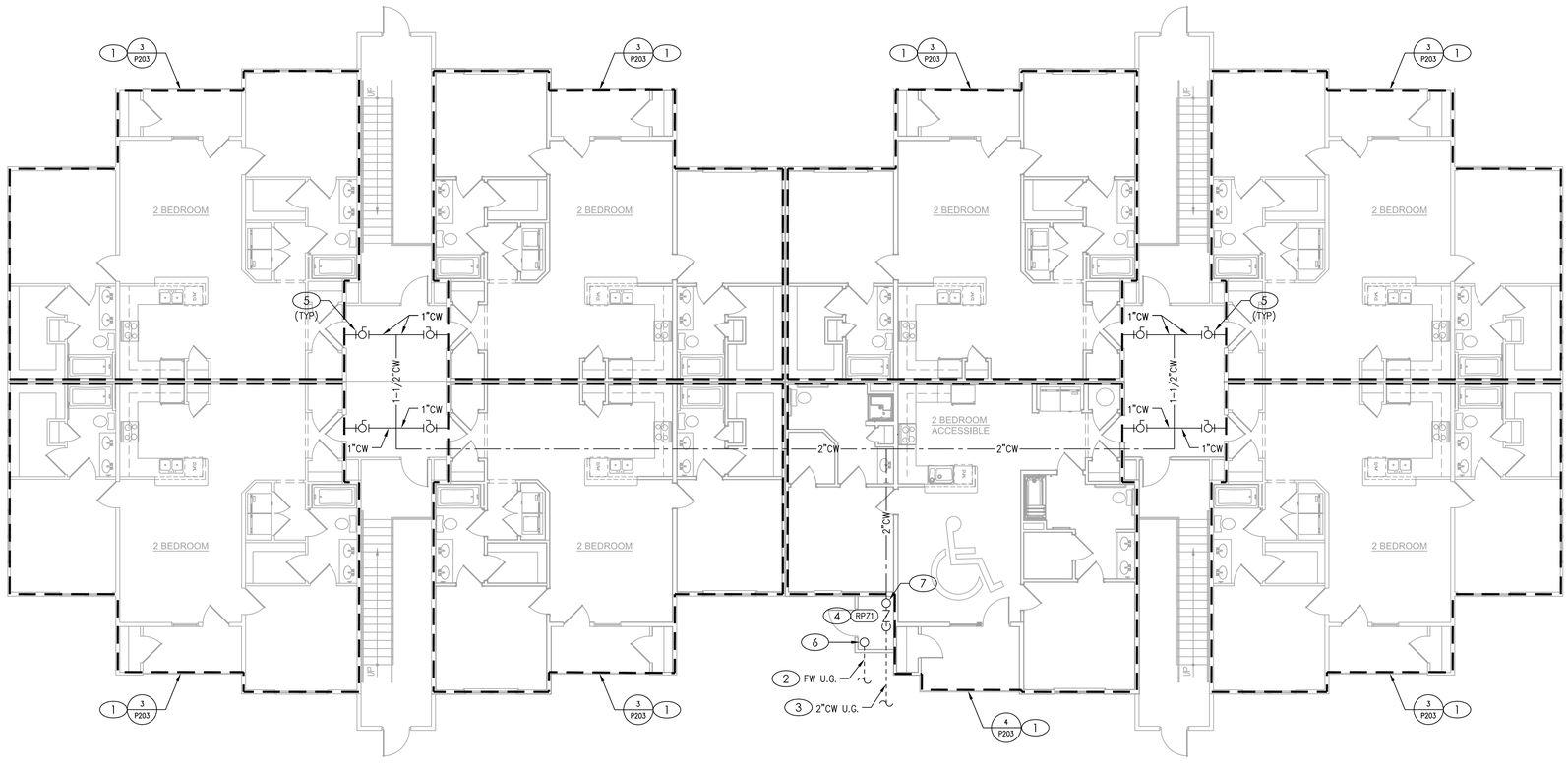
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SHEET NO.
PLUMBING PLAN
ROOF
BUILDING TYPE A
P113

KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. FIRE SERVICE TO MAIN. REFER TO CIVIL DRAWINGS FOR CONTINUATION.
3. 2" DOMESTIC COLD WATER TO UTILITY SERVICE. SEE CIVIL PLANS FOR CONTINUATION. CONTRACTOR SHALL WORK WITH THE WATER COMPANY FOR THE INSTALLATION OF A NEW WATER MAIN ENTRANCE INCLUDING TAP, METER, METER PIT, PIPING, ETC. FOR A COMPLETE INSTALLATION.
4. PROVIDE 2" RPZ BACKFLOW PREVENTER IN HORIZONTAL. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION. INSTALL BACKFLOW PREVENTER 24" ABOVE FINISHED FLOOR (CENTERLINE ELEVATION) AND MINIMUM 12" CLEARANCE FRONT AND BACK. PROVIDE DRAIN FROM BACKFLOW PREVENTER TO FLOOR DRAIN AND DISCHARGE WITH AIR GAP.
5. PROVIDE ACCESS PANEL IN CEILING TO ACCESS UNIT SHUT-OFF VALVE.
6. FIRE RISER. SEE DETAIL ON SHEET MP002 FOR GENERAL REQUIREMENTS. COORDINATE WITH FIRE SPRINKLER CONTRACTOR TO CONFIRM ENTRY SIZE AND LOCATION OF FIRE DEPARTMENT CONNECTION.
7. DOMESTIC WATER RISER. 2"CW UP TO SECOND LEVEL.



FIRST LEVEL WATER PLAN - BUILDING TYPE A

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

1

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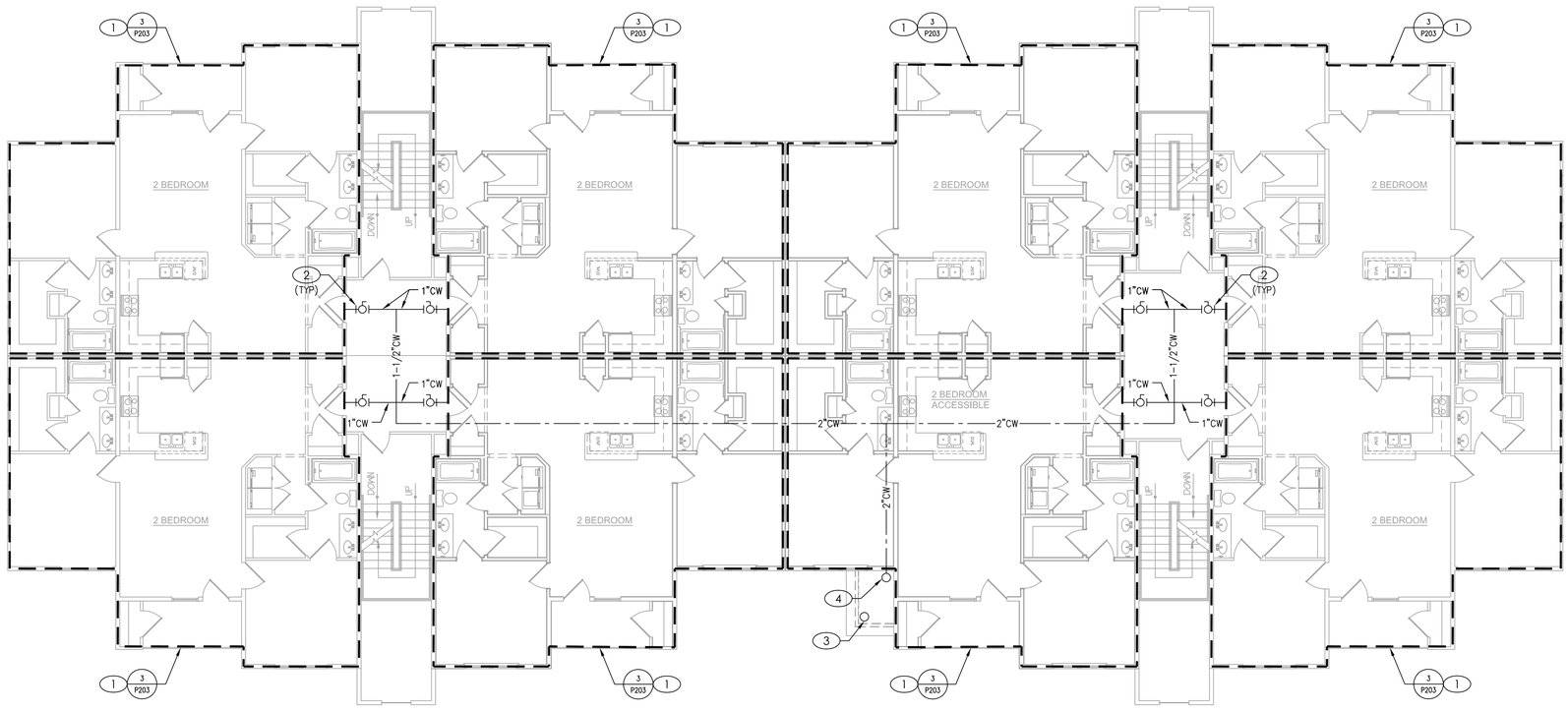
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SHEET NO.
PLUMBING PLAN
FIRST LEVEL
BUILDING TYPE A
P114

KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. PROVIDE ACCESS PANEL IN CEILING TO ACCESS UNIT SHUT-OFF VALVE.
3. CONTINUE FIRE RISER TO THIRD LEVEL. COORDINATE WITH FIRE SPRINKLER CONTRACTOR FOR SIZING.
4. DOMESTIC WATER RISER. 2"CW UP TO THIRD LEVEL.



SECOND/THIRD LEVEL WATER PLAN - BUILDING TYPE A

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

1

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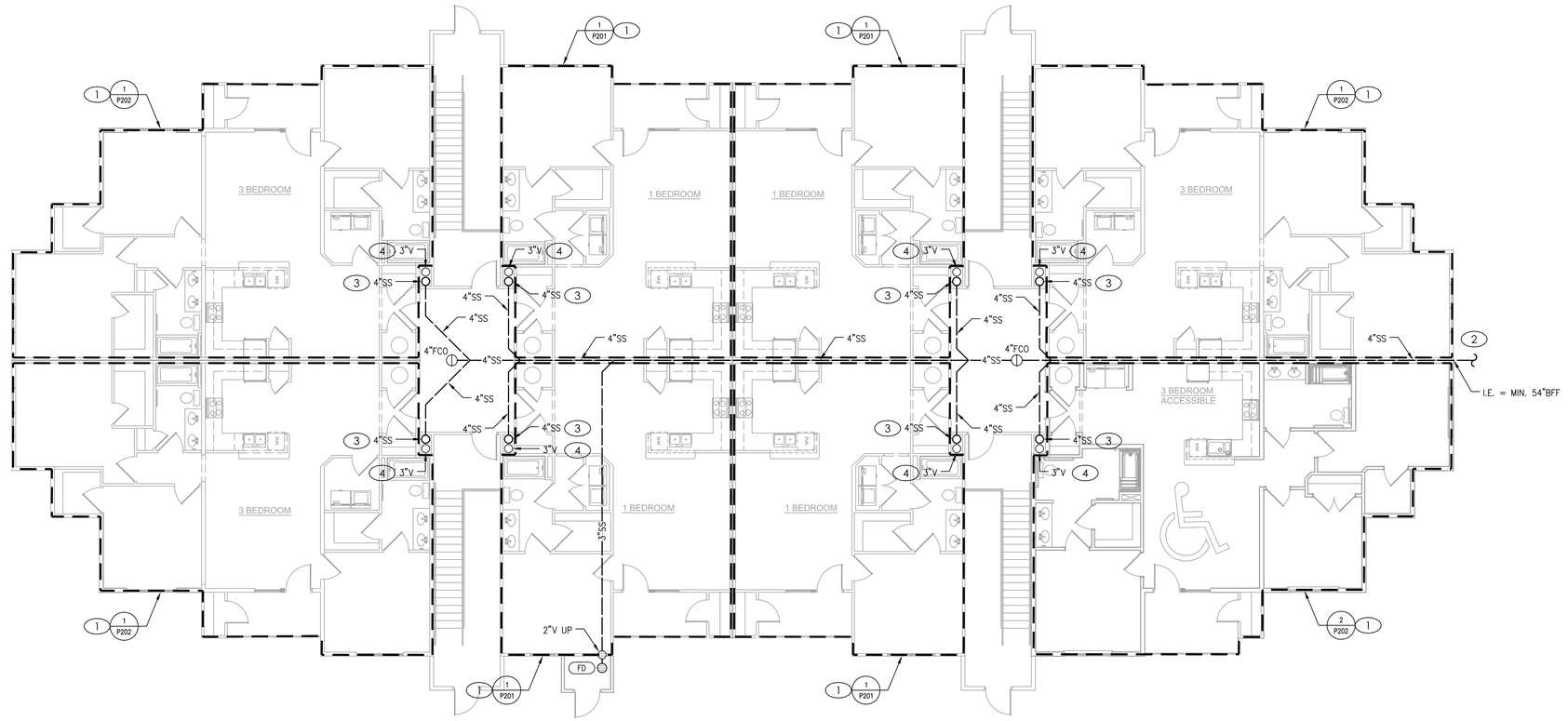
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SHEET NO.
PLUMBING PLAN
SECOND/THIRD LEVEL
BUILDING TYPE A
P115

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. 4" SANITARY TO UTILITY SERVICE. CONTRACTOR SHALL WORK WITH LOCAL WASTE WATER AUTHORITY AND BEAR ALL COST FOR INSTALLATION OF A NEW SEWER LINE CONNECTING INTO THE SEWER MAIN FOR A COMPLETE INSTALLATION. REFER TO CIVIL PLANS FOR CONTINUATION. COORDINATE INVERT ELEVATION WITH EXISTING SITE UTILITIES PRIOR TO START OF WORK.
3. 4"SS RISER. ROUTE SANITARY SEWER LINES FROM UNITS INTO COMMON RISER AND CONTINUE TO MAIN SANITARY LINE BELOW GRADE.
4. 3" VENT RISER. ROUTE VENTS FROM UNITS INTO COMMON RISER AND CONTINUE VENT UP THROUGH ROOF.



FIRST LEVEL WASTE & VENT PLAN - BUILDING B1-1

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

1

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Lee's Summit, Missouri 64063

STATE OF MISSOURI
JUSTIN R. SMOTHERS
NUMBER PE-2012003568
PROFESSIONAL ENGINEER
02-08-2022
professional seal

PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

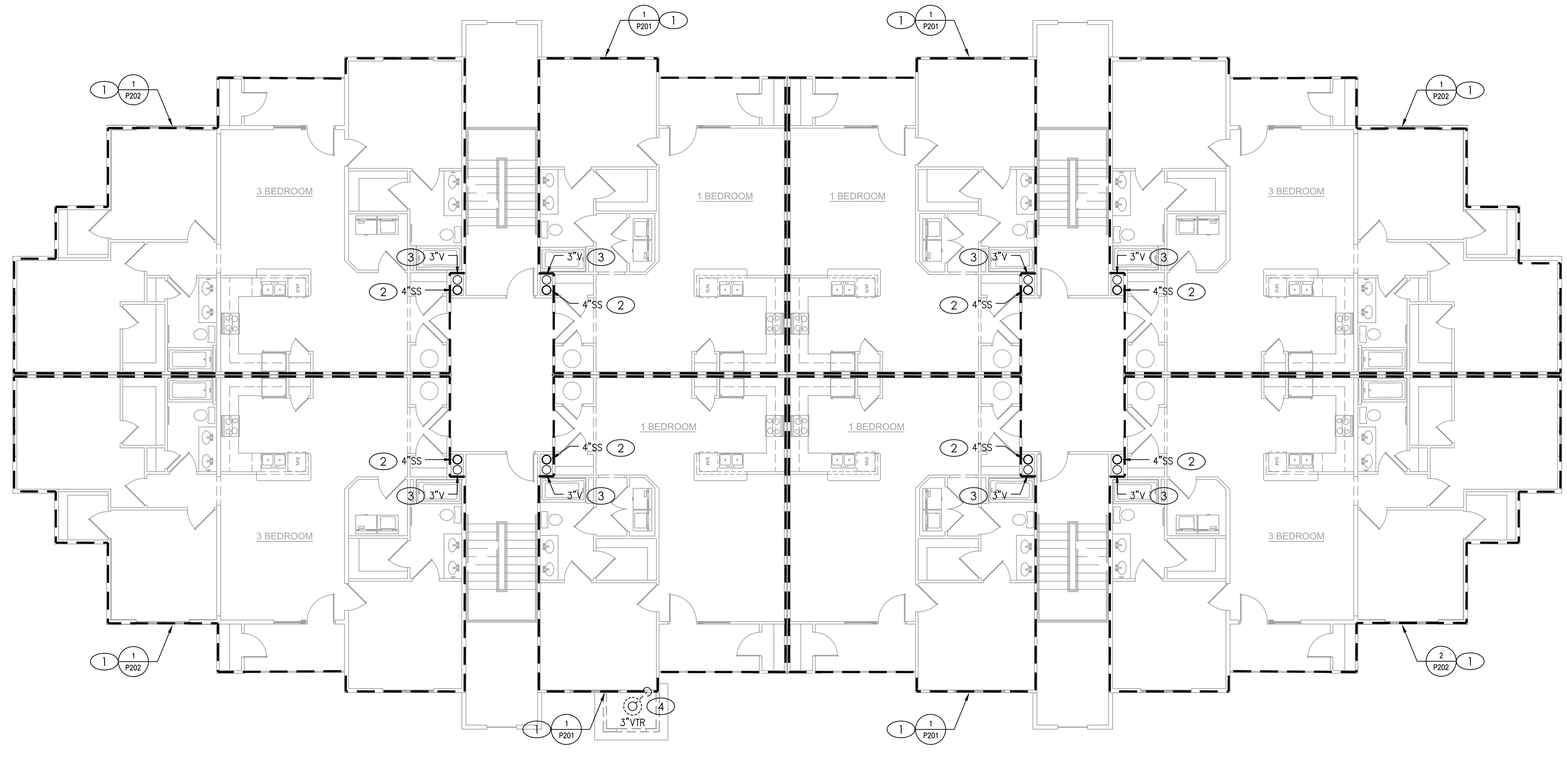
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SHEET NO.
PLUMBING PLAN
FIRST LEVEL
BUILDING B1-1
P121

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. 4"SS RISER. ROUTE SANITARY SEWER LINES FROM UNITS INTO COMMON RISER AND CONTINUE TO MAIN SANITARY LINE BELOW GRADE.
3. 3" VENT RISER. ROUTE VENTS FROM UNITS INTO COMMON RISER AND CONTINUE VENT UP THROUGH ROOF.
4. VENT STACK UP TO 3" VENT THROUGH ROOF. LOCATE A MINIMUM OF 10'-0" FROM ANY OUTSIDE AIR INTAKE. COORDINATE PIPE PENETRATION WITH ROOFING CONTRACTOR SO NOT TO VOID ROOF WARRANTY. SEAL ROOF PENETRATION WEATHER TIGHT.



SECOND/THIRD LEVEL WASTE & VENT PLAN - BUILDING TYPE B

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

1

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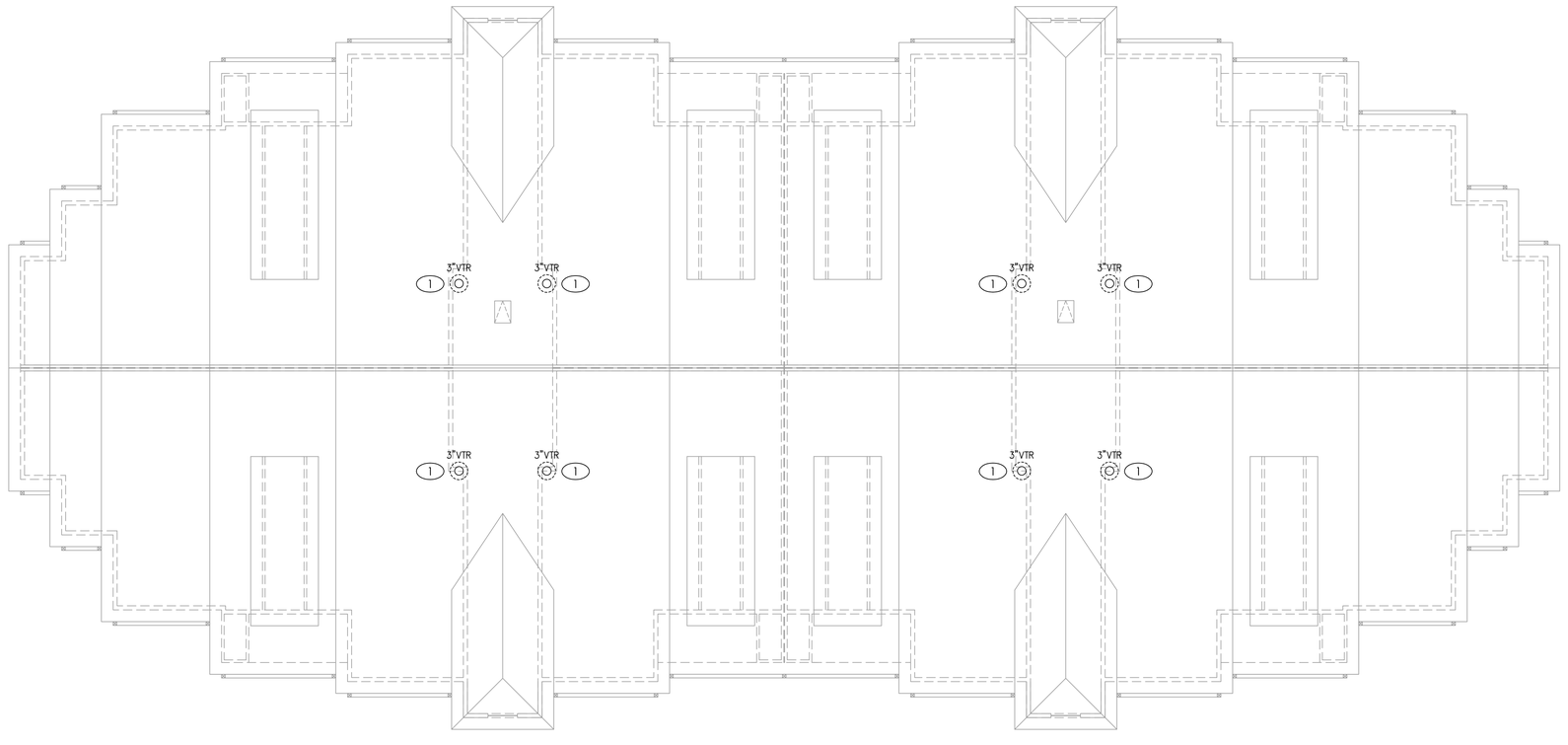
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SHEET NO.
PLUMBING PLAN
SECOND/THIRD LEVEL
BUILDING TYPE B
P122

(#) KEYED PLAN NOTES

1. VENT STACK UP TO 3" VENT THROUGH ROOF. LOCATE A MINIMUM OF 3'-0" FROM EDGE OF ROOF AND 10'-0" FROM ANY OUTSIDE AIR INTAKE. COORDINATE PIPE PENETRATION WITH ROOFING CONTRACTOR SO NOT TO VOID ROOF WARRANTY. SEAL ROOF PENETRATION WEATHER TIGHT.



ROOF WASTE & VENT PLAN - BUILDING TYPE B (1)

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

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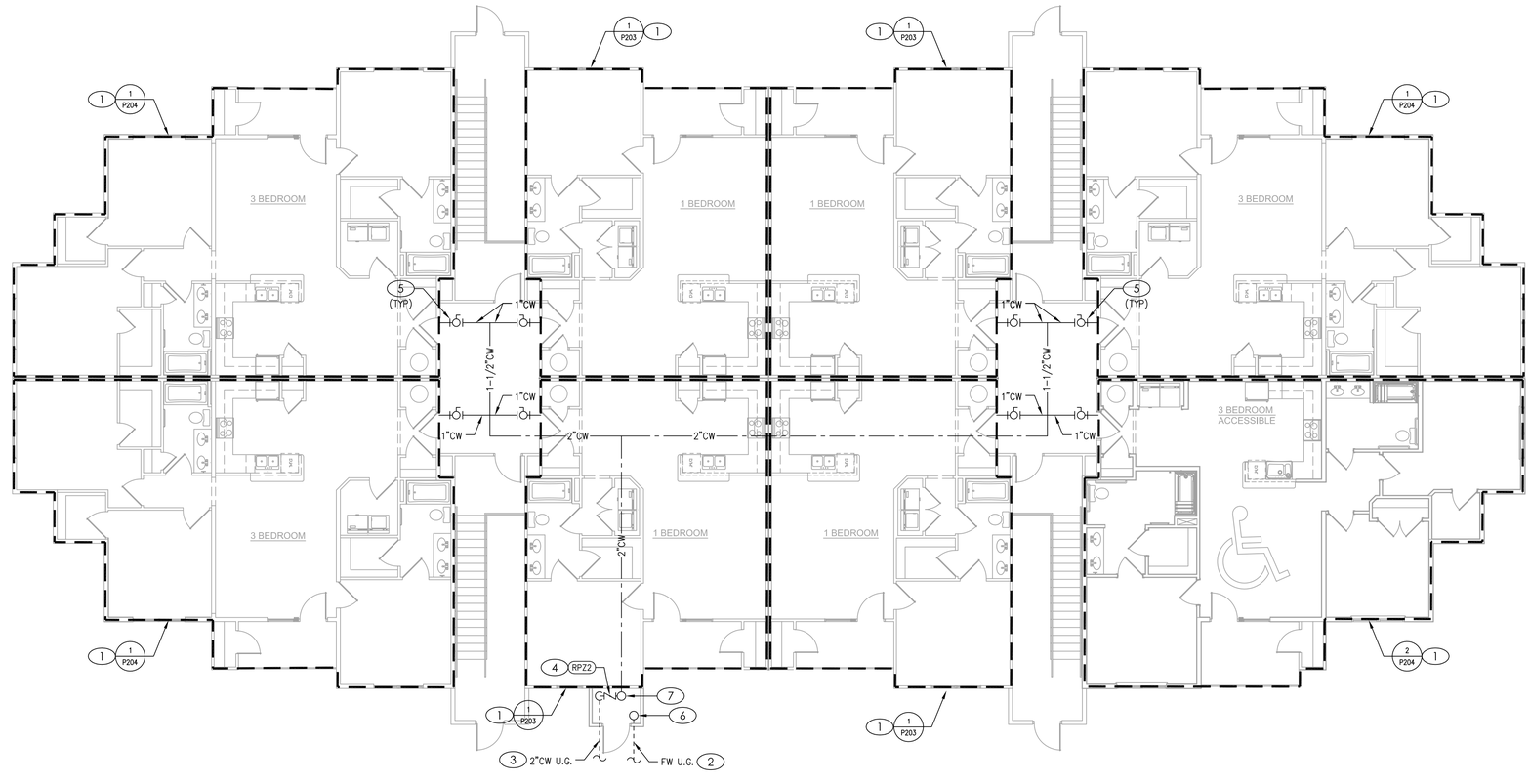
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SHEET NO.
PLUMBING PLAN
ROOF
BUILDING TYPE B
P123

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. FIRE SERVICE TO MAIN. REFER TO CIVIL DRAWINGS FOR CONTINUATION.
3. 2" DOMESTIC COLD WATER TO UTILITY SERVICE. SEE CIVIL PLANS FOR CONTINUATION. CONTRACTOR SHALL WORK WITH THE WATER COMPANY FOR THE INSTALLATION OF A NEW WATER MAIN ENTRANCE INCLUDING TAP, METER, METER PIT, PIPING, ETC. FOR A COMPLETE INSTALLATION.
4. PROVIDE 2" RPZ BACKFLOW PREVENTER IN HORIZONTAL. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION. INSTALL BACKFLOW PREVENTER 24" ABOVE FINISHED FLOOR (CENTERLINE ELEVATION) AND MINIMUM 12" CLEARANCE FRONT AND BACK. PROVIDE DRAIN FROM BACKFLOW PREVENTER TO FLOOR DRAIN AND DISCHARGE WITH AIR GAP.
5. PROVIDE ACCESS PANEL IN CEILING TO ACCESS UNIT SHUT-OFF VALVE.
6. FIRE RISER. SEE DETAIL ON SHEET MP002 FOR GENERAL REQUIREMENTS. COORDINATE WITH FIRE SPRINKLER CONTRACTOR TO CONFIRM ENTRY SIZE AND LOCATION OF FIRE DEPARTMENT CONNECTION.
7. DOMESTIC WATER RISER. 2"CW UP TO SECOND LEVEL.



FIRST LEVEL WATER PLAN - BUILDING TYPE B

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

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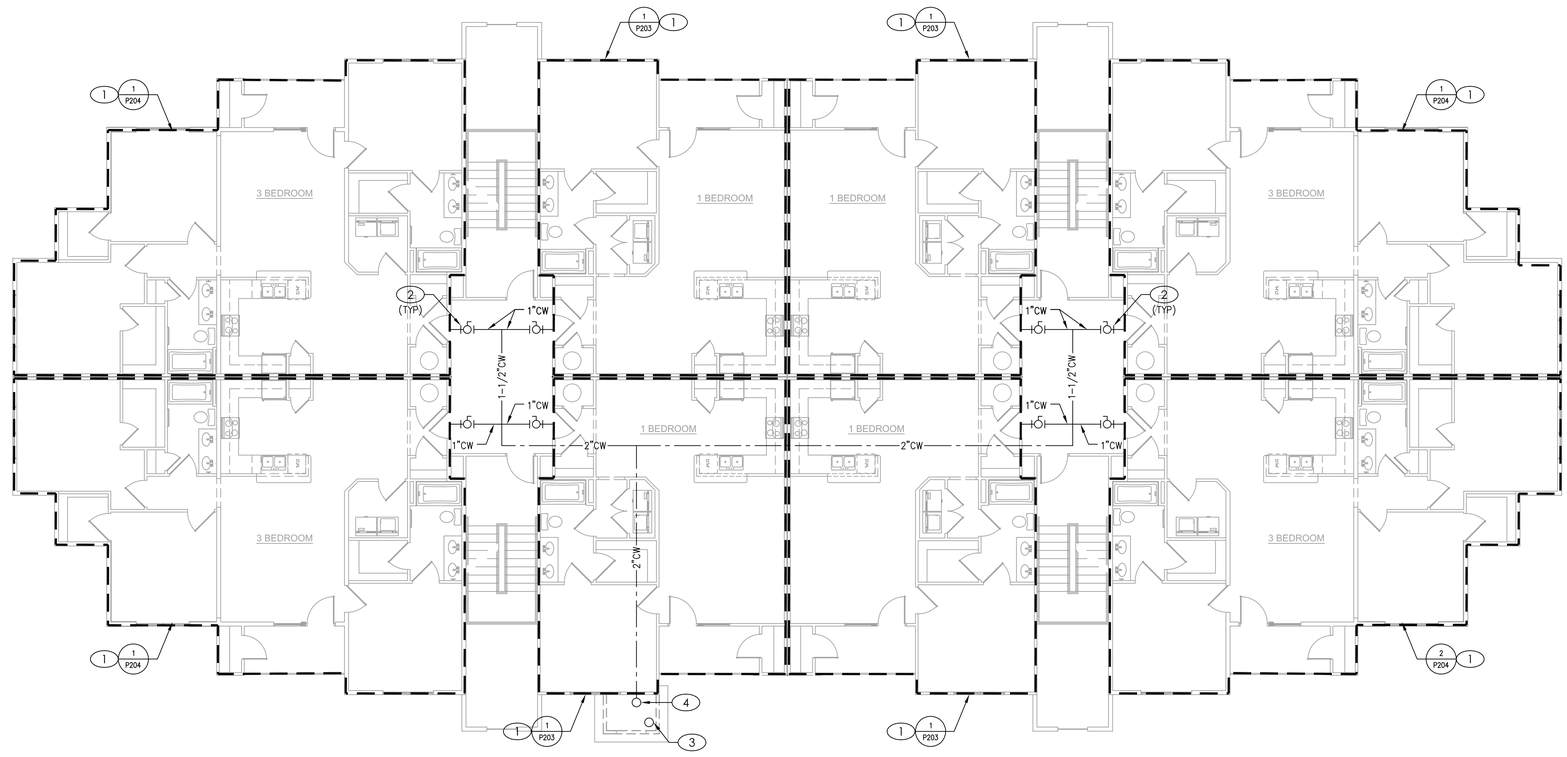
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SHEET NO.
PLUMBING PLAN
FIRST LEVEL
BUILDING TYPE B
P124

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. PROVIDE ACCESS PANEL IN CEILING TO ACCESS UNIT SHUT-OFF VALVE.
3. CONTINUE FIRE RISER TO THIRD LEVEL. COORDINATE WITH FIRE SPRINKLER CONTRACTOR FOR SIZING.
4. DOMESTIC WATER RISER. 2"CW UP TO THIRD LEVEL.



SECOND/THIRD LEVEL WATER PLAN - BUILDING TYPE B

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

1

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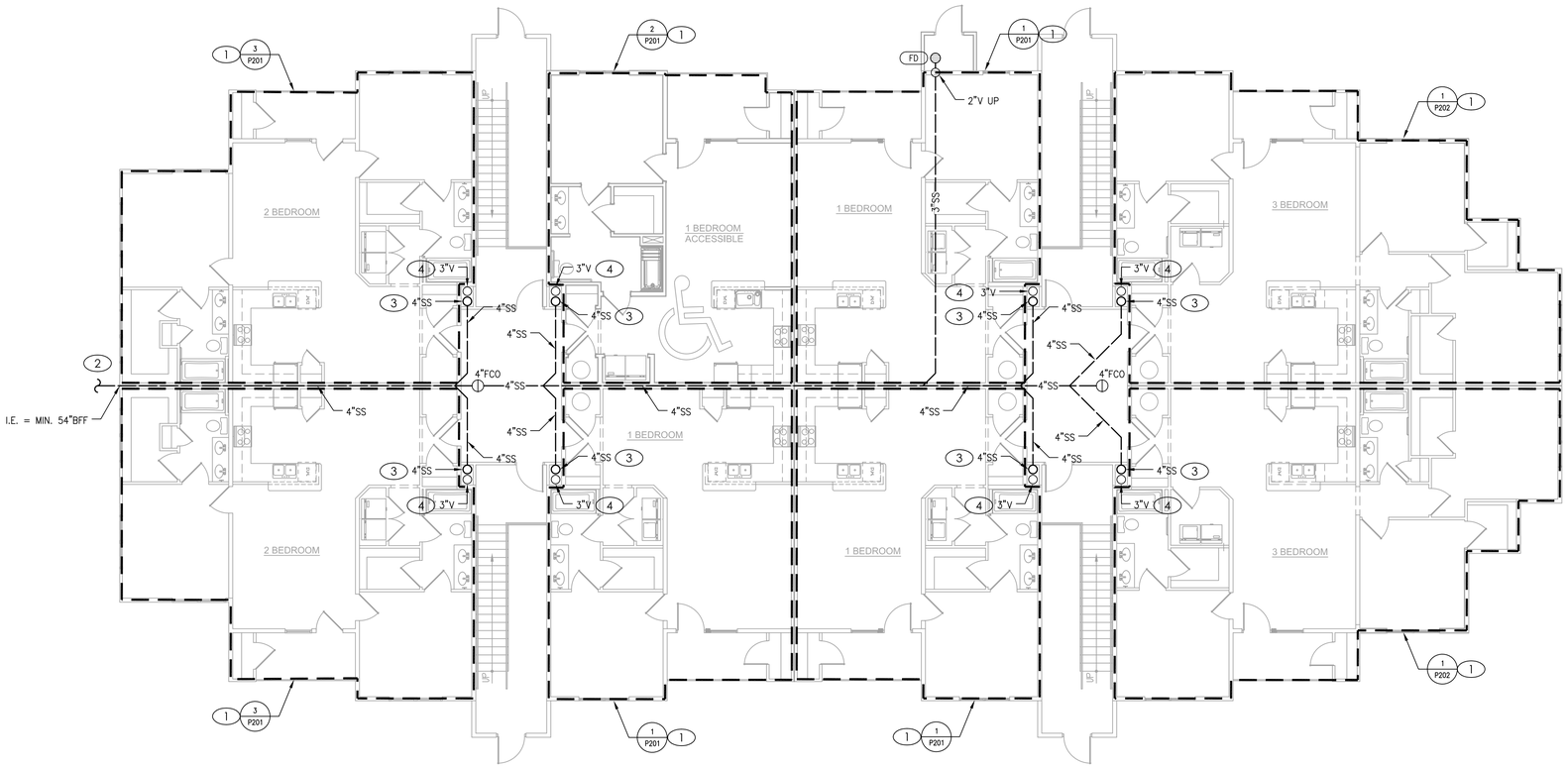
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SHEET NO.
PLUMBING PLAN
SECOND/THIRD LEVEL
BUILDING TYPE B
P125

KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. 4" SANITARY TO UTILITY SERVICE. CONTRACTOR SHALL WORK WITH LOCAL WASTE WATER AUTHORITY AND BEAR ALL COST FOR INSTALLATION OF A NEW SEWER LINE CONNECTING INTO THE SEWER MAIN FOR A COMPLETE INSTALLATION. REFER TO CIVIL PLANS FOR CONTINUATION. COORDINATE INVERT ELEVATION WITH EXISTING SITE UTILITIES PRIOR TO START OF WORK.
3. 4"SS RISER. ROUTE SANITARY SEWER LINES FROM UNITS INTO COMMON RISER AND CONTINUE TO MAIN SANITARY LINE BELOW GRADE.
4. 3" VENT RISER. ROUTE VENTS FROM UNITS INTO COMMON RISER AND CONTINUE VENT UP THROUGH ROOF.



FIRST LEVEL WASTE & VENT PLAN - BUILDING C1-1

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

1

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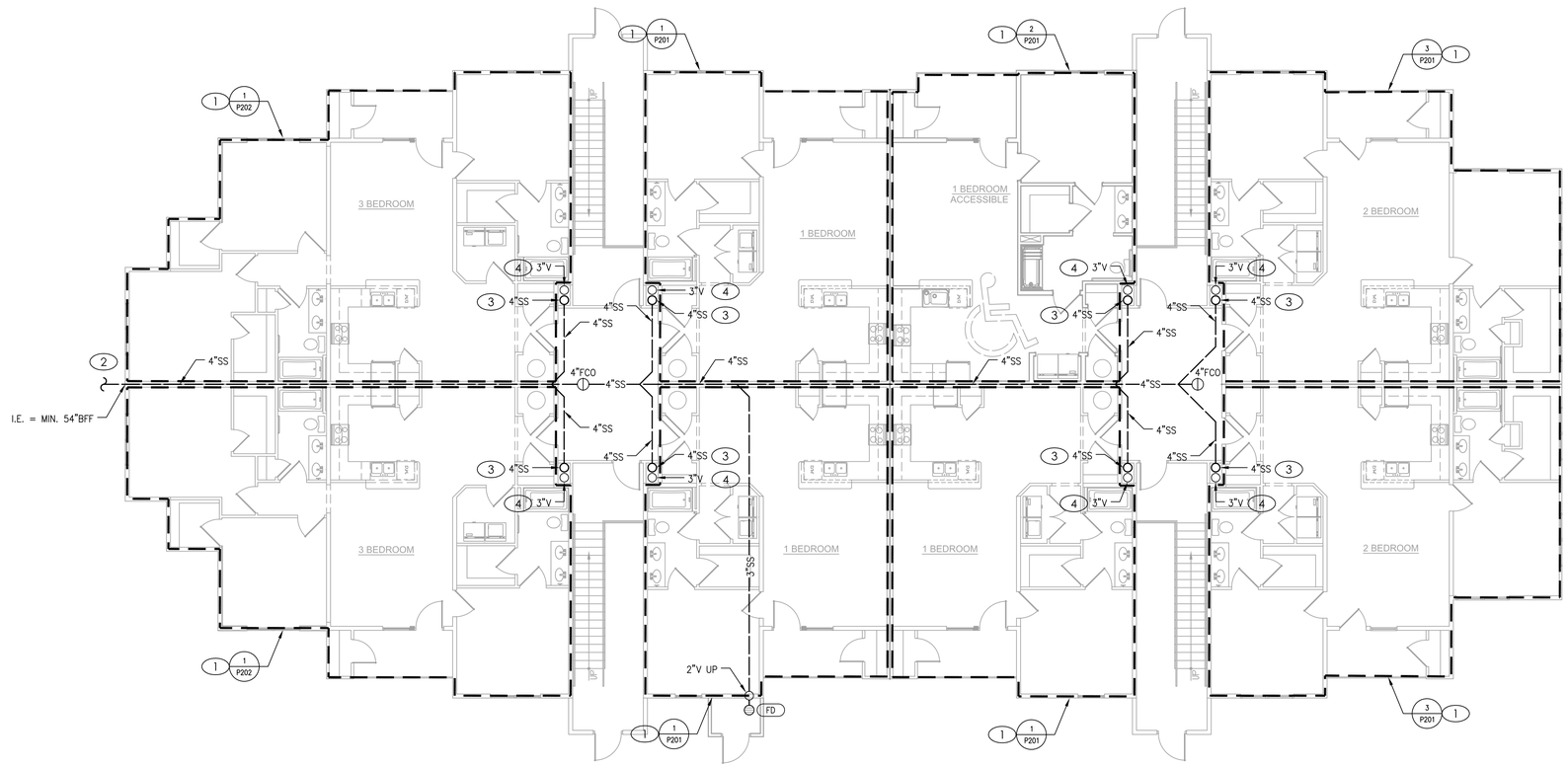
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SHEET NO.
PLUMBING PLAN
FIRST LEVEL
BUILDING C1-1
P131

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. 4" SANITARY TO UTILITY SERVICE. CONTRACTOR SHALL WORK WITH LOCAL WASTE WATER AUTHORITY AND BEAR ALL COST FOR INSTALLATION OF A NEW SEWER LINE CONNECTING INTO THE SEWER MAIN FOR A COMPLETE INSTALLATION. REFER TO CIVIL PLANS FOR CONTINUATION. COORDINATE INVERT ELEVATION WITH EXISTING SITE UTILITIES PRIOR TO START OF WORK.
3. 4"SS RISER. ROUTE SANITARY SEWER LINES FROM UNITS INTO COMMON RISER AND CONTINUE TO MAIN SANITARY LINE BELOW GRADE.
4. 3" VENT RISER. ROUTE VENTS FROM UNITS INTO COMMON RISER AND CONTINUE VENT UP THROUGH ROOF.



FIRST LEVEL WASTE & VENT PLAN - BUILDING C1-2

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

1

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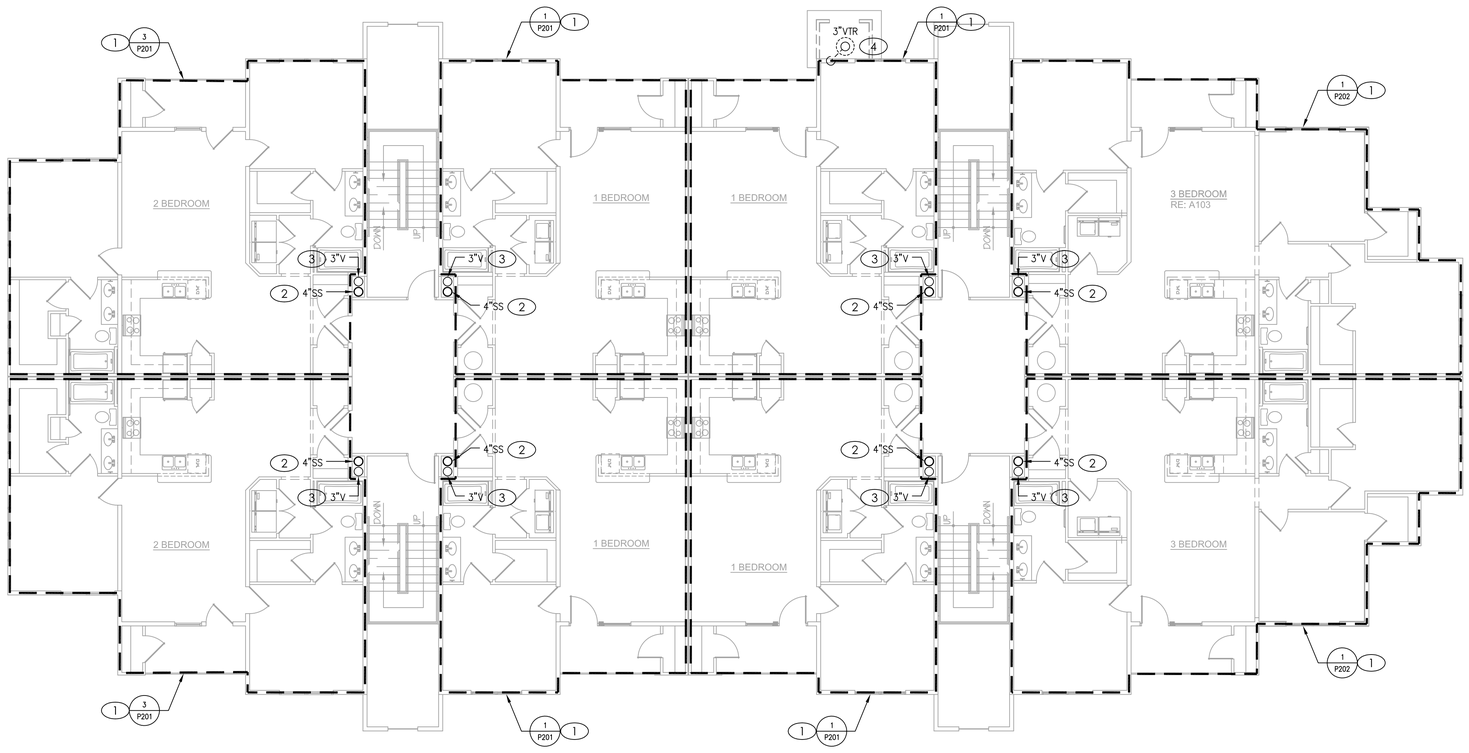
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SHEET NO.
PLUMBING PLAN
FIRST LEVEL
BUILDING C1-2
P131a

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. 4"SS RISER. ROUTE SANITARY SEWER LINES FROM UNITS INTO COMMON RISER AND CONTINUE TO MAIN SANITARY LINE BELOW GRADE.
3. 3" VENT RISER. ROUTE VENTS FROM UNITS INTO COMMON RISER AND CONTINUE VENT UP THROUGH ROOF.
4. VENT STACK UP TO 3" VENT THROUGH ROOF. LOCATE A MINIMUM OF 10'-0" FROM ANY OUTSIDE AIR INTAKE. COORDINATE PIPE PENETRATION WITH ROOFING CONTRACTOR SO NOT TO VOID ROOF WARRANTY. SEAL ROOF PENETRATION WEATHER TIGHT.



SECOND/THIRD LEVEL WASTE & VENT PLAN - BUILDING TYPE C

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

1

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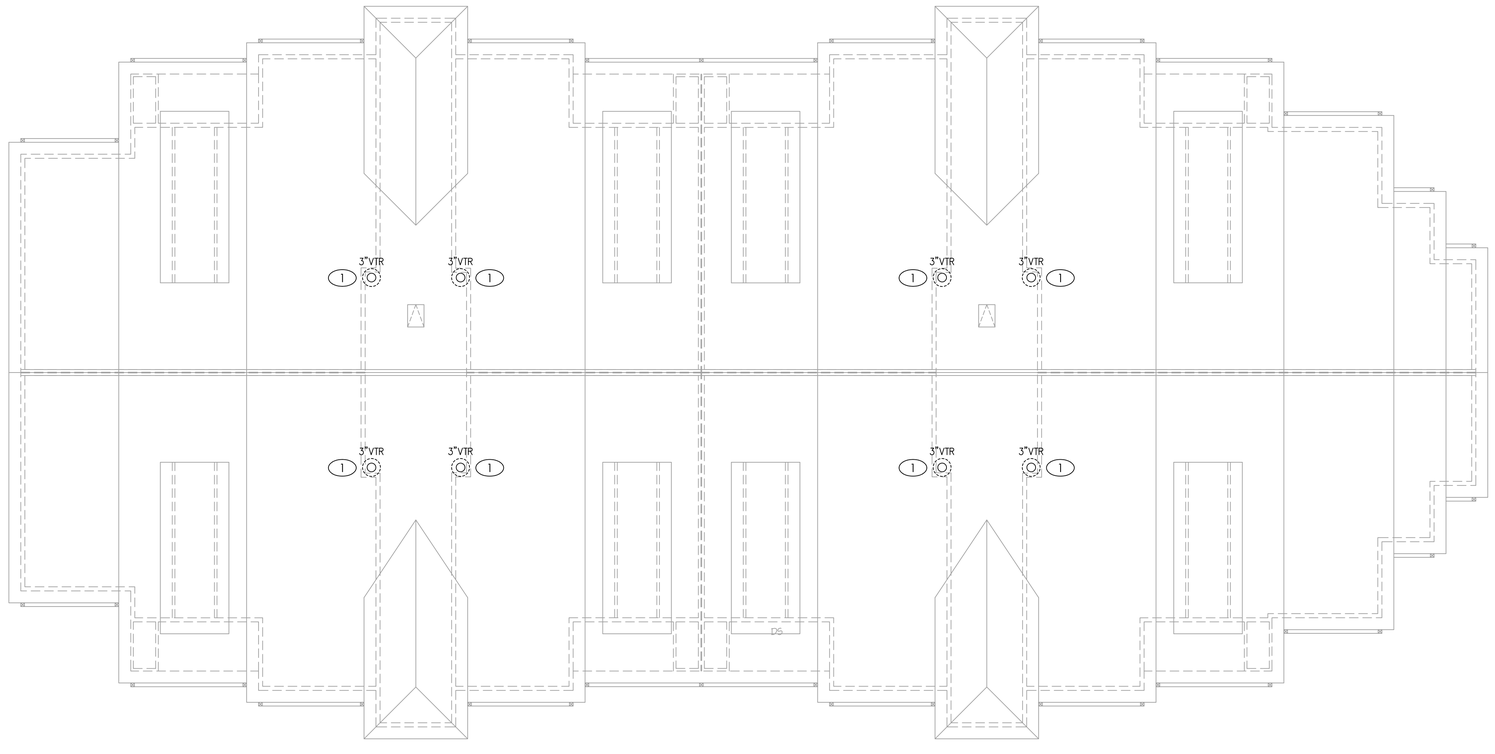
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SHEET NO.
PLUMBING PLAN
SECOND/THIRD LEVEL
BUILDING TYPE C
P132

(#) KEYED PLAN NOTES

1. VENT STACK UP TO 3" VENT THROUGH ROOF. LOCATE A MINIMUM OF 3'-0" FROM EDGE OF ROOF AND 10'-0" FROM ANY OUTSIDE AIR INTAKE. COORDINATE PIPE PENETRATION WITH ROOFING CONTRACTOR SO NOT TO VOID ROOF WARRANTY. SEAL ROOF PENETRATION WEATHER TIGHT.



ROOF WASTE & VENT PLAN - BUILDING TYPE C

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

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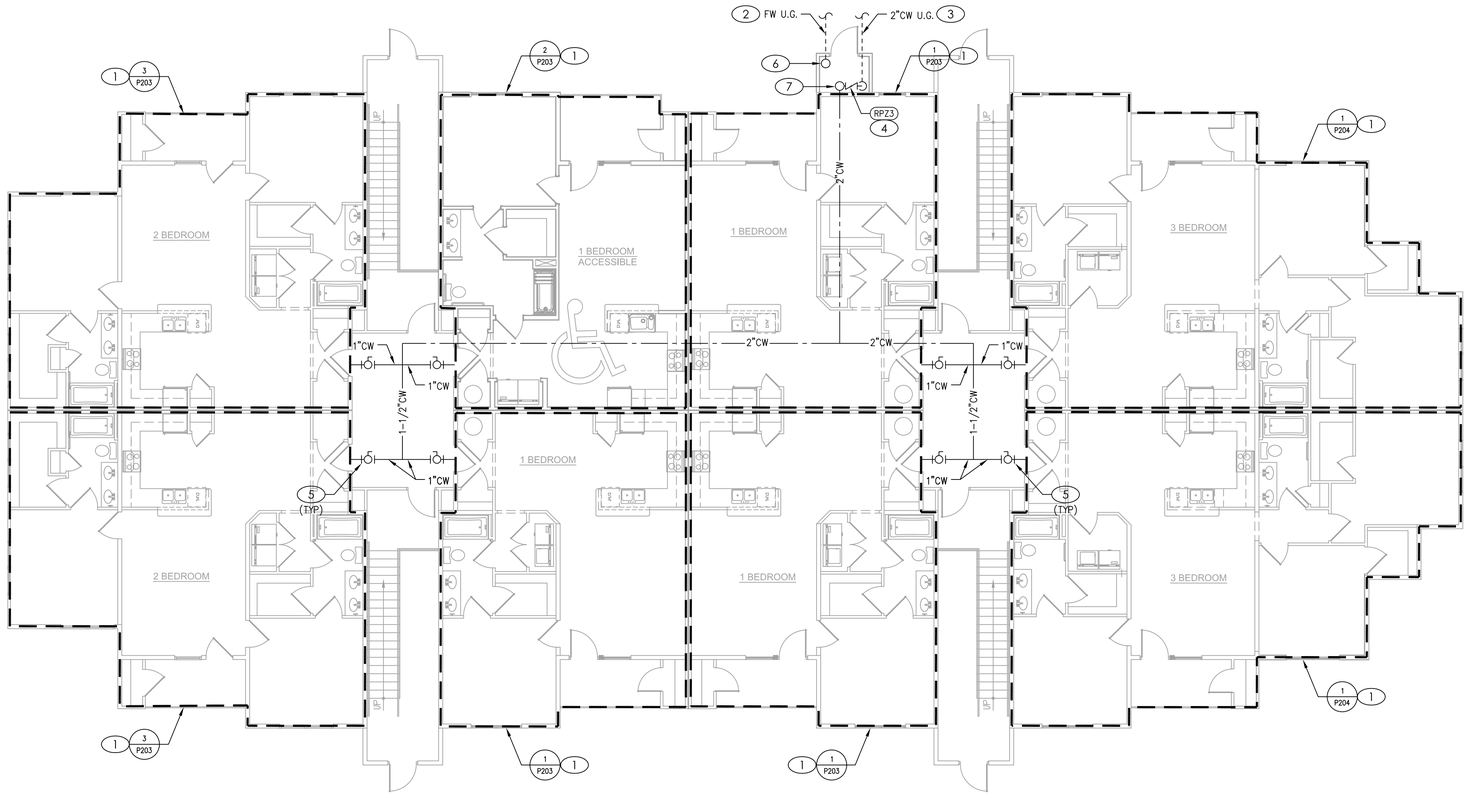
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SHEET NO.
PLUMBING PLAN
ROOF
BUILDING TYPE C
P133

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. FIRE SERVICE TO MAIN. REFER TO CIVIL DRAWINGS FOR CONTINUATION.
3. 2" DOMESTIC COLD WATER TO UTILITY SERVICE. SEE CIVIL PLANS FOR CONTINUATION. CONTRACTOR SHALL WORK WITH THE WATER COMPANY FOR THE INSTALLATION OF A NEW WATER MAIN ENTRANCE INCLUDING TAP, METER, METER PIT, PIPING, ETC. FOR A COMPLETE INSTALLATION.
4. PROVIDE 2" RPZ BACKFLOW PREVENTER IN HORIZONTAL. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION. INSTALL BACKFLOW PREVENTER 24" ABOVE FINISHED FLOOR (CENTERLINE ELEVATION) AND MINIMUM 12" CLEARANCE FRONT AND BACK. PROVIDE DRAIN FROM BACKFLOW PREVENTER TO FLOOR DRAIN AND DISCHARGE WITH AIR GAP.
5. PROVIDE ACCESS PANEL IN CEILING TO ACCESS UNIT SHUT-OFF VALVE.
6. FIRE RISER. SEE DETAIL ON SHEET MP002 FOR GENERAL REQUIREMENTS. COORDINATE WITH FIRE SPRINKLER CONTRACTOR TO CONFIRM ENTRY SIZE AND LOCATION OF FIRE DEPARTMENT CONNECTION.
7. DOMESTIC WATER RISER. 2"CW UP TO SECOND LEVEL.



FIRST LEVEL WATER PLAN - BUILDING TYPE C

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

1

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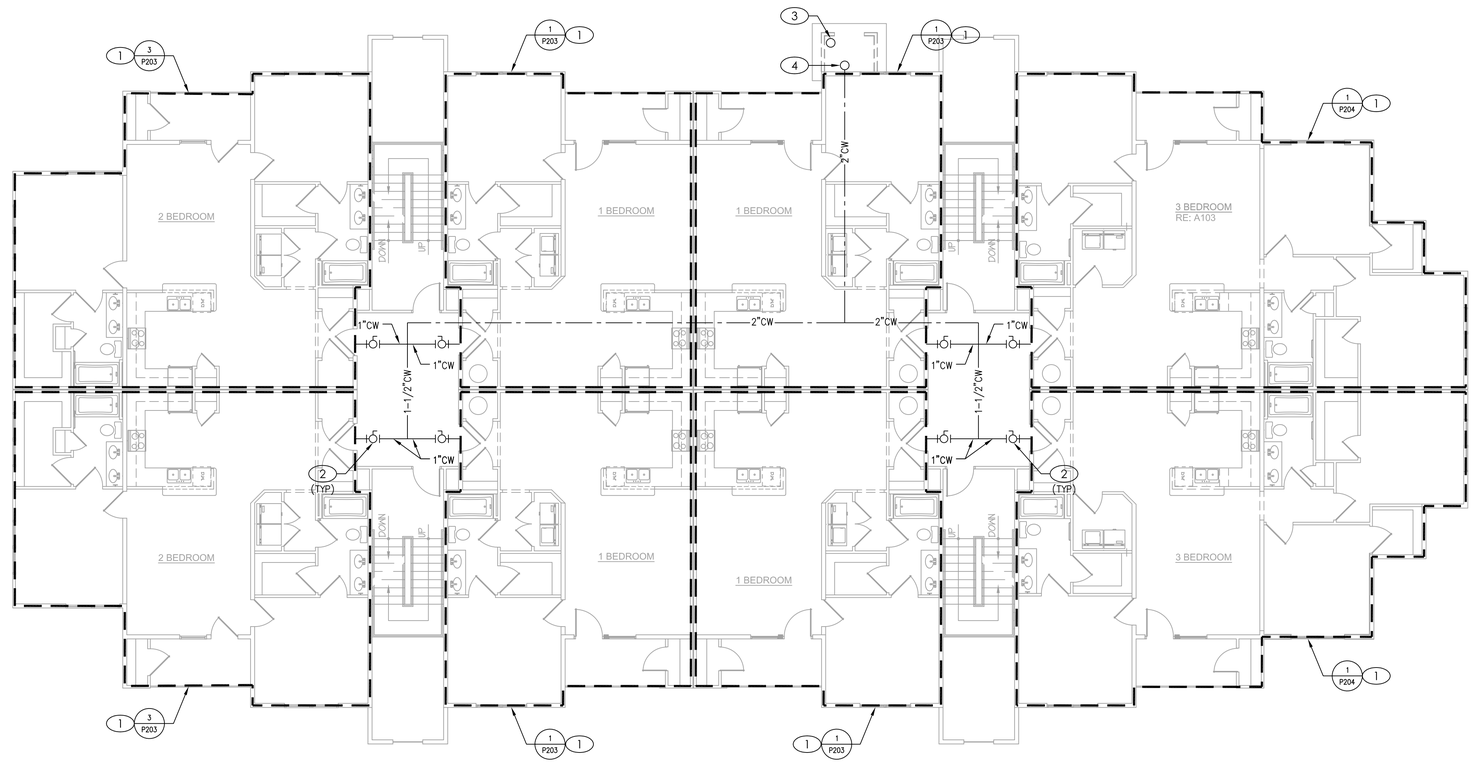
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SHEET NO.
PLUMBING PLAN
FIRST LEVEL
BUILDING TYPE C
P134

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS FOR UNIT PLUMBING PLANS.
2. PROVIDE ACCESS PANEL IN CEILING TO ACCESS UNIT SHUT-OFF VALVE.
3. CONTINUE FIRE RISER TO THIRD LEVEL. COORDINATE WITH FIRE SPRINKLER CONTRACTOR FOR SIZING.
4. DOMESTIC WATER RISER. 2"CW UP TO THIRD LEVEL.



SECOND/THIRD LEVEL WATER PLAN - BUILDING TYPE C

1

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

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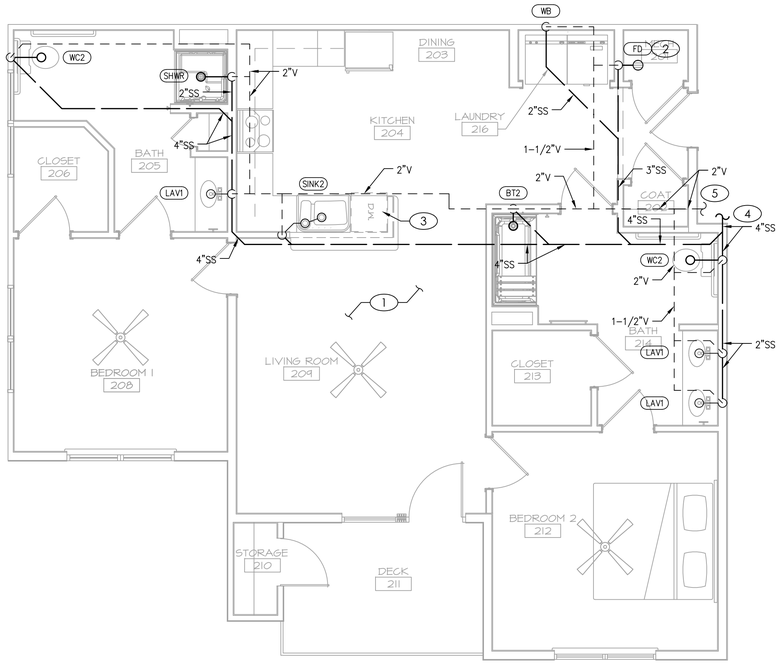
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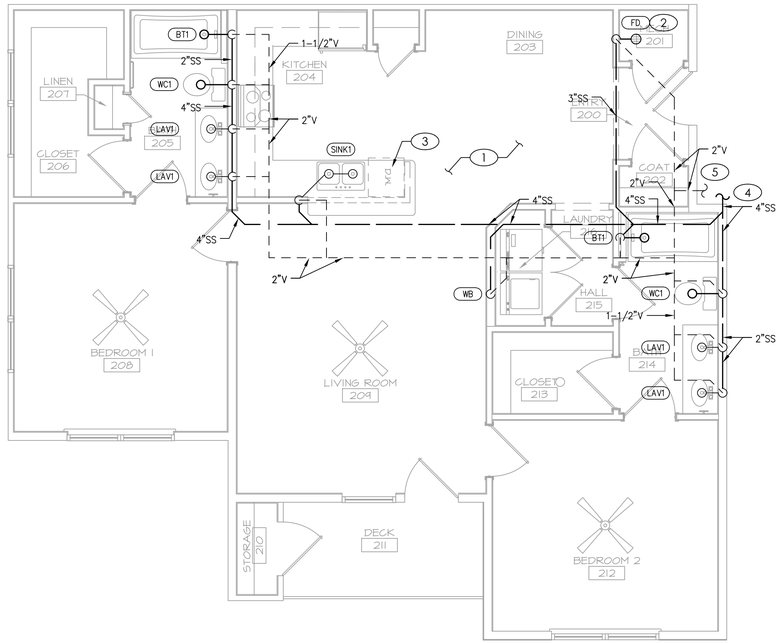
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SHEET NO.
PLUMBING PLAN
SECOND/THIRD LEVEL
BUILDING TYPE C
P135



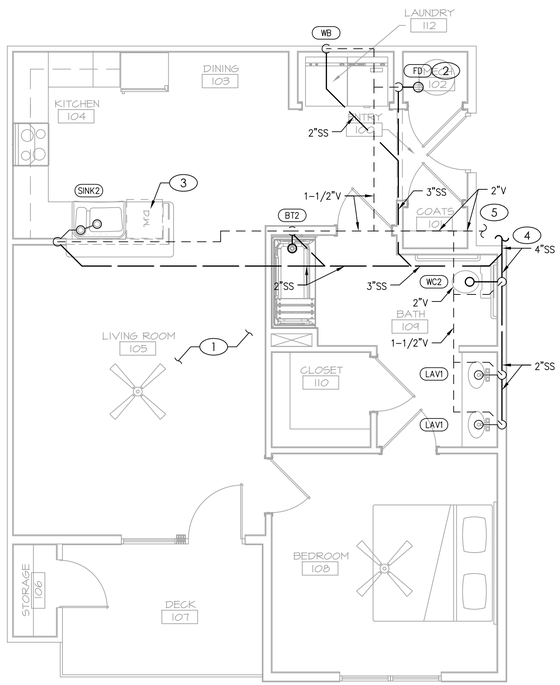
WASTE & VENT PLAN - TYP. 2 BEDROOM (ADA) 4

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



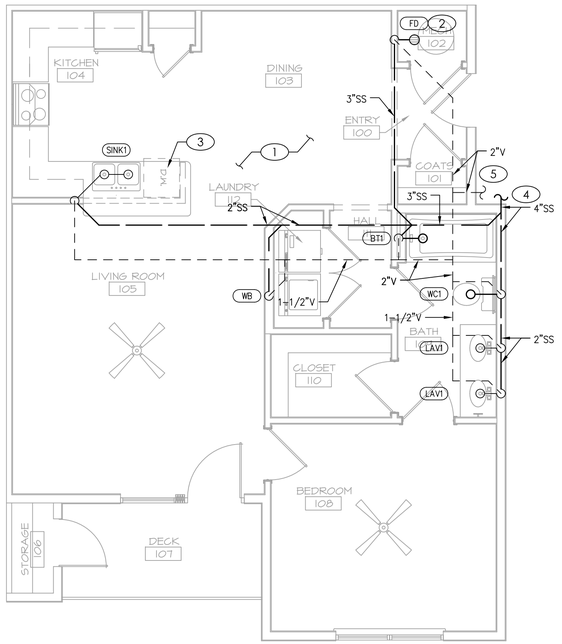
WASTE & VENT PLAN - TYP. 2 BEDROOM 3

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



WASTE & VENT PLAN - TYP. 1 BEDROOM (ADA) 2

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



WASTE & VENT PLAN - TYP. 1 BEDROOM 1

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

KEYED PLAN NOTES

1. SANITARY SEWER PIPING SHOWN BELOW FLOOR SHALL BE BELOW GRADE FOR LEVEL 1 UNITS. FOR LEVEL 2 AND LEVEL 3 UNITS, SANITARY SEWER PIPING SHALL BE BELOW FLOOR IN CEILING SPACE.
2. PLUMBING CONTRACTOR TO PROVIDE 3/4" T&P RELIEF DISCHARGE PIPING AND 3/4" CONDENSATE PAN DRAIN FROM WATER HEATER TO FLOOR DRAIN. DISCHARGE WITH AIR GAP.
3. PROVIDE DISHWASHER DRAIN TO CONNECTION AT GARBAGE DISPOSAL. ROUTE TO UNDERSIDE OF COUNTERTOP TO CREATE HIGH LOOP THEN BACK DOWN TO GARBAGE DISPOSAL CONNECTION.
4. LOCATION OF 4" SANITARY SEWER RISER. CONNECT SANITARY SEWER LINES FROM UNIT TO RISER.
5. LOCATION OF 3" VENT RISER. CONNECT VENTS FROM UNIT TO RISER.

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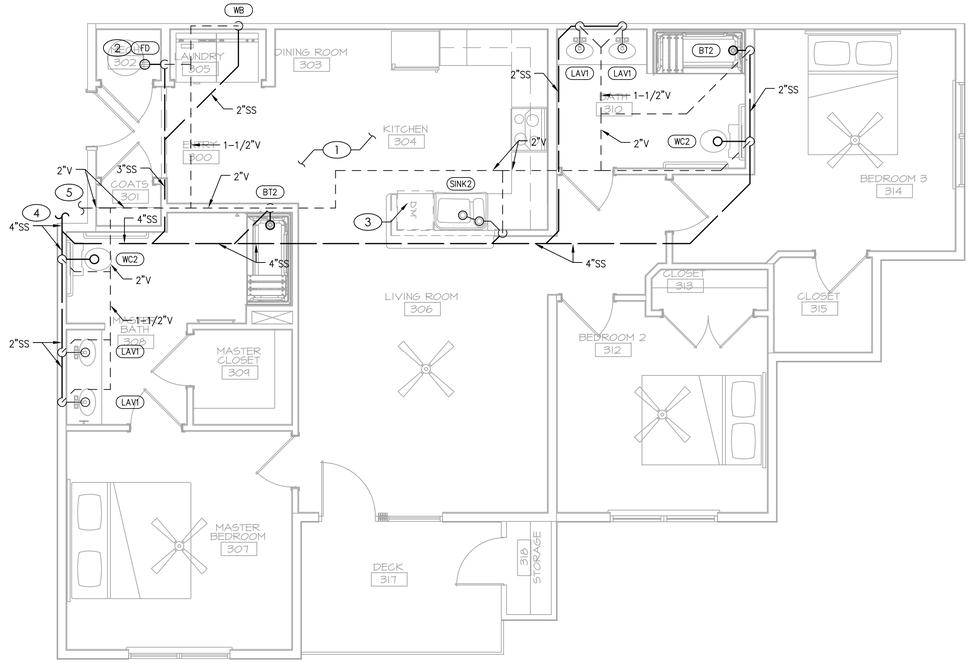
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02-08-2022
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DATE : 02.08.2022
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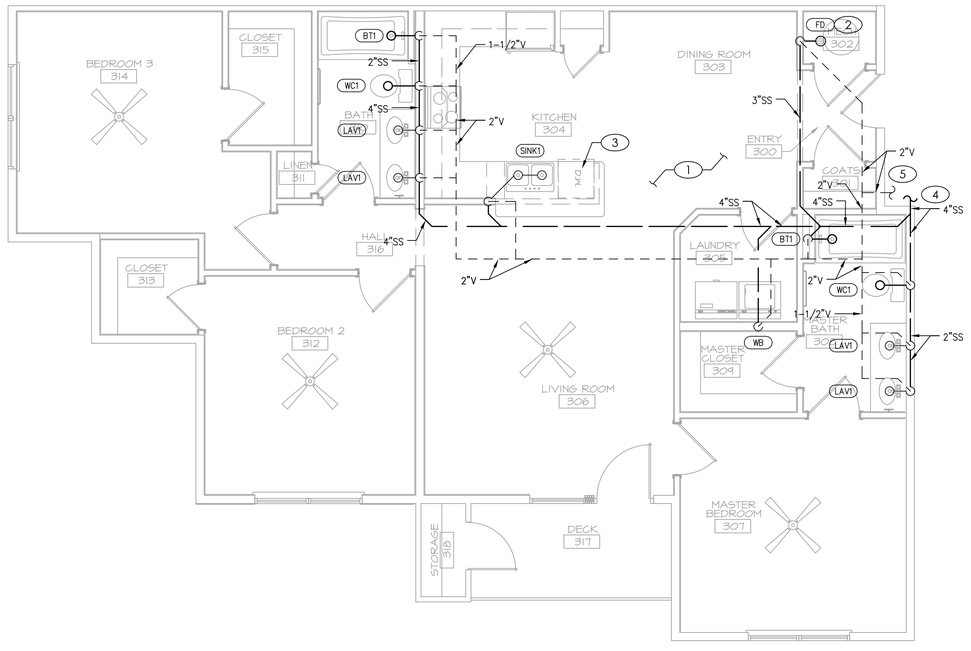
SHEET NO.
ENLARGED PLUMBING PLANS
P201



WASTE & VENT PLAN - TYP. 3 BEDROOM (ADA)

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

2



WASTE & VENT PLAN - TYP. 3 BEDROOM

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

1

KEYED PLAN NOTES

1. SANITARY SEWER PIPING SHOWN BELOW FLOOR SHALL BE BELOW GRADE FOR LEVEL 1 UNITS. FOR LEVEL 2 AND LEVEL 3 UNITS, SANITARY SEWER PIPING SHALL BE BELOW FLOOR IN CEILING SPACE.
2. PLUMBING CONTRACTOR TO PROVIDE 3/4" T&P RELIEF DISCHARGE PIPING AND 3/4" CONDENSATE PAN DRAIN FROM WATER HEATER TO FLOOR DRAIN. DISCHARGE WITH AIR GAP.
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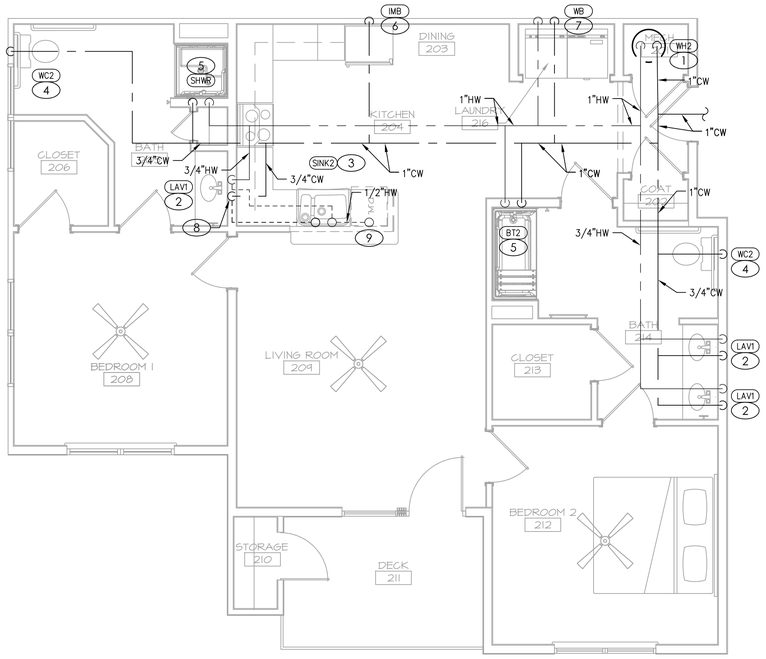
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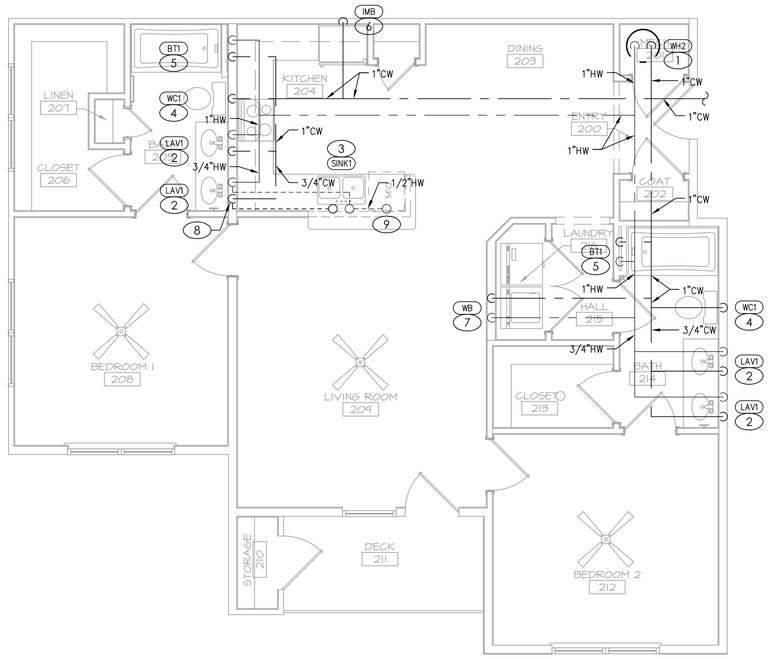
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P202



WATER PLAN - TYP. 2 BEDROOM (ADA)

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

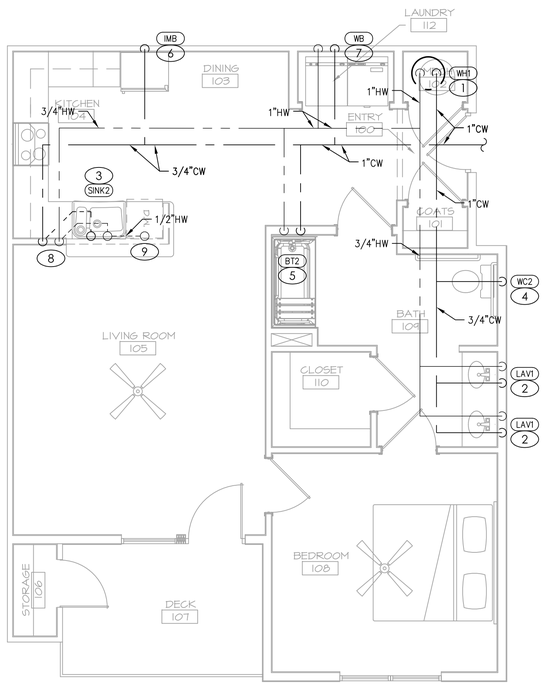
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WATER PLAN - TYP. 2 BEDROOM

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

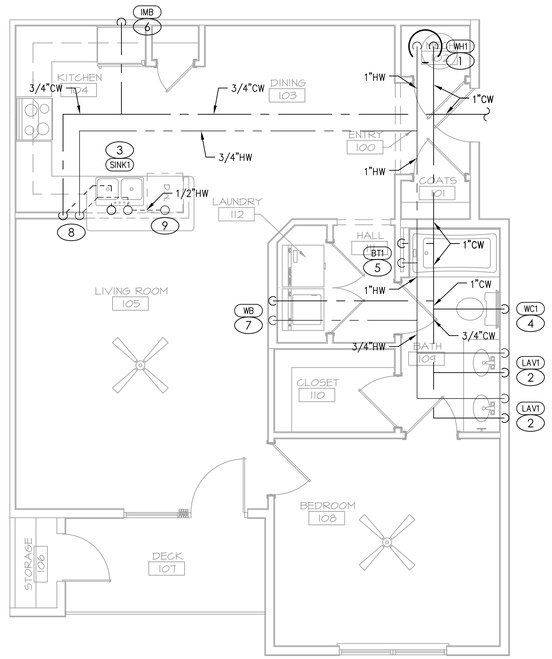
3



WATER PLAN - TYP. 1 BEDROOM (ADA)

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

2



WATER PLAN - TYP. 1 BEDROOM

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

1

KEYED PLAN NOTES

1. CONNECT 1"CW AND 1"HW TO WATER HEATER.
2. PROVIDE 1/2"CW AND 1/2"HW DOWN IN WALL TO LAVATORY.
3. PROVIDE 1/2"CW AND 1/2"HW TO SINK.
4. PROVIDE 1/2"CW DOWN IN WALL TO WATER CLOSET.
5. PROVIDE 1/2"CW AND 1/2"HW DOWN IN WALL TO BATHTUB/SHOWER.
6. PROVIDE 1/2"CW DOWN IN WALL TO ICE MAKER BOX.
7. PROVIDE 1/2"CW AND 1/2"HW DOWN IN WALL TO WASHER BOX.
8. ROUTE 3/4"CW AND 3/4"HW DOWN IN WALL AT THIS LOCATION. ROUTE 1/2"CW AND 1/2"HW UNDER COUNTER TO SINK.
9. PROVIDE 1/2"HW TO DISHWASHER.

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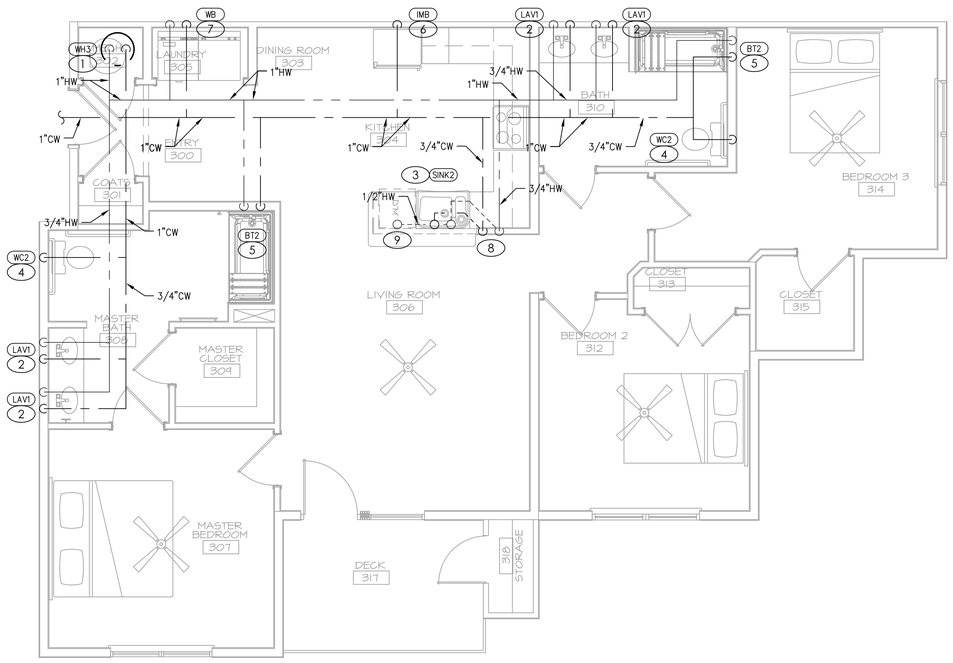
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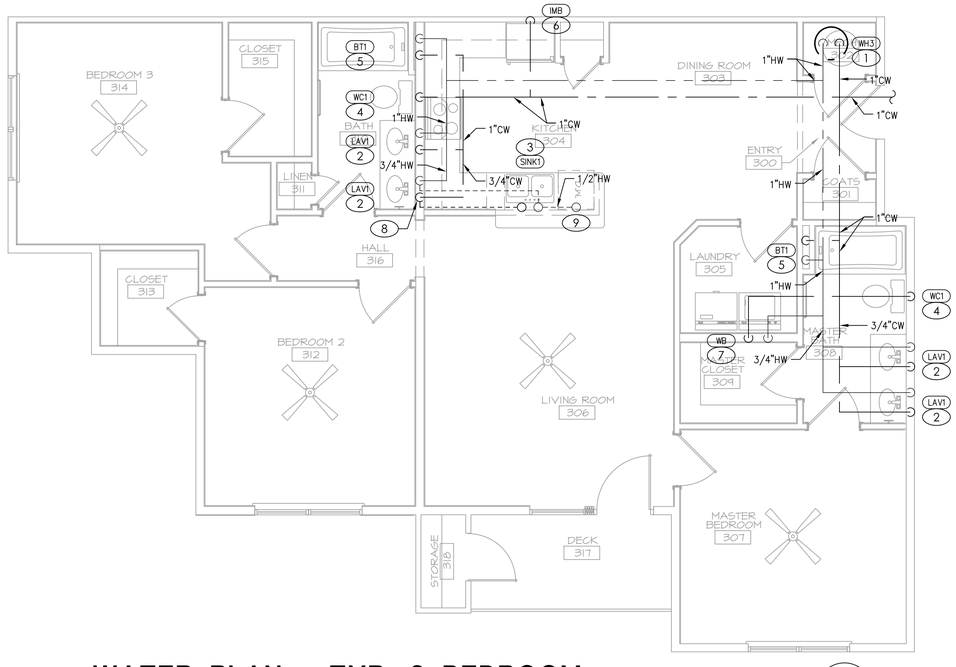
P203



WATER PLAN - TYP. 3 BEDROOM (ADA)

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

2



WATER PLAN - TYP. 3 BEDROOM

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

1

KEYED PLAN NOTES

1. CONNECT 1"CW AND 1"HW TO WATER HEATER.
2. PROVIDE 1/2"CW AND 1/2"HW DOWN IN WALL TO LAVATORY.
3. PROVIDE 1/2"CW AND 1/2"HW TO SINK.
4. PROVIDE 1/2"CW DOWN IN WALL TO WATER CLOSET.
5. PROVIDE 1/2"CW AND 1/2"HW DOWN IN WALL TO BATHTUB/SHOWER.
6. PROVIDE 1/2"CW DOWN IN WALL TO ICE MAKER BOX.
7. PROVIDE 1/2"CW AND 1/2"HW DOWN IN WALL TO WASHER BOX.
8. ROUTE 3/4"CW AND 3/4"HW DOWN IN WALL AT THIS LOCATION. ROUTE 1/2"CW AND 1/2"HW UNDER COUNTER TO SINK.
9. PROVIDE 1/2"HW TO DISHWASHER.

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P204

ELECTRICAL SPECIFICATIONS

PART I – GENERAL

A. CONDITIONS
1. FURNISH AND INSTALL A COMPLETELY WIRED AND OPERATIONAL ELECTRICAL SYSTEM AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO, THESE MAJOR ITEMS.
   A. LIGHTING FIXTURES AS INDICATED AND SPECIFIED ON THE PLANS.
   B. ELECTRICAL PANELS, SERVICE, CONDUIT, WIRING, ETC., FOR ALL OUTLETS AND EQUIPMENT.
   C. TELEPHONE, TELEVISION, AND FIRE ALARM. OUTLETS AND CONDUIT AS INDICATED.
2. OBTAIN AND REVIEW ALL OTHER DRAWINGS INCLUDING REFLECTED CEILING PLAN, INTERIOR AND EXTERIOR ELEVATIONS, FURNITURE PLANS AND ALL MILL WORK DRAWINGS. COORDINATE INSTALLATION OF ALL ELECTRICAL DEVICES AND EQUIPMENT PRIOR TO ROUGH–IN.
3. OBTAIN SUBMITTAL AND SHOP DRAWINGS FROM OTHER TRADES AND EQUIPMENT TO COORDINATE INSTALLATION ACCORDINGLY.
4. INSTALLATION SHALL COMPLY WITH ALL CURRENT APPLICABLE CODES AND GOVERNING AGENCIES HAVING JURISDICTION.
5. FIRE ALARM SYSTEM, IF REQUIRED PER IBC, SHALL BE DESIGN–BUILD BY OWNER'S/GC'S FIRE ALARM CONTRACTOR. DESIGN SHALL BE IN ACCORDANCE WITH NFPA 72. FIRE ALARM CONTRACTOR SHALL SUBMIT STAMPED DRAWINGS TO AHJ FOR REVIEW AND APPROVAL. FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR TESTING AND VERIFYING THAT THE AUDIBILITY OF THE FIRE ALARM SYSTEM MEETS A MINIMUM OF 15 DBA ABOVE AMBIENT NOISE LEVELS. ADD HORNS WHERE REQUIRED TO MAINTAIN MINIMUM LEVELS.
6. PROVIDE FIRE STOP ON ALL PIPING THAT PENETRATES RATED WALLS. METHOD OF FIRE STOP SHALL MEET WALL RATING. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF FIRE RATED WALLS. THIS CONTRACTOR SHALL PROVIDE FIRE RATED ENCLOSURES AROUND ALL ROUGH–IN BOXES, PANELS, ETC. THAT ARE LOCATED IN FIRE RATED WALLS AND SHALL FIRE CAULK ALL OPENINGS IN RATED ASSEMBLIES.

B. RELATED WORK BY OTHERS
1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT, TRENCH, AND BACKFILL FOR ELECTRICAL SERVICE ENTRANCE FROM THE MAIN SERVICE TO UTILITY POINT OF ELECTRICAL SERVICE. ELECTRICAL CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE ELECTRICAL SERVICE ENTRANCE WITH SERVING UTILITY COMPANY.
2. THE ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT, TRENCH, AND BACKFILL FOR PRIMARY PHONE AND CATV SERVICE FROM THE TELEPHONE TERMINAL BOARD OR CABINET TO THE PHONE COMPANY AND CATV COMPANY POINT OF SERVICE COORDINATE WITH LOCAL UTILITY COMPANIES.

C. CODES, REGULATIONS, AND STANDARDS
1. THE INSTALLATION SHALL COMPLY WITH APPLICABLE LOCAL AND STATE CODES AND ORDINANCES, WITH THE REGULATIONS OF THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE AND WITH THE REQUIREMENTS OF THE POWER, TELEPHONE, AND CATV COMPANIES FURNISHING SERVICES TO THIS INSTALLATION.
2. THE LATEST EDITIONS OF THE FOLLOWING INDUSTRY STANDARDS, SPECIFICATIONS, AND CODES ARE MINIMUM REQUIREMENTS:
   A. THE NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION STANDARDS.
   B. THE NATIONAL ELECTRICAL CODE, INCLUDING LOCAL AMENDMENTS.
   C. UNDERWRITER LABORATORIES INCORPORATED STANDARDS.
   D. AMERICAN NATIONAL STANDARDS INSTITUTE.
   E. INTERNATIONAL BUILDING CODE.

D. INSPECTION OF SITE
1. PRIOR TO SUBMITTING A BID FOR ELECTRICAL WORK, THE CONTRACTOR SHALL VISIT THE SITE OF THE PROPOSED CONSTRUCTION AND SHALL THOROUGHLY ACQUAINT HIMSELF WITH EXISTING UTILITIES, AND WORKING CONDITIONS TO BE ENCOUNTERED, ETC. ALLOWANCE WILL NOT BE MADE FOR NONCOMPLIANCE WITH THIS CONDITION AFTER BIDDING.
2. ELECTRICAL INSTALLATION SHALL MEET THE EXISTING CONDITIONS.

E. STORAGE AND HANDLING OF MATERIAL
1. DELIVER MATERIALS AND EQUIPMENT TO THE PROJECT IN THE MANUFACTURER'S ORIGINAL, UNOPENED, LABELED CONTAINERS. PROTECT AGAINST MOISTURE, TAMPERING, OR DAMAGE FROM IMPROPER HANDLING OR STORAGE. CONTRACTOR SHALL PROTECT AND BE RESPONSIBLE FOR ANY DAMAGE TO WORK OR MATERIALS UNTIL FINAL ACCEPTANCE BY THE OWNER, AND SHALL MAKE GOOD WITHOUT COST TO THE OWNER, ANY DAMAGE OR LOSS THAT MAY OCCUR DURING THIS PERIOD.
2. ARRANGE FOR TIMELY DELIVERY OF MATERIALS AND EQUIPMENT TO THE JOB SITE IN ORDER TO MINIMIZE THE LENGTH OF TIME BETWEEN DELIVERY AND INSTALLATION.
3. COVER AND PROTECT ANY MATERIAL WHICH MAY BE AFFECTED BY THE WEATHER WHILE IN TRANSIT OR STORED AT THE PROJECT SITE. ANY MATERIAL FOUND DEFECTIVE OR NOT INSTALLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS MAY BE REJECTED BY THE ENGINEER.

F. CLEANUP
1. KEEP THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIALS, OR RUBBISH CAUSED BY EMPLOYEES OR WORK UNDER THIS DIVISION OF THE SPECIFICATIONS. AT THE COMPLETION OF THE WORK REMOVE ALL SURPLUS MATERIALS, TOOLS, ETC., AND LEAVE THE PREMISES BROOM–CLEAN.

G. EXCAVATION, CUTTING, AND FITTING
1. PERFORM ALL EXCAVATION AND BACK FILLING REQUIRED FOR WORK PERFORMED UNDER THIS DIVISION OF THE SPECIFICATIONS. USE EXCAVATED MATERIALS FOR BACKFILL UNLESS OFF SITE MATERIALS ARE DEEMED NECESSARY.
2. PERFORM THE EXCAVATION, CUTTING, FITTING, REPAIRING, AND FINISHING OF THE WORK NECESSARY FOR THE INSTALLATION OF THE EQUIPMENT OF THIS SECTION. HOWEVER, NO CUTTING OF THE WORK OF OTHER TRADES OR OF ANY STRUCTURAL MEMBERS SHALL BE DONE WITHOUT THE CONSENT OF THE ARCHITECT.

H. DRAWINGS
1. THE DRAWINGS INDICATE THE GENERAL ARRANGEMENT AND LOCATIONS OF THE ELECTRICAL WORK DATA PRESENTED ON THESE DRAWINGS ARE AS ACCURATE AS PLANNING CAN DETERMINE, BUT FIELD VERIFICATION OF ALL DIMENSIONS, LOCATIONS, LEVELS, ETC., TO SUIT FIELD CONDITIONS IS REQUIRED. REVIEW ALL ARCHITECTURAL, STRUCTURAL, AND MECHANICAL DRAWINGS AND ADJUST ALL WORK TO MEET THE REQUIREMENTS OF CONDITIONS SHOWN. THE ARCHITECTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER ALL OTHER DRAWINGS. DISCREPANCIES BETWEEN DIFFERENT PLANS, OR BETWEEN DRAWINGS AND SPECIFICATIONS, OR REGULATIONS AND CODES GOVERNING THE INSTALLATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IN WRITING BEFORE THE DATE OF BID OPENING. IF DISCREPANCIES ARE NOT REPORTED, THE CONTRACTOR SHALL BID THE GREATER QUANTITY OR BETTER QUALITY, AND APPROPRIATE ADJUSTMENTS WILL BE MADE AFTER CONTRACT AWARD. CONTRACTOR SHALL BE RESPONSIBLE TO FIELD MEASURE AND CONFIRM MOUNTING HEIGHTS AND LOCATION OF ELECTRICAL EQUIPMENT WITH RESPECT TO COUNTERS, RADIATION, ETC. DO NOT SCALE DISTANCES OFF THE ELECTRICAL DRAWINGS, USE ACTUAL BUILDING DIMENSIONS.

I. COOPERATION WITH OTHER CONTRACTORS
1. COOPERATE WITH THE OTHER TRADES SO THAT THE INSTALLATION OF THE ELECTRICAL OUTLETS AND EQUIPMENT WILL BE PROPERLY COORDINATED. CONDUIT, LIGHTING FIXTURES, AND OTHER EQUIPMENT LOCATIONS SHALL BE VERIFIED WITH OTHER TRADES TO AVOID CONFLICT WITH THE PIPING, DUCTWORK, STEEL, BEAMS, OR OTHER OBSTRUCTIONS.
2. CAREFULLY VERIFY THE LOCATIONS OF THE OUTLET BOXES AND DETERMINE THAT THEY HAVE NOT BEEN DISTURBED DURING THE INSTALLATION OF MATERIALS OF OTHER TRADES.
3. COORDINATE THE LOCATION OF THE TRENCHES AND CONDUITS FOR ELECTRICAL AND TELEPHONE UTILITY SERVICES WITH THE GENERAL CONTRACTOR.
4. COORDINATE HVAC AND PLUMBING EQUIPMENT CONNECTION REQUIREMENTS WITH HVAC AND PLUMBING CONTRACTORS.

J. RECORD DRAWINGS
1. THE ELECTRICAL CONTRACTOR SHALL MAINTAIN A SET OF DRAWINGS AT THE JOB SITE FOR THE EXCLUSIVE PURPOSE OF MAINTAINING A RECORD OF ALL WORK INSTALLED AND TO SHOW ANY DEVIATIONS FROM THE WORK INDICATED ON THE DRAWINGS.
2. AT THE COMPLETION OF THE PROJECT, ONE SET OF REPRODUCIBLE DRAWINGS, SHOWING ALL RECORD CONDITIONS, SHALL BE DELIVERED TO THE OWNER FOR ACCEPTANCE PRIOR TO FINAL PAYMENT.

PART II – PRODUCTS AND EXECUTION

A. MATERIALS
1. ALL MATERIALS SHALL BE NEW AND OF QUALITY AS SPECIFIED ON THE PLANS OR SPECIFICATIONS AND MUST CARRY THE UNDERWRITER'S LABORATORIES APPROVAL COVERING THE PURPOSE FOR WHICH THEY ARE USED, IN ADDITION TO MEETING ALL REQUIREMENTS OF THE CURRENT APPLICABLE CODES AND REGULATIONS.

B. SHOP DRAWINGS AND APPROVALS
1. THE ITEMS SPECIFIED HEREIN AND ON DRAWINGS ARE USED AS A STANDARD OF QUALITY. ANY MATERIALS OF EQUAL QUALITY AND AESTHETIC VALUE WILL BE GIVEN CONSIDERATION AS A SUBSTITUTE FOR THE MATERIALS SPECIFIED. NO APPROVAL WILL BE GIVEN TO A SPECIFIC CATALOG NUMBER, MODEL, OR TYPE OF EQUIPMENT, PRIOR TO BIDDING. AFTER BIDDING, THE DECISION OF THE ARCHITECT AND/OR ENGINEER DETERMINING EQUAL MATERIALS WILL BE FINAL.
2. THE CONTRACTOR SHALL SUBMIT SEVEN (7) IDENTICAL BOUND SETS OF SHOP DRAWINGS ON THE FOLLOWING ITEMS:
   A. LIGHTING FIXTURE CUTS AND PERFORMANCE DATA.
   B. OUTLINE DRAWINGS AND DATA SHEETS OF EACH PANELBOARD, LOAD CENTERS, AND DISTRIBUTION PANELS.
   C. OUTLINE DRAWINGS OF ALL SWITCH GEAR COMPONENTS.
   D. WIRING DEVICES AND COVERPLATES.
   E. ALL CIRCUIT BREAKERS INSTALLED IN PANELBOARDS, LOAD CENTERS, AND DISTRIBUTION PANELS.
3. SUBMIT ITEMS AT ONE TIME IN A NEAT AND ORDERLY MANNER WITHIN 15 DAYS OF AWARD OF CONTRACT. PARTIAL SUBMITTALS WILL NOT BE ACCEPTABLE.

C. SYSTEM GROUNDING
1. GROUNDING SHALL COMPLY WITH REQUIREMENTS OF ARTICLE 250. ALL EXPOSED NONCURRENT CARRYING METALLIC PARTS OF ELECTRICAL EQUIPMENT, METALLIC RACEWAY SYSTEMS, METALLIC CABLE ARMOR, GROUNDING CONDUCTOR OF NONMETALLIC SHEATHED CABLES, GROUNDING CONDUCTOR IN NONMETALLIC RACEWAYS, AND GROUNDED CONDUCTORS OF THE WIRING SYSTEM SHALL BE GROUNDED.
2. GROUNDING CONDUCTOR (NEUTRAL) OF THE WIRING SYSTEM SHALL BE CONNECTED TO THE SYSTEM GROUNDING CONDUCTOR AT A SINGLE PLACE IN EACH SYSTEM BY REMOVABLE BONDING JUMPERS, SIZED ACCORDING TO THE APPLICABLE PROVISIONS OF THE NATIONAL ELECTRICAL CODE. THE GROUNDED CONDUCTOR (NEUTRAL) TO THE GROUNDING CONDUCTOR CONNECTION SHALL BE LOCATED IN THE ENCLOSURE FOR THE SYSTEM'S OVERCURRENT PROTECTION OR WHERE OTHERWISE INDICATED ON THE PLANS OR SPECIFICATIONS.
3. A GROUND BUS SEPARATE FROM THE NEUTRAL BUS SHALL BE PROVIDED IN ALL DISTRIBUTION PANELS AND PANELBOARDS. PROPER TORQUE ON GROUND BUS SHALL BE VERIFIED, PER MANUFACTURER'S RECOMMENDATIONS, PRIOR TO ENERGIZING EQUIPMENT.
4. GROUND BUSES AND NEUTRAL BUSES IN ALL DISTRIBUTION PANELS, LOAD CENTERS, PANELBOARDS, AND THOSE PROVIDED IN ANY EQUIPMENT SHALL BE ISOLATED EXCEPT WHERE REQUIRED TO BE CONNECTED AS SPECIFIED ABOVE FOR THE SERVICE ENTRANCE
5. WHEN INDICATED ON THE DRAWINGS, EQUIPMENT GROUNDING CONDUCTORS SHALL BE EXTENDED FROM THE GROUND BUS IN THE DISTRIBUTION EQUIPMENT TO THE RECEPTACLE, FIXTURE OR DEVICE LUGS WHERE THEY ARE PROVIDED. WHERE LUGS ARE NOT PROVIDED, EQUIPMENT GROUNDING CONDUCTORS SHALL BE CONNECTED TO EQUIPMENT ENCLOSURES. THE CONNECTIONS SHALL BE ARRANGED SUCH THAT REMOVAL OF THE RECEPTACLE, EQUIPMENT GROUND CONDUCTORS, OR GROUND JUMPERS FROM GROUND BUSING SHALL NOT AFFECT THE GROUND SYSTEM.
6. RACEWAYS MAY NOT BE USED AS A GROUNDING CONDUCTOR FOR POWER AND LIGHTING CIRCUITS. ALL CONDUIT SHALL HAVE SEPARATE CODE SIZED GREEN GROUND WIRE INSTALLED IN THE CONDUIT TO INSURE A CONTINUOUS GROUNDING PATH.
7. IN INACCESSIBLE LOCATIONS, MAKE CONNECTIONS BY EXOTHERMIC WELD PROCESS.
8. IN ACCESSIBLE LOCATIONS, CONNECTIONS SHALL BE MADE WITH BOLTED THROUGH, APPROVED SOLDERLESS BRONZE GROUNDING DEVICES.

D. WIRE
1. CONDUCTOR SIZES SHOWN ON THE DRAWINGS ARE BASED ON COPPER WIRE. UNLESS OTHERWISE SPECIFIED, ALL WIRE SHALL BE TYPE XHHW OR SE FOR FEEDERS OR BRANCH CIRCUITS LARGER THAN 4 AWG, TYPE THHN/THWN INSULATION FOR FEEDERS AND BRANCH CIRCUITS 4 AWG AND SMALLER. ALL BRANCH CIRCUIT WIRING SHALL BE COPPER.
2. ALUMINUM CONDUCTORS MAY BE UTILIZED FOR SERVICE ENTRANCE AND PANEL FEEDERS. CONDUCTORS SHALL BE ALUMINUM ALLOW AA–8000 SERIES.
3. THE WIRES SHALL BE MARKED WITH COLOR TO SIMPLIFY CIRCUIT IDENTIFICATION. UNLESS OTHERWISE REQUIRED BY LOCAL ORDINANCES GROUND WIRES SHALL BE GREEN, NEUTRAL WIRES SHALL BE 120V–WHITE, AND LIVE WIRES 208Y/120V AND 120/240 SHALL BE BLACK (PHASE A), RED (PHASE B), AND BLUE (PHASE C). CIRCUIT SHALL BE LABELED IN EACH J–BOX.
4. ALL CONDUCTORS SHALL BE RATED 600 VOLT.
5. SPLICES IN EXTERIOR PULL BOXES AND MANHOLES SHALL BE WEATHERPROOF USING "SCOTCHCAST" SPLICE KIT OR APPROVED EQUAL. SEAL ENDS OF CONDUITS AND DUCTS WITH "DUCTSEAL" OR APPROVED EQUAL.
6. PROVIDE SOLID CONDUCTOR FOR 12 AWG AND SMALLER.
7. ALL WIRING WITHIN RESIDENTIAL UNITS ONLY MAY BE TYPE NM CABLE.
8. NO WIRE SHALL BE INSTALLED IN THE CONDUIT SYSTEM UNTIL THE CONDUIT SYSTEM IS COMPLETE. USE MINERALAC NO. 100 OR EQUIVALENT AS A LUBRICANT TO FACILITATE THE INSTALLATION OF THE CONDUCTORS IN THE CONDUIT SYSTEM.
9. MC CABLE WITH COPPER CONDUCTORS AND GROUND WIRE MAY BE USED WHERE PERMITTED.

E. CONDUIT
1. ALL WIRING SHALL BE INSTALLED IN LISTED METALLIC CONDUIT EXCEPT AS PERMITTED IN OTHER SECTIONS. RGS, WITH A 20 MIL PVC COATING WILL BE USED WHEN IN CONTACT WITH EARTH. IMC MAY BE USED IN INDOOR LOCATIONS NOT IN CONTACT WITH THE EARTH. EMT MAY BE USED IN INDOOR LOCATIONS NOT IN CONTACT WITH EARTH, NOT IN CONCRETE SLABS OR WALLS AND NOT SUBJECT TO DAMAGE. PVC MAY BE USED IN OR BELOW CONCRETE AND DIRECT BURIED IN EARTH. FLEXIBLE STEEL CONDUIT SHALL BE USED FOR INDOOR FINAL CONNECTIONS TO EQUIPMENT IN LENGTHS NOT TO EXCEED 72". LIQUID–TIGHT FLEXIBLE STEEL CONDUIT SHALL BE FOR OUTDOOR FINAL CONNECTIONS TO EQUIPMENT NOT TO EXCEED 48".
2. WHERE CONDUIT ENTERS OUTLET BOXES, FIXTURES OR CABINETS, FIRMLY FASTEN WITH STEEL SET SCREW, COMPRESSION CONNECTORS, OR DOUBLE LOCKNUTS FOR GRC. ALL CONNECTIONS SHALL HAVE BUSHINGS OR INSULATED THROAT CONNECTORS. FIRMLY FASTEN CONDUIT TO THE BUILDING CONSTRUCTION. RUN EXPOSED CONDUIT PARALLEL TO THE BUILDING LINES, SUPPORTED BY APPROPRIATE HANGERS (UNISTRUT, T & B OR APPLETON, OR EQUAL).
3. COVER METALLIC CONDUIT IN CONTACT WITH EARTH WITH POLYETHYLENE TAPED SPIRAL WRAPPED, 1/2 LAPPED TO PROVIDE 20 MIL. THICKNESS. TAPE SHALL BE SCOTCH NO. 50 TAPE. CONDUIT AND DUCTS NOT UNDER BUILDINGS AND FEEDER DUCTS SHALL BE INSTALLED PER N.E.C. 300–5. MAKE JOINTS WITH COMPOUND TO BE WATERTIGHT.
4. SCHEDULE 40 PVC CONDUIT SHALL BE PERMITTED UNDERGROUND WITH PROPER FITTINGS, ALL UL APPROVED AND CEMENTED JOINTS. PENETRATIONS THROUGH FLOOR SLABS AND BENDS GREATER THAN 22° SHALL BE WRAPPED RIGID GALVANIZED STEEL ELBOWS.
5. FITTINGS AND CONDUIT BODIES SHALL BE STEEL. DIECAST FITTINGS ARE NOT ACCEPTABLE.
6. CONDUIT SIZES SHALL BE AS REQUIRED BY CODE AND AS INDICATED OR SPECIFIED.
7. ALL EMPTY CONDUIT SYSTEMS SHALL HAVE A 200 LB. TEST NYLON PULL STRING TO FACILITATE INSTALLATION OF FUTURE WIRE.
8. WIRING, CONDUITS, AND OUTLETS SHALL BE CONCEALED WITH THE BUILDING STRUCTURE, EXCEPT THAT CERTAIN MOTOR AND LIGHTING FEEDER CONDUITS MAY BE RUN EXPOSED IN CERTAIN AREAS AS INDICATED ON THE DRAWINGS.
9. CONDUIT PENETRATION THROUGH ROOF SHALL HAVE ROOF FLASHING WITH CAULK TYPE COUNTER FLASHING SLEEVE. INSTALLATION SHALL BE WATERTIGHT.
10. CONDUITS SHALL BE ROUTED PARALLEL AND PERPENDICULAR TO THE STRUCTURE.

F. OUTLET, PULL, AND JUNCTION BOXES
1. EACH SWITCH, LIGHT. RECEPTACLE OR OTHER OUTLET, INSTALLED IN RESIDENTIAL UNITS, SHALL BE PROVIDED WITH A CODE SIZED, PLASTIC OUTLET BOX. JUNCTION AND PULL BOXES SHALL BE CODE SIZED, PLASTIC OR METAL OUTLET BOX. ALL OTHER OUTLET BOXES SHALL BE STEEL
2. BOXES INSTALLED IN POURED CEMENT FLOORS SHALL BE FLUSH TYPE CAST IRON OR STEEL WITH WATERTIGHT GASKETED COVERS. WHERE BOXES ARE INSTALLED IN FLOORS WITH TILE OR CARPET FLOOR COVERING, COVERS SHALL BE OF THE RECESSED TYPE TO ACCOMMODATE THE FLOOR COVERING.
3. BOXES INSTALLED FOR THE ALARM, COMPUTER, AND SECURITY SYSTEM SHALL BE PROVIDED WITH APPROPRIATE COVER PLATES.
4. BOXES FOR TELEPHONE, COMPUTER, T.V., FIRE ALARM, SECURITY, AND SIMILAR SYSTEMS SHALL BE MINIMUM 2–1/8" DEEP.

G WIRING DEVICES
1. WALL SWITCHES SHALL BE SPECIFICATION GRADE AC SILENT TYPE SWITCHES, 20A 120/277 VOLT.
2. RECEPTACLES SHALL BE SPECIFICATION GRADE, DUPLEX TYPE. NEMA5–20R, 20 AMPERE, 120VOLT GROUNDED TYPE. SPECIAL APPLICATION RECEPTACLES SHALL BE INDICATED ON PLANS. MOUNT WITH THE GROUND DOWN.
3. DEVICE PLATES SHALL BE EQUAL TO SIERRA SMOOTH–LINE PLASTIC WALL PLATES. COLOR SHALL BE WHITE, UNLESS OTHERWISE NOTED.
4. RECEPTACLES IN OUTDOOR AND WET LOCATIONS SHALL BE INSTALLED WITH A HINGED OUTLET COVER/ENCLOSURE CLEARLY MARKED AND U.L. LISTED SUITABLE FOR WET LOCATIONS WHILE IN USE, EQUAL TO TAYMAC SPECIFICATION GRADE.

H. SERVICE ENTRANCE SECTION
1. THE SERVICE ENTRANCE EQUIPMENT SHALL BE AS INDICATED ON THE DRAWINGS. EQUIPMENT SHALL CARRY THE U.L. LABEL AND SHALL CONFORM TO THE POWER COMPANY REGULATIONS.
2. SERVICE ENTRANCE EQUIPMENT SHALL BE PROVIDED WITH A FULLY RATED COPPER OR ALUMINUM BUS. HORIZONTALLY TAPERED BUSSING SHALL NOT BE ALLOWED.

I. DISTRIBUTION PANELS
1. DISTRIBUTION PANELS SHALL BE PROVIDED WITH FULLY RATED COPPER OR ALUMINUM BUS. HORIZONTAL TAPERED BUSSING SHALL NOT BE ALLOWED
2. ACCEPTABLE MANUFACTURERS – CUTLER HAMMER, SEIMENS, SQUARE D OR GENERAL ELECTRIC
3. FACTORY ASSEMBLED DEAD FRONT, METAL ENCLOSED, AND SELF–SUPPORTING SWITCH BOARD ASSEMBLY CONFORMING T NEMA PB 2 AND UL 891, AND COMPLETE FROM INCOMING LINE TERMINALS TO LOAD SIDE TERMINATIONS.
4. LINE AND LOAD TERMINATIONS: ACCESSIBLE FROM FRONT ONLY OF THE SWITCH BOARD. SUITABLE FOR CONDUCTOR MATERIALS AND NUMBER OF CONDUCTORS USED.
5. BUS CONNECTIONS: BOLTED. ACCESSIBLE FROM FRONT FOR MAINTENANCE. PROVIDE BELLEVILLE WASHERS FOR PROPERLY TORQUE ALL CONNECTIONS
6. PROVIDE FULLY–RATED NEUTRAL BUS AND FULLY RATED GROUND BUS MATCHING MATERIAL USED FOR MAIN BUS.
7. FUTURE PROVISIONS: FULLY EQUIP SPACES FOR FUTURE DEVICES WITH BUSSING AND BUS CONNECTIONS SUITABLY INSULATED AND BRACED FOR SHORT CIRCUIT CURRENTS. CONTINUOUS CURRENT RATING AS INDICATED ON DRAWINGS.
8. ALL CIRCUIT BREAKERS SHALL BE BOLT–ON TYPE.

J. PANEL BOARDS
1. CIRCUIT BREAKER TYPE AS INDICATED ON DRAWINGS. UNLESS INDICATED OTHERWISE, ALL PANELS SHALL HAVE PANEL HAVE PANEL BOARD TYPE CONSTRUCTION WITH BOLT–ON CIRCUIT BREAKERS FOR 3Ø PANELS
2. MANUFACTURERS SHALL BE GENERAL ELECTRIC, SQUARE D, SEIMENS, CUTLER–HAMMER WITH VOLTAGE, SIZES, AND RATINGS AS INDICATED ON DRAWINGS.
3. THE CIRCUIT BREAKERS SHALL BE OPERABLE IN ANY POSITION AND BE REMOVABLE FROM THE FRONT OF THE PANEL BOARD WITHOUT DISTURBING THE ADJACENT UNITS. BRANCH BREAKERS SHALL BE OF SUCH DESIGN THAT COMBINATION OF SINGLE–POLE, DOUBLE–POLE, AND THREE–POLE BREAKERS CAN BE ASSEMBLED ON THE SAME PANEL. EACH BRANCH CIRCUIT SHALL BE CLEARLY NUMBERED. BRANCH AND MAN TERMINALS SHALL BE SOLDERLESS TYPE. HANDLE TIES TO FORM MULTI–POLE BREAKERS NOT ACCEPTABLE.

K. LOAD CENTER
1. CIRCUIT BREAKER TYPE AS INDICATED ON DRAWINGS. MANUFACTURERS SHALL BE GENERAL ELECTRIC, SQUARE D, SIEMENS, CUTLER–HAMMER/EATON WITH VOLTAGE, SIZES, AND RATINGS AS INDICATED ON DRAWINGS.
2. THE CIRCUIT BREAKERS SHALL BE OPERABLE IN ANY POSITION AND BE REMOVABLE FROM THE FRONT OF THE PANEL BOARD WITHOUT DISTURBING THE ADJACENT UNITS. BRANCH BREAKERS SHALL BE OF SUCH DESIGN THAT COMBINATION OF SINGLE–POLE AND DOUBLE–POLE BREAKERS CAN BE ASSEMBLED ON THE SAME PANEL. EACH BRANCH CIRCUIT SHALL BE CLEARLY NUMBERED. BRANCH AND MAIN TERMINALS SHALL BE OF THE SOLDERLESS TYPE. HANDLE TIES TO FORM MULTI–POLE BREAKERS NOT ACCEPTABLE.
   A. CIRCUIT BREAKERS SHALL BE PLUG–IN TYPE
3. WIRE TERMINATION FOR PANEL BOARDS AND CIRCUIT BREAKERS SHALL BE LISTED AS SUITABLE FOR 75 DEGREES C.
4. PROVIDE A TYPEWRITTEN CIRCUIT INDEX BEHIND CLEAR PLASTIC COVER ON INSIDE OF DOOR. INFORMATION SHALL INCLUDE ROOM AND TYPE LOAD SERVED. ALL CIRCUIT BREAKERS SHALL BE IDENTIFIED, INCLUDING SPARES. INDEX CARD FRAME SHALL BE METAL, SECURED TO DOOR.
5. PANEL BOARDS/LOAD CENTERS TO BE PROVIDED WITH COPPER BUSSIING ONLY.

L. LIGHTING FIXTURES
1. PROVIDE ALL LIGHTING FIXTURES, WIRED AND CONNECTED. THE DRAWINGS INDICATE THE FIXTURES FOR EACH LOCATION. PROVIDE LAMPS FOR ALL FIXTURES. THE LAMPS SHALL BE BY THE SAME MANUFACTURER. VERIFY CEILING CONSTRUCTION BEFORE ORDERING RECESSED UNITS. PROVIDE PLASTER FRAMES AND HANGERS AS REQUIRED. CEILING CONSTRUCTION, ARCHITECTURAL ACCESSORIES, VOLTAGE, AND BALLASTS TO MEET THE EXISTING CEILING CONDITION.

M. LIGHTING CONTROL
1. FURNISH AND INSTALL TIME SWITCHES, PHOTOCELLS, CONTRACTORS AND FULL LIGHTING CONTROL SYSTEMS AS REQUIRED FOR LIGHTING CONTROLS INDICATED ON THE DRAWINGS.
2. TIME SWITCHES SHALL BE EQUAL TO PARAGON, GENERAL ELECTRIC, TORK, OR INTERMATIC AND SHALL HAVE SIZE AND NUMBER OF POLES AS REQUIRED.
3. PHOTOCELLS SHALL BE EQUAL TO TORK OR INTERMATIC WITH VOLTAGE AS INDICATED.

N. TELEPHONE AND CABLE TELEVISION SYSTEMS
1. TELEPHONE WALL OUTLETS SHALL CONSIST OF STANDARD BOXES MOUNTED 18" ABOVE THE FLOOR UNLESS OTHERWISE INDICATED. PROVIDE A TERMINAL MOUNTING BOARD FOR THE INCOMING SERVICE CABLE.
2. CABLE TELEVISION OUTLETS SHALL CONSIST OF STANDARD BOXES MOUNTED 18" ABOVE THE FLOOR UNLESS OTHERWISE INDICATED. PROVIDE A TERMINAL MOUNTING BOARD FOR THE INCOMING SERVICE CABLE.

O. GUARANTEE
1. GUARANTEE ALL MATERIAL FURNISHED AND ALL WORKMANSHIP PERFORMED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF WORK. ANY DEFECTS DEVELOPING WITHIN THIS PERIOD, TRACEABLE TO MATERIAL FURNISHED AS A PART OF THIS SECTION OR WORKMANSHIP PERFORMED HEREUNDER, SHALL BE MADE GOOD AT NO EXPENSE TO THE OWNER.

M. FIRE SEALING NOTES
1. COORDINATE CONSTRUCTION OF OPENINGS AND PENETRATING ITEMS TO ENSURE THAT THROUGH–PENETRATION FIRESTOP SYSTEMS ARE INSTALLED ACCORDING TO SPECIFIED AND APPLICABLE UL REQUIREMENTS.
2. COORDINATE SIZING OF SLEEVES, OPENINGS, CORE–DRILLED HOLES, OR CUT OPENINGS TO ACCOMMODATE THROUGH–PENETRATION FIRESTOP SYSTEMS.
3. DO NOT COVER UP THROUGH–PENETRATION FIRESTOP SYSTEM INSTALLATIONS UNTIL EXAMINED BY INSPECTOR, IF REQUIRED BY AUTHORITIES HAVING JURISDICTION.
4. COMPATIBILITY: PROVIDE THROUGH–PENETRATION FIRESTOP SYSTEMS THAT ARE COMPATIBLE WITH ONE ANOTHER; WITH THE SUBSTRATES FORMING OPENINGS; AND WITH THE ITEMS, IF ANY, PENETRATING THROUGH–PENETRATION FIRESTOP SYSTEMS, UNDER CONDITIONS OF SERVICE AND APPLICATION, AS DEMONSTRATED BY THROUGH–PENETRATION FIRESTOP SYSTEM MANUFACTURER BASED ON TESTING AND FIELD EXPERIENCE.
5. PROVIDE COMPONENTS FOR EACH THROUGH–PENETRATION FIRESTOP SYSTEM THAT ARE NEEDED TO INSTALL FILL MATERIALS. USE ONLY COMPONENTS SPECIFIED BY THROUGH–PENETRATION FIRESTOP SYSTEM MANUFACTURER AND APPROVED BY QUALIFIED TESTING AND INSPECTING AGENCY FOR FIRESTOP SYSTEMS INDICATED.
6. PROVIDE SLEEVES THROUGH ALL FIRE–RATED WALLS AND FILL VOIDS SURROUNDING SLEEVES AND INTERIOR TO SLEEVES AROUND PIPING WITH FIRE STOP PUTTY WITH U.L. LISTED 3 HOUR RATING INSTALLED AS PER MANUFACTURERS RECOMMENDATIONS.
7. FIRE SEAL ALL PIPING, CONDUIT, CABLE, ETC PENETRATIONS ROUTED THROUGH FIRE RATED WALLS.
8. PROVIDE FIRE RATED ENCLOSURES OR WRAPS ON LIGHT FIXTURES AND OTHER ITEMS PENETRATING FIRE RATED CEILINGS, FLOOR/CEILING/ CEILING/ROOF ASSEMBLIES TO MAINTAIN UL LISTING FOR CONSTRUCTION.

SYMBOLS LEGEND

NOTE: THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS, ETC, ARE NECESSARILY USED ON THE DRAWINGS.

Symbol	Description
	LED FIXTURE (SEE SCHEDULE)
	FIXTURE WITH EMERGENCY BATTERY DRIVER UNIT
	TRACK LIGHT
	DOWNLIGHT FIXTURE WITH EMERGENCY BATTERY DRIVER UNIT
	WALL MOUNTED FIXTURE WITH EMERGENCY BATTERY DRIVER UNIT
	PENDANT MOUNTED FIXTURE WITH EMERGENCY BATTERY DRIVER UNIT
	DOWNLIGHT FIXTURE
	WALL MOUNTED FIXTURE
	PENDANT MOUNTED FIXTURE
	POLE MOUNTED FIXTURE
	SINGLE FACE EXIT SIGN – UNIVERSAL MOUNTED
	SINGLE FACE EXIT SIGN W/ DIRECTIONAL ARROWS – UNIVERSAL MTD
	DOUBLE FACE EXIT SIGN W/ DIRECTIONAL ARROWS – UNIVERSAL MTD
	DUAL HEADED EMERGENCY UNIT
	COMBO DUAL HEADED EMERGENCY AND EXIT SIGN UNIT
A	LETTER INDICATES LIGHT FIXTURE AS INDICATED ON FIXTURE SCHED
S	SINGLE POLE SWITCH @ +48" UNLESS NOTED
S_{abc}	SWITCH BANK @ +48" UNLESS NOTED. LOWER CASE LETTER INDICATES FIXTURE CONTROLLED.
S_2	2 POLE SWITCH @ +48" UNLESS NOTED
S_3	3–WAY SWITCH @ +48" UNLESS NOTED
S_4	4–WAY SWITCH @ +48" UNLESS NOTED
S_D	DIMMER SWITCH – SIZE AS REQUIRED @ +48" UNLESS NOTED
S_{3D}	3–WAY DIMMER SWITCH – SIZE AS REQUIRED @ +48" UNLESS NOTED
S_{3Dxy}	3–WAY DIMMER SWITCH BANK @ +48" UNLESS NOTED. LOWER CASE LETTER INDICATES FIXTURE CONTROLLED.
S_S	SWITCH SENSOR @ +48" UNLESS NOTED
S_M	MANUAL MOTOR STARTER
OS	OCCUPANCY SENSOR
SOSa	WALL SWITCH WITH OCCUPANCY SENSOR. TWO BUTTON DIGITAL LOW VOLTAGE WALL SWITCH. PROVIDES ON/OFF/0–10V DIMMING. SWITCH @ +48" UNLESS NOTED. LOWER CASE LETTER INDICATES FIXTURE CONTROLLED.
SDa	TWO BUTTON DIGITAL LOW VOLTAGE WALL SWITCH. PROVIDES ON/OFF/0–10V DIMMING. SWITCH @ +48" UNLESS NOTED. LOWER CASE LETTER INDICATES FIXTURE CONTROLLED.
LC	LIGHTING CONTACTOR
PP	LIGHTING CONTROLS POWER PACK
PC	PHOTOCELL
TC	TIMECLOCK
	CAMERA
S	SPEAKER
	TELEPHONE OUTLET@ +18" UNLESS NOTED
	DATA OUTLET @ +18" UNLESS NOTED
	COMBINATION TELEPHONE/DATA OUTLET @ +18" UNLESS NOTED
TV	TELEVISION OUTLET @ +18" UNLESS NOTED
	SMOKE DETECTOR
	HEAT DETECTOR
	DUCT SMOKE DETECTOR
	AUXILIARY SYSTEM TERMINAL CABINET
	SWITCHBOARD, MOTOR CONTROL CENTER OR DISTRIBUTION BOARD
	120/240V., 3 PHASE, 3 WIRE PANELBOARD, UNO
T	TRANSFORMER
	MOTOR OUTLET
	DISCONNECT SWITCH – SIZE AND TYPE NOTED
	COMBINATION FUSED STARTER DISCONNECT SWITCH FUSE SIZE AS INDICATED, STARTER SIZE '1'
EF 1	MECHANICAL EQUIP. CONNECTION, SEE SCHED. ON MECH. PLAN
J	JUNCTION BOX
	CONDUIT RUN CONCEALED IN WALL OR ABOVE CEILING
	CONDUIT RUN BELOW FLOOR OR GRADE
	SPECIAL HEAVY DUTY RECEPTACLE – SIZE AS NOTED. @ +18" UNLESS NOTED
	FIRE RATED POKE THRU WITH TYPE INDICATED
	FLUSH FLOOR BOX WITH TYPE INDICATED
	SINGLE RECEPTACLE @ +18" UNLESS NOTED
	DUPLEX RECEPTACLE @ +18" UNLESS NOTED
	DOUBLE DUPLEX RECEPTACLE @ +18" UNLESS NOTED
	GFI DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE INSTALLED ABOVE COUNTERTOP
GFI	GFCI–RATED DUPLEX RECEPTACLE
AF	ARC FAULT RATED DUPLEX RECEPTACLE
WP	DUPLEX RECEPTACLE WITH WEATHERPROOF COVERPLATE @ 18" UNLESS NOTED
P1–3,5,7	HOMERUN TO PANELBOARD, INFORMATION AT ARROWS ARE CIRCUIT NUMBERS AND PANELBOARD FOR TERMINATION. REFER TO ASSOCIATED NOTE FOR BRANCH CIRCUIT CONDUCTOR SIZES.
	INDICATES 1/2" CONDUIT CONCEALED IN CEILING OR WALL WITH (3) CONDUCTORS. (1) PHASE, (1) NEUTRAL AND (1) GROUND WIRE. ALL ARE #12 AWG UNLESS NOTED OTHERWISE.

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JUSTIN R. SMOTHERS
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PROFESSIONAL ENGINEER
02-08-2022
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PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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SHEET NO.
ELECTRICAL - SPECS AND SYMBOLS
E001

GENERAL NOTES

A. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.

B. ALL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) AND ALL LOCAL BUILDING CODES AND AMENDMENTS.

C. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACE AVAILABLE, AND WITHOUT INTERFERENCES.

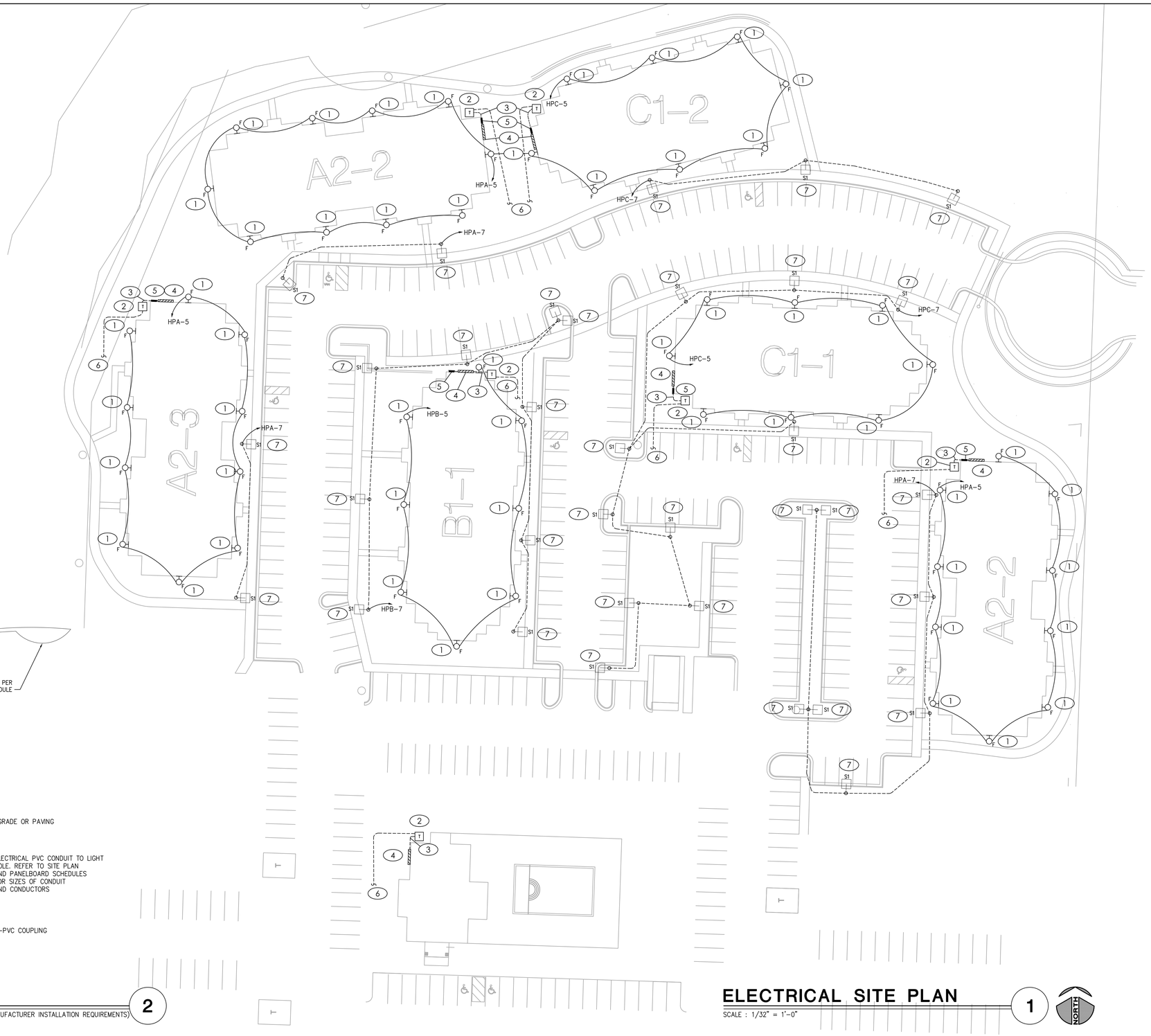
D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

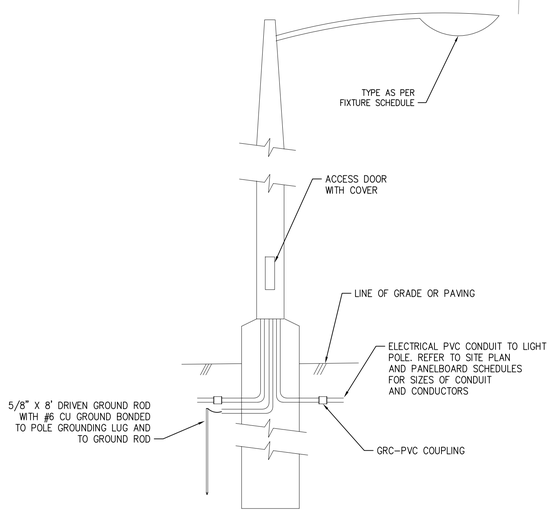
E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.

(#) KEYED PLAN NOTES

1. BUILDING EXTERIOR LIGHT FIXTURE. ROUTE EXTERIOR LIGHTING THROUGH PHOTOCELL. MOUNT PHOTOCELL ON ROOF AND POINT NORTH. REFER TO LIGHT FIXTURE SCHEDULE ON SHEET E301 FOR MORE INFORMATION.
2. PROPOSED UTILITY TRANSFORMER LOCATION. REFER TO SINGLE LINE DIAGRAMS ON SHEETS E300, E301, E302, AND E303 FOR MORE INFORMATION.
3. PROPOSED UTILITY SECONDARY CONDUIT/CONDUCTOR ROUTE. REFER TO SINGLE LINE DIAGRAM ON SHEETS E300, E301, E302, AND E303 FOR MORE INFORMATION. COORDINATE WITH UTILITY SERVICE EQUIPMENT LOCATIONS PRIOR TO CONSTRUCTION.
4. ELECTRICAL SERVICE ENTRANCE METER ENCLOSURES AND DISCONNECT. REFER TO SINGLE LINE DIAGRAMS ON SHEETS E300, E301, E302, AND E303 FOR MORE INFORMATION.
5. HOUSE PANEL LOCATION. REFER TO SINGLE LINE DIAGRAMS ON SHEETS E300, E301, E302, AND E303 AND PANEL SCHEDULES ON SHEET E305 FOR MORE INFORMATION.
6. PROPOSED UTILITY PRIMARY CONDUIT/CONDUCTOR ROUTE. REFER TO SINGLE LINE DIAGRAMS ON SHEETS E300, E301, E302, AND E303 FOR MORE INFORMATION. COORDINATE WITH UTILITY PRIOR TO CONSTRUCTION.
7. SITE LIGHTING POLE. REFER TO LIGHT FIXTURE SCHEDULE ON SHEET E301 FOR MORE INFORMATION.





POLE BASE DETAIL

NO SCALE (SPECIFIC DETAILS, FOUNDATION AND ANCHORING SHALL BE PER POLE MANUFACTURER INSTALLATION REQUIREMENTS)

2

ELECTRICAL SITE PLAN

SCALE : 1/32" = 1'-0"

1

NORTH

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SHEET NO.

ELECTRICAL SITE PLAN

E100

(#) KEYED PLAN NOTES

1. CONNECT EXIT/EMERGENCY LIGHT TO INDICATED CIRCUIT WITH A SEPARATE AND UN-SWITCHED HOT CONDUCTOR BYPASSING ALL CONTROLS AND CONTACTORS.
2. WALL SWITCH OCCUPANCY SENSOR. SENSORWORX SWX-100 SERIES OR PRE-BID APPROVED EQUAL. PROVIDE AND MAKE ALL CONNECTIONS PER MANUFACTURER'S RECOMMENDATIONS AND NEC REQUIREMENTS.
3. ROUTE CIRCUIT THROUGH TIMECLOCK EN ROUTE TO DESIGNATED PANEL AND BREAKER.
4. WIRE NIGHTLIGHT FOR CONTINUOUS-ON OPERATION.
5. ROUTE EXTERIOR LIGHTING THROUGH PHOTOCELL. MOUNT PHOTOCELL ON ROOF AND POINT NORTH.
6. 4-POLE 365/7-DAY ASTRONOMICAL DIGITAL TIME SWITCH - INTERMATIC ET2854C OR PRE-BID APPROVED EQUAL - FOR CONTROL OF: (1) OFFICE/MECH/RR LIGHTS [CKT HP-1], (2) FOYER/RECEPTION/CORRIDOR LIGHTS [CKT HP-3], (3) KITCHEN/ACTIVITY LIGHTS [CKT HP-9]. LEAVE 1 POLE SPARE. COORDINATE EXACT TIMECLOCK PROGRAMMING/SETTINGS WITH OWNER PRIOR TO CONSTRUCTION.
7. JUNCTION BOX FOR HARDWARE CONNECTION TO DISPLAY CASE LIGHTING BY OTHERS. COORDINATE EXACT LOCATION, CONNECTION, AND CONTROL REQUIREMENTS WITH DISPLAY CASE INSTALLER PRIOR TO CONSTRUCTION.

GENERAL NOTES

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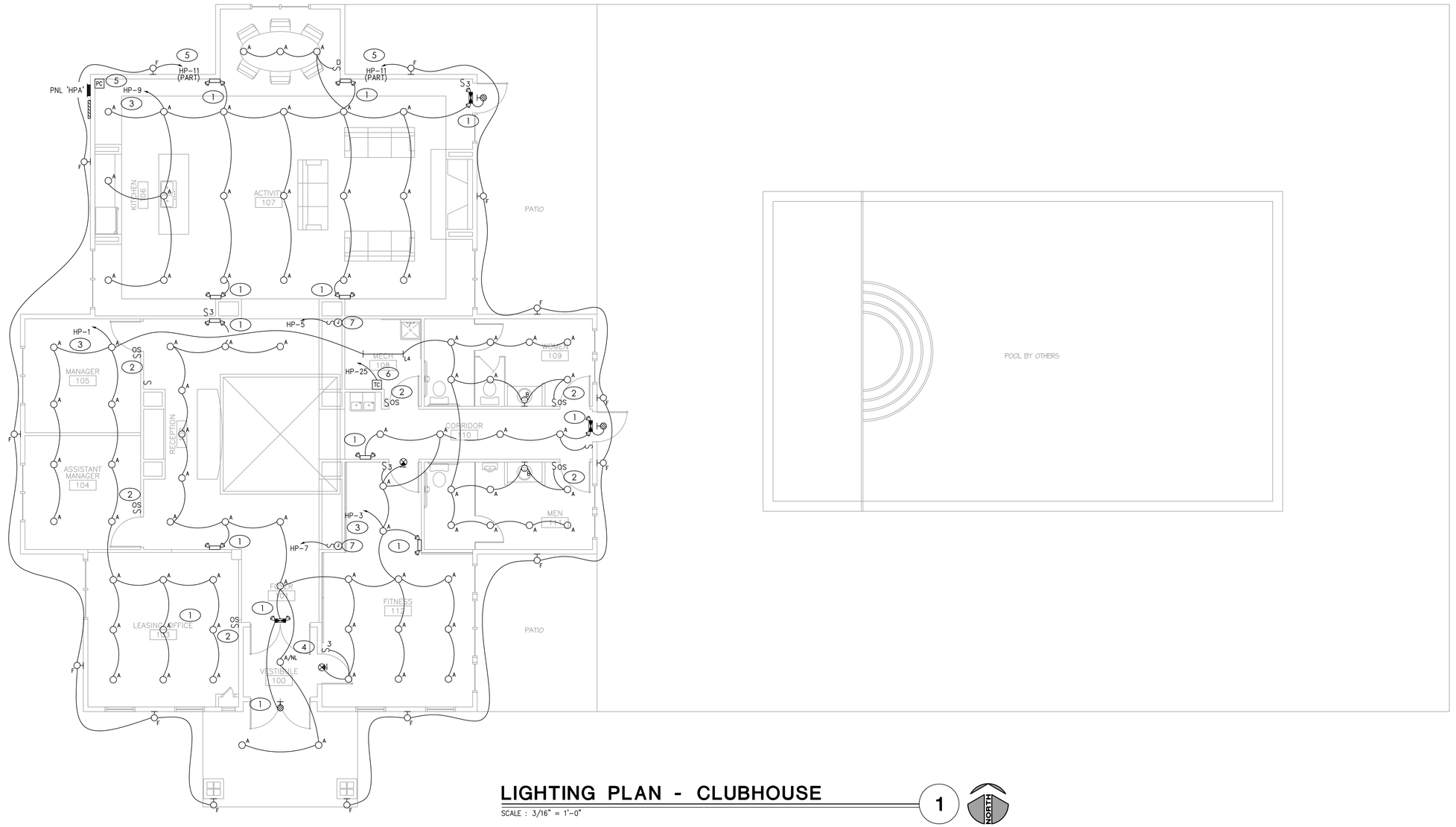
B. ALL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) AND ALL LOCAL BUILDING CODES AND AMENDMENTS.

C. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACE AVAILABLE, AND WITHOUT INTERFERENCES.

D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.



LIGHTING PLAN - CLUBHOUSE

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

1

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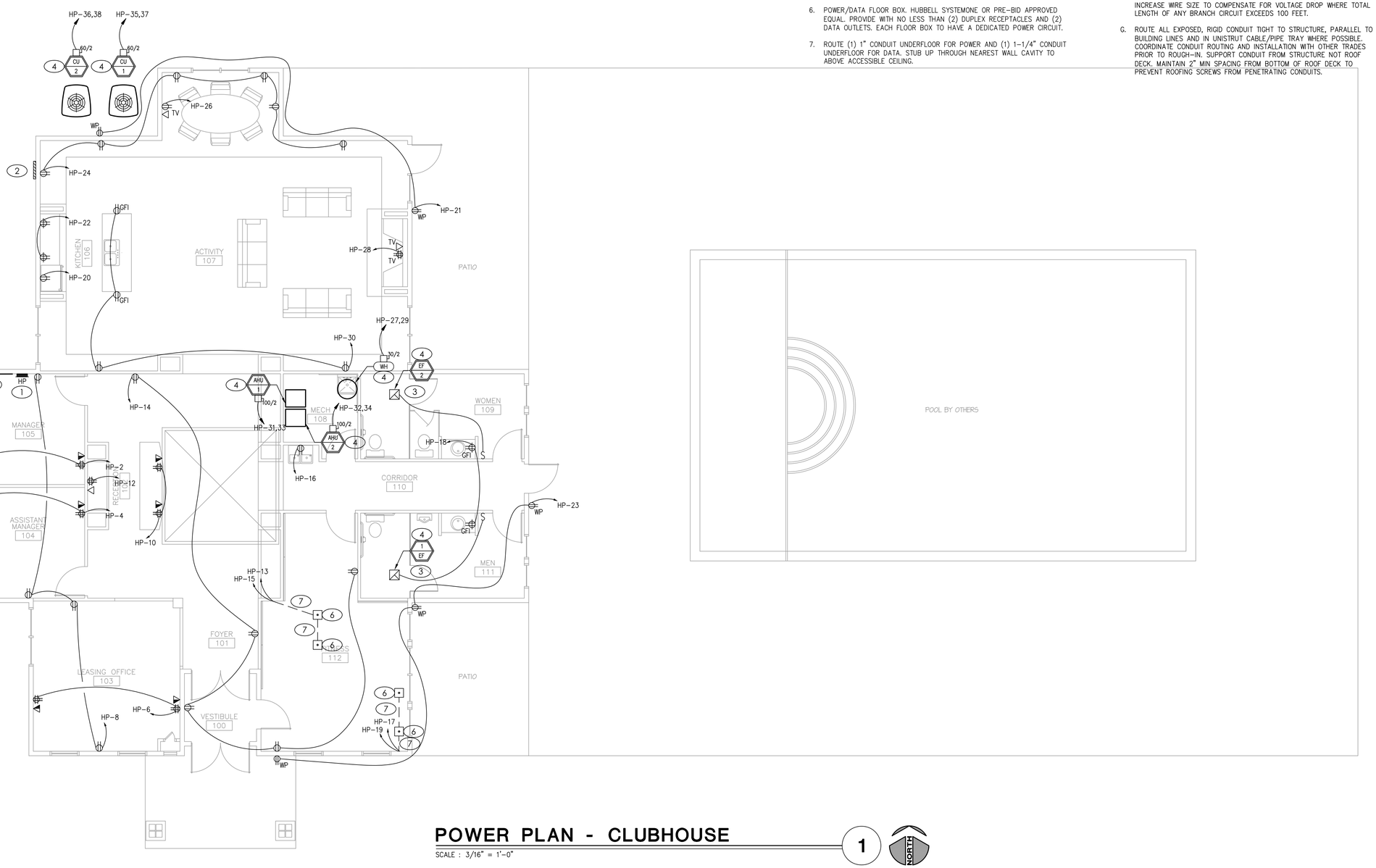
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PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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SHEET NO.
LIGHTING PLAN
CLUBHOUSE BUILDING
E101



POWER PLAN - CLUBHOUSE

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

1

NORTH

KEYED PLAN NOTES

1. NEW PANELBOARD. REFER TO SINGLE LINE DIAGRAM ON SHEET E303 AND PANELBOARD SCHEDULE ON SHEET E305 FOR MORE INFORMATION.
2. UTILITY SERVICE ENTRANCE EQUIPMENT. CONFIRM EXACT LOCATION PRIOR TO CONSTRUCTION. REFER TO SINGLE LINE DIAGRAM ON SHEET E303 FOR MORE INFORMATION.
3. DERIVE POWER FOR EXHAUST FAN FROM LIGHTING CIRCUIT SERVING RESTROOM. WIRE TO WALL SWITCH FOR ON/OFF OPERATION.
4. MAKE CONNECTION TO DIVISION 22/23 EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS AND NEC REQUIREMENTS. COORDINATE WORK WITH DIVISION 22/23 CONTRACTOR PRIOR TO CONSTRUCTION.
5. 4'X4'X1/2" FIRE TREATED PLYWOOD BACKBOARD FOR TELECOMMUNICATIONS EQUIPMENT WITH (1) 2" CONDUIT FROM SITE TELECOMMUNICATIONS DEMARCATION POINT FOR TELECOMMUNICATIONS CABLING ROUTING TO SERVICE ENTRANCE EQUIPMENT BY OTHERS.
6. POWER/DATA FLOOR BOX. HUBBELL SYSTEMONE OR PRE-BID APPROVED EQUAL. PROVIDE WITH NO LESS THAN (2) DUPLEX RECEPTACLES AND (2) DATA OUTLETS. EACH FLOOR BOX TO HAVE A DEDICATED POWER CIRCUIT.
7. ROUTE (1) 1" CONDUIT UNDERFLOOR FOR POWER AND (1) 1-1/4" CONDUIT UNDERFLOOR FOR DATA. STUB UP THROUGH NEAREST WALL CAVITY TO ABOVE ACCESSIBLE CEILING.

GENERAL NOTES

A. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.

B. ALL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) AND ALL LOCAL BUILDING CODES AND AMENDMENTS.

C. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACE AVAILABLE, AND WITHOUT INTERFERENCES.

D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. WIRE SIZE SHALL BE MINIMUM #12 AWG, THWN SOLID COPPER UNLESS OTHERWISE NOTED. PROVIDE GROUND WIRE WHERE REQUIRED BY CODE. INCREASE WIRE SIZE TO COMPENSATE FOR VOLTAGE DROP WHERE TOTAL LENGTH OF ANY BRANCH CIRCUIT EXCEEDS 100 FEET.

G. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.

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SHEET NO.
POWER PLAN
CLUBHOUSE BUILDING
E102

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS ON SHEET E201 FOR UNIT LIGHTING PLANS.
2. CONNECT EXIT/EMERGENCY LIGHT TO INDICATED CIRCUIT WITH A SEPARATE AND UN-SWITCHED HOT CONDUCTOR BYPASSING ALL CONTROLS AND CONTACTORS.
3. CIRCUIT TO BE UNSWITCHED FOR CONTINUOUS OPERATION.
4. CONTINUE CIRCUIT TO NEXT FLOOR ABOVE.

GENERAL NOTES

A. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.

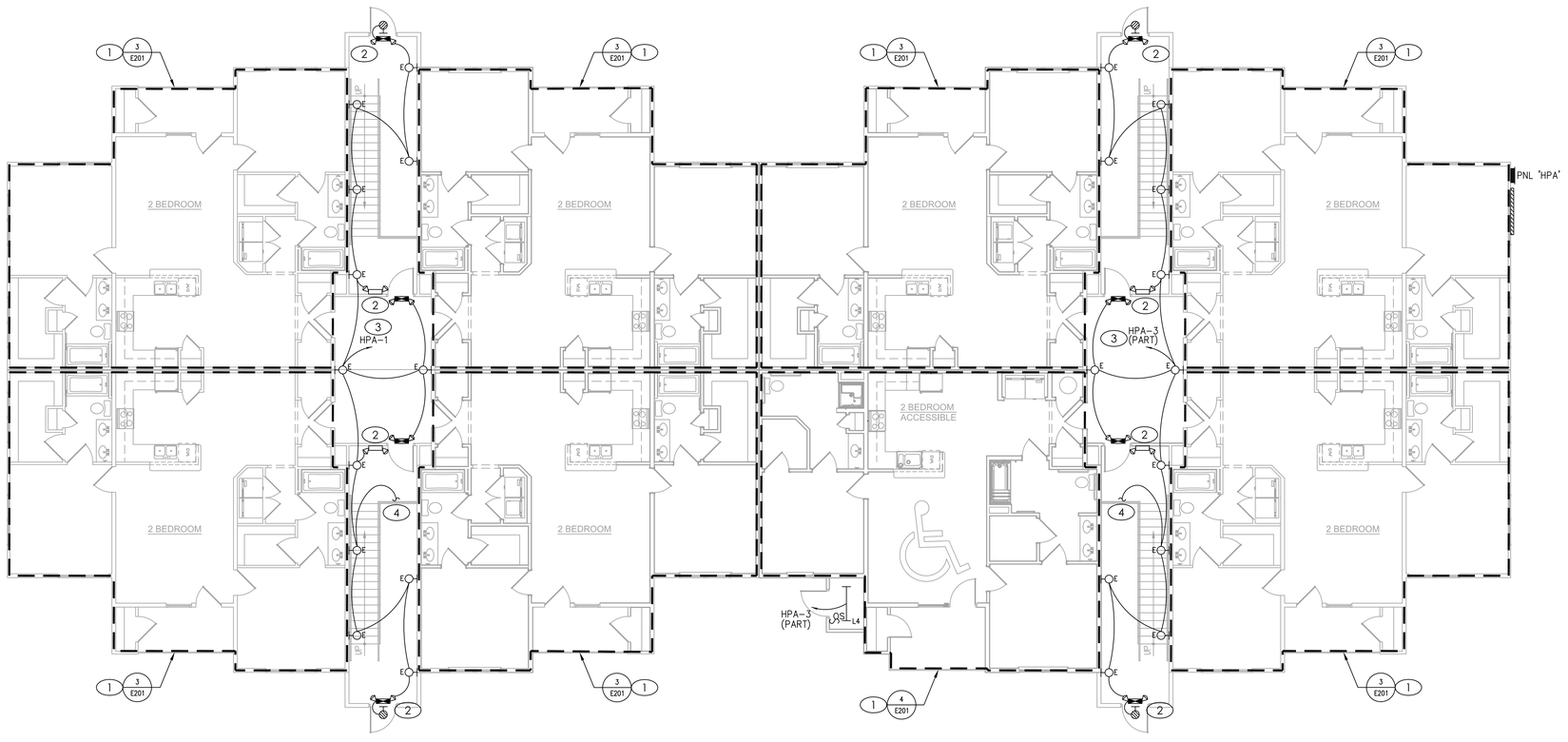
B. ALL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) AND ALL LOCAL BUILDING CODES AND AMENDMENTS.

C. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACE AVAILABLE, AND WITHOUT INTERFERENCES.

D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.



FIRST LEVEL LIGHTING PLAN - BUILDING TYPE A

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

1

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SHEET NO.

LIGHTING PLAN
FIRST LEVEL
BUILDING TYPE A

E111

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS ON SHEET E201 FOR UNIT LIGHTING PLANS.
2. CONNECT EXIT/EMERGENCY LIGHT TO INDICATED CIRCUIT WITH A SEPARATE AND UN-SWITCHED HOT CONDUCTOR BYPASSING ALL CONTROLS AND CONTACTORS.
3. CIRCUIT CONTINUED FROM FLOOR BELOW.
4. CIRCUIT CONTINUED FROM 2ND TO 3RD FLOOR.

GENERAL NOTES

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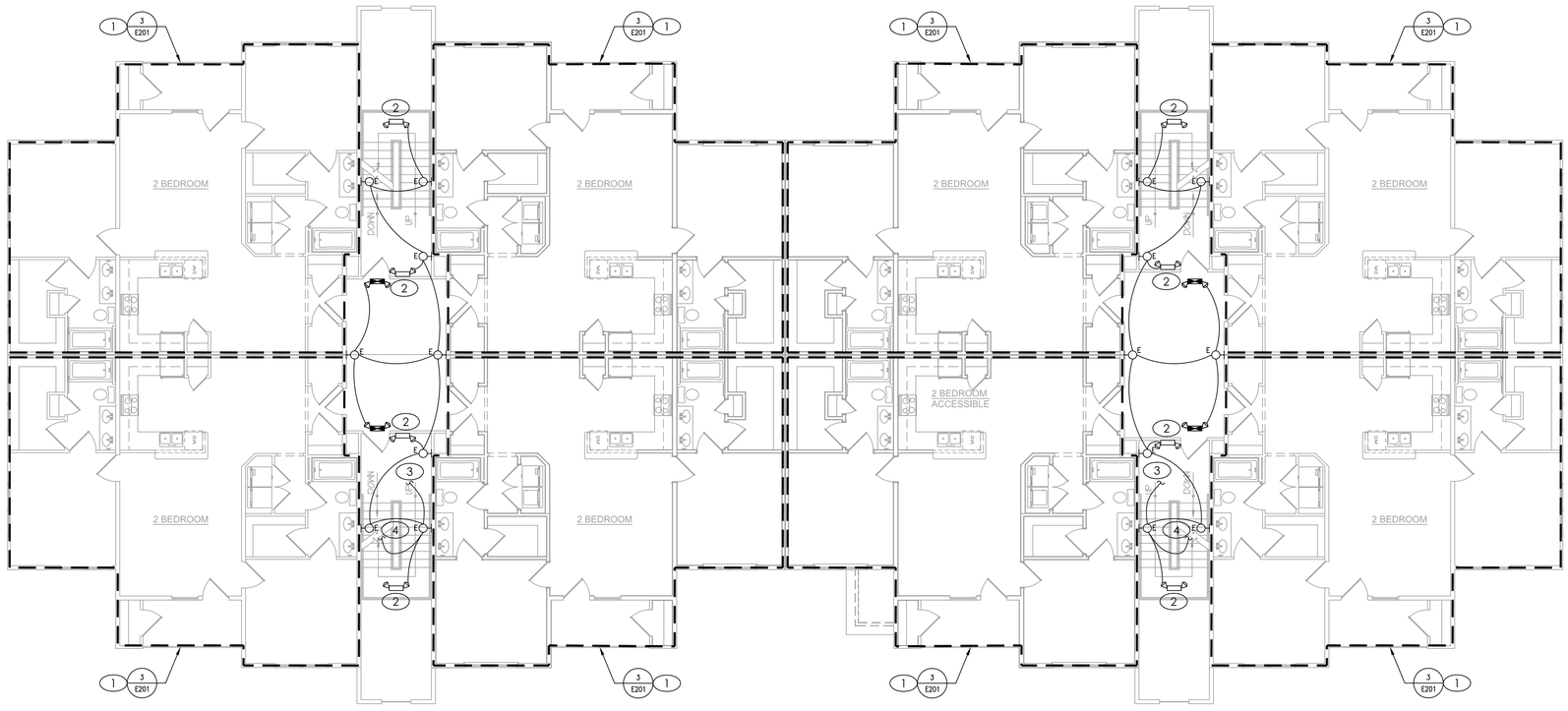
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C. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACE AVAILABLE, AND WITHOUT INTERFERENCES.

D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.



SECOND/THIRD LEVEL LIGHTING PLAN - BUILDING TYPE A

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

1

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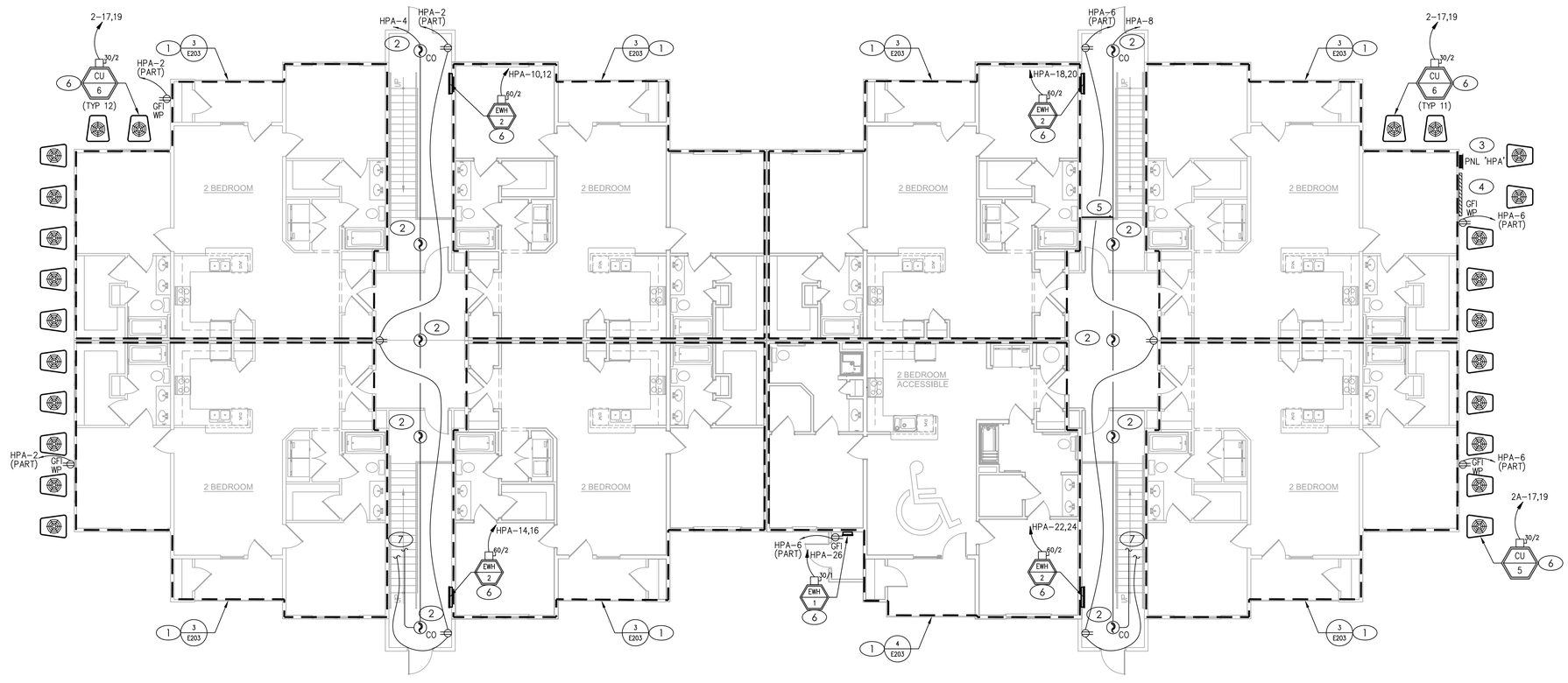
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SHEET NO.

LIGHTING PLAN
SECOND/THIRD LEVEL
BUILDING TYPE A

E112



FIRST LEVEL POWER PLAN - BUILDING TYPE A

SCALE : 1/8" = 1'–0"

1

KEYED PLAN NOTES

1. SEE ENLARGED VIEWS ON SHEET E203 FOR UNIT POWER PLANS.
2. TIE SMOKE DETECTORS TO FIRE ALARM SYSTEM ACCORDING TO NFPA REQUIREMENTS.
3. HOUSE PANELBOARD. REFER TO SINGLE LINE DIAGRAM ON SHEET E300 AND PANELBOARD SCHEDULES ON SHEET E305 FOR MORE INFORMATION.
4. UTILITY SERVICE ENTRANCE EQUIPMENT. CONFIRM EXACT LOCATION PRIOR TO CONSTRUCTION. REFER TO SINGLE LINE DIAGRAM ON SHEET E300 FOR MORE INFORMATION.
5. 4'X4'X1/2" FIRE TREATED PLYWOOD BACKBOARD FOR TELECOMMUNICATIONS EQUIPMENT WITH (1) 2" CONDUIT FROM SITE TELECOMMUNICATIONS DEMARCATION POINT FOR TELECOMMUNICATIONS CABLING ROUTING TO SERVICE ENTRANCE EQUIPMENT BY OTHERS.
6. MAKE CONNECTION TO DIVISION 22/23 EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS AND NEC REQUIREMENTS. COORDINATE WORK WITH DIVISION 22/23 CONTRACTOR PRIOR TO CONSTRUCTION.
7. CONTINUE CIRCUIT TO NEXT FLOOR ABOVE.

GENERAL NOTES

A. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.

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E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. WIRE SIZE SHALL BE MINIMUM #12 AWG, THWN SOLID COPPER UNLESS OTHERWISE NOTED. PROVIDE GROUND WIRE WHERE REQUIRED BY CODE. INCREASE WIRE SIZE TO COMPENSATE FOR VOLTAGE DROP WHERE TOTAL LENGTH OF ANY BRANCH CIRCUIT EXCEEDS 100 FEET.

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SHEET NO.
POWER PLAN
FIRST LEVEL
BUILDING TYPE A
E113

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS ON SHEET E203 FOR UNIT POWER PLANS.
2. TIE SMOKE DETECTORS TO FIRE ALARM SYSTEM ACCORDING TO NFPA REQUIREMENTS.
3. CIRCUIT CONTINUED FROM FLOOR BELOW.
4. CIRCUIT CONTINUED FROM 2ND TO 3RD FLOOR.

GENERAL NOTES

A. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.

B. ALL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) AND ALL LOCAL BUILDING CODES AND AMENDMENTS.

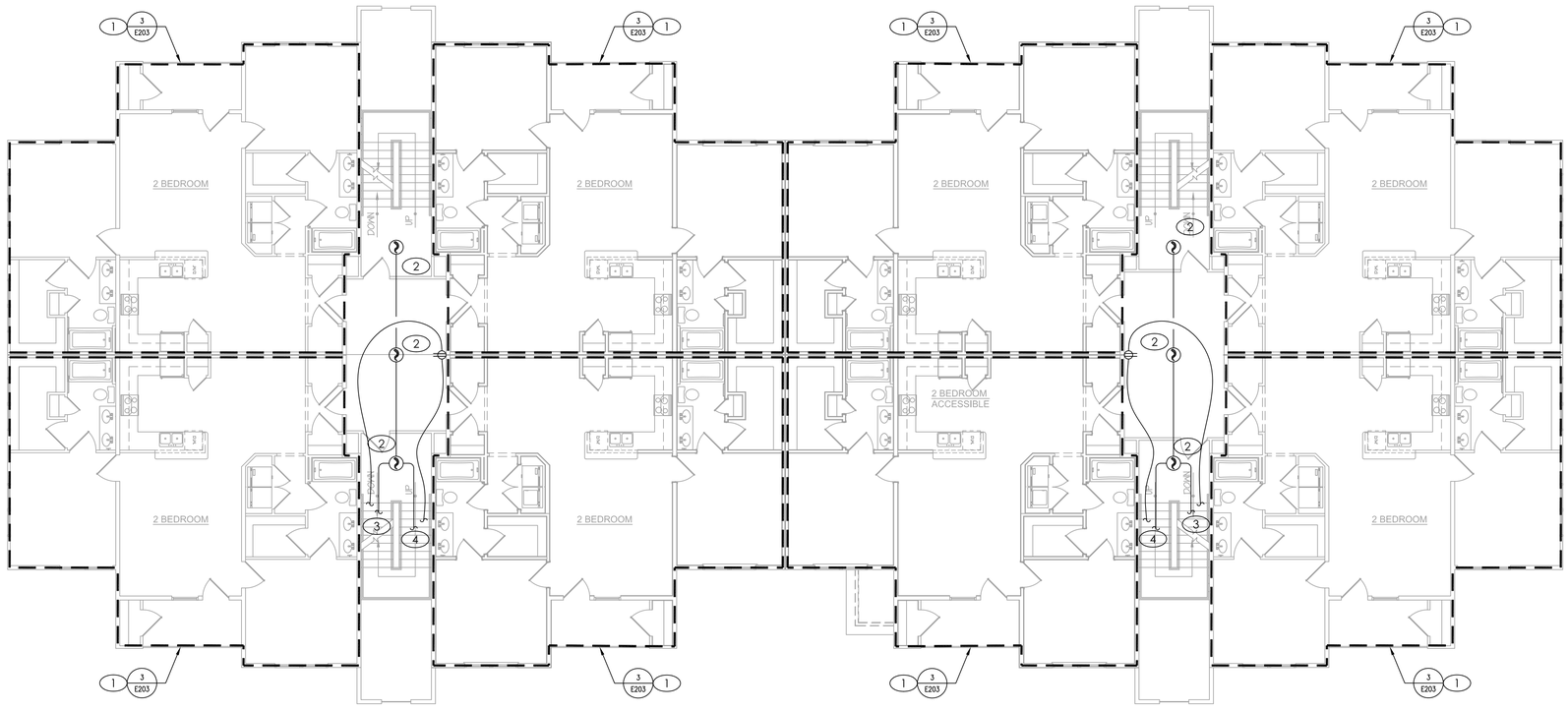
C. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACE AVAILABLE, AND WITHOUT INTERFERENCES.

D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. WIRE SIZE SHALL BE MINIMUM #12 AWG, THWN SOLID COPPER UNLESS OTHERWISE NOTED. PROVIDE GROUND WIRE WHERE REQUIRED BY CODE. INCREASE WIRE SIZE TO COMPENSATE FOR VOLTAGE DROP WHERE TOTAL LENGTH OF ANY BRANCH CIRCUIT EXCEEDS 100 FEET.

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SECOND/THIRD LEVEL POWER PLAN - BUILDING TYPE A

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

1

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SHEET NO.
POWER PLAN
SECOND/THIRD LEVEL
BUILDING TYPE A
E114

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS ON SHEET E201/E202 FOR UNIT LIGHTING PLANS.
2. CONNECT EXIT/EMERGENCY LIGHT TO INDICATED CIRCUIT WITH A SEPARATE AND UN-SWITCHED HOT CONDUCTOR BYPASSING ALL CONTROLS AND CONTACTORS.
3. CIRCUIT TO BE UNSWITCHED FOR CONTINUOUS OPERATION.
4. CONTINUE CIRCUIT TO NEXT FLOOR ABOVE.

GENERAL NOTES

A. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.

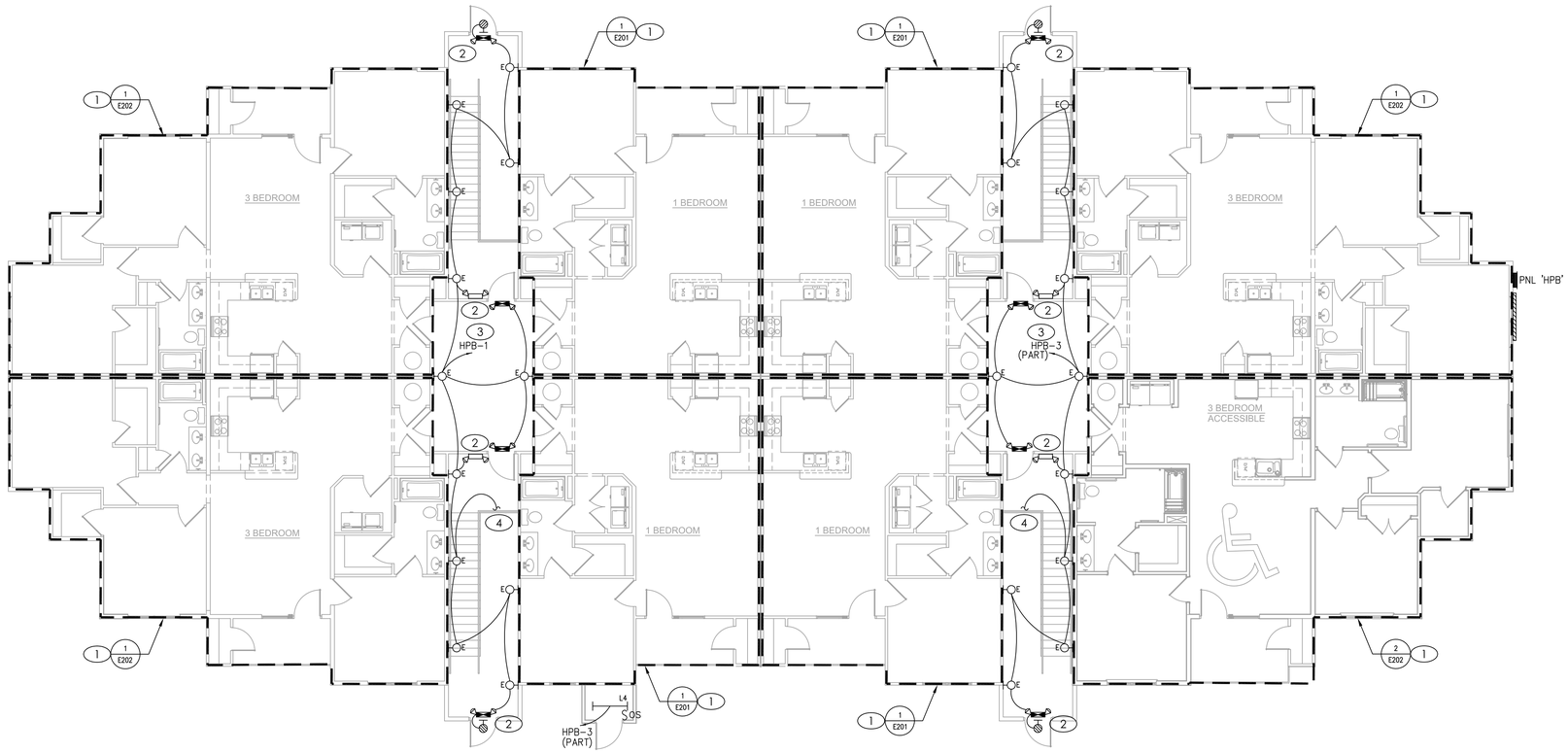
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E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

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FIRST LEVEL LIGHTING PLAN - BUILDING TYPE B

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

1

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SHEET NO.
LIGHTING PLAN
FIRST LEVEL
BUILDING TYPE B
E121

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS ON SHEET E201/202 FOR UNIT LIGHTING PLANS.
2. CONNECT EXIT/EMERGENCY LIGHT TO INDICATED CIRCUIT WITH A SEPARATE AND UN-SWITCHED HOT CONDUCTOR BYPASSING ALL CONTROLS AND CONTACTORS.
3. CIRCUIT CONTINUED FROM FLOOR BELOW.
4. CIRCUIT CONTINUED FROM 2ND TO 3RD FLOOR.

GENERAL NOTES

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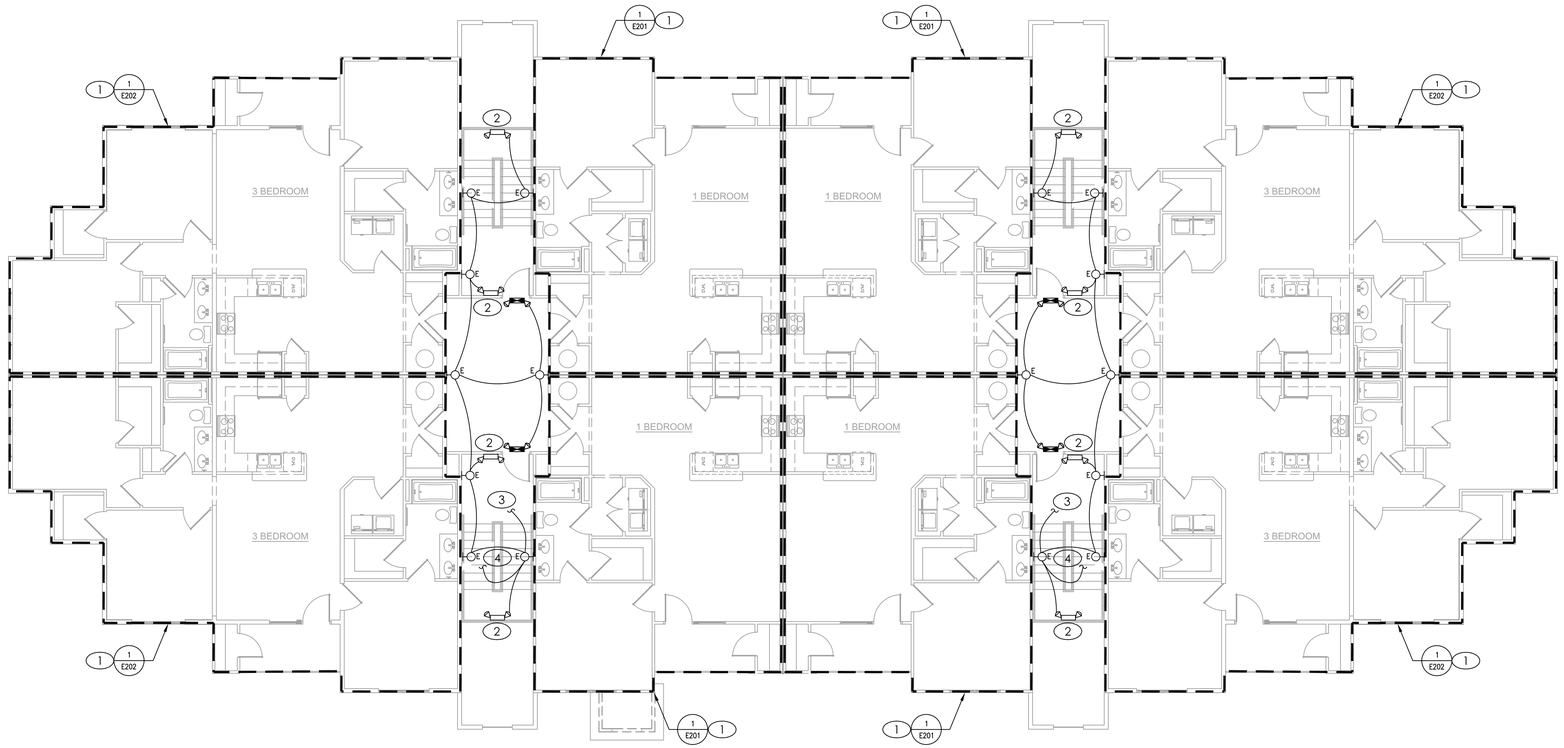
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D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.



SECOND/THIRD LEVEL LIGHTING PLAN - BUILDING TYPE B

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

1

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SHEET NO.
LIGHTING PLAN
SECOND/THIRD LEVEL
BUILDING TYPE B
E122

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS ON SHEET E203/E204 FOR UNIT POWER PLANS.
2. TIE SMOKE DETECTORS TO FIRE ALARM SYSTEM ACCORDING TO NFPA REQUIREMENTS.
3. HOUSE PANELBOARD. REFER TO SINGLE LINE DIAGRAM ON SHEET E301 AND PANELBOARD SCHEDULES ON SHEET E305 FOR MORE INFORMATION.
4. UTILITY SERVICE ENTRANCE EQUIPMENT. CONFIRM EXACT LOCATION PRIOR TO CONSTRUCTION. REFER TO SINGLE LINE DIAGRAM ON SHEET E301 FOR MORE INFORMATION.
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7. CONTINUE CIRCUIT TO NEXT FLOOR ABOVE.

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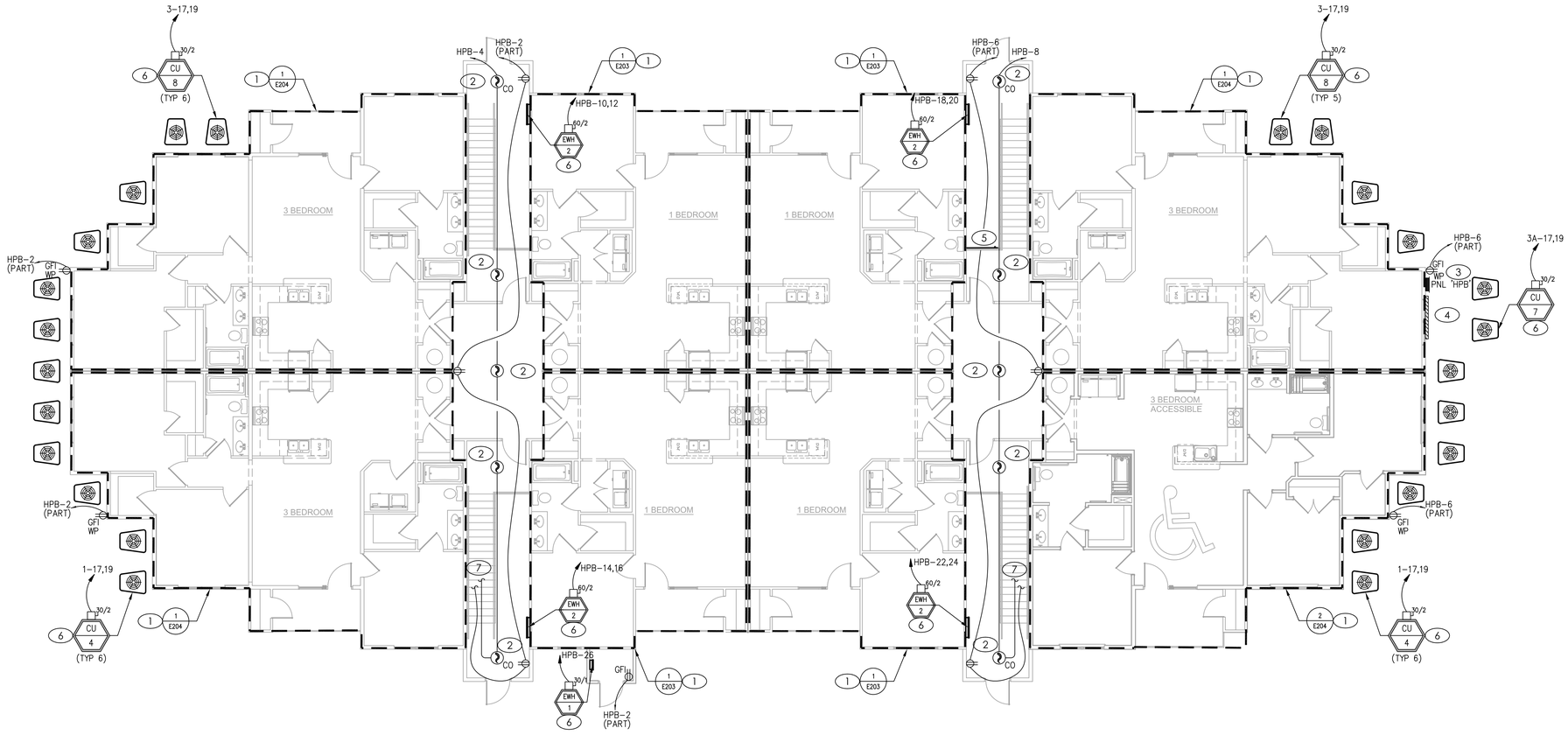
C. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACE AVAILABLE, AND WITHOUT INTERFERENCES.

D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. WIRE SIZE SHALL BE MINIMUM #12 AWG, THWN SOLID COPPER UNLESS OTHERWISE NOTED. PROVIDE GROUND WIRE WHERE REQUIRED BY CODE. INCREASE WIRE SIZE TO COMPENSATE FOR VOLTAGE DROP WHERE TOTAL LENGTH OF ANY BRANCH CIRCUIT EXCEEDS 100 FEET.

G. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.



FIRST LEVEL POWER PLAN - BUILDING TYPE B

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

1

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JUSTIN R. SMOTHERS
NUMBER PE-2012003568
PROFESSIONAL ENGINEER
02-08-2022
professional seal

PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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SHEET NO.
POWER PLAN
FIRST LEVEL
BUILDING TYPE B
E123

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS ON SHEET E203/E204 FOR UNIT POWER PLANS.
2. TIE SMOKE DETECTORS TO FIRE ALARM SYSTEM ACCORDING TO NFPA REQUIREMENTS.
3. CIRCUIT CONTINUED FROM FLOOR BELOW.
4. CIRCUIT CONTINUED FROM 2ND TO 3RD FLOOR.

GENERAL NOTES

A. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.

B. ALL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) AND ALL LOCAL BUILDING CODES AND AMENDMENTS.

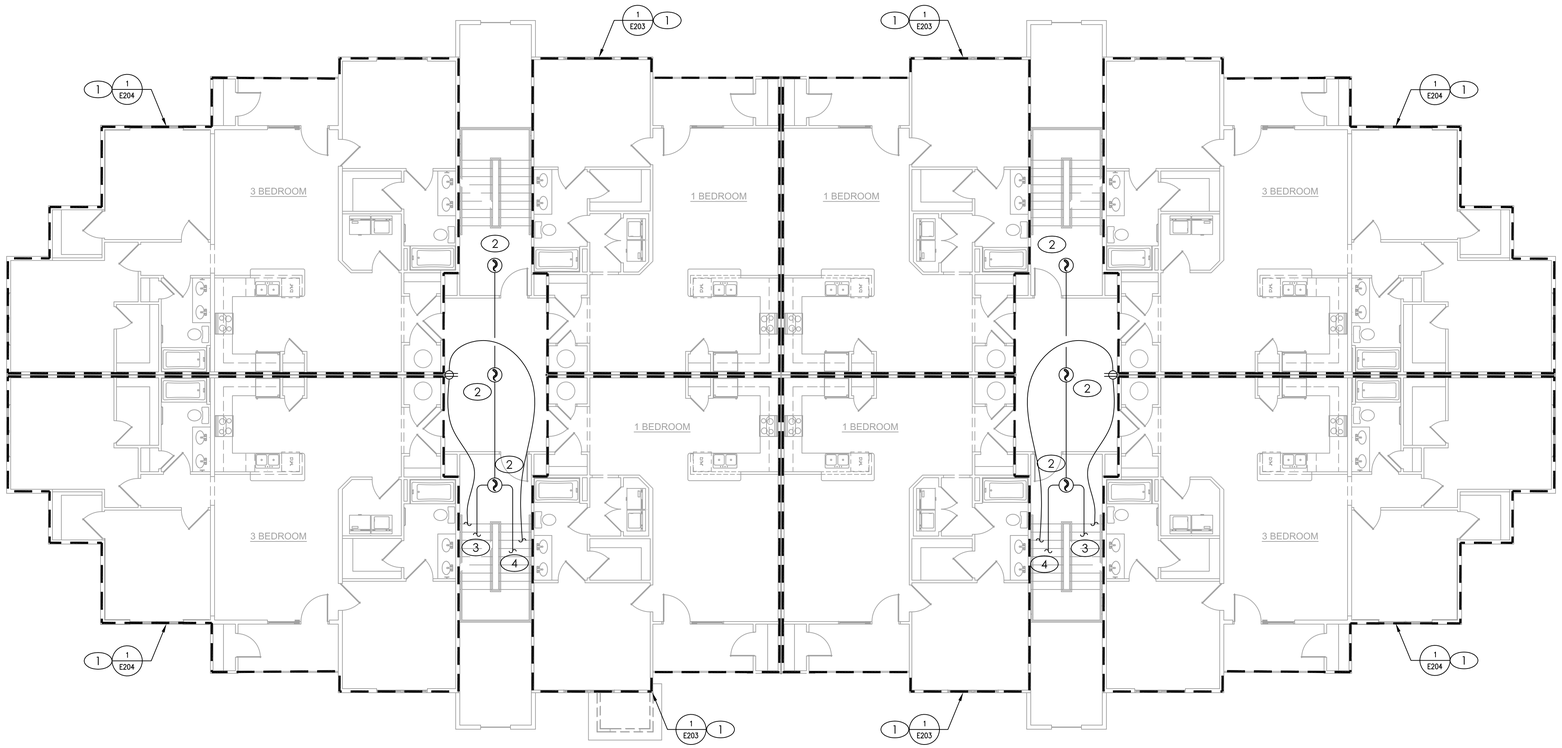
C. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACE AVAILABLE, AND WITHOUT INTERFERENCES.

D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. WIRE SIZE SHALL BE MINIMUM #12 AWG, THWN SOLID COPPER UNLESS OTHERWISE NOTED. PROVIDE GROUND WIRE WHERE REQUIRED BY CODE. INCREASE WIRE SIZE TO COMPENSATE FOR VOLTAGE DROP WHERE TOTAL LENGTH OF ANY BRANCH CIRCUIT EXCEEDS 100 FEET.

G. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.



SECOND/THIRD LEVEL POWER PLAN - BUILDING TYPE B

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

1

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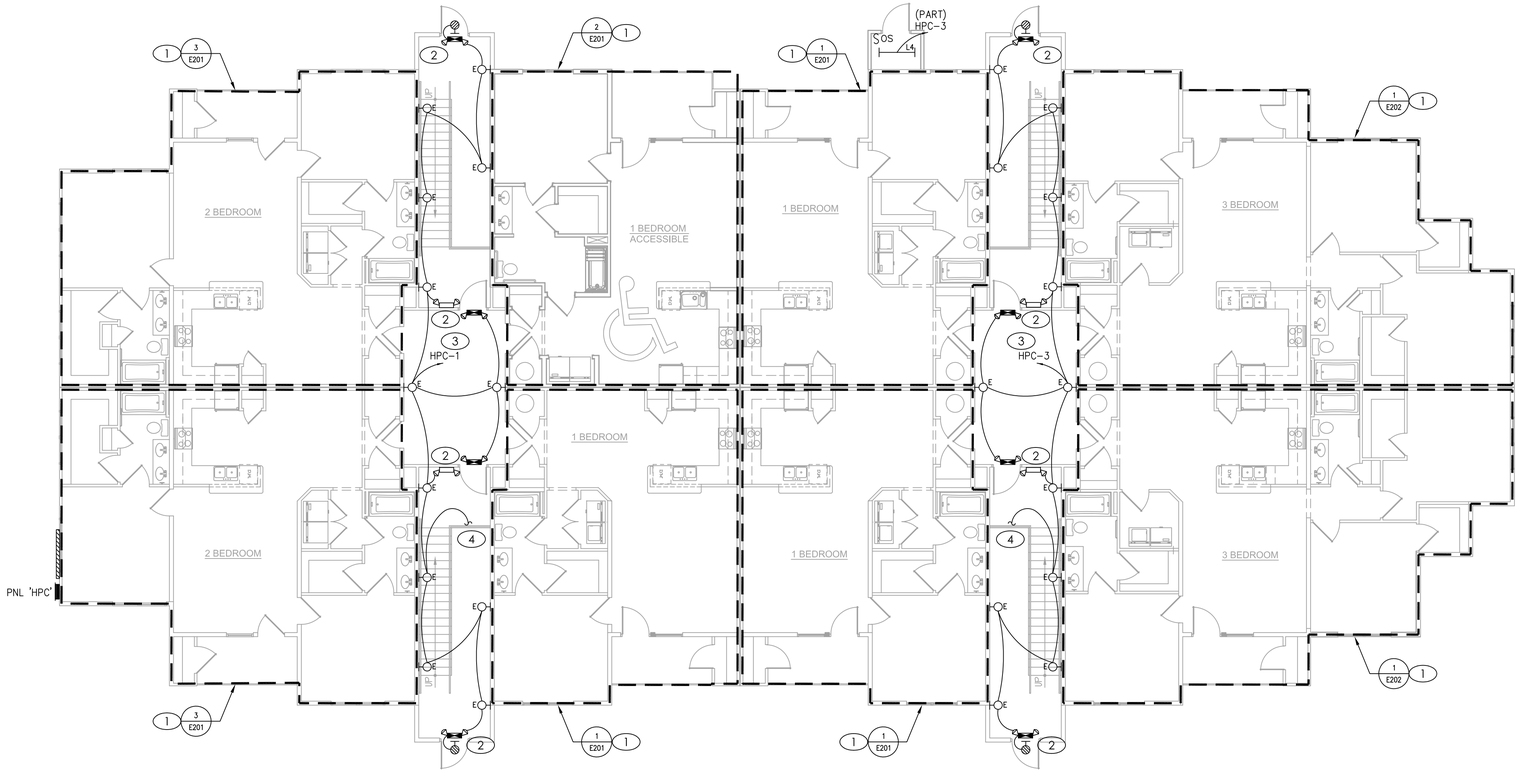
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SHEET NO.
POWER PLAN
SECOND/THIRD LEVEL
BUILDING TYPE B
E124



FIRST LEVEL LIGHTING PLAN - BUILDING TYPE C

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

1

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS ON SHEET E201/E202 FOR UNIT LIGHTING PLANS.
2. CONNECT EXIT/EMERGENCY LIGHT TO INDICATED CIRCUIT WITH A SEPARATE AND UN-SWITCHED HOT CONDUCTOR BYPASSING ALL CONTROLS AND CONTACTORS.
3. CIRCUIT TO BE UNSWITCHED FOR CONTINUOUS OPERATION.
4. CONTINUE CIRCUIT TO NEXT FLOOR ABOVE.

GENERAL NOTES

A. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.

B. ALL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) AND ALL LOCAL BUILDING CODES AND AMENDMENTS.

C. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACE AVAILABLE, AND WITHOUT INTERFERENCES.

D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.

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SHEET NO.
LIGHTING PLAN
FIRST LEVEL
BUILDING TYPE C
E131

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS ON SHEET E201/202 FOR UNIT LIGHTING PLANS.
2. CONNECT EXIT/EMERGENCY LIGHT TO INDICATED CIRCUIT WITH A SEPARATE AND UN-SWITCHED HOT CONDUCTOR BYPASSING ALL CONTROLS AND CONTACTORS.
3. CIRCUIT CONTINUED FROM FLOOR BELOW.
4. CIRCUIT CONTINUED FROM 2ND TO 3RD FLOOR.

GENERAL NOTES

A. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.

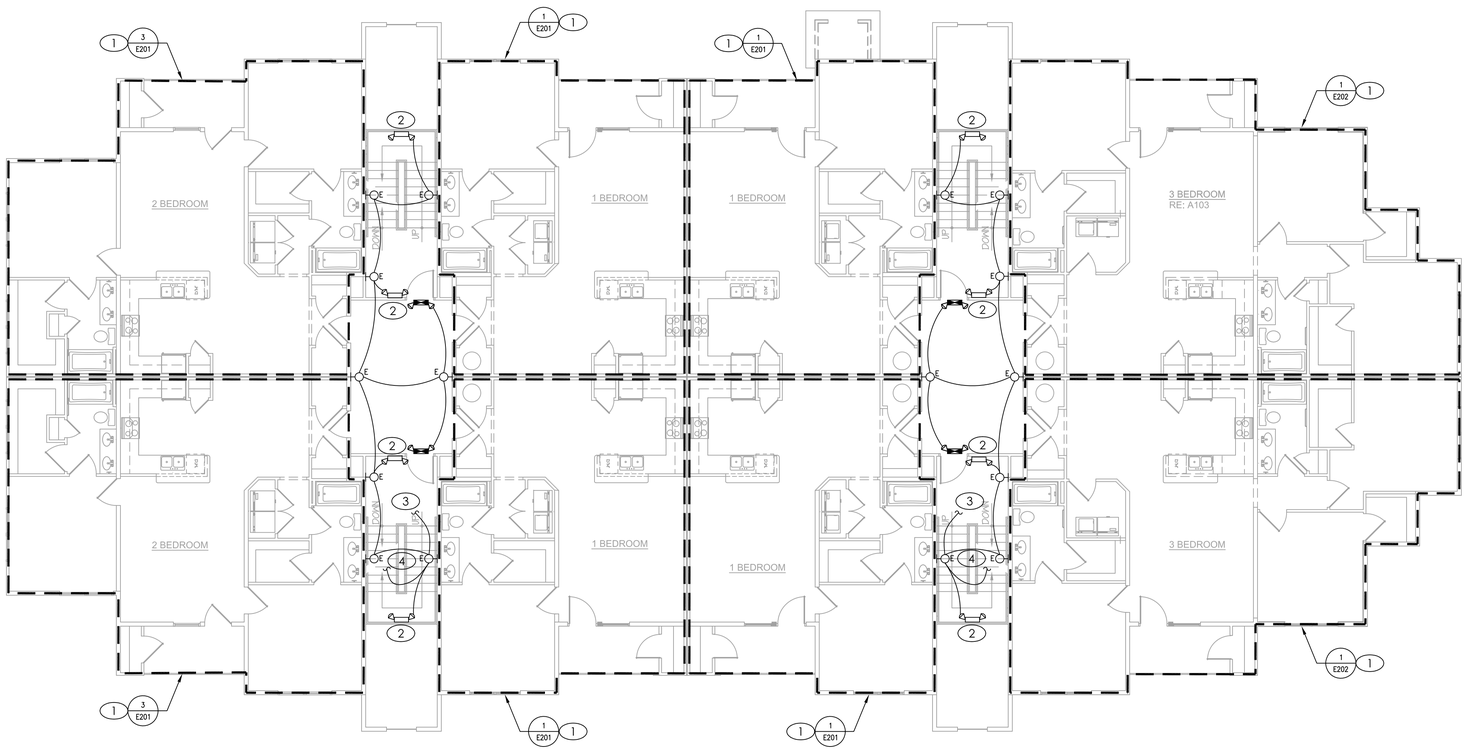
B. ALL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) AND ALL LOCAL BUILDING CODES AND AMENDMENTS.

C. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACE AVAILABLE, AND WITHOUT INTERFERENCES.

D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.



SECOND/THIRD LEVEL LIGHTING PLAN - BUILDING TYPE C

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

1

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PROJECT NO. : JSC 21-058
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DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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SHEET NO.
LIGHTING PLAN
SECOND/THIRD LEVEL
BUILDING TYPE C
E132

KEYED PLAN NOTES

1. SEE ENLARGED VIEWS ON SHEET E203/E204 FOR UNIT POWER PLANS.
2. TIE SMOKE DETECTORS TO FIRE ALARM SYSTEM ACCORDING TO NFPA REQUIREMENTS.
3. HOUSE PANELBOARD. REFER TO SINGLE LINE DIAGRAM ON SHEET E302 AND PANELBOARD SCHEDULES ON SHEET E305 FOR MORE INFORMATION.
4. UTILITY SERVICE ENTRANCE EQUIPMENT. CONFIRM EXACT LOCATION PRIOR TO CONSTRUCTION. REFER TO SINGLE LINE DIAGRAM ON SHEET E302 FOR MORE INFORMATION.
5. 4'X4'X1/2" FIRE TREATED PLYWOOD BACKBOARD FOR TELECOMMUNICATIONS EQUIPMENT WITH (1) 2" CONDUIT FROM SITE TELECOMMUNICATIONS DEMARCATION POINT FOR TELECOMMUNICATIONS CABLING ROUTING TO SERVICE ENTRANCE EQUIPMENT BY OTHERS.
6. MAKE CONNECTION TO DIVISION 22/23 EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS AND NEC REQUIREMENTS. COORDINATE WORK WITH DIVISION 22/23 CONTRACTOR PRIOR TO CONSTRUCTION.
7. CONTINUE CIRCUIT TO NEXT FLOOR ABOVE.

GENERAL NOTES

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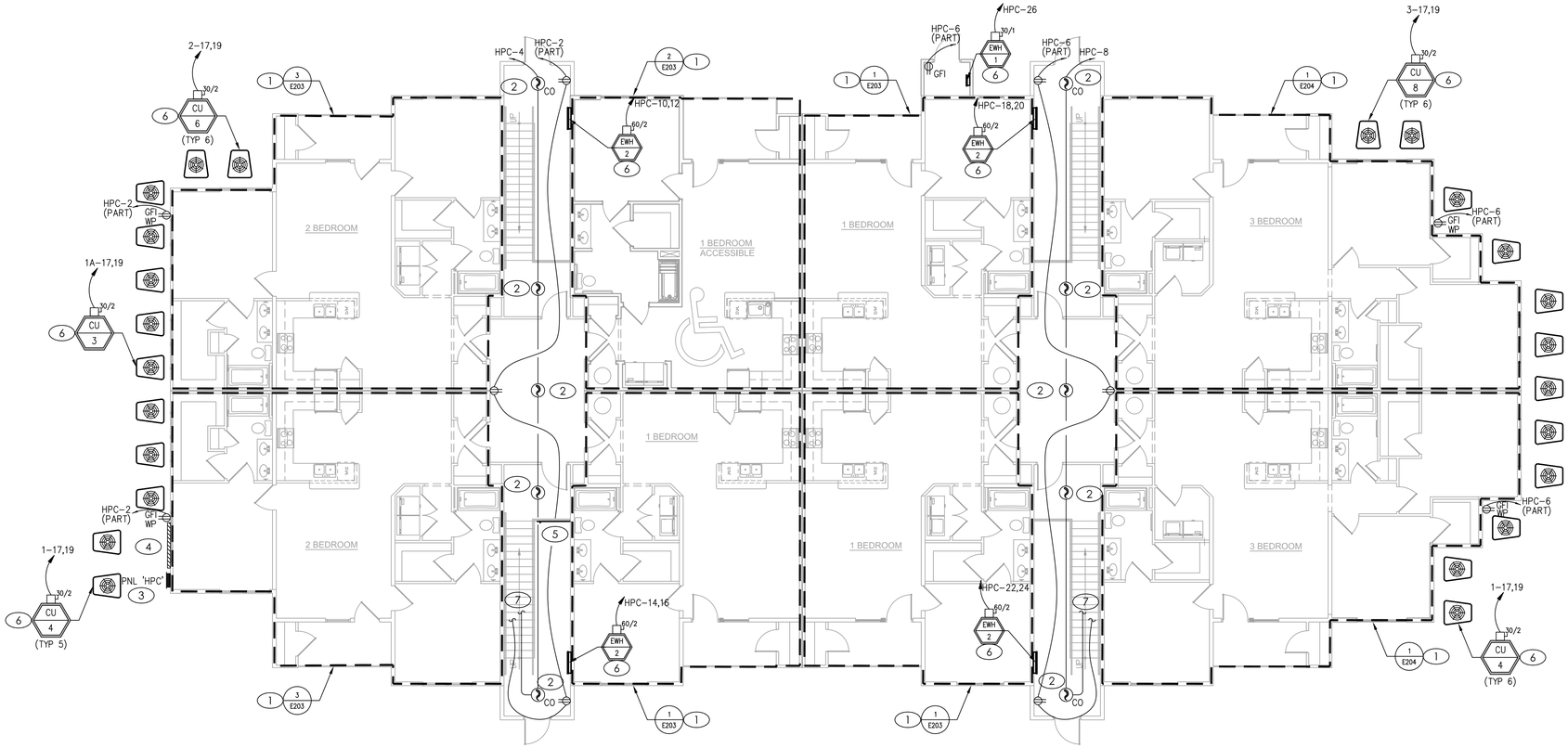
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FIRST LEVEL POWER PLAN - BUILDING TYPE C

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

1

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PROJECT NO. : JSC 21-058
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REVIEWED BY : JRS

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SHEET NO.
POWER PLAN
FIRST LEVEL
BUILDING TYPE C
E133

(#) KEYED PLAN NOTES

1. SEE ENLARGED VIEWS ON SHEET E203/E204 FOR UNIT POWER PLANS.
2. TIE SMOKE DETECTORS TO FIRE ALARM SYSTEM ACCORDING TO NFPA REQUIREMENTS.
3. CIRCUIT CONTINUED FROM FLOOR BELOW.
4. CIRCUIT CONTINUED FROM 2ND TO 3RD FLOOR.

GENERAL NOTES

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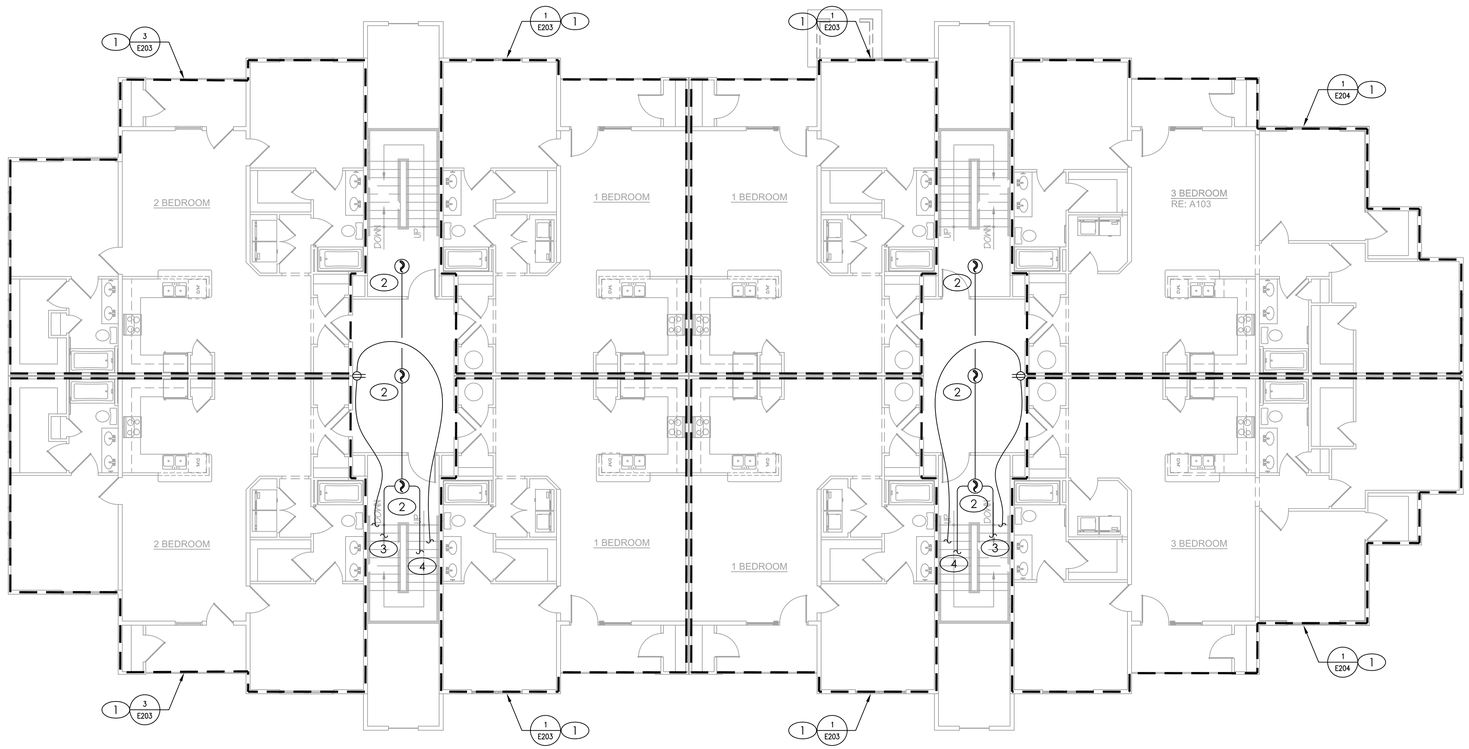
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SECOND/THIRD LEVEL POWER PLAN - BUILDING TYPE C

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

1

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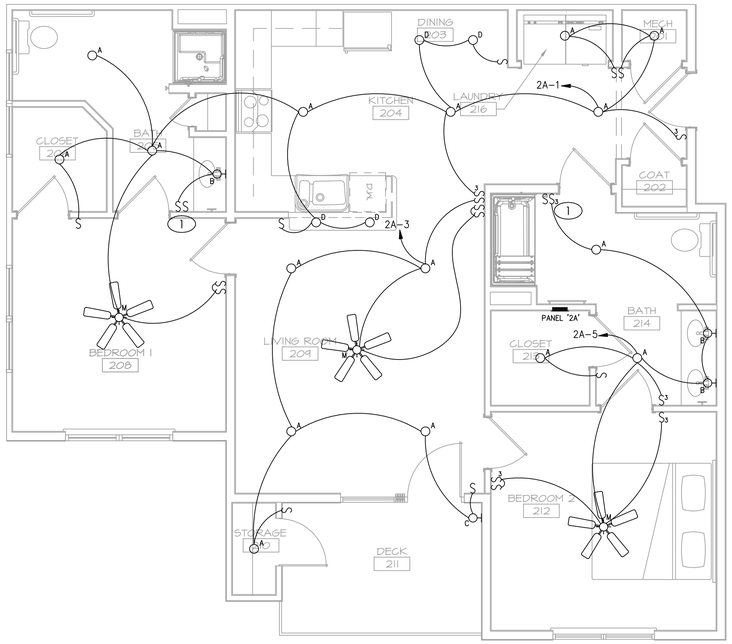
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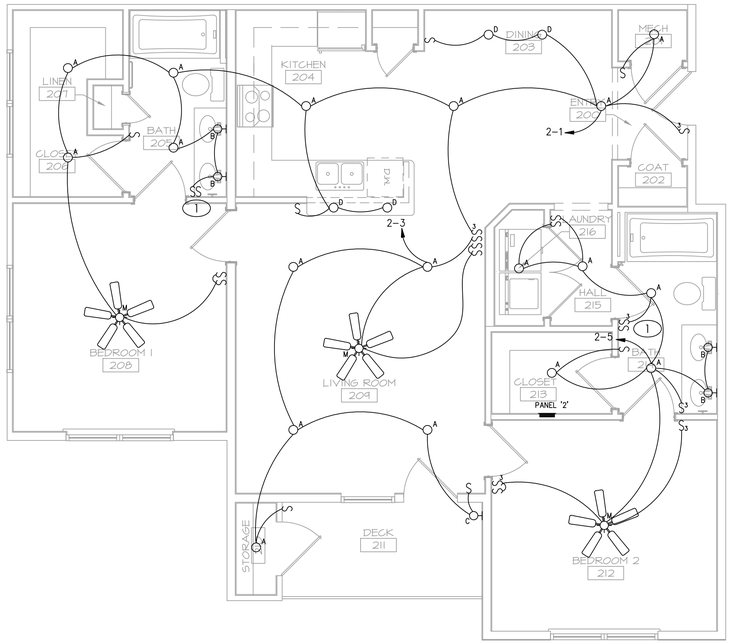
POWER PLAN
SECOND/THIRD LEVEL
BUILDING TYPE C

E134



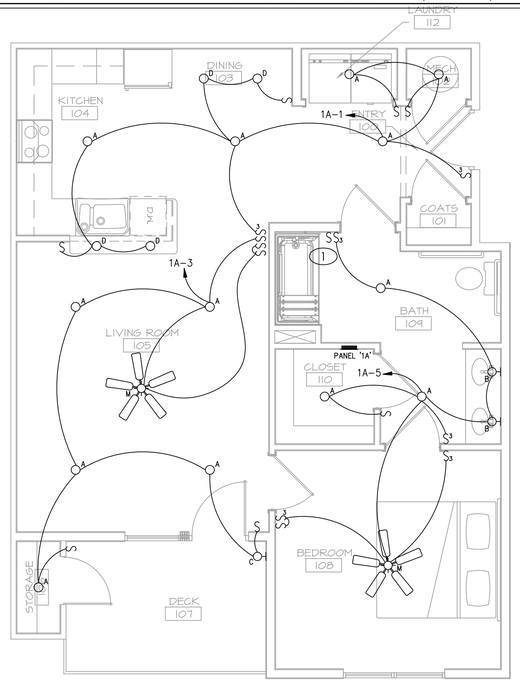
LIGHTING PLAN - TYP. 2 BEDROOM (ADA) 4

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



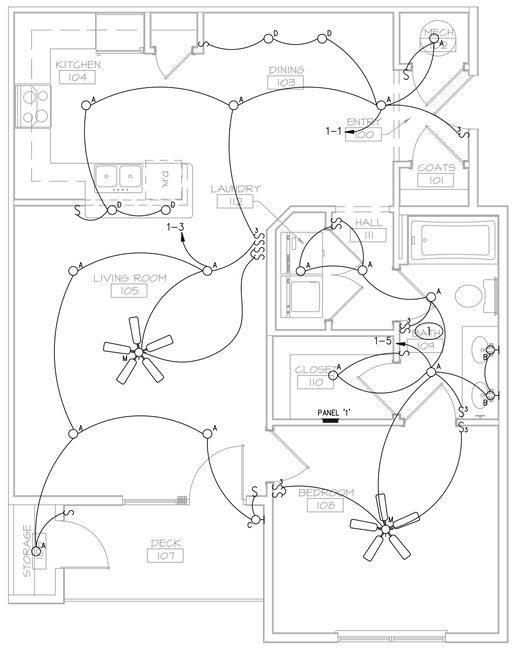
LIGHTING PLAN - TYP. 2 BEDROOM 3

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



LIGHTING PLAN - TYP. 1 BEDROOM (ADA) 2

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



LIGHTING PLAN - TYP. 1 BEDROOM 1

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

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(#) KEYED PLAN NOTES

1. 2-GANG SWITCH: (#1) FOR LIGHTING IN ROOM; (#2) FOR EXHAUST FAN.

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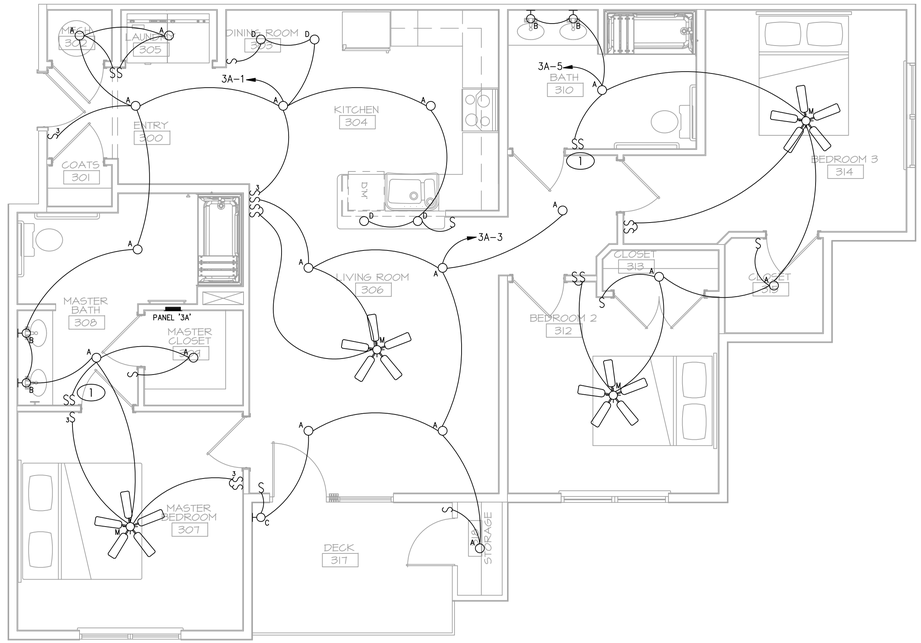
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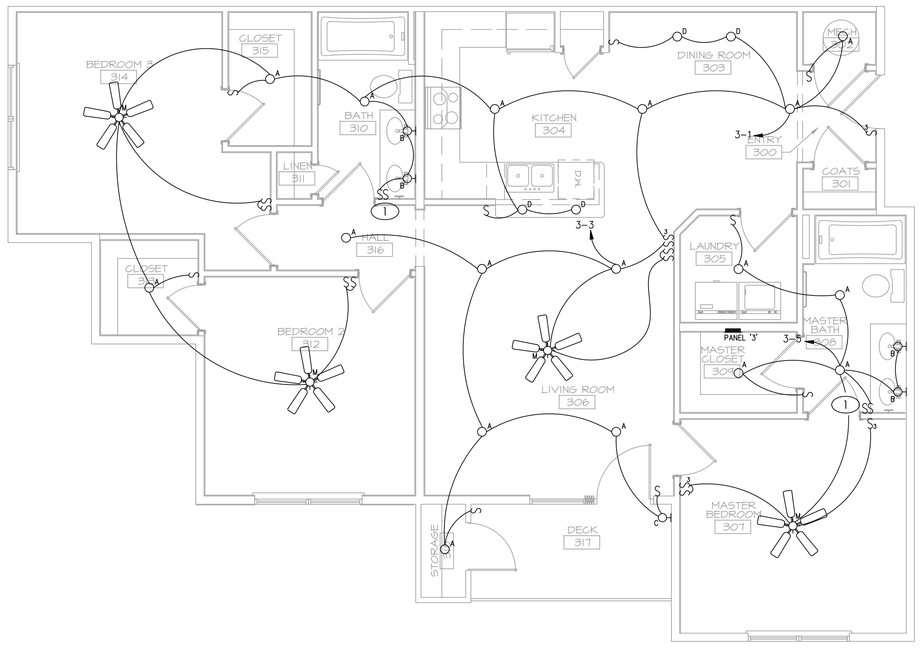
SHEET NO.
ENLARGED LIGHTING PLANS
E201



LIGHTING PLAN - TYP. 3 BEDROOM (ADA)

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

2



LIGHTING PLAN - TYP. 3 BEDROOM

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

1

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D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.

(#) KEYED PLAN NOTES

1. 2-GANG SWITCH: (#1) FOR LIGHTING IN ROOM; (#2) FOR EXHAUST FAN.

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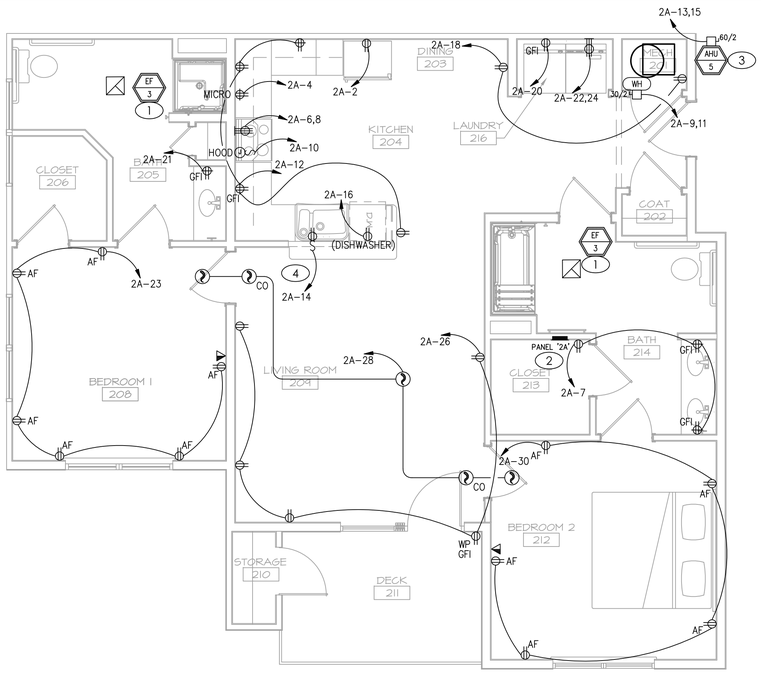
STATE OF MISSOURI
JUSTIN R. SMOTHERS
NUMBER PE-2012003568
PROFESSIONAL ENGINEER
02-08-2022
professional seal

PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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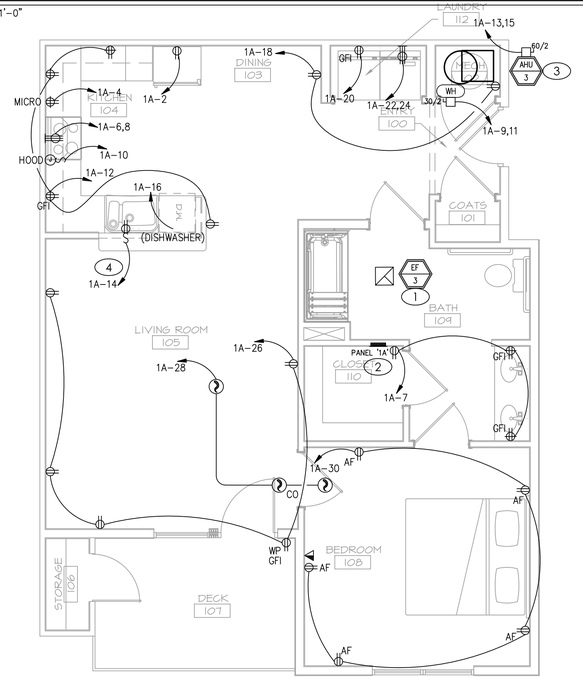
SHEET NO.
ENLARGED LIGHTING PLANS
E202



POWER PLAN - TYP. 2 BEDROOM (ADA)

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

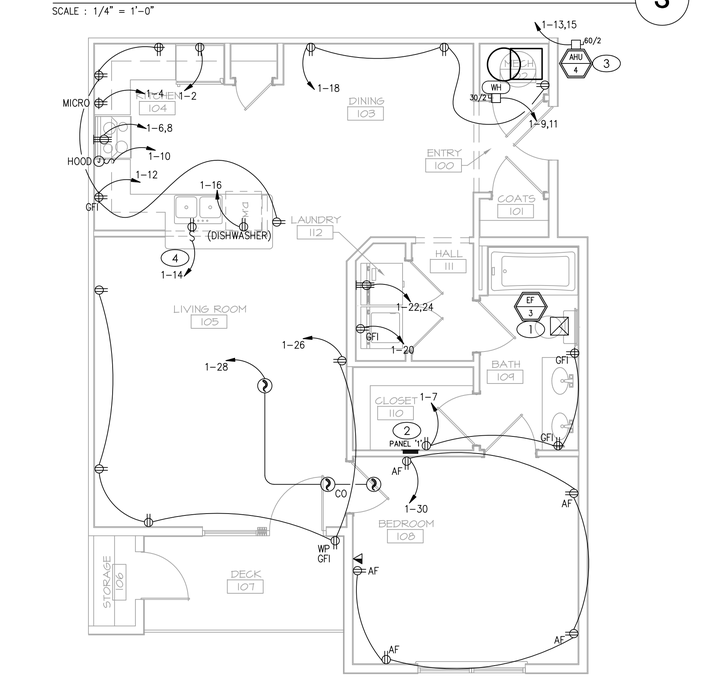
4



POWER PLAN - TYP. 2 BEDROOM

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

3



POWER PLAN - TYP. 1 BEDROOM (ADA)

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

2

POWER PLAN - TYP. 1 BEDROOM

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

1

GENERAL NOTES

A. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.

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D. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.

E. ALL WIRING SHALL BE IN APPROVED RACEWAY.

F. WIRE SIZE SHALL BE MINIMUM #12 AWG, THWN SOLID COPPER UNLESS OTHERWISE NOTED. PROVIDE GROUND WIRE WHERE REQUIRED BY CODE. INCREASE WIRE SIZE TO COMPENSATE FOR VOLTAGE DROP WHERE TOTAL LENGTH OF ANY BRANCH CIRCUIT EXCEEDS 100 FEET.

G. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.

(#) KEYED PLAN NOTES

1. WIRE SO THAT EXHAUST FAN DERIVES POWER FROM CIRCUIT SERVING LIGHTING FIXTURES IN ROOM. EXHAUST FAN SWITCHING BY WALL SWITCH. SEE SHEET E201.
2. NEW PANELBOARD. REFER TO SINGLE LINE DIAGRAM AND PANELBOARD SCHEDULES ON SHEETS E300 TO E302 AND E304 TO E305 FOR MORE INFORMATION.
3. MAKE CONNECTION TO DIVISION 22/23 EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS AND NEC REQUIREMENTS. COORDINATE WORK WITH DIVISION 22/23 CONTRACTOR PRIOR TO CONSTRUCTION.
4. RECEPTACLE AND SWITCH FOR GARBAGE DISPOSAL. CONFIRM EXACT LOCATION WITH ARCHITECT PRIOR TO CONSTRUCTION.

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architecture

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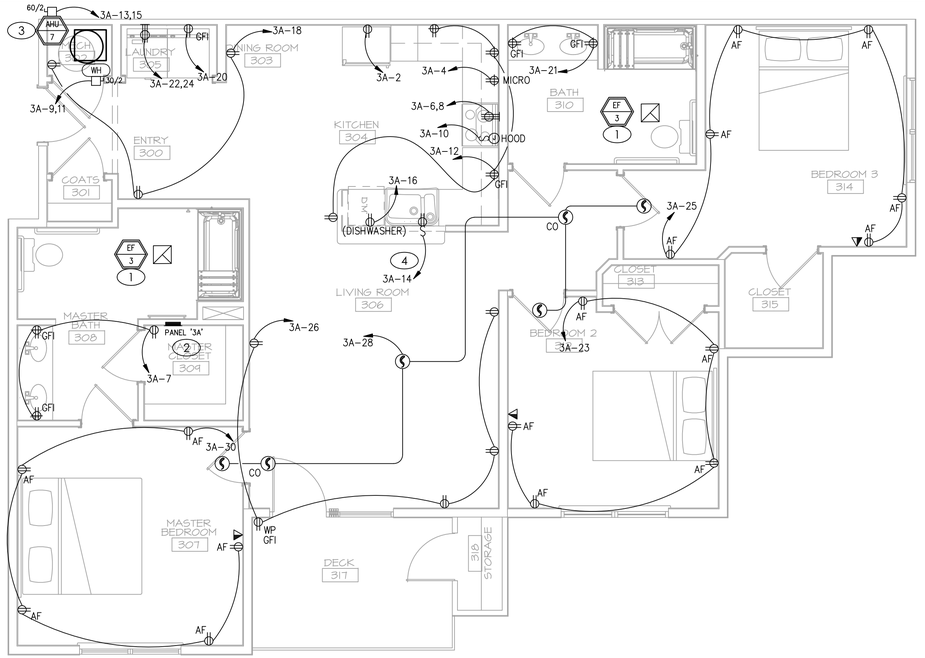
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SHEET NO.

ENLARGED POWER PLANS

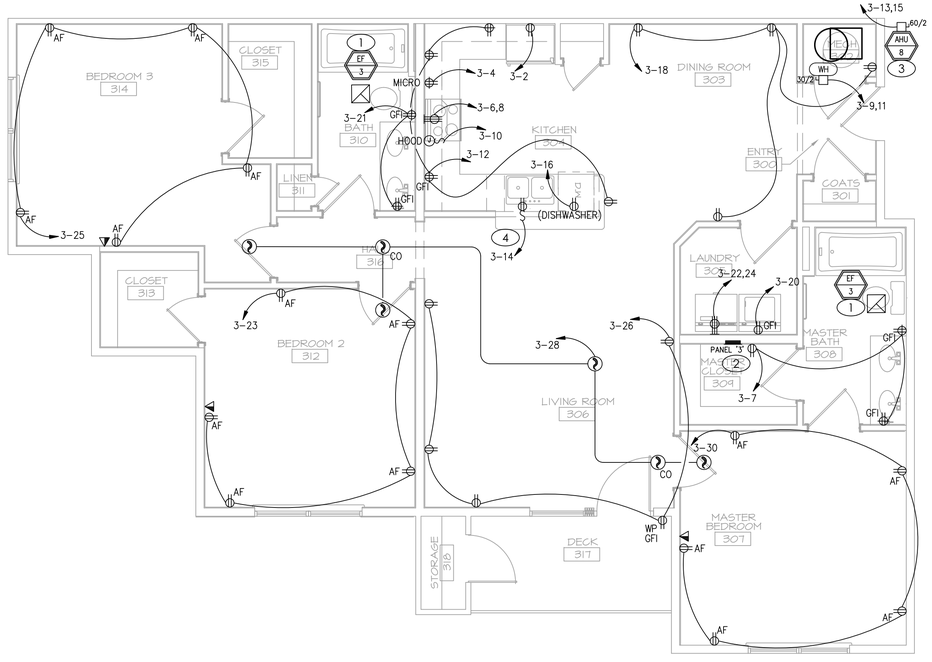
E203



POWER PLAN - TYP. 3 BEDROOM (ADA)

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

2



POWER PLAN - TYP. 3 BEDROOM

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

1

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(#) KEYED PLAN NOTES

1. WIRE SO THAT EXHAUST FAN DERIVES POWER FROM CIRCUIT SERVING LIGHTING FIXTURES IN ROOM. EXHAUST FAN SWITCHING BY WALL SWITCH. SEE SHEET E202.

2. NEW PANELBOARD. REFER TO SINGLE LINE DIAGRAM AND PANELBOARD SCHEDULES ON SHEETS E300 TO E302 AND E304 TO E305 FOR MORE INFORMATION.

3. MAKE CONNECTION TO DIVISION 22/23 EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS AND NEC REQUIREMENTS. COORDINATE WORK WITH DIVISION 22/23 CONTRACTOR PRIOR TO CONSTRUCTION.

4. RECEPTACLE AND SWITCH FOR GARBAGE DISPOSAL. CONFIRM EXACT LOCATION WITH ARCHITECT PRIOR TO CONSTRUCTION.

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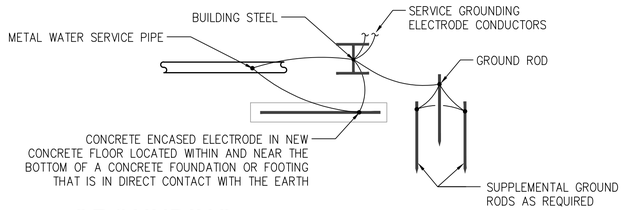
STATE OF MISSOURI
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PROJECT NO. : JSC 21-058
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REVIEWED BY : JRS

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SHEET NO.
ENLARGED POWER PLANS
E204



GROUNDING ELECTRODE SYSTEM DIAGRAM 2

SCALE : NO SCALE

Short-Circuit and Voltage Drop Calculations

Distances are for calculation purposes only and shall not be used for contractor takeoffs nor bidding - Contractor shall notify Engineer of any field condition that results in a change of 10% or greater circuit distance

The following calculations are based on the "Point-by-Point" method where:

$ISC_{(2)} = ISC_{(1)} \times M_{(1)}$ M= 1/(1+f)

$ISC_{(1)}$ = short circuit current at fault point 1

$ISC_{(2)}$ = short circuit current at fault point 2

Feeder: $f_{(3\varnothing)} = \frac{1.732 \times L \times Isc}{C \times E}$ XFMR: $f_{(3\varnothing)} = \frac{IP(sca) \times Vp \times 1.73 \times \%Z}{100{,}000 \times KVA}$ $IS_{(sca)\#} = \frac{Vp \times M \times IP_{(sca)}}{Vs}$

Feeder: $f_{(1\varnothing)} = \frac{2 \times L \times Isc}{C \times E}$ XFMR: $f_{(1\varnothing)} = \frac{IP(sca) \times Vp \times \%Z}{100{,}000 \times KVA}$

VOLTAGE DROP (3Ø):
%VD= ((R x cos(arccos(pf)) + X x sin (arccos(pf))) x L/# x I x 1.73) / E
VOLTAGE DROP (1Ø):
%VD= ((R x cos(arccos(pf)) + X x sin(arccos(pf))) x 2 x L/# x I) / E

IP = Primary short circuit current
Vp = Primary voltage
IS= Secondary short circuit current
Vs= Secondary voltage
L = Length of circuit E = Line to line volts
C = "C" Factor from Bussman table where "C" = 1 / impedance per linear foot

%VD CUM= Cumulative Voltage Drop from Fault Point 1 to Fault Point #
R= resistance in ohms per LF
X= reactances in ohms per LF

Feeder Types =
NM - Non Magnetic Conduit, M - Magnetic Conduit, FB - Feeder Busway, PB - Plug-in Busway, TX - Transformer

Date of Calculations: 02/08/2022
System Voltage: 240/120V - 1 phase

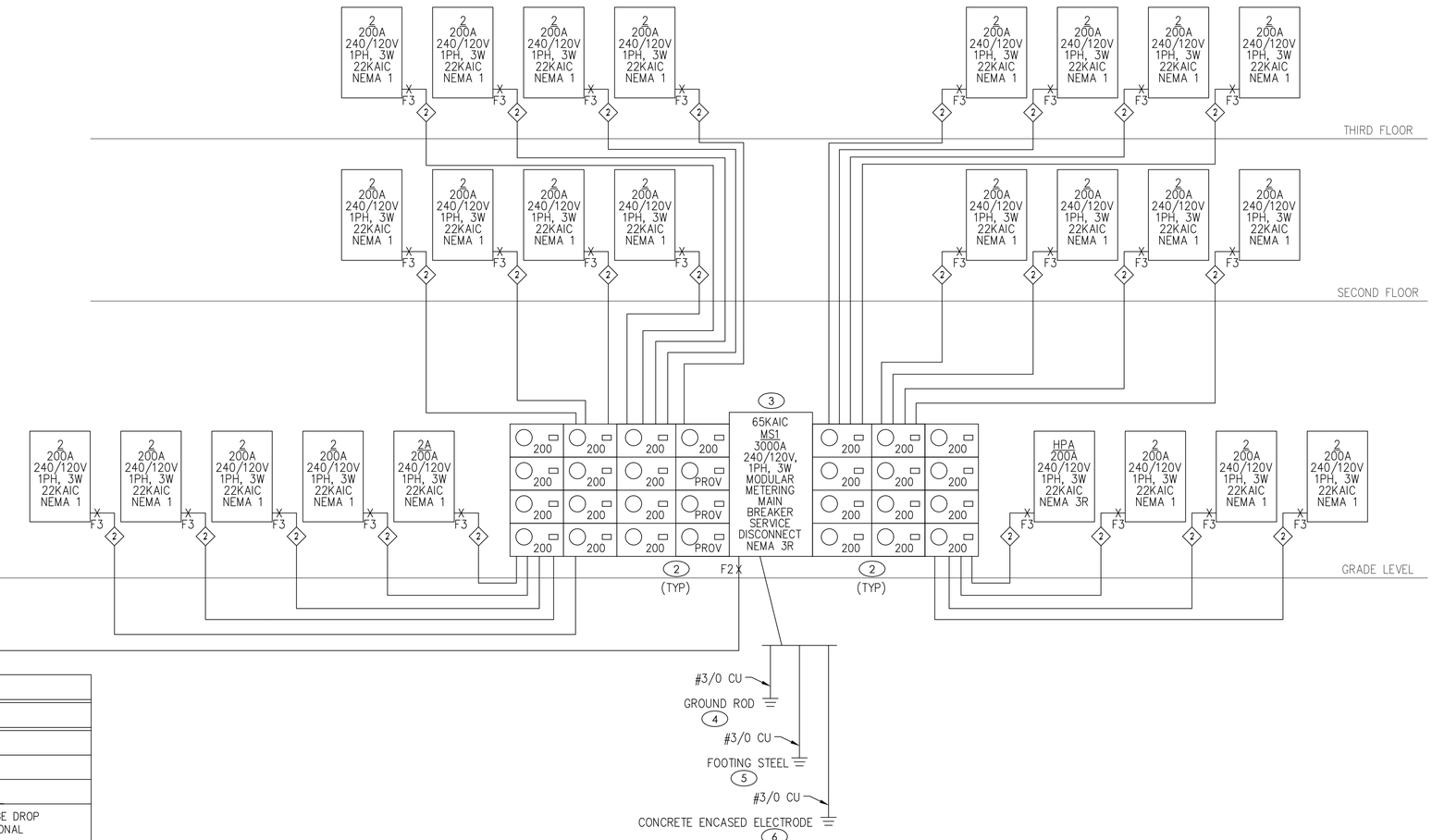
Fault Point (F#)	Bus/Feeder Description	Source (Fault Point)	Phase	Source Isc (amps)	Feeder: Conduit Type/ TX	Feeder: Material	Feeder: Quantity of Parallel Sets and Bus/ Phase & Neutral Size	Conductor 'C' Value	Busway 'C' Value	L-L Voltage (E)	Circuit Length (L)	Load Power Factor (pf)	Circuit Load (Amperage)	Conductor: Resistance (R)	Conductor: Reactance (X)	Conductor: Arccos (pf) (Radians)	Transformer: Type	Transformer: Degree Rise	Transformer: kVA	Transformer: New Xfmr Z	Transformer: Existing Xfmr Z	Transformer: Secondary Voltage	Transformer: Tap Setting	f	M	Fault Current (amps)	Voltage Drop (%VD)	Cumulative Voltage Drop (%VD)	Fault Point (F#)
1	Utility Service Point	63,000 at the secondary of the utility transformer																					Source Isc + 6X Motor Contribution =			63720			1
	Motor Contribution	120 The connected full load motor amps (includes compressors) on the system																											
2	TO SERVICE DISCONNECT	1	1	63720	NM	AL	2 Set(s) of 250 kcmil	12862	--	240	50	0.8	320	0.000085	0.000041	0.643501								1.032	0.49	31357	-0.62%	-0.62%	2
3	TO HOUSE PANEL 'HP'	2	1	31357	M	AL	2 Set(s) of 250 kcmil	12122	--	240	50	0.8	268	0.000086	0.000052	0.643501								0.539	0.65	20376	-0.56%	-1.18%	3

SC/VD CALCULATIONS 3

SCALE : NO SCALE

KEYED SLD NOTES

1. PROVIDE NEW CONDUIT AND CONDUCTORS TO UTILITY SOURCE. VERIFY EXACT LOCATION AND REQUIREMENTS WITH UTILITY PRIOR TO CONSTRUCTION.
2. PROVIDE NEW UTILITY METER PER UTILITY REQUIREMENTS. CONFIRM METERING SEQUENCE WITH UTILITY PRIOR TO CONSTRUCTION.
3. NEW DISCONNECT PER UTILITY REQUIREMENTS.
4. PROVIDE NEW GROUND PER NEC 250.52(A)(5).
5. BOND PER NEC 250.52(A)(2).
6. PROVIDE NEW GROUND PER NEC 250.52(A)(3).
7. EVERGY SOURCE AMPS INTERRUPTING CURRENT HAS NOT BEEN MADE AVAILABLE TO ENGINEER OF RECORD AT THIS TIME. FAULT CURRENT CALCULATIONS ARE BASED OFF OF 63K AIC MAXIMUM PER EVERGY STANDARDS. REFER TO SC/VD CALCULATIONS ON THIS SHEET FOR MORE INFORMATION.



BLDG A ELECTRICAL SINGLE LINE DIAGRAM 1

SCALE : NO SCALE

FEEDER SCHEDULE	
FEEDER NUMBER	CONDUIT AND CONDUCTOR SIZES
1	(8) 3-1/2" CONDUIT EA W/ (3) 750KCM AL
2	(1) 2" CONDUIT W/ (3) 250KCM AL & (1) #4 AL GND
THE DESIGN PROFESSIONAL HAS PERFORMED ALL THE REQUIRED VOLTAGE DROP CALCULATIONS FOR ALL BRANCH CIRCUITS AND FEEDERS PER THE NATIONAL ELECTRICAL CODE, ARTICLE 210.19(A)(1) FPN NO. 4.	
AVAILABLE FAULT CURRENT VALUES AT THE SECONDARY OF THE UTILITY TRANSFORMER HAS NOT BEEN GIVEN TO JSC ENGINEERS AT THIS TIME. CALCULATIONS HAVE BEEN PERFORMED USING A UTILITY-PROVIDED 63KAIC MAXIMUM RATING. OBTAIN FAULT CURRENT INFORMATION FROM THE UTILITY PROVIDER PRIOR TO ORDERING EQUIPMENT.	

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SHEET NO.
ELECTRICAL SCHEDULES AND DIAGRAMS
E300

ELECTRICAL LIGHTING SCHEDULE (VERIFY ALL SELECTIONS AND FINISHES WITH OWNER AND ARCHITECT PRIOR TO ORDERING).

FIXTURE TYPE	MANUFACTURER NAME	MANUFACTURER SERIES	VOLT AMPS	MOUNTING	LAMP TYPE	REMARKS	VOLT
A	LITHONIA	WF6 LED 27K30K35K 90CRI MW	14	RECESSED	LED INCLUDED	6" LED WAFER DOWNLIGHT	MVOLT
B	LITHONIA	FMVCCL 24IN MVOLT 30K 90CRI BN	18	WALL	LED INCLUDED	24" CONTEMPORARY CYLINDER VANITY, 3000K	MVOLT
C	GLOBE ELECTRIC	RIVER 1-LIGHT	60	WALL	E26 BASE, 60W MAX	OUTDOOR WALL SCONCE WITH SEEDED GLASS SHADE, 60W MAX, MATTE BLACK	MVOLT
D	PROGRESS LIGHTING	P4401-29	10	PENDANT	PROVIDE WITH 10W LED A19 MEDIUM BASE LAMP	OPAL CASED 8" GLOBE PENDANT	120
E	LITHONIA	11596 MVOLT WLN BZ	18	WALL	COMPACT QUAD TUBE FLUORESCENT INCLUDED	LINON HALF ROUND 11" SCONCE, NON-DIMMABLE	MVOLT
F	LITHONIA	WPX2 LED 40K MVOLT DBLXD	47	WALL	LED INCLUDED	EXTERIOR WALLPACK	MVOLT
S1	LITHONIA	DSX1 LED P1 40K T3M MVOLT	54	25' POLE	LED INCLUDED	PARKING LOT LED LIGHT, 4000K, WITH PHOTOCELL	MVOLT
	LITHONIA	ELM6L	10.6	SURFACE	LED INCLUDED	EMERGENCY LIGHTING UNIT WITH 90 MIN. BATTERY PACK	120/277
	LITHONIA	LHQM	5	SURFACE	LED INCLUDED	EMERGENCY EXIT EGRESS COMBO LIGHTING UNIT WITH RED FACE EXIT SIGN AND 90 MIN. BATTERY PACK	120/277
	LITHONIA	ERE	5	SURFACE	LED INCLUDED	OUTDOOR EMERGENCY REMOTE EGRESS LIGHTING UNIT - PROVIDE 700 LUMEN BATTERY PACK	120/277

ELECTRICAL LIGHTING SCHEDULE (VERIFY ALL SELECTIONS AND FINISHES WITH OWNER AND ARCHITECT PRIOR TO ORDERING).

FIXTURE TYPE	MANUFACTURER NAME	MANUFACTURER SERIES	VOLT AMPS	MOUNTING	LAMP TYPE	REMARKS	VOLT
H	LITHONIA	2VTS2 33L ADSM GZ10 LP830	26	RECESSED	LED INCLUDED	2' X 2' VOLUMETRIC LED TROFFER; 'HE' FIXTURE TYPE ADDS 'EL7L' EMERGENCY BATTERY PACK	MVOLT
K	CONTECH	CPL4 30K MVD FC B	50	PENDANT	LED INCLUDED	LED CEILING PENDANT FIXTURE, 3000K, FLEXIBLE CORD MOUNTING; 'KE' FIXTURE TYPE REPLACE 'MVD' DRIVER OPTION WITH 'CDB' CANOPY MOUNT DRIVER WITH BATTERY BACKUP	MVOLT
L4	LITHONIA	CLX L48 3000LM SEF RDL MVOLT GZ10 30K 80CRI	21	SURFACE	LED INCLUDED	4' LED STRIP FIXTURE, 3000K, ROUND DIFFUSE LENS	MVOLT
M	MONTE CARLO	HAVEN 5HVS2BZ OR PRE-BID APPROVED EQUAL	10	CEILING	PROVIDE LED LIGHT KIT	52" 5-BLADE CEILING FAN, 3-SPEED, BRONZE FINISH, PROVIDE WITH LED LIGHT KIT	MVOLT

Short-Circuit and Voltage Drop Calculations

Distances are for calculation purposes only and shall not be used for contractor takeoffs nor bidding - Contractor shall notify Engineer of any field condition that results in a change of 10% or greater circuit distance

The following calculations are based on the "Point-by-Point" method where:

$ISC_{PT2} = ISC_{PT1} \times M_{PT2}$ $\quad M = 1/(1+f)$

ISC_{PT1} = short circuit current at fault point 1

ISC_{PT2} = short circuit current at fault point 2

Feeder: $f_{(1\Phi)} = \frac{1.732 \times L \times Isc}{C \times E}$ $\quad$ Feeder: $f_{(3\Phi)} = \frac{2 \times L \times Isc}{C \times E}$

XFMR: $f_{(1\Phi)} = \frac{IP(sca)k \times Vp \times 1.73 \times \%Z}{100,000 \times kVA}$ $\quad$ XFMR: $f_{(3\Phi)} = \frac{IP(sca)k \times Vp \times \%Z}{100,000 \times kVA}$

$IS_{(sca)k} = \frac{Vp \times M \times IP_{(sca)k}}{Vs}$

IP = Primary short circuit current
Vp = Primary voltage
IS= Secondary short circuit current
Vs= Secondary voltage
L = Length of circuit $\quad$ E = Line to line volts
C = "C" Factor from Bussman table where "C" = 1 / impedance per linear foot

Feeder Types =
NM - Non Magnetic Conduit, M - Magnetic Conduit, FB - Feeder Busway, PB - Plug-in Busway, TX - Transformer

VOLTAGE DROP (3Ø):
%VD= ((R x cos(arccos(pf)) + X x sin (arccos(pf))) x L/# x I x 1.73) / E

VOLTAGE DROP (1Ø):
%VD= ((R x cos(arccos(pf)) + X x sin(arccos(pf))) x 2 x L/# x I) / E

%VD CUM= Cumulative Voltage Drop from Fault Point 1 to Fault Point #
R= resistance in ohms per LF
X= reactances in ohms per LF

Date of Calculations: 02/08/2022
System Voltage: 240/120V - 1 phase

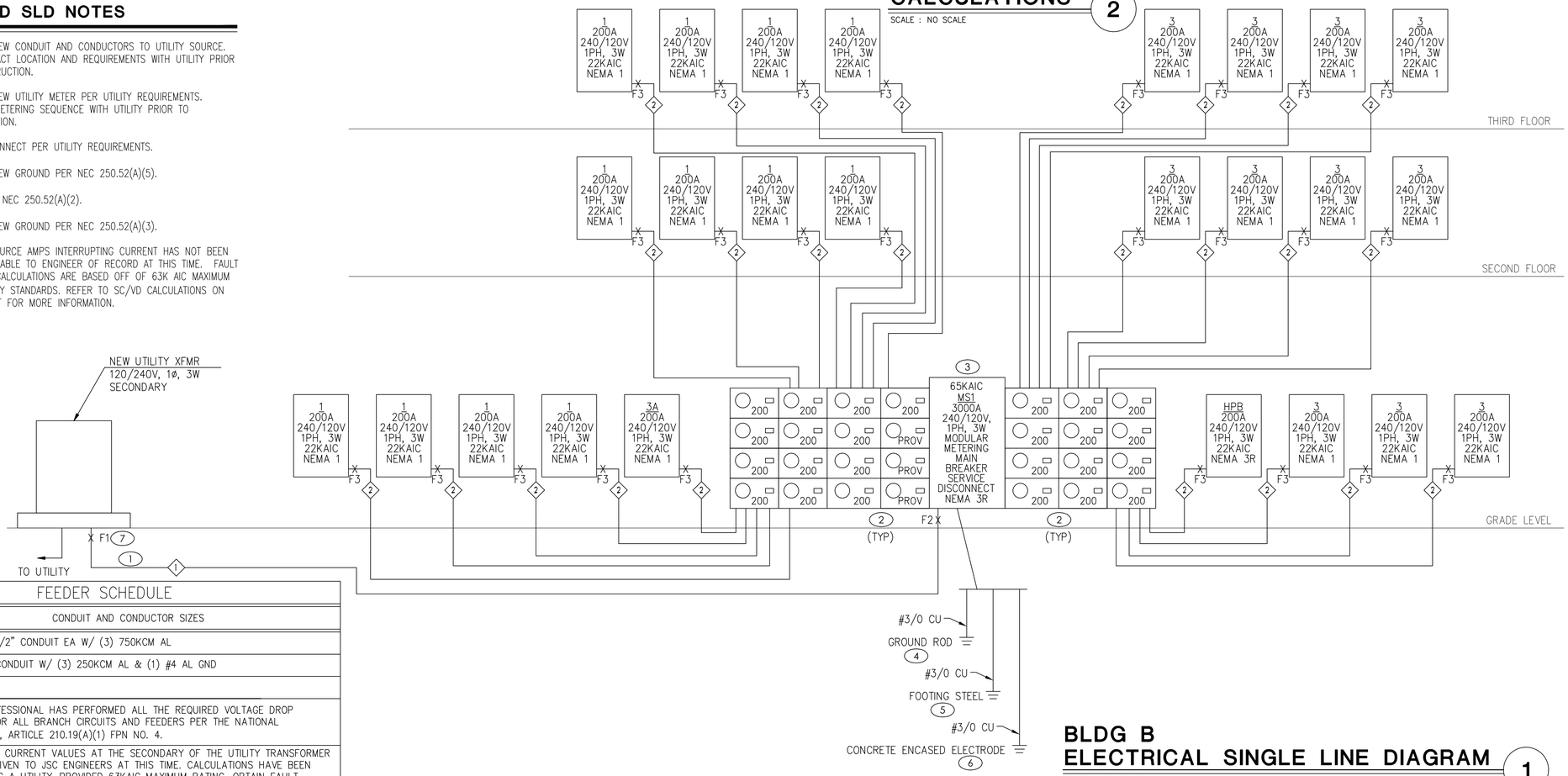
Fault Point (F#)	Bus/Feeder Description	Source (Fault Point)	Phase	Source Isc (amps)	Feeder: Conduit Type/ TX	Material	Quantity of Parallel Sets and Bus/ Phase & Neutral Size	Conductor "C" Value	Busway 'C' Value	L-L Voltage (E)	Circuit Length (L)	Load Power Factor (pf)	Circuit Load (Amps/sqin)	Conductor: Resistance (R)	Reactance (X)	Arccos (pf) (Radians)	Transformer: Type	Degree Rise	kVA	New XfmrZ	Existing XfmrZ	Secondary Voltage	Tap Setting	f	M	Fault Current (amps)	Voltage Drop (%VD)	Cumulative Voltage Drop (%VD)	Fault Point (F#)
1	Utility Service Point			63,000 at the secondary of the utility transformer																									Source Isc = 63720		1
	Motor Contribution			120 The connected full load motor amps (includes compressors) on the system																										
2	TO SERVICE DISCONNECT	1	1	63720	1/	NM	AL	2/ Set(s) of	250 kcm #	12862	--	240	50	0.8	320	0.000085	0.000041	0.643501								1.032	0.49	31357	-0.62%	-0.62%	2
3	TO HOUSE PANEL 'HP'	2	1	31357	M	AL	2/ Set(s) of	250 kcm #	12122	--	240	50	0.8	268	0.000086	0.000052	0.643501								0.539	0.65	20376	-0.56%	-1.18%	3

(#) KEYED SLD NOTES

1. PROVIDE NEW CONDUIT AND CONDUCTORS TO UTILITY SOURCE. VERIFY EXACT LOCATION AND REQUIREMENTS WITH UTILITY PRIOR TO CONSTRUCTION.
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5. BOND PER NEC 250.52(A)(2).
6. PROVIDE NEW GROUND PER NEC 250.52(A)(3).
7. EVERGY SOURCE AMPS INTERRUPTING CURRENT HAS NOT BEEN MADE AVAILABLE TO ENGINEER OF RECORD AT THIS TIME. FAULT CURRENT CALCULATIONS ARE BASED OFF OF 63K AIC MAXIMUM PER EVERGY STANDARDS. REFER TO SC/VD CALCULATIONS ON THIS SHEET FOR MORE INFORMATION.

SC/VD CALCULATIONS (2)

SCALE : NO SCALE



BLDG B ELECTRICAL SINGLE LINE DIAGRAM (1)

SCALE : NO SCALE

FEEDER SCHEDULE

FEEDER NUMBER	CONDUIT AND CONDUCTOR SIZES
1	(8) 3-1/2" CONDUIT EA W/ (3) 750KCM AL
2	(1) 2" CONDUIT W/ (3) 250KCM AL & (1) #4 AL GND

THE DESIGN PROFESSIONAL HAS PERFORMED ALL THE REQUIRED VOLTAGE DROP CALCULATIONS FOR ALL BRANCH CIRCUITS AND FEEDERS PER THE NATIONAL ELECTRICAL CODE, ARTICLE 210.19(A)(1) FPN NO. 4.

AVAILABLE FAULT CURRENT VALUES AT THE SECONDARY OF THE UTILITY TRANSFORMER HAS NOT BEEN GIVEN TO JSC ENGINEERS AT THIS TIME. CALCULATIONS HAVE BEEN PERFORMED USING A UTILITY-PROVIDED 63KAIC MAXIMUM RATING. OBTAIN FAULT CURRENT INFORMATION FROM THE UTILITY PROVIDER PRIOR TO ORDERING EQUIPMENT.

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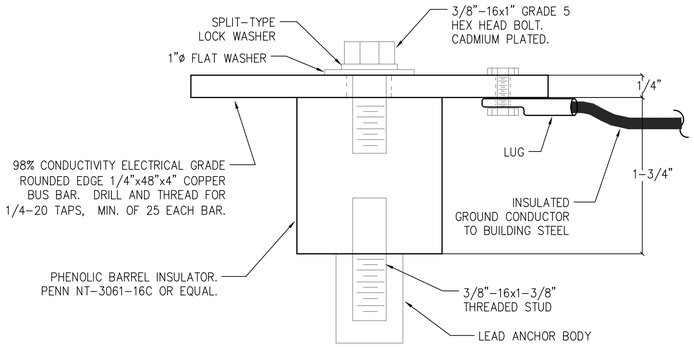
JUSTIN R SMOTHERS
NUMBER PE-2012003568
STATE OF MISSOURI
PROFESSIONAL ENGINEER
02-08-2022
professional seal

PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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SHEET NO.
ELECTRICAL SCHEDULES AND DIAGRAMS
E301



GROUND BUS MOUNTING DIAGRAM 2

SCALE : NO SCALE

Short-Circuit and Voltage Drop Calculations

Distances are for calculation purposes only and shall not be used for contractor takeoffs nor bidding - Contractor shall notify Engineer of any field condition that results in a change of 10% or greater circuit distance

The following calculations are based on the "Point-by-Point" method where:

$ISC_{(2)} = ISC_{(1)} \times M_{(1)}$ M= 1/(1+f)

$ISC_{(1)}$ = short circuit current at fault point 1

$ISC_{(2)}$ = short circuit current at fault point 2

Feeder: $f_{(3\varnothing)} = \frac{1.732 \times L \times Isc}{C \times E}$ XFMR: $f_{(3\varnothing)} = \frac{IP(sca) \times Vp \times 1.73 \times \%Z}{100,000 \times KVA}$ $IS_{(sca)} = \frac{Vp \times Mx \times IP_{(sca)}}{Vs}$

Feeder: $f_{(1\varnothing)} = \frac{2 \times L \times Isc}{C \times E}$ XFMR: $f_{(1\varnothing)} = \frac{IP(sca) \times Vp \times \%Z}{100,000 \times KVA}$

IP = Primary short circuit current
Vp = Primary voltage
IS= Secondary short circuit current
Vs= Secondary voltage
L = Length of circuit E = Line to line volts
C = "C" Factor from Bussman table where "C" = 1 / impedance per linear foot

Feeder Types =
NM- Non Magnetic Conduit, M- Magnetic Conduit, FB - Feeder Busway, PB - Plug-in Busway, TX- Transformer

VOLTAGE DROP (3Ø):
%VD= ((R x cos(arccos(pf)) + X x sin (arccos(pf))) x L/# x I x 1.73) / E
VOLTAGE DROP (1Ø):
%VD= ((R x cos(arccos(pf)) + X x sin(arccos(pf))) x 2 x L/# x I) / E

%VD CUM= Cumulative Voltage Drop from Fault Point 1 to Fault Point #
R= resistance in ohms per LF
X= reactances in ohms per LF

Date of Calculations: 02/08/2022
System Voltage: 240/120V - 1 phase

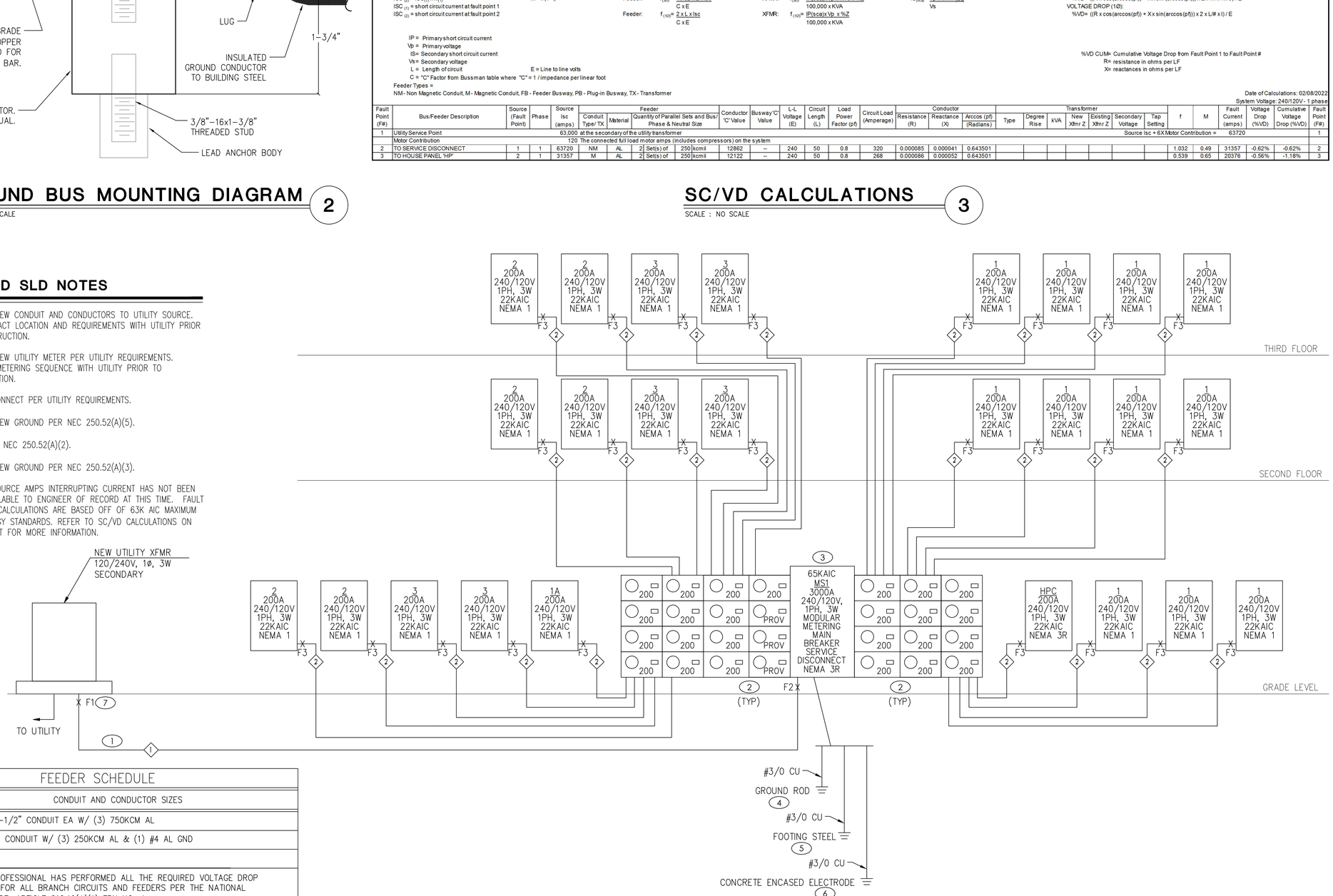
Fault Point (F#)	Bus/Feeder Description	Source (Fault Point)	Phase	Source Isc (amps)	Feeder: Conduit Type/ TX	Material	Quantity of Parallel Sets and Bus/ Phase & Neutral Size			Conductor 'C' Value	Busway 'C' Value	L-L Voltage (E)	Circuit Length (L)	Load Power Factor (pf)	Circuit Load (Amperage)	Conductor: Resistance (R)	Reactance (X)	Accos (pf) (Radians)	Transformer: Type	Degree Rise	kVA	New Xfmr Z	Existing Xfmr Z	Secondary Voltage	Tap Setting	f	M	Fault Current (amps)	Voltage Drop (%VD)	Cumulative Voltage Drop (%VD)	Fault Point (F#)
1	Utility Service Point			63,000 at the secondary of the utility transformer																								Source Isc + 6XMotor Contribution =	63720		1
	Motor Contribution			120 The connected full load motor amps (includes compressors) on the system																											
2	TO SERVICE DISCONNECT	1	1	63720	NM	AL	2	Set(s) of	250	kcmil	12862	--	240	50	0.8	320	0.000085	0.000041	0.643501							1.032	0.49	31357	-0.62%	-0.62%	2
3	TO HOUSE PANEL 'HP'	2	1	31357	M	AL	2	Set(s) of	250	kcmil	12122	--	240	50	0.8	268	0.000086	0.000052	0.643501							0.539	0.65	20376	-0.56%	-1.18%	3

SC/VD CALCULATIONS 3

SCALE : NO SCALE

KEYED SLD NOTES

1. PROVIDE NEW CONDUIT AND CONDUCTORS TO UTILITY SOURCE. VERIFY EXACT LOCATION AND REQUIREMENTS WITH UTILITY PRIOR TO CONSTRUCTION.
2. PROVIDE NEW UTILITY METER PER UTILITY REQUIREMENTS. CONFIRM METERING SEQUENCE WITH UTILITY PRIOR TO CONSTRUCTION.
3. NEW DISCONNECT PER UTILITY REQUIREMENTS.
4. PROVIDE NEW GROUND PER NEC 250.52(A)(5).
5. BOND PER NEC 250.52(A)(2).
6. PROVIDE NEW GROUND PER NEC 250.52(A)(3).
7. EVERGY SOURCE AMPS INTERRUPTING CURRENT HAS NOT BEEN MADE AVAILABLE TO ENGINEER OF RECORD AT THIS TIME. FAULT CURRENT CALCULATIONS ARE BASED OFF OF 63K AIC MAXIMUM PER EVERGY STANDARDS. REFER TO SC/VD CALCULATIONS ON THIS SHEET FOR MORE INFORMATION.



BLDG C ELECTRICAL SINGLE LINE DIAGRAM 1

SCALE : NO SCALE

FEEDER SCHEDULE	
FEEDER NUMBER	CONDUIT AND CONDUCTOR SIZES
1	(8) 3-1/2" CONDUIT EA W/ (3) 750KCM AL
2	(1) 2" CONDUIT W/ (3) 250KCM AL & (1) #4 AL GND

THE DESIGN PROFESSIONAL HAS PERFORMED ALL THE REQUIRED VOLTAGE DROP CALCULATIONS FOR ALL BRANCH CIRCUITS AND FEEDERS PER THE NATIONAL ELECTRICAL CODE, ARTICLE 210.19(A)(1) FPN NO. 4.

AVAILABLE FAULT CURRENT VALUES AT THE SECONDARY OF THE UTILITY TRANSFORMER HAS NOT BEEN GIVEN TO JSC ENGINEERS AT THIS TIME. CALCULATIONS HAVE BEEN PERFORMED USING A UTILITY-PROVIDED 63KAIC MAXIMUM RATING. OBTAIN FAULT CURRENT INFORMATION FROM THE UTILITY PROVIDER PRIOR TO ORDERING EQUIPMENT.

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Summit Point Apartment Phase II

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02-08-2022
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PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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SHEET NO.
ELECTRICAL SCHEDULES AND DIAGRAMS
E302

Short-Circuit and Voltage Drop Calculations

Distances are for calculation purposes only and shall not be used for contractor takeoffs nor bidding - Contractor shall notify Engineer of any field condition that results in a change of 10% or greater circuit distance

The following calculations are based on the "Point-by-Point" method where:

$ISC_{(2)} = ISC_{(1)} \times M_{(1)}$ M= 1/(1+f)

$ISC_{(1)}$ = short circuit current at fault point 1

$ISC_{(2)}$ = short circuit current at fault point 2

Feeder: $f_{(1\varnothing)} = \frac{1.732 \times L \times Isc}{C \times E}$ XFMR: $f_{(3\varnothing)} = \frac{IP(sca) \times Vp \times 1.73 \times \%Z}{100{,}000 \times KVA}$ $IS_{(sca)} = \frac{Vp \times Mx\ IP_{(sca)}}{Vs}$

Feeder: $f_{(1\varnothing)} = \frac{2 \times L \times Isc}{C \times E}$ XFMR: $f_{(1\varnothing)} = \frac{IP(sca) \times Vp \times \%Z}{100{,}000 \times KVA}$

VOLTAGE DROP (3Ø):
%VD= ((R x cos(arccos(pf)) + X x sin (arccos(pf))) x L/# x I x 1.73) / E

VOLTAGE DROP (1Ø):
%VD= ((R x cos(arccos(pf)) + X x sin(arccos(pf))) x 2 x L/# x I) / E

IP = Primary short circuit current
Vp = Primary voltage
IS= Secondary short circuit current
Vs= Secondary voltage
L = Length of circuit
E = Line to line volts
C = "C" Factor from Bussman table where "C" = 1 / impedance per linear foot

%VD CUM= Cumulative Voltage Drop from Fault Point 1 to Fault Point #
R= resistance in ohms per LF
X= reactances in ohms per LF

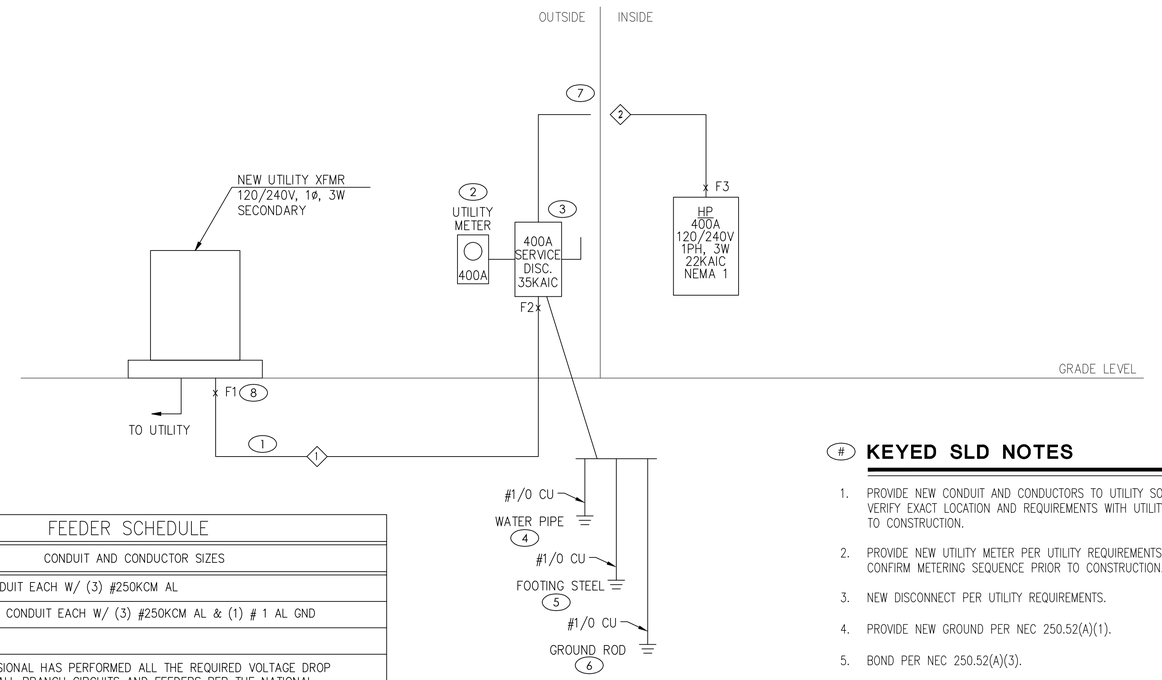
Feeder Types =
NM - Non Magnetic Conduit, M - Magnetic Conduit, FB - Feeder Busway, PB - Plug-in Busway, TX - Transformer

Date of Calculations: 02/08/2022
System Voltage: 240/120V - 1 phase

Fault Point (F#)	Bus/Feeder Description	Source (Fault Point)	Phase	Source Isc (amps)	Feeder: Conduit Type/ TX	Feeder: Material	Feeder: Quantity of Parallel Sets and Bus/ Phase & Neutral Size	Conductor 'C' Value	Busway 'C' Value	L-L Voltage (E)	Circuit Length (L)	Load Power Factor (pf)	Circuit Load (Amperage)	Conductor: Resistance (R)	Conductor: Reactance (X)	Conductor: Arccos (pf) (Radians)	Transformer: Type	Degree Rise	kVA	Transformer: New Xfmr Z	Existing Xfmr Z	Secondary Voltage	Tap Setting	f	M	Fault Current (amps)	Voltage Drop (%VD)	Cumulative Voltage Drop (%VD)	Fault Point (F#)
1	Utility Service Point	63,000 at the secondary of the utility transformer																										Source Isc + 6X Motor Contribution =		63720			1
	Motor Contribution	120 The connected full load motor amps (includes compressors) on the system																													
2	TO SERVICE DISCONNECT	1	1	63720	NM	AL	2 Set(s) of	250 kcmil	12862	--	240	50	0.8	320	0.000085	0.000041	0.643501								1.032	0.49	31357	-0.62%	-0.62%	2
3	TO HOUSE PANEL 'HP'	2	1	31357	M	AL	2 Set(s) of	250 kcmil	12122	--	240	50	0.8	268	0.000086	0.000052	0.643501								0.539	0.65	20376	-0.56%	-1.18%	3

SC/VD CALCULATIONS 3

SCALE : NO SCALE



FEEDER SCHEDULE	
FEEDER NUMBER	CONDUIT AND CONDUCTOR SIZES
1	(2) 2" CONDUIT EACH W/ (3) #250KCM AL
2	(2) 2-1/2" CONDUIT EACH W/ (3) #250KCM AL & (1) # 1 AL GND
THE DESIGN PROFESSIONAL HAS PERFORMED ALL THE REQUIRED VOLTAGE DROP CALCULATIONS FOR ALL BRANCH CIRCUITS AND FEEDERS PER THE NATIONAL ELECTRICAL CODE, ARTICLE 210.19(A)(1) FPN NO. 4.	
AVAILABLE FAULT CURRENT VALUES AT THE SECONDARY OF THE UTILITY TRANSFORMER HAS NOT BEEN GIVEN TO JSC ENGINEERS AT THIS TIME. CALCULATIONS HAVE BEEN PERFORMED USING A UTILITY-PROVIDED 63KAIC MAXIMUM RATING. OBTAIN FAULT CURRENT INFORMATION FROM THE UTILITY PROVIDER PRIOR TO ORDERING EQUIPMENT.	

(#) KEYED SLD NOTES

1. PROVIDE NEW CONDUIT AND CONDUCTORS TO UTILITY SOURCE. VERIFY EXACT LOCATION AND REQUIREMENTS WITH UTILITY PRIOR TO CONSTRUCTION.
2. PROVIDE NEW UTILITY METER PER UTILITY REQUIREMENTS. CONFIRM METERING SEQUENCE PRIOR TO CONSTRUCTION.
3. NEW DISCONNECT PER UTILITY REQUIREMENTS.
4. PROVIDE NEW GROUND PER NEC 250.52(A)(1).
5. BOND PER NEC 250.52(A)(3).
6. PROVIDE NEW GROUND PER NEC 250.52(A)(5).
7. PENETRATE EXTERIOR WALL FOR SERVICE ENTRANCE CONDUCTORS PER NEC REQUIREMENTS. COORDINATE EXACT LOCATION WITH OWNER.
8. EVERGY SOURCE AMPS INTERRUPTING CURRENT HAS NOT BEEN MADE AVAILABLE TO ENGINEER OF RECORD AT THIS TIME. FAULT CURRENT CALCULATIONS ARE BASED OFF OF 63K AIC MAXIMUM PER EVERGY STANDARDS. REFER TO SC/VD CALCULATIONS ON THIS SHEET FOR MORE INFORMATION.

CLUBHOUSE ELECTRICAL SINGLE LINE DIAGRAM 1

SCALE : NO SCALE

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PROFESSIONAL ENGINEER
02-08-2022
professional seal

PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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SHEET NO.
ELECTRICAL SCHEDULES AND DIAGRAMS
E303

PANELBOARD: 3 (NEW)

BUS AMPS: 225A
MAIN SIZE/TYPE: 200A MCB
VOLTS/PHASE: 120/240V, 1PH, 3W
SECTION: 1

FED FROM: UTILITY
AIC RATING: 22000 FULLY RATED
SERVES: 3 BEDROOM
MOUNTING: SURFACE
LOCATION: MECH 302

LINE-SIDE LUGS: MECHANICAL
EQUIPMENT GROUND BUS

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	DESCRIPTION	CKT NO.
1	LTG - ENTRY/KITCHEN/MECH/BED/BATH	194		12	20	1	1	20	12	800		RCPT - REFRIGERATOR	2
3	LTG - LIVING RM/DECK/STORAGE		154	12	20	1	1	20	12		1,200	RCPT - MICROWAVE	4
5	LTG - BEDROOM/BATHROOM/CLOSET	123		12	20	1	2	50	6	4,800		RCPT - OVEN	6
7	RCPT - BATHROOM GFI		360	12	20	1					4,800		8
9	PWR - WH	2,250		10	30	2	1	20	12	500		PWR - STOVETOP HOOD	10
11			2,250				1	20	12		720	RCPT - KITCHEN COUNTER	12
13	^^PWR - AHU-8	6,240		6	60	2	1	20	12	500		PWR - GARBAGE DISPOSAL	14
15			6,240				1	20	12		1,200	RCPT - DISHWASHER	16
17	^^PWR - CU-8	2,496		10	30	2	1	20	12	540		RCPT - DINING / MECH GENERAL	18
19			2,496				1	20	12		1,200	RCPT - WASHER	20
21	RCPT - BATHROOM GFI	360		12	20	1	2	30	10	2,880		RCPT - DRYER	22
23	RCPT - BEDROOM		900	12	20	1					2,880		24
25	RCPT - BEDROOM	900		12	20	1	1	20	12	900		RCPT - LIVING ROOM/DECK	26
27	SPARE				20	1	1	20	12		200	PWR - SMOKE DETECTORS	28
29	SPARE				20	1	1	20	12	900		RCPT - BEDROOM	30
	SUBTOTAL	12,563	12,400							11,820	12,200	SUBTOTAL	

		LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	24,383	COOLING	4,992	0	REFRIG		1.00	
AMPS	203	HEATING	12,480	1.00	SIGN/DISP		1.25	
TOTAL PHASE B - VA	24,600	LIGHTING	471	1.25	KITCHEN		1.00	
AMPS	205	RECEPTACLES	25,340	1.0/.5	EXISTING		1.00	
TOTAL PNLBD - VA	48,983	MOTORS	500	1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	204	SUPP HEAT	4,500	1.00	SHOW WNDW		1.25	36,439 VA
		MISC EQUIP	700	1.00	LTG TRACK		1.00	152 A

PANELBOARD NOTES
^^ = HACR-TYPE BREAKER
* = GFI-TYPE BREAKER

PANELBOARD: 2A (NEW)

BUS AMPS: 225A
MAIN SIZE/TYPE: 200A MCB
VOLTS/PHASE: 120/240V, 1PH, 3W
SECTION: 1

FED FROM: UTILITY
AIC RATING: 22000 FULLY RATED
SERVES: 2 BEDROOM ADA
MOUNTING: SURFACE
LOCATION: MECH 201

LINE-SIDE LUGS: MECHANICAL
EQUIPMENT GROUND BUS

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	DESCRIPTION	CKT NO.
1	LTG - ENTRY/KITCHEN/MECH/BEDROOM	187		12	20	1	1	20	12	800		RCPT - REFRIGERATOR	2
3	LTG - LIVING RM/DECK/STORAGE		140	12	20	1	1	20	12		1,200	RCPT - MICROWAVE	4
5	LTG - BEDROOM/BATHROOM/CLOSET	88		12	20	1	2	50	6	4,800		RCPT - OVEN	6
7	RCPT - BATHROOM GFI		360	12	20	1					4,800		8
9	PWR - WH	2,250		10	30	2	1	20	12	500		PWR - STOVETOP HOOD	10
11			2,250				1	20	12		720	RCPT - KITCHEN COUNTER	12
13	^^PWR - AHU-5	5,640		6	50	2	1	20	12	500		PWR - GARBAGE DISPOSAL	14
15			5,640				1	20	12		1,200	RCPT - DISHWASHER	16
17	^^PWR - CU-5	2,496		10	30	2	1	20	12	360		RCPT - DINING / MECH GENERAL	18
19			2,496				1	20	12		1,200	RCPT - WASHER	20
21	RCPT - BATHROOM GFI	180		12	20	1	2	30	10	2,880		RCPT - DRYER	22
23	RCPT - BEDROOM		900	12	20	1					2,880		24
25	SPARE				20	1	1	20	12	900		RCPT - LIVING ROOM/DECK	26
27	SPARE				20	1	1	20	12		200	PWR - SMOKE DETECTORS	28
29	SPARE				20	1	1	20	12	900		RCPT - BEDROOM	30
	SUBTOTAL	10,841	11,786							11,640	12,200	SUBTOTAL	

		LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	22,481	COOLING	4,992	0	REFRIG		1.00	
AMPS	187	HEATING	11,280	1.00	SIGN/DISP		1.25	
TOTAL PHASE B - VA	23,986	LIGHTING	415	1.25	KITCHEN		1.00	
AMPS	200	RECEPTACLES	24,280	1.0/.5	EXISTING		1.00	
TOTAL PNLBD - VA	46,467	MOTORS	500	1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	194	SUPP HEAT	4,500	1.00	SHOW WNDW		1.25	34,439 VA
		MISC EQUIP	500	1.00	LTG TRACK		1.00	143 A

PANELBOARD NOTES
^^ = HACR-TYPE BREAKER
* = GFI-TYPE BREAKER

PANELBOARD: 3A (NEW)

BUS AMPS: 225A
MAIN SIZE/TYPE: 200A MCB
VOLTS/PHASE: 120/240V, 1PH, 3W
SECTION: 1

FED FROM: UTILITY
AIC RATING: 22000 FULLY RATED
SERVES: 3 BEDROOM ADA
MOUNTING: SURFACE
LOCATION: MECH 302

LINE-SIDE LUGS: MECHANICAL
EQUIPMENT GROUND BUS

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	DESCRIPTION	CKT NO.
1	LTG - ENTRY/KITCHEN/MECH/BED/BATH	205		12	20	1	1	20	12	800		RCPT - REFRIGERATOR	2
3	LTG - LIVING RM/DECK/STORAGE		154	12	20	1	1	20	12		1,200	RCPT - MICROWAVE	4
5	LTG - BEDROOM/BATHROOM/CLOSET	98		12	20	1	2	50	6	4,800		RCPT - OVEN	6
7	RCPT - BATHROOM GFI		360	12	20	1					4,800		8
9	PWR - WH	2,250		10	30	2	1	20	12	500		PWR - STOVETOP HOOD	10
11			2,250				1	20	12		720	RCPT - KITCHEN COUNTER	12
13	^^PWR - AHU-7	6,240		6	60	2	1	20	12	500		PWR - GARBAGE DISPOSAL	14
15			6,240				1	20	12		1,200	RCPT - DISHWASHER	16
17	^^PWR - CU-7	2,496		10	30	2	1	20	12	360		RCPT - DINING / MECH GENERAL	18
19			2,496				1	20	12		1,200	RCPT - WASHER	20
21	RCPT - BATHROOM GFI	360		12	20	1	2	30	10	2,880		RCPT - DRYER	22
23	RCPT - BEDROOM		900	12	20	1					2,880		24
25	RCPT - BEDROOM	900		12	20	1	1	20	12	900		RCPT - LIVING ROOM/DECK	26
27	SPARE				20	1	1	20	12		200	PWR - SMOKE DETECTORS	28
29	SPARE				20	1	1	20	12	900		RCPT - BEDROOM	30
	SUBTOTAL	12,549	12,400							11,640	12,200	SUBTOTAL	

		LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	24,189	COOLING	4,992	0	REFRIG		1.00	
AMPS	202	HEATING	12,480	1.00	SIGN/DISP		1.25	
TOTAL PHASE B - VA	24,600	LIGHTING	457	1.25	KITCHEN		1.00	
AMPS	205	RECEPTACLES	25,160	1.0/.5	EXISTING		1.00	
TOTAL PNLBD - VA	48,789	MOTORS	500	1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	203	SUPP HEAT	4,500	1.00	SHOW WNDW		1.25	36,331 VA
		MISC EQUIP	700	1.00	LTG TRACK		1.00	151 A

PANELBOARD NOTES
^^ = HACR-TYPE BREAKER
* = GFI-TYPE BREAKER

PANELBOARD: 1 (NEW)

BUS AMPS: 225A
MAIN SIZE/TYPE: 200A MCB
VOLTS/PHASE: 120/240V, 1PH, 3W
SECTION: 1

FED FROM: UTILITY
AIC RATING: 22000 FULLY RATED
SERVES: 1 BEDROOM
MOUNTING: SURFACE
LOCATION: MECH 102

LINE-SIDE LUGS: MECHANICAL
EQUIPMENT GROUND BUS

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	DESCRIPTION	CKT NO.
1	LTG - ENTRY/KITCHEN/MECH	96		12	20	1	1	20	12	800		RCPT - REFRIGERATOR	2
3	LTG - LIVING RM/DECK/STORAGE		140	12	20	1	1	20	12		1,200	RCPT - MICROWAVE	4
5	LTG - BEDROOM/BATHROOM/CLOSET	123		12	20	1	2	50	6	4,800		RCPT - OVEN	6
7	RCPT - BATHROOM GFI		360	12	20	1					4,800		8
9	PWR - WH	2,250		10	30	2	1	20	12	500		PWR - STOVETOP HOOD	10
11			2,250				1	20	12		720	RCPT - KITCHEN COUNTER	12
13	^^PWR - AHU-4	4,320		8	40	2	1	20	12	500		PWR - GARBAGE DISPOSAL	14
15			4,320				1	20	12		1,200	RCPT - DISHWASHER	16
17	^^PWR - CU-4	2,292		10	30	2	1	20	12	540		RCPT - DINING / MECH GENERAL	18
19			2,292				1	20	12		1,200	RCPT - WASHER	20
21	SPARE				20	1	2	30	10	2,880		RCPT - DRYER	22
23	SPARE				20	1					2,880		24
25	SPARE				20	1	1	20	12	900		RCPT - LIVING ROOM/DECK	26
27	SPARE				20	1	1	20	12		200	PWR - SMOKE DETECTORS	28
29	SPARE				20	1	1	20	12	900		RCPT - BEDROOM	30
	SUBTOTAL	9,081	9,362							11,820	12,200	SUBTOTAL	

		LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	20,901	COOLING	4,584	0	REFRIG		1.00	
AMPS	174	HEATING	8,640	1.00	SIGN/DISP		1.25	
TOTAL PHASE B - VA	21,562	LIGHTING	359	1.25	KITCHEN		1.00	
AMPS	180	RECEPTACLES	23,180	1.0/.5	EXISTING		1.00	
TOTAL PNLBD - VA	42,463	MOTORS	500	1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	177	SUPP HEAT	4,500	1.00	SHOW WNDW		1.25	31,379 VA
		MISC EQUIP	700	1.00	LTG TRACK		1.00	131 A

PANELBOARD NOTES
^^ = HACR-TYPE BREAKER
* = GFI-TYPE BREAKER

PANELBOARD: 2 (NEW)

BUS AMPS: 225A
MAIN SIZE/TYPE: 200A MCB
VOLTS/PHASE: 120/240V, 1PH, 3W
SECTION: 1

FED FROM: UTILITY
AIC RATING: 22000 FULLY RATED
SERVES: 2 BEDROOM
MOUNTING: SURFACE
LOCATION: MECH 201

LINE-SIDE LUGS: MECHANICAL
EQUIPMENT GROUND BUS

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	DESCRIPTION	CKT NO.
1	LTG - ENTRY/KITCHEN/MECH/BEDROOM	198		12	20	1	1	20	12	800		RCPT - REFRIGERATOR	2
3	LTG - LIVING RM/DECK/STORAGE		140	12	20	1	1	20	12		1,200	RCPT - MICROWAVE	4
5	LTG - BEDROOM/BATHROOM/CLOSET	123		12	20	1	2	50	6	4,800		RCPT - OVEN	6
7	RCPT - BATHROOM GFI		360	12	20	1					4,800		8
9	PWR - WH	2,250		10	30	2	1	20	12	500		PWR - STOVETOP HOOD	10
11			2,250				1	20	12		720	RCPT - KITCHEN COUNTER	12
13	^^PWR - AHU-6	5,640		6	50	2	1	20	12	500		PWR - GARBAGE DISPOSAL	14
15			5,640				1	20	12		1,200	RCPT - DISHWASHER	16
17	^^PWR - CU-6	2,496		10	30	2	1	20	12	540		RCPT - DINING / MECH GENERAL	18
19			2,496				1	20	12		1,200	RCPT - WASHER	20
21	RCPT - BATHROOM GFI	360		12	20	1	2	30	10	2,880		RCPT - DRYER	22
23	RCPT - BEDROOM		900	12	20	1					2,880		24
25	SPARE				20	1	1	20	12	900		RCPT - LIVING ROOM/DECK	26
27	SPARE				20	1	1	20	12		200	PWR - SMOKE DETECTORS	28
29	SPARE				20	1	1	20	12	900		RCPT - BEDROOM	30
	SUBTOTAL	11,067	11,786							11,820	12,200	SUBTOTAL	

		LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	22,887	COOLING	4,992	0	REFRIG		1.00	
AMPS	191	HEATING	11,280	1.00	SIGN/DISP		1.25	
TOTAL PHASE B - VA	23,986	LIGHTING	461	1.25	KITCHEN		1.00	
AMPS	200	RECEPTACLES	24,440	1.0/.5	EXISTING		1.00	
TOTAL PNLBD - VA	46,873	MOTORS	500	1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	195	SUPP HEAT	4,500	1.00	SHOW WNDW		1.25	34,776 VA
		MISC EQUIP	700	1.00	LTG TRACK		1.00	145 A

PANELBOARD NOTES
^^ = HACR-TYPE BREAKER
* = GFI-TYPE BREAKER

PANELBOARD: 1A (NEW)

BUS AMPS: 225A
MAIN SIZE/TYPE: 200A MCB
VOLTS/PHASE: 120/240V, 1PH, 3W
SECTION: 1

FED FROM: UTILITY
AIC RATING: 22000 FULLY RATED
SERVES: 1 BEDROOM ADA
MOUNTING: SURFACE
LOCATION: MECH 102

LINE-SIDE LUGS: MECHANICAL
EQUIPMENT GROUND BUS

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	DESCRIPTION	CKT NO.
1	LTG - ENTRY/KITCHEN/MECH	117		12	20	1	1	20	12	800		RCPT - REFRIGERATOR	2
3	LTG - LIVING RM/DECK/STORAGE		140	12	20	1	1	20	12		1,200	RCPT - MICROWAVE	4
5	LTG - BEDROOM/BATHROOM/CLOSET	88		12	20	1	2	50	6	4,800		RCPT - OVEN	6
7	RCPT - BATHROOM GFI		360	12	20	1					4,800		8
9	PWR - WH	2,250		10	30	2	1	20	12	500		PWR - STOVETOP HOOD	10
11			2,250				1	20	12		720	RCPT - KITCHEN COUNTER	12
13	^^PWR - AHU-3	4,320		8	40	2	1	20	12	500		PWR - GARBAGE DISPOSAL	14
15			4,320				1	20	12		1,200	RCPT - DISHWASHER	16
17	^^PWR - CU-3	2,292		10	30	2	1	20	12	360		RCPT - DINING / MECH GENERAL	18
19			2,292				1	20	12		1,200	RCPT - WASHER	20
21	SPARE				20	1	2	30	10	2,880		RCPT - DRYER	22
23	SPARE				20	1					2,880		24
25	SPARE				20	1	1	20	12	900		RCPT - LIVING ROOM/DECK	26
27	SPARE				20	1	1	20	12		200	PWR - SMOKE DETECTORS	28
29	SPARE				20	1	1	20	12	900		RCPT - BEDROOM	30
	SUBTOTAL	9,067	9,362							11,640	12,200	SUBTOTAL	

		LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	20,707	COOLING	4,584	0	REFRIG		1.00	
AMPS	173	HEATING	8,640	1.00	SIGN/DISP		1.25	
TOTAL PHASE B - VA	21,562	LIGHTING	345	1.25	KITCHEN		1.00	
AMPS	180	RECEPTACLES	23,000	1.0/.5	EXISTING		1.00	
TOTAL PNLBD - VA	42,269	MOTORS	500	1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	176	SUPP HEAT	4,500	1.00	SHOW WNDW		1.25	31,271 VA
		MISC EQUIP	700	1.00	LTG TRACK		1.00	130 A

PANELBOARD NOTES
^^ = HACR-TYPE BREAKER
* = GFI-TYPE BREAKER

ELECTRICAL PANEL SCHEDULES

SCALE : NO SCALE

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JUSTIN R SMOTHERS
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PROFESSIONAL ENGINEER
02-08-2022
professional seal

PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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SHEET NO.
ELECTRICAL SCHEDULES
E304

PANELBOARD: HP (NEW)

BUS AMPS: 400A
MAIN SIZE/TYPE: 400A MCB
VOLTS/PHASE: 120/240V, 1PH, 3W
SECTION: 1

FED FROM: UTILITY
A/C RATING: 22000 FULLY RATED
SERVES: CLUBHOUSE
MOUNTING: SURFACE
LOCATION: EXTERIOR CORNER BLDG

LINE-SIDE LUGS: MECHANICAL
EQUIPMENT GROUND BUS
SERVICE ENTRANCE RATED

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	DESCRIPTION	CKT NO.
1	LTG - OFFICES / MECH / RESTROOMS	565		10	20	1	1	20	12	720		RCPT - MGR 105 QUADS	2
3	LTG - FOYER / RECEPTION / CORRIDOR		452	10	20	1	1	20	12		720	RCPT - ASST. MGR 104 QUADS	4
5	PWR - RECEPTION DISPLAY CASE 1	1,200		12	20	1	1	20	12	720		RCPT - LEASING OFFICE 103 QUADS	6
7	PWR - RECEPTION DISPLAY CASE 2		1,200	12	20	1	1	20	12		720	RCPT - MGR / ASST. MGR / OFFICE GEN	8
9	LTG - KITCHEN / ACTIVITY	344		10	20	1	1	20	12	720		RCPT - RECEPTION 102 QUADS	10
11	LTG - EXTERIOR BUILDING		564	10	20	1	1	20	12		1,000	RCPT - PRINTER	12
13	RCPT - STAIR STEPPER 1	800		12	20	1	1	20	12	900		RCPT - RECEPT / FITNESS / FOYER GEN	14
15	RCPT - STAIR STEPPER 2		800	12	20	1	1	20	12		400	RCPT - DRINKING FOUNTAIN	16
17	RCPT - TREADMILL 1	1,200		12	20	1	1	20	12	360		RCPT - RESTROOM GFIS	18
19	RCPT - TREADMILL 2		1,200	12	20	1	1	20	12		800	RCPT - KITCHEN 106 REFRIGERATOR	20
21	RCPT - EXTERIOR PATIO 1	360		12	20	1	1	20	12	360		RCPT - KITCHEN 106 COUNTER	22
23	RCPT - EXTERIOR PATIO 2 / ENTRANCES		540	12	20	1	1	20	12		1,080	RCPT - ACTIVITY 107 GENERAL	24
25	PWR - TIMECLOCK	200		12	20	1	1	20	12			RCPT - ACTIVITY 107 CONFERENCE TV	26
27	PWR - WH		2,250	10	30	2	1	20	12			RCPT - ACTIVITY 107 TV	28
29		2,250					1	20	12			RCPT - KITCHEN 106 ISLAND / 107 GEN	30
31	^^PWR - AHU-1		10,200	2	90	2	2	90	2		10,200	^^PWR - AHU-2	32
33		10,200								10,200			34
35	^^PWR - CU-1		4,188	6	60	2	2	60	6		4,188	^^PWR - CU-2	36
37		4,188								4,188			38
39	SPARE				20	1	1	20				SPARE	40
41	SPARE				20	1	1	20				SPARE	42
	SUBTOTAL	21,307	21,394							18,168	19,108	SUBTOTAL	

				LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	39,475	LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	COOLING	16,752	0	REFRIG		1.00	
AMPS	329	COOLING	16,752	0	REFRIG		1.00	HEATING	40,800	1.00	SIGN/DISP	2,400	1.25	
TOTAL PHASE B - VA	40,502	HEATING	40,800	1.00	SIGN/DISP	2,400	1.25	LIGHTING	1,925	1.25	KITCHEN		1.00	
AMPS	338	LIGHTING	1,925	1.25	KITCHEN		1.00	RECEPTACLES	9,400	1.0/.5	EXISTING		1.00	
TOTAL PNLBD - VA	79,977	RECEPTACLES	9,400	1.0/.5	EXISTING		1.00	MOTORS		1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	333	MOTORS		1.00	LRG MOTOR		1.25	SUPP HEAT	4,500	1.00	SHOW WNDW		1.25	64,306 VA
		SUPP HEAT	4,500	1.00	SHOW WNDW		1.25	MISC EQUIP	4,200	1.00	LTG TRACK		1.00	268 A
		MISC EQUIP	4,200	1.00	LTG TRACK		1.00							

PANELBOARD NOTES
^^HACR-TYPE BREAKER

SIGN/DISPLAY - SIGNAGE & DISPLAY CASE

PANELBOARD: HPB (NEW)

BUS AMPS: 225A
MAIN SIZE/TYPE: 200A MCB
VOLTS/PHASE: 120/240V, 1PH, 3W
SECTION: 1

FED FROM: UTILITY
A/C RATING: 22000 FULLY RATED
SERVES: BUILDING B
MOUNTING: SURFACE
LOCATION: EXTERIOR CORNER BLDG B

LINE-SIDE LUGS: MECHANICAL
EQUIPMENT GROUND BUS
SERVICE ENTRANCE RATED

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	DESCRIPTION	CKT NO.
1	LTG - BLDG HALLWAY 1	624		10	20	1	1	20	10	900		RCPT - BLDG HALLWAY 1	2
3	LTG - BLDG HALLWAY 2		645	10	20	1	1	20	12		200	PWR - BLDG SMOKE DETECTORS 1	4
5	LTG - EXTERIOR BUILDING	376		10	20	1	1	20	10	900		RCPT - BLDG HALLWAY 2	6
7	LTG - EXTERIOR SITE POLES		243	12	20	2	1	20	12		200	PWR - BLDG SMOKE DETECTORS 2	8
9		243					2	35	8	3,000		^^PWR - EWH-2	10
11	SPARE				20	1					3,000		12
13	SPARE				20	1	2	35	8	3,000		^^PWR - EWH-2	14
15	SPARE				20	1					3,000		16
17	SPARE				20	1	2	35	8	3,000		^^PWR - EWH-2	18
19	SPARE				20	1					3,000		20
21	SPARE				20	1	2	35	8	3,000		^^PWR - EWH-2	22
23	SPARE				20	1					3,000		24
25	SPARE				20	1	1	20	10	1,500		^^PWR - EWH-1	26
27	SPARE				20	1	1	20				SPARE	28
29	SPARE				20	1	1	20				SPARE	30
	SUBTOTAL	1,243	888							15,300	12,400	SUBTOTAL	

				LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	16,543	LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	COOLING		0	REFRIG		1.00	
AMPS	138	COOLING		0	REFRIG		1.00	HEATING	25,500	1.00	SIGN/DISP		1.25	
TOTAL PHASE B - VA	13,288	HEATING	25,500	1.00	SIGN/DISP		1.25	LIGHTING	2,131	1.25	KITCHEN		1.00	
AMPS	111	LIGHTING	2,131	1.25	KITCHEN		1.00	RECEPTACLES	1,800	1.0/.5	EXISTING		1.00	
TOTAL PNLBD - VA	29,831	RECEPTACLES	1,800	1.0/.5	EXISTING		1.00	MOTORS		1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	124	MOTORS		1.00	LRG MOTOR		1.25	SUPP HEAT		1.00	SHOW WNDW		1.25	30,364 VA
		SUPP HEAT		1.00	SHOW WNDW		1.25	MISC EQUIP	400	1.00	LTG TRACK		1.00	127 A
		MISC EQUIP	400	1.00	LTG TRACK		1.00							

PANELBOARD NOTES
^^ = HACR-TYPE BREAKER

PANELBOARD: HPC (NEW)

BUS AMPS: 225A
MAIN SIZE/TYPE: 200A MCB
VOLTS/PHASE: 120/240V, 1PH, 3W
SECTION: 1

FED FROM: UTILITY
A/C RATING: 22000 FULLY RATED
SERVES: BUILDING C
MOUNTING: SURFACE
LOCATION: EXTERIOR CORNER BLDG C

LINE-SIDE LUGS: MECHANICAL
EQUIPMENT GROUND BUS
SERVICE ENTRANCE RATED

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	DESCRIPTION	CKT NO.
1	LTG - BLDG HALLWAY 1	624		10	20	1	1	20	10	900		RCPT - BLDG HALLWAY 1	2
3	LTG - BLDG HALLWAY 2		645	10	20	1	1	20	12		200	PWR - BLDG SMOKE DETECTORS 1	4
5	LTG - EXTERIOR BUILDING	376		10	20	1	1	20	10	900		RCPT - BLDG HALLWAY 2	6
7	LTG - EXTERIOR SITE POLES		270	12	20	2	1	20	12		200	PWR - BLDG SMOKE DETECTORS 2	8
9		270					2	35	8	3,000		^^PWR - EWH-2	10
11	SPARE				20	1					3,000		12
13	SPARE				20	1	2	35	8	3,000		^^PWR - EWH-2	14
15	SPARE				20	1					3,000		16
17	SPARE				20	1	2	35	8	3,000		^^PWR - EWH-2	18
19	SPARE				20	1					3,000		20
21	SPARE				20	1	2	35	8	3,000		^^PWR - EWH-2	22
23	SPARE				20	1					3,000		24
25	SPARE				20	1	1	20	10	1,500		^^PWR - EWH-1	26
27	SPARE				20	1	1	20				SPARE	28
29	SPARE				20	1	1	20				SPARE	30
	SUBTOTAL	1,270	915							15,300	12,400	SUBTOTAL	

				LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	16,570	LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	COOLING		0	REFRIG		1.00	
AMPS	138	COOLING		0	REFRIG		1.00	HEATING	25,500	1.00	SIGN/DISP		1.25	
TOTAL PHASE B - VA	13,315	HEATING	25,500	1.00	SIGN/DISP		1.25	LIGHTING	2,185	1.25	KITCHEN		1.00	
AMPS	111	LIGHTING	2,185	1.25	KITCHEN		1.00	RECEPTACLES	1,800	1.0/.5	EXISTING		1.00	
TOTAL PNLBD - VA	29,885	RECEPTACLES	1,800	1.0/.5	EXISTING		1.00	MOTORS		1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	125	MOTORS		1.00	LRG MOTOR		1.25	SUPP HEAT		1.00	SHOW WNDW		1.25	30,431 VA
		SUPP HEAT		1.00	SHOW WNDW		1.25	MISC EQUIP	400	1.00	LTG TRACK		1.00	127 A
		MISC EQUIP	400	1.00	LTG TRACK		1.00							

PANELBOARD NOTES
^^ = HACR-TYPE BREAKER

PANELBOARD: HPA (NEW)

BUS AMPS: 225A
MAIN SIZE/TYPE: 200A MCB
VOLTS/PHASE: 120/240V, 1PH, 3W
SECTION: 1

FED FROM: UTILITY
A/C RATING: 22000 FULLY RATED
SERVES: BUILDING A
MOUNTING: SURFACE
LOCATION: EXTERIOR CORNER BLDG A

LINE-SIDE LUGS: MECHANICAL
EQUIPMENT GROUND BUS
SERVICE ENTRANCE RATED

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	DESCRIPTION	CKT NO.
1	LTG - BLDG HALLWAY 1	624		10	20	1	1	20	10	900		RCPT - BLDG HALLWAY 1	2
3	LTG - BLDG HALLWAY 2		645	10	20	1	1	20	12		200	PWR - BLDG SMOKE DETECTORS 1	4
5	LTG - EXTERIOR BUILDING	470		10	20	1	1	20	10	900		RCPT - BLDG HALLWAY 2	6
7	LTG - EXTERIOR SITE POLES		216	12	20	2	1	20	12		200	PWR - BLDG SMOKE DETECTORS 2	8
9		216					2	35	8	3,000		^^PWR - EWH-2	10
11	SPARE				20	1					3,000		12
13	SPARE				20	1	2	35	8	3,000		^^PWR - EWH-2	14
15	SPARE				20	1					3,000		16
17	SPARE				20	1	2	35	8	3,000		^^PWR - EWH-2	18
19	SPARE				20	1					3,000		20
21	SPARE				20	1	2	35	8	3,000		^^PWR - EWH-2	22
23	SPARE				20	1					3,000		24
25	SPARE				20	1	1	20	10	1,500		^^PWR - EWH-1	26
27	SPARE				20	1	1	20				SPARE	28
29	SPARE				20	1	1	20				SPARE	30
	SUBTOTAL	1,310	861							15,300	12,400	SUBTOTAL	

				LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	16,610	LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	COOLING		0	REFRIG		1.00	
AMPS	138	COOLING		0	REFRIG		1.00	HEATING	25,500	1.00	SIGN/DISP		1.25	
TOTAL PHASE B - VA	13,261	HEATING	25,500	1.00	SIGN/DISP		1.25	LIGHTING	2,171	1.25	KITCHEN		1.00	
AMPS	111	LIGHTING	2,171	1.25	KITCHEN		1.00	RECEPTACLES	1,800	1.0/.5	EXISTING		1.00	
TOTAL PNLBD - VA	29,871	RECEPTACLES	1,800	1.0/.5	EXISTING		1.00	MOTORS		1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	124	MOTORS		1.00	LRG MOTOR		1.25	SUPP HEAT		1.00	SHOW WNDW		1.25	30,414 VA
		SUPP HEAT		1.00	SHOW WNDW		1.25	MISC EQUIP	400	1.00	LTG TRACK		1.00	127 A
		MISC EQUIP	400	1.00	LTG TRACK		1.00							

PANELBOARD NOTES
^^ = HACR-TYPE BREAKER

ELECTRICAL PANEL SCHEDULES

SCALE : NO SCALE

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JUSTIN R SMOTHERS
NUMBER PE-2012003568
PROFESSIONAL ENGINEER
02-08-2022
professional seal

PROJECT NO. : JSC 21-058
DATE : 02.08.2022
DRAWN BY : JSC
REVIEWED BY : JRS

REVISED:

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SHEET NO.
ELECTRICAL SCHEDULES
E305