

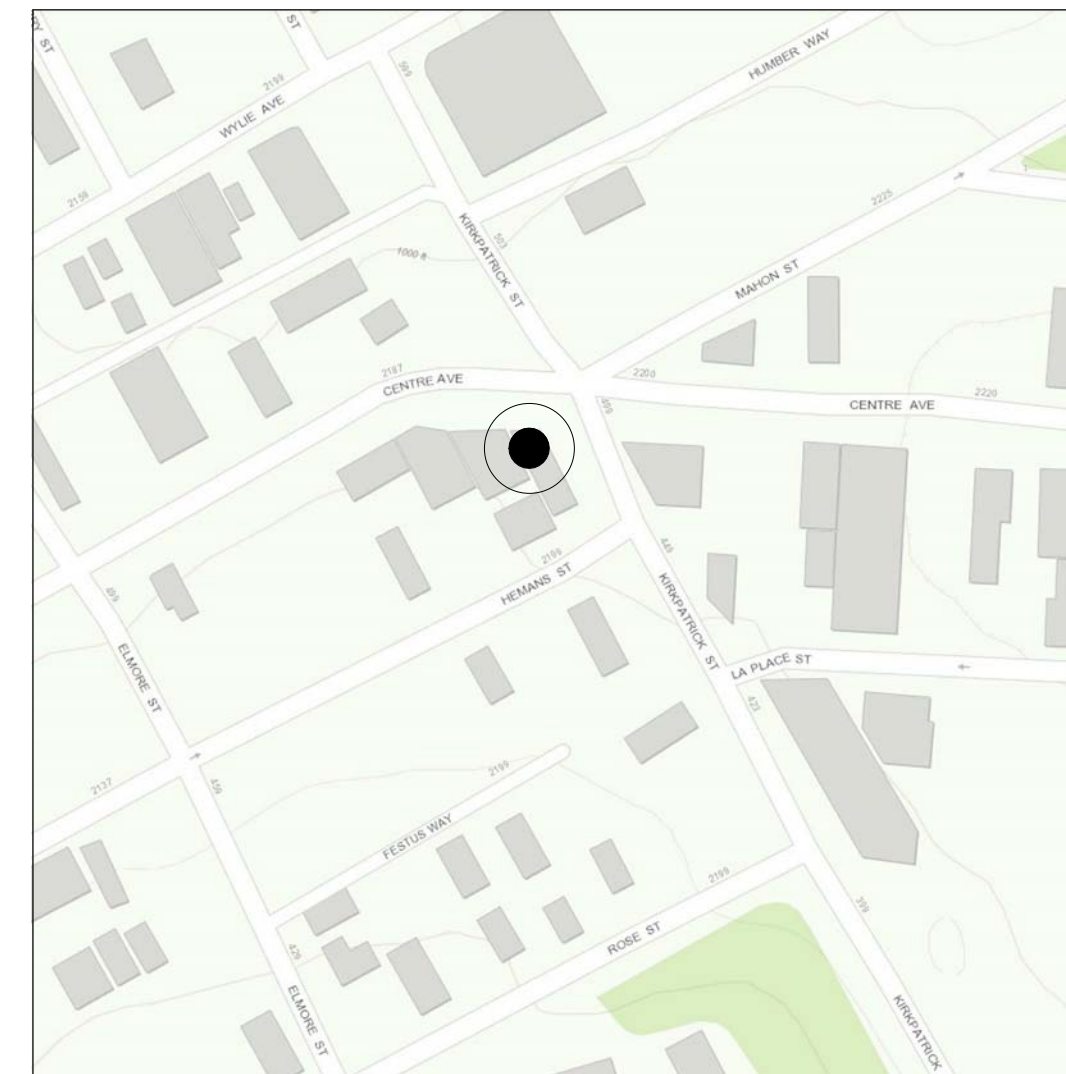
Building Renovation

Big Tom's Barbershop

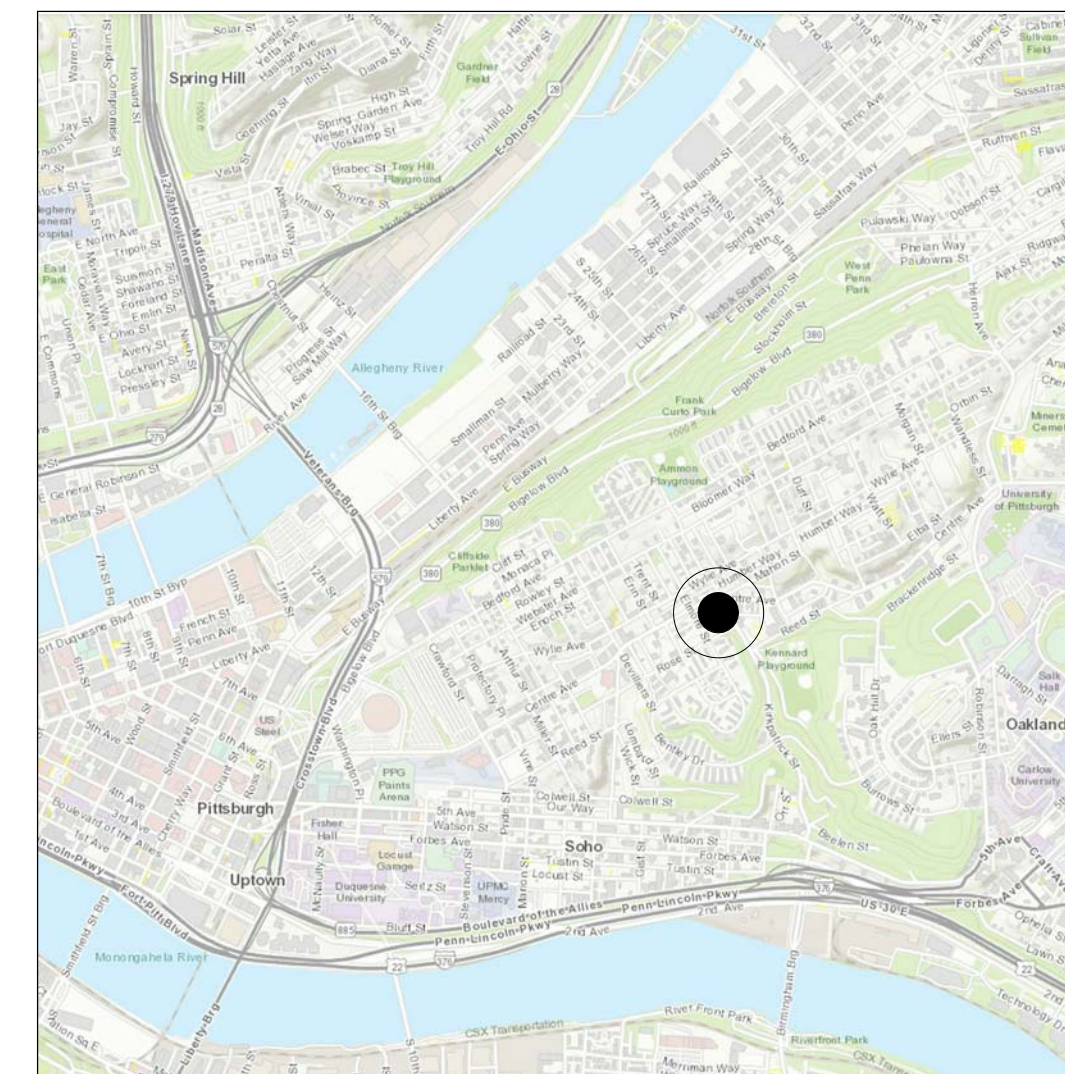
2178 Centre Avenue, Pittsburgh, PA 15219



LOCATION MAP



VICINITY MAP



DRAWING LIST

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CS	
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WINSTON DESIGN + DEVELOPMENT

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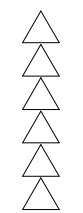
COMMUNION
ARCHITECTURE IS ADVOCACY AND ACTIVISM

Building Renovation
for
Big Tom's Barbershop
2178 Centre Avenue, Pittsburgh, PA 15219

Seal:

NOT FOR CONSTRUCTION

Revisions:



Date:
April 19, 2021

Project Number
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:
COVER SHEET

Scale: 1/2" = 1'-0"
Drawing Number:

CS

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PROJECT NOTES

Description: Interior and exterior renovation of existing 3-story commercial structure

Location: 2178 Centre Avenue
Pittsburgh, PA 15219

Occupancy: Group B (Business)
Group M (Retail)
Group R-2 (Apartments)

Code Compliance: International Building Code 2015

Construction: IIB

Fire Suppression: Non-Sprinklered (Group B & Group M)
Sprinklered (Group R-2)

Building Area: 5,400 Gross SF

Renovation Area: 4,140 SF

PROJECT TEAM

Owner
TOMTOM24 DEVELOPMENT
TomTom24 Development, LLC
P.O. Box 53043
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Contact: Thomas Boyd
bigtomshop@gmail.com

Architect
WINSTON DESIGN + DEVELOPMENT
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907 East End Avenue
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MEP Engineer
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Pittsburgh, PA 15212
Contact: Thomas Taylor, CET, CPD
412.322.9280

PROJECT DESCRIPTION

The Centre Avenue Redevelopment for Big Tom's Barbershop ("Project") is the rehabilitation of a 3-story existing building in the Hill District of the City of Pittsburgh. The intent is to preserve the exterior's urban form with newly installed double-hung windows as well as masonry repointing and repair; and upgrade the interior to provide an accessible and versatile space for commercial tenants as well as provide an open and usable space for residents. Exterior upgrades include a newly installed storefront that elevates the streetscape. Interior upgrades include commercial spaces on the ground level and residential units on the upper levels.

The commercial spaces include a full-service barbershop and adjacent retail shop. Both commercial spaces will be fully accessible from an interior courtyard and integrate accessible restrooms (see project accessibility narrative). The Barbershop is equipped with (5) barber stations, (2) wash stations, a receptionist/ waiting area, as well as a service sink and stacked washer and dryer. The interior layout and design optimize daylighting, space efficiency, as well as 6'-0" COVID-19 clearances at the barber stations. Additionally, the adjacent Retail Shop is a flex space equipped for short-term use.

The residential units include four (4) 1-Bedroom apartments with a living room, dine-in kitchen, full bath, and bedroom; all equipped for ambulatory accessibility and aging-in-place. The interior layout and design optimize daylighting and space efficiency, as well as maintain the existing stair configuration. The intent of the residential units is to provide open and flexible apartments overlooking two prominent corridors: Centre Avenue and Kirkpatrick Avenue.

Abbreviations

#	Pound OR Number	FLR	Floor(ing)	PNL	Panel
&	And	FLUOR	Fluorescent	PNT	Panel(fed)
@	At	FM	Factory Mutual	PREFAB	Prefabricated
AB	Anchor Bolt OR Air Barrier	FND	Foundation	PREFIN	Prefinished
ABV	Above	FO	Face Of	PSF	Pounds Per Square Foot
A/C	Air Conditioning	FOIC	Furnished By Owner Installed By Contractor	PSI	Pounds Per Square Inch
ACOUS	Acoustical	FR	Fire Protection OR Fire Proof	PT	Pressure Treated
ACT	Acoustic Ceiling Tile	FRP	Fiberglass Reinforced Plastic	PTD	Paper Towel Dispenser
AD	Area Drain	FT	Foot OR Feet	PTD/R	Paper Towel Dispenser & Receptacle
AFF	Above Finished Floor	FTG	Footing	PTN	Partition
AFG	Above Finished Grade	FURN	Furniture, Furnish(ing)	PTR	Paper Towel Receptacle
AGGR	Aggregate	FURR	Furring	PVC	Polyvinyl Chloride
AHU	Air Handling Unit	FWC	Fabric Wallcovering	PWR	Power
ALT	Alternate	FWP	Fabric Wall Panel	QT	Quarry Tile
ALUM	Aluminum			QTY	Quantity
ANOD	Anodized				
AP	Access Panel				
APPROX	Approximately				
ARCH	Architectural(lect)				
ASPH	Asphalt				
A/V	Audio Visual				
AVG	Average				
AWP	Acoustical Wall Panel				
BD	Board				
BIT	Bituminous				
BLDG	Building				
BK	Block(ing)				
BLW	Below				
BM	Beam				
BO	Bottom Of				
BOF	Bottom Of Footing				
BOD	Bottom Of Duct				
BR	Bedroom				
BRG	Bearing				
BSMT	Basement				
BYND	Beyond				
BT	Both Tub				
BUR	Built-Up-Roofing				
CAB	Cabinet				
CATV	Cable Television				
CCTV	Closed Circuit Television				
CF	Cubic Feet				
CHNL	Channel				
CG	Corner Guard				
CIP	Cast-In-Place				
CJ	Construction Joint				
CLJ	Central Joint				
CL	Center Line				
CLG	Ceiling				
CLKG	Caulking				
CLO	Closet				
CLR	Clear				
CMU	Concrete Masonry Unit				
CNTR	Counter				
CO	Cased Opening OR Cleanout				
COL	Column				
COMPR	Compressible				
CONC	Concrete				
CONF RM	Conference Room				
CONSTR	Construction				
CONT	Continuous				
CONTR	Contract(or)				
COORD	Coordinate				
CORR	Corridor OR Corrugated				
CPT	Carpet(ing)				
CRS	Course				
CSK	Countersunk(s)nk				
CT	Ceramic Tile				
CTB	Ceramic Tile Base				
CTE	Connect To Existing				
CTR	Center				
CU	Condensing Unit				
CUH	Cabinet Unit Heater				
CW	Cold Water OR Curtainwall				
DBL	Double				
DEG	Degree				
DEMOL	Demolish OR Demolition				
DEPT	Department				
DET	Details				
DIA	Diameter				
DIM	Dimension				
DISP	Dispenser OR Display				
DN	Down				
DR	Door				
DS	Downspout				
D/W	Dishwasher				
DWG	Drawing				
DWLS	Dowels				
DWR	Drawer				
EA	Each				
EB	Expansion Bolt				
EC	Electrical Contractor				
EF	Exhaust Fan				
EJ	Expansion Joint				
EL	Elevation				
ELEC	Electric(al)				
ELEV	Elevator				
EMER	Emergency				
ENCL	Enclosure				
ENGR	Engineer				
ENTR	Entrance				
EQ	Equal				
EQUIP	Equipment				
ESCAL	Escalator				
ET	Expansion Tank				
EUH	Electrical Unit Heater				
EWC	Electric Water Cooler(Drinking Fountain)				
EXCAV	Excavation				
EXH	Exhaust				
EXP	Expansion				
EXST	Existing				
EXT	Exterior				
FA	Fire Alarm				
FACP	Fire Alarm Control Panel				
FCP	Fabric Ceiling Panel				
FD	Floor Drain OR Fire Department				
FDC	Fire Department Connection				
FE	Fire Extinguisher				
FEC	Fire Extinguisher Cabinet				
FF	Finished Floor				
FHC	Fire Hose Cabinet				
FIN	Finish				
FIXT	Fixture				
FL	Flashing				
GALV	Galvanized				
GB	Grab Bar OR Grade Beam				
GC	General Contractor				
GEN	Generator or General				
GFCI	Ground Fault Circuit Interrupter				
GFIG	Ground Fault Circuit Interrupter				
GFRC	Glass Fiber Reinforced Concrete				
GL	Glazing OR Glass				
GND	Ground				
GP	Gypsum Plaster				
GR	Grading				
GRL	Guardrail(ing)				
GWB	Gypsum Wall Board				
GYP BD	Gypsum Board				
HB	Hose Bib (Connection)				
HC	Hollow Core				
H/C	Handicapped				
HD	Head				
HDRL	Handrail(ing)				
HDW	Hardware				
HDWD	Hardwood				
HGT	Height				
HM	Hollow Metal				
HOR	Horizontal				
HR	Hour				
HTR	Heater				
HVAC	Heating, Ventilation, Air Cond.				
HW	Hot Water				
HYD	Hydrant				
IBC	International Building Code				
ID	Inside Diameter				
ILO	In Lieu Of				
IN	Inch(es)				
INSUL	Insulated OR Insulation				
INT	Interior				
INV	Invert				
JAN	Janitor				
JC	Janitor's Closet				
JT	Joint				
JST	Joist				
KIT	Kitchen				
KO	Knock Out				
KPL	Kick Plate				
LAB	Laboratory				
LAM	Laminate(ion)				
LAV	Lavatory				
LBL	Label				
LD	Linear Diffuser				
LF	Linear Feet				
LIN	Linoleum				
LKR	Locker				
LR	Living Room				
LTG	Lighting				
LVR	Louver				
MAINT	Maintenance				
M/S	Masonry				
MATL	Material				
MAX	Maximum				
MBR	Master Bedroom				
MDF	Medium Density Fiberboard				
MECH	Mechanical				
MEMB	Membrane				
MEZZ	Mezzanine				
MFR	Manufacturer				
MGR	Manager				
MH	Manhole				
MIN	Minimum				
MISC	Miscellaneous				
MO	Masonry Opening				
MP	Metal Panel				
MR	Moisture-Resistant				
MSB	Mop Service Basin				
MTD	Mounted				
MTL	Metal				
MTLRF	Metal Roof(ing)				
MUA	Make-Up Air				
MULL	Mullion				
NC	Noise Criteria				
NIC	Not In Contract				
NFPA	National Fire Protection Association				
NO	Number				
NOM	Nominal				
NONCOM	Non-Combustible				
NTS	Not To Scale				
OA	Outside Air				
OC	On Center				
OFF	Office				
OH	Opposite Hand OR Over Head				
OD	Outside Diameter				
OPNG	Opening				
ORD	Overflow Roof Drain				
OVHD	Over Head				
PB	Push Button OR Pull Box				
PBD	Particle Board				
PC	Precast Concrete				
PCP	Precast Concrete Pavers				
PEMB	Pre-engineered Metal Building				
PERF	Perforated				
PL	Plate				
PLAM	Plastic Laminate				
PLBG	Plumbing				
PLYWD	Plywood				
RA	Radius OR Riser				
RA	Return Air				
RB	Rubber Base				
RBR	Rubber				
RCP	Reflected Ceiling Plan				
RD	Roof Drain				
REF	Reference				
REFG	Refrigerator				
REINF	Reinforced				
RET	Return				
RETG	Retaining				
REQD	Required				
REV	Revised, Revision				
RFG	Roofing				
RM	Room				
RO	Rough Opening				
RTU	Roof-Top Unit				
SA	Supply Air				
SB	Splash Block				
SCD	Seat Cover Dispenser				
SCR	Screen				
SD	Smoke Detector				
SECT	Section				
SF	Square Foot				
SHWR	Shower				
SHT	Sheet				
SHTHG	Sheathing				
SIM	Similar				
SINK	Sink				
SLNT	Susant				
SND	Sanitary Napkin Dispenser				
SNR	Sanitary Napkin Receptacle				
SOG	Slab on Grade				
SPEC	Specified OR Specification				
SPK	Sprinkler				
SPKR	Speaker				
SQ	Square				
SQFT	Square Feet				
SS	Solid Surface				
SSK	Service Sink				
STC	Sound Transmission Coefficient				
STD	Standard				
STL	Steel				
STSL	Stainless Steel				
STOR	Storage				
STRUCT	Structure OR Structural				
SUSP	Suspended				
T	Tread				
T&B	Top and Bottom				
T&G	Tongue And Groove				
TBD	To Be Determined				
T/D	Telephone/Data				
TEL	Telephone				
TEMP	Temporary OR Temperature				
TGL	Tempered Glazing				
THK	Thickness				
THRD	Threaded				
THRES	Threshold				
TLT	Toilet				
TO	Top Of				
TOC	Top Of Concrete				
TOF	Top Of Footing				
TOP	Top Of Parapet				
TOPO	Topography				
TOS	Top Of Steel				
TOW	Top of Wall				
TPD	Toilet Paper Dispenser				
TPTN	Toilet Partition				
TRTD	Treated				
TS	Tube Steel				
TSTAT	Thermostat				
TYP	Typical				
UG	Under Ground				
UH	Unit Heater				
UL	Underwriter's Laboratory				
UNO	Unless Noted Otherwise				
UR	Urinal				
U/S	Underside				

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2178 Centre Avenue, Pittsburgh, PA 15219

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Revisions:

- ▲
- ▲
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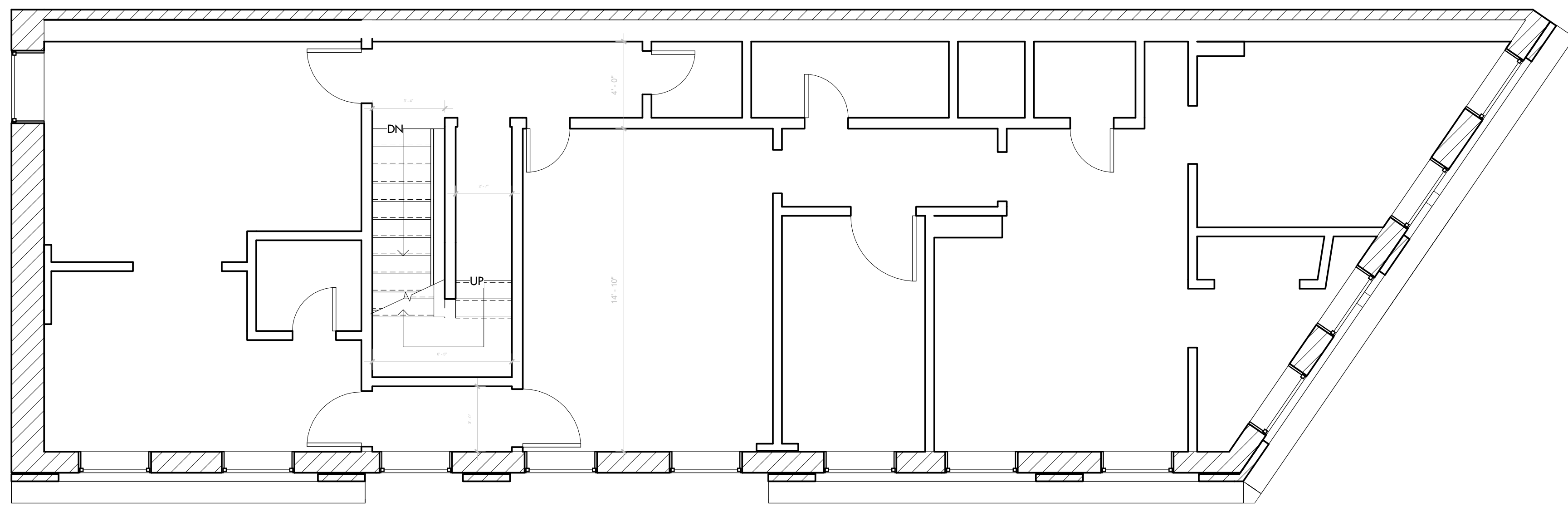
Project Number
2020-06

Owner / Client:
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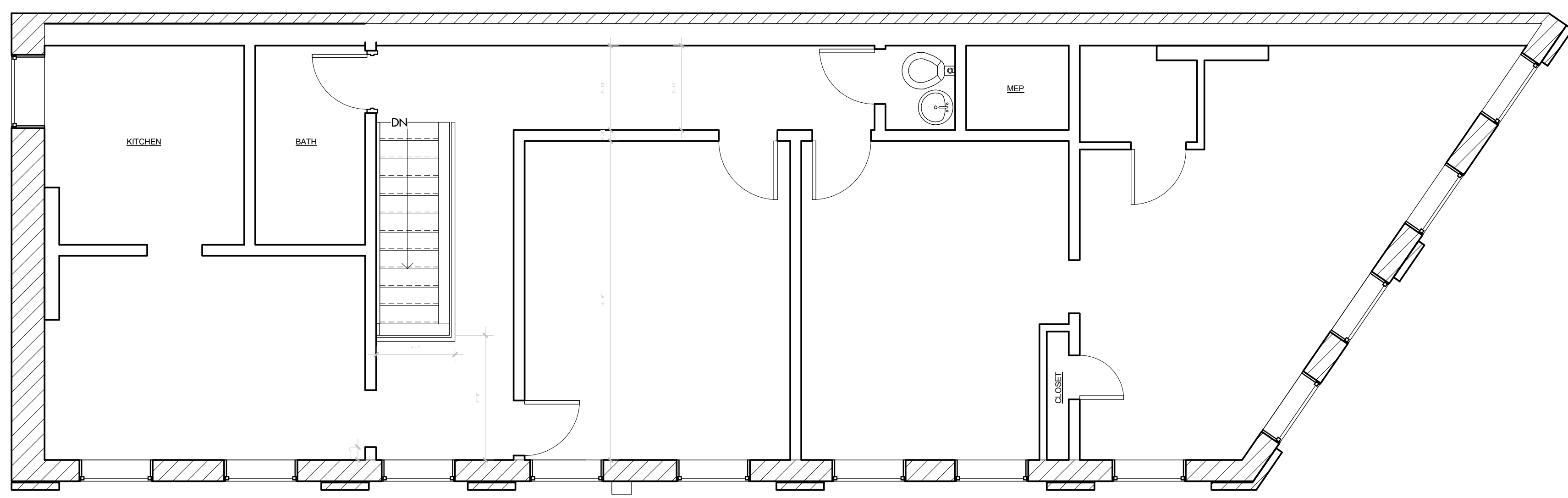
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**EXISTING PLAN -
LEVEL 02 & 03**

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Drawing Number:

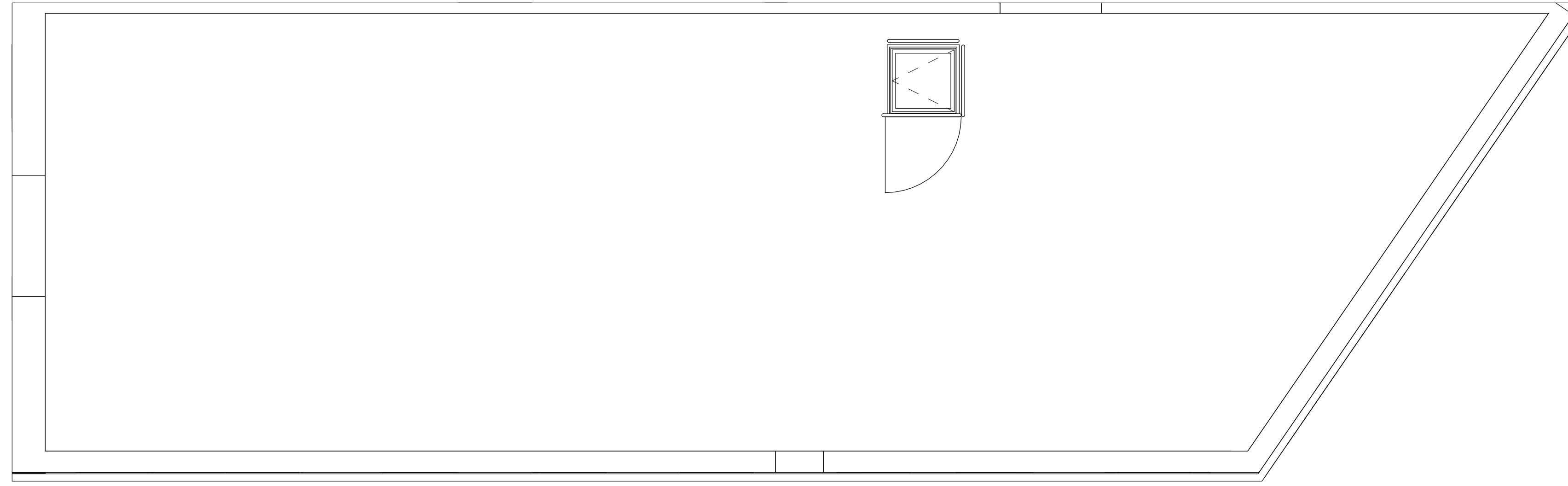
AE-102



① -02 - Second Floor - Existing
1/4" = 1'-0"



② -03 - Third Floor - Existing
1/4" = 1'-0"



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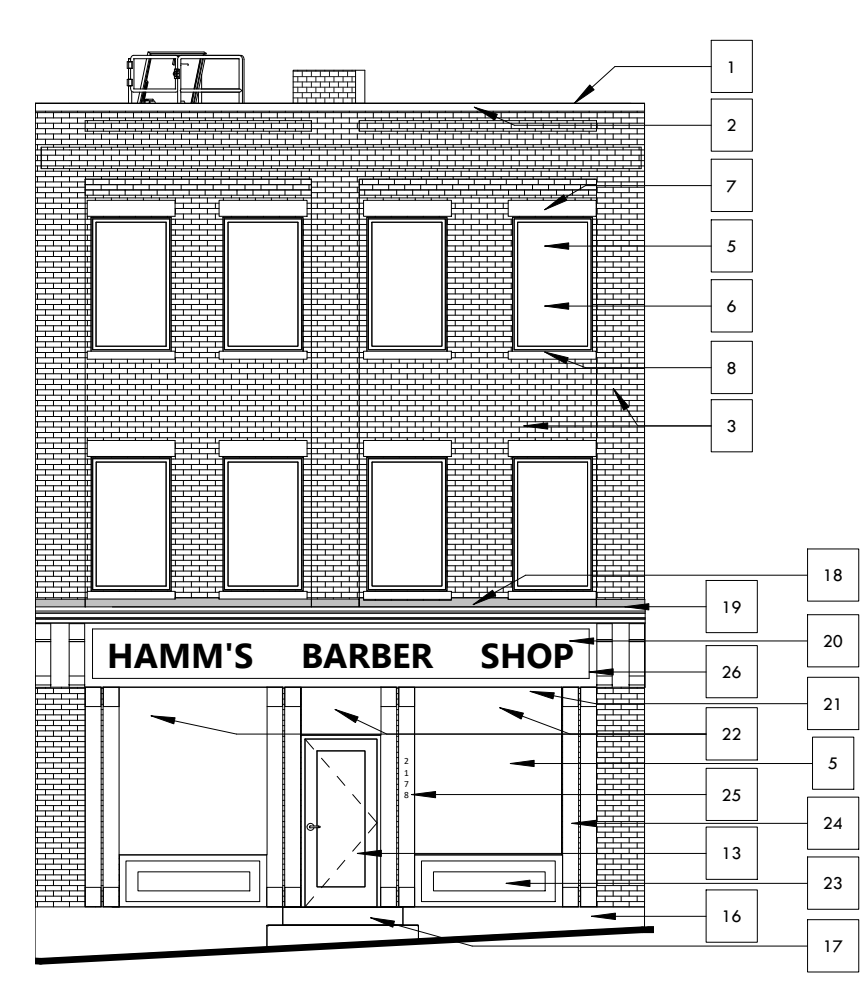
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**EXISTING PLAN -
ROOF**

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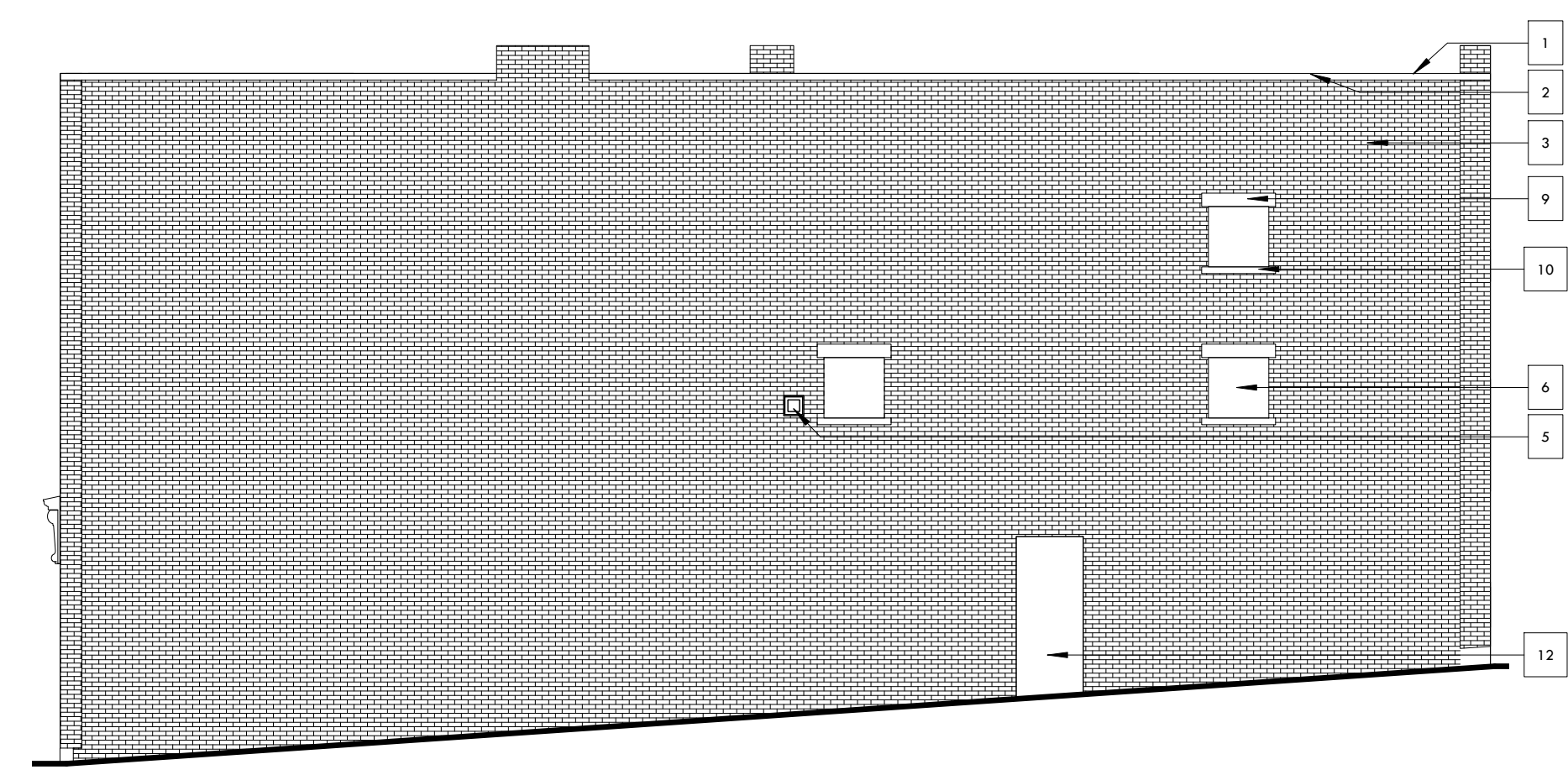
AE-103



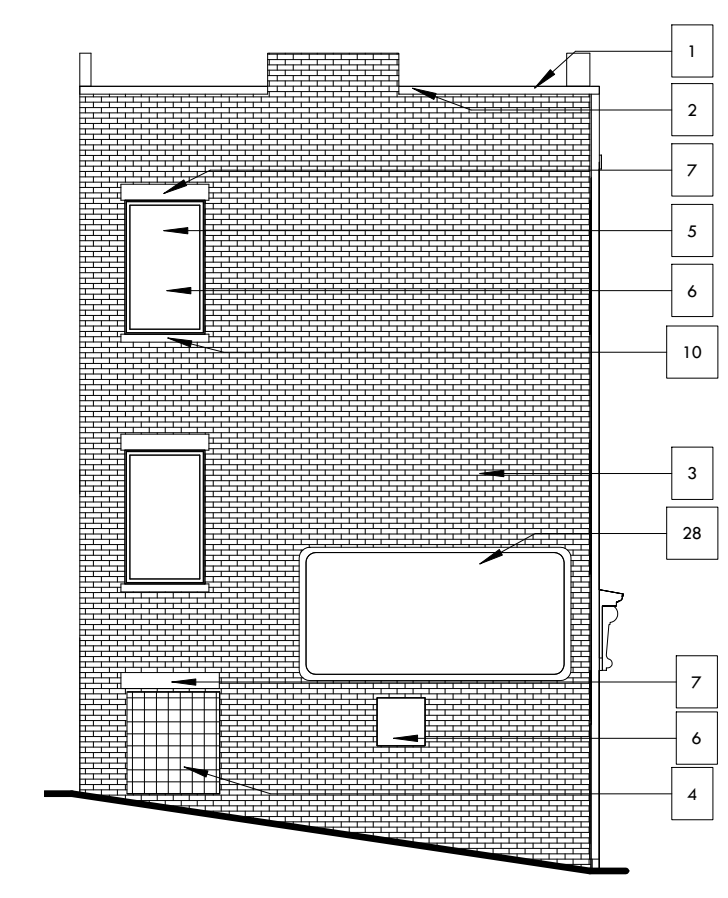
3 EXISTING EAST ELEVATION - KIRKPATRICK STREET
1/8" = 1'-0"



1 EXISTING NORTH ELEVATION - CENTRE AVENUE
1/8" = 1'-0"



5 WEST ELEVATION - EXTERIOR LOT
1/8" = 1'-0"



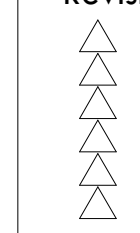
4 EXISTING SOUTH ELEVATION - HEMANS STREET
1/8" = 1'-0"

Exterior Elevation Notes - Existing	
No.	Text Note
1	EXIST. ROOF MEMBRANE TO REMAIN
2	EXIST. ALUMINUM COPING TO REMAIN
3	EXIST. BRICK TO REMAIN, TYP.
4	EXIST. GLASS BLOCK WINDOW TO BE REMOVED, TYP.
5	EXIST. WINDOW TO BE REMOVED, TYP.
6	EXIST. PLYWOOD INFILL PANEL TO BE REMOVED, TYP.
7	EXIST. WD. LINTEL TO REMAIN, TYP.
8	EXIST. WD. SILL TO REMAIN, TYP.
9	EXIST. WD. LINTEL TO BE REMOVED, TYP.
10	EXIST. WD. SILL TO BE REMOVED, TYP.
11	EXIST. ALUM. DOWNSPOUT
12	EXIST. MASONRY OPENING
13	EXIST. WD. DOOR TO BE REMOVED
14	EXIST. H.M. DOOR TO BE REMOVED
15	EXIST. SECURITY GRILLE TO BE REMOVED
16	EXIST. STONE BASE TO REMAIN
17	EXIST. STONE STEPS TO REMAIN
18	EXIST. PAINT, TYP.
19	EXIST. TRIM TO REMAIN, TYP.
20	EXIST. SIGN TO BE SALVAGE
21	EXIST. CORNICE LIGHTING TO BE REMOVED, TYP.
22	EXIST. TRANSOM TO BE REMOVED, TYP.
23	EXIST. WINDOW BASE TO REMAIN, TYP.
24	EXIST. PIERS TO REMAIN
25	EXIST. STREET NUMBER TO BE SALVAGE
26	EXIST. CORNICE TO REMAIN, TYP.
27	EXIST. CONDUIT TO BE REMOVED, AS NEEDED.
28	EXIST. BILLBOARD TO REMAIN
29	EXIST. MECHANICAL EQUIPMENT AND BRACKET TO BE REMOVED

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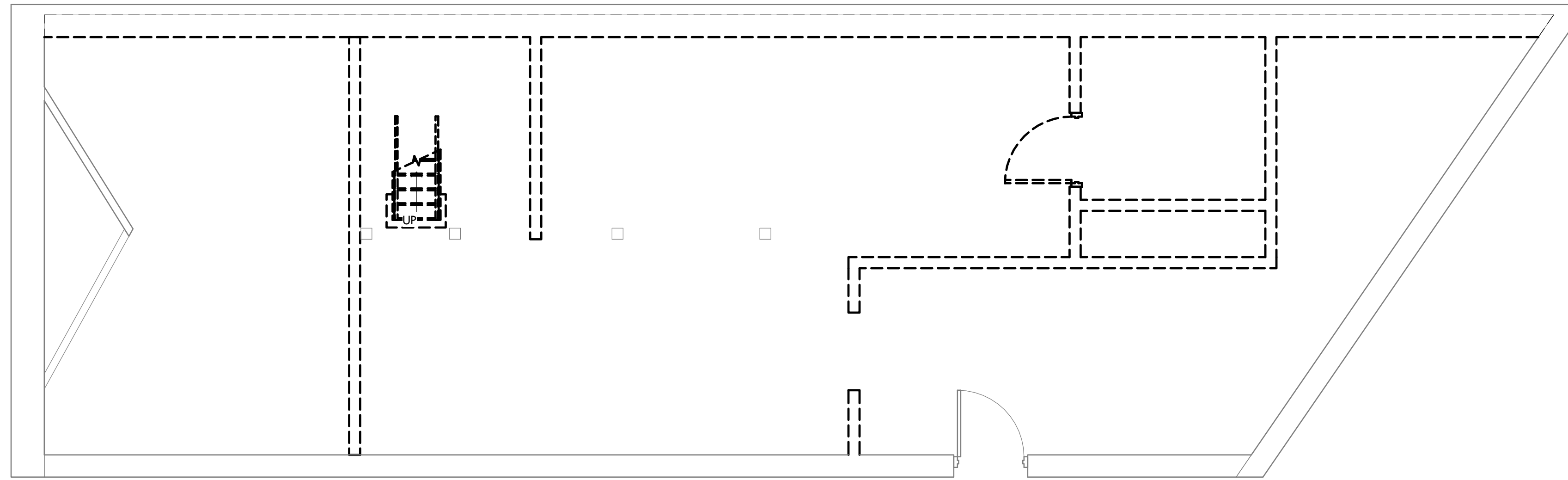
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EXISTING BUILDING ELEVATIONS

Scale: **As indicated**
Drawing Number:

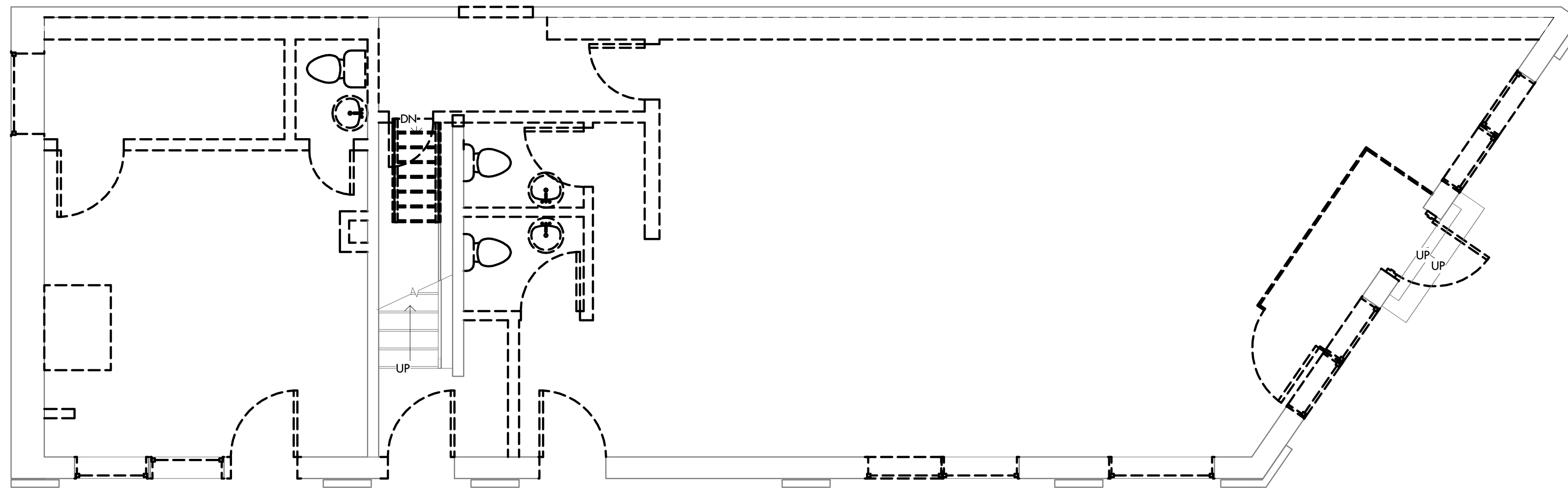
AE-201

GENERAL DEMOLITION NOTES

1. THE SCOPE OF THE DEMOLITION WORK HAS GENERALLY BEEN INDICATED ON DRAWINGS FOR THE CONTRACTOR'S INFORMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE FULL SCOPE, EXTENT, NATURE, AND MANNER OF DEMOLITION REQUIRED.
2. ONLY WORKMEN SKILLED AND KNOWLEDGEABLE IN THEIR RESPECTIVE TRADE SHALL BE EMPLOYED IN THE DEMOLITION WORK.
3. REMOVE ALL EXISTING CONSTRUCTIONS AND FINISHES NECESSARY FOR THE COMPLETION OF THE WORK AS DEPICTED ON THE DRAWINGS. INCLUDING BUT NOT LIMITED TO, ITEMS SHOWN ON THE PLANS WITH DASHED LINES. NECESSARY DISCONNECTS AND ALTERATIONS TO EXISTING MECHANICAL AND ELECTRICAL SYSTEMS SHALL BE INCLUDED. PATCH AS REQUIRED ALL CONSTRUCTIONS TO REMAIN IN ACCORDANCE WITH THE CONTRACT DRAWINGS. WHERE CONTRACTOR IS DESIGNATED TO MAKE REMOVALS, DISPOSITION OF MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR. VERIFY WITH OWNER, THE DISPOSITION AND REMOVAL OF ANY COMPONENTS OF SALVAGEABLE VALUE.
4. AREAS, SURFACES, AND FINISHES NOT AFFECTED BY THE WORK OF THIS CONTRACT SHALL BE PROTECTED PRIOR TO COMMENCEMENT AND UNTIL THE COMPLETION OF WORK.
5. DO NOT ALTER THE STRUCTURAL INTEGRITY OF THE EXISTING BUILDING OR ITS ASSEMBLIES UNLESS SPECIFICALLY NOTED OTHERWISE. PROTECT COLUMNS AND OTHER BUILDING STRUCTURAL ELEMENTS DURING DEMOLITION AND CONSTRUCTION OPERATIONS.
6. REMOVE ONLY NON-LOAD BEARING CONSTRUCTION AND PARTITIONS. CONTRACTOR TO VERIFY, PRIOR TO REMOVAL, THAT NO STRUCTURAL COMPONENTS, I.E. BEARING WALLS, BEAMS, HEADERS, ETC. SUPPORTING FLOOR, ROOF OR CEILING JOISTS ARE DESIGNATED FOR REMOVAL. CONTACT THE ARCHITECT PRIOR TO REMOVAL OF ANY CONSTRUCTION IN QUESTION OR DEVIATING FROM THE DESIGN INTENT. CONTRACTOR'S NON-CONTACT OF ARCHITECT PRIOR TO REMOVAL OF ANY WORK INDICATES HIS COMPLETE UNDERSTANDING THAT NO LOAD BEARING OR STRUCTURAL WORK IS BEING ALTERED UNDER THIS CONTRACT.
7. UNLESS OTHERWISE NOTED, ALL INTERIOR PARTITIONS INDICATED FOR REMOVAL ARE UNDERSTOOD TO BE NON-LOAD BEARING. IF IT BECOMES APPARENT IN THE FIELD THAT A WALL IS LOAD BEARING, IT SHALL NOT BE REMOVED WITHOUT PRIOR APPROVAL BY THE ARCHITECT.
8. CONTRACTOR SHALL TAKE SPECIAL CARE TO DEMOLISH ONLY THAT WORK WHICH IS REQUIRED TO BE DEMOLISHED AND NOT TO DISTURB ANY WORK WHICH IS TO REMAIN. IF, IN THE COURSE OF DEMOLITION, THE CONTRACTOR DESTROYS OR DISTURBS ANY WORK WHICH IS TO REMAIN, HE SHALL, AT HIS OWN EXPENSE, REPAIR OR REPLACE SUCH WORK AS NECESSARY.
9. ITEMS ON THESE PLANS SHOWN DASHED ARE INTENDED TO BE DEMOLISHED.
10. WHERE DEMOLITION OCCURS, PATCH AND RESTORE SURFACES AND FINISHES TO MATCH EXISTING FINISHES TO MATCH EXISTING ADJACENT CONSTRUCTION.
11. EXISTING MATERIALS TO REMAIN SHALL BE PROTECTED FROM DAMAGE AT ALL TIMES. EXISTING BUILDING MATERIALS AND/OR FINISHES THAT ARE DAMAGED SHALL BE REPAIRED AND/OR REPLACED TO SATISFACTION OF THE OWNER AND ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.
12. CUTS AND PENETRATIONS IN EXISTING WORK REQUIRED TO ACCOMPLISH NEW WORK SHALL BE KEPT TO AN ABSOLUTE MINIMUM AND SHALL BE DONE NEATLY AND WITHOUT DISTURBING ADJACENT WORK TO REMAIN. RECEIVE OWNER'S APPROVAL PRIOR TO ANY CUTTING THAT MAY AFFECT STRUCTURAL INTEGRITY.
13. CONTRACTOR SHALL REMOVE ALL ABANDONED DUCT WORK, PIPING, EQUIPMENT, SUPPORT HANGER, ETC. ABOVE CEILINGS TO STRUCTURE ABOVE.
14. CONTRACTOR SHALL REMOVE ALL ABANDONED EQUIPMENT CURBS, STANCHIONS, VENT PIPES, ETC. WHERE NO LONGER IN USE.
15. CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL EXISTING CEILING, WALL, FLOOR, AND WALL BASE SYSTEMS SHOWN WITHIN THE LIMIT OF WORK.
16. WHERE FLOOR FINISHES REQUIRE DEMOLITION, CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL EXISTING FLOOR FINISHES ENTIRELY INCLUDING REMOVAL OF ALL ADHESIVES, THINSET, MASTIC, ETC. CONTRACTOR IS TO GRIND FLOOR AS REQUIRED TO REVOLVE ALL SUBSTRATES.
17. WHERE APPLICABLE LEVEL ALL EXISTING FLOORS AS REQUIRED TO RECEIVE NEW FLOOR FINISHES. INSTALL REQUIRED TRANSITION PIECES BETWEEN VARIOUS FLOOR FINISHES SUITABLE FOR CONDITIONS AND ACCEPTABLE TO THE OWNER. MATCH EXISTING WHEREVER POSSIBLE.
18. REFER TO STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR SPECIFIC DEMOLITION NOTES REGARDING THESE DISCIPLINES. ALL STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING ITEMS REMOVED SHALL BE PROPERLY TERMINATED PER CODE AND PROPERLY IDENTIFIED. ABANDONING ITEMS OR UNUSED UTILITIES IN PLACE IS STRICTLY PROHIBITED. CONTRACTOR SHALL PROVIDE ANY TEMPORARY CONNECTIONS REQUIRED TO MAINTAIN THE FACILITY WITH ESSENTIAL SERVICES SCHEDULED TO REMAIN PERFORMED BY WORKERS SKILLED IN THE APPLICABLE TRADES.



① 00 - Basement - Demolition
1/4" = 1'-0"

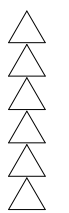


② 01 - First Floor - Demolition
1/4" = 1'-0"

Seal:

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CONSTRUCTION**

Revisions:



Date:
April 19, 2021

Project Number
2020-06

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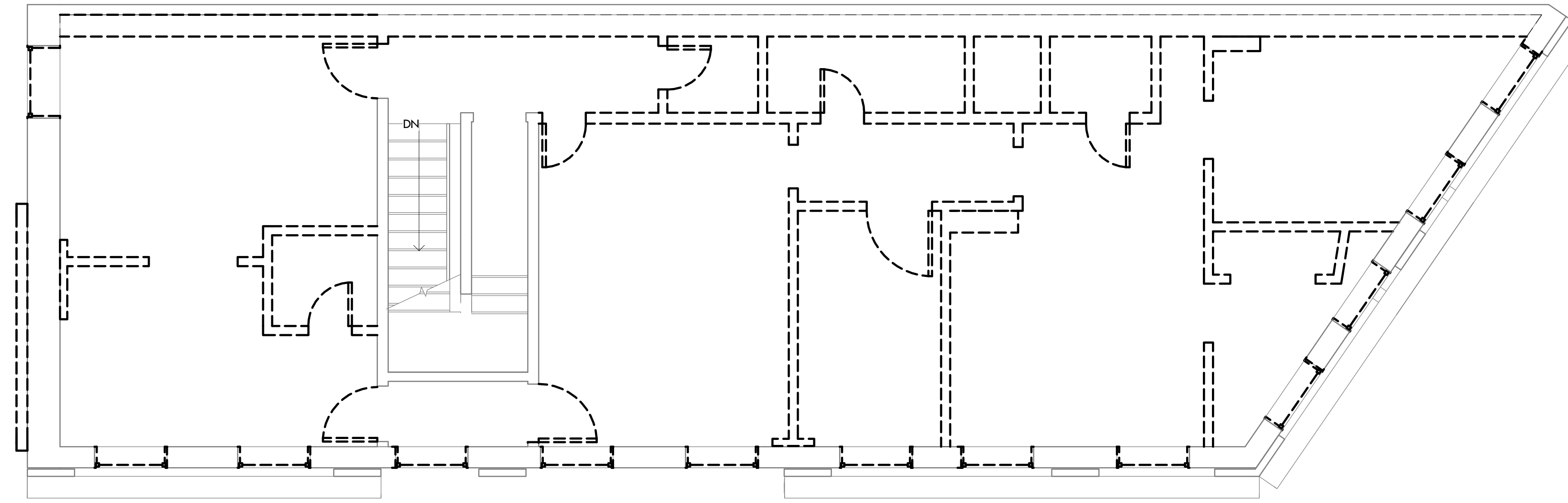
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**DEMOLITION PLAN
- LEVEL 00 & 01**

Scale: 1/4" = 1'-0"
Drawing Number:

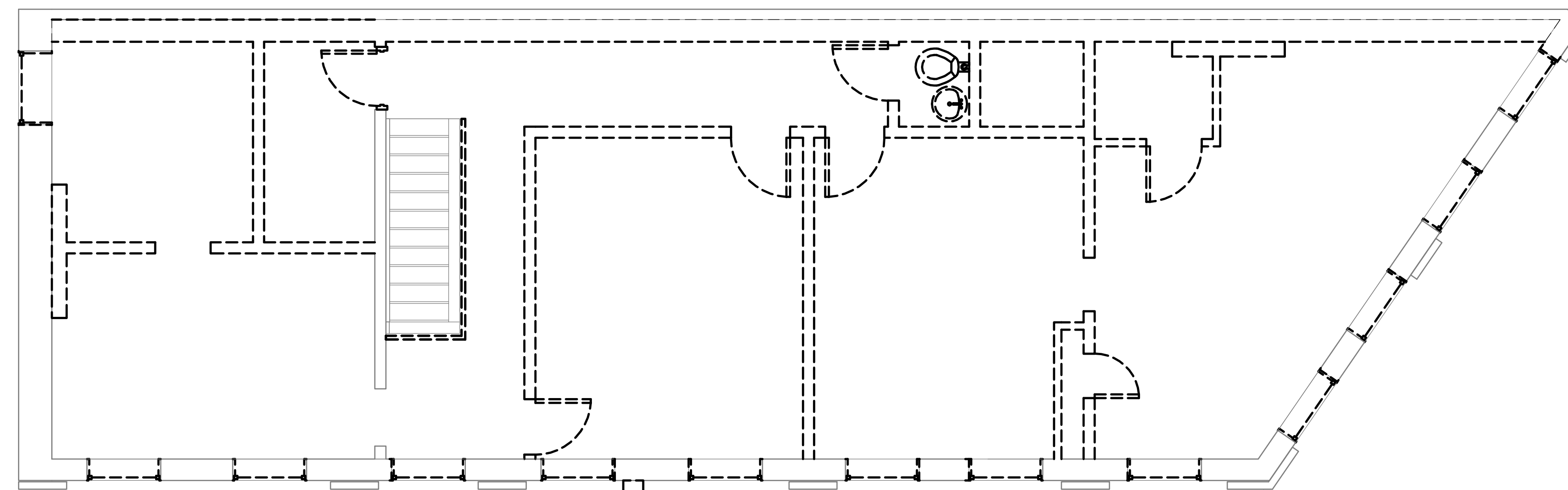
AD-101

GENERAL DEMOLITION NOTES

1. THE SCOPE OF THE DEMOLITION WORK HAS GENERALLY BEEN INDICATED ON DRAWINGS FOR THE CONTRACTOR'S INFORMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE FULL SCOPE, EXTENT, NATURE, AND MANNER OF DEMOLITION REQUIRED.
2. ONLY WORKMEN SKILLED AND KNOWLEDGEABLE IN THEIR RESPECTIVE TRADE SHALL BE EMPLOYED IN THE DEMOLITION WORK.
3. REMOVE ALL EXISTING CONSTRUCTIONS AND FINISHES NECESSARY FOR THE COMPLETION OF THE WORK AS DEPICTED ON THE DRAWINGS. INCLUDING BUT NOT LIMITED TO, ITEMS SHOWN ON THE PLANS WITH DASHED LINES. NECESSARY DISCONNECTS AND ALTERATIONS TO EXISTING MECHANICAL AND ELECTRICAL SYSTEMS SHALL BE INCLUDED. PATCH AS REQUIRED ALL CONSTRUCTIONS TO REMAIN IN ACCORDANCE WITH THE CONTRACT DRAWINGS. WHERE CONTRACTOR IS DESIGNATED TO MAKE REMOVALS, DISPOSITION OF MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR. VERIFY WITH OWNER, THE DISPOSITION AND REMOVAL OF ANY COMPONENTS OF SALVAGEABLE VALUE.
4. AREAS, SURFACES, AND FINISHES NOT AFFECTED BY THE WORK OF THIS CONTRACT SHALL BE PROTECTED PRIOR TO COMMENCEMENT AND UNTIL THE COMPLETION OF WORK.
5. DO NOT ALTER THE STRUCTURAL INTEGRITY OF THE EXISTING BUILDING OR ITS ASSEMBLIES UNLESS SPECIFICALLY NOTED OTHERWISE. PROTECT COLUMNS AND OTHER BUILDING STRUCTURAL ELEMENTS DURING DEMOLITION AND CONSTRUCTION OPERATIONS.
6. REMOVE ONLY NON-LOAD BEARING CONSTRUCTION AND PARTITIONS. CONTRACTOR TO VERIFY, PRIOR TO REMOVAL, THAT NO STRUCTURAL COMPONENTS, I.E. BEARING WALLS, BEAMS, HEADERS, ETC., SUPPORTING FLOOR, ROOF OR CEILING JOISTS ARE DESIGNATED FOR REMOVAL. CONTACT THE ARCHITECT PRIOR TO REMOVAL OF ANY CONSTRUCTION IN QUESTION OR DEVIATING FROM THE DESIGN INTENT. CONTRACTOR'S NON-CONTACT OF ARCHITECT PRIOR TO REMOVAL OF ANY WORK INDICATES HIS COMPLETE UNDERSTANDING THAT NO LOAD BEARING OR STRUCTURAL WORK IS BEING ALTERED UNDER THIS CONTRACT.
7. UNLESS OTHERWISE NOTED, ALL INTERIOR PARTITIONS INDICATED FOR REMOVAL ARE UNDERSTOOD TO BE NON-LOAD BEARING. IF IT BECOMES APPARENT IN THE FIELD THAT A WALL IS LOAD BEARING, IT SHALL NOT BE REMOVED WITHOUT PRIOR APPROVAL BY THE ARCHITECT.
8. CONTRACTOR SHALL TAKE SPECIAL CARE TO DEMOLISH ONLY THAT WORK WHICH IS REQUIRED TO BE DEMOLISHED AND NOT TO DISTURB ANY WORK WHICH IS TO REMAIN. IF, IN THE COURSE OF DEMOLITION, THE CONTRACTOR DESTROYS OR DISTURBS ANY WORK WHICH IS TO REMAIN, HE SHALL, AT HIS OWN EXPENSE, REPAIR OR REPLACE SUCH WORK AS NECESSARY.
9. ITEMS ON THESE PLANS SHOWN DASHED ARE INTENDED TO BE DEMOLISHED.
10. WHERE DEMOLITION OCCURS, PATCH AND RESTORE SURFACES AND FINISHES TO MATCH EXISTING FINISHES TO MATCH EXISTING ADJACENT CONSTRUCTION.
11. EXISTING MATERIALS TO REMAIN SHALL BE PROTECTED FROM DAMAGE AT ALL TIMES. EXISTING BUILDING MATERIALS AND/OR FINISHES THAT ARE DAMAGED SHALL BE REPAIRED AND/OR REPLACED TO SATISFACTION OF THE OWNER AND ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.
12. CUTS AND PENETRATIONS IN EXISTING WORK REQUIRED TO ACCOMPLISH NEW WORK SHALL BE KEPT TO AN ABSOLUTE MINIMUM AND SHALL BE DONE NEATLY AND WITHOUT DISTURBING ADJACENT WORK TO REMAIN. RECEIVE OWNER'S APPROVAL PRIOR TO ANY CUTTING THAT MAY AFFECT STRUCTURAL INTEGRITY.
13. CONTRACTOR SHALL REMOVE ALL ABANDONED DUCT WORK, PIPING, EQUIPMENT, SUPPORT HANGER, ETC. ABOVE CEILINGS TO STRUCTURE ABOVE.
14. CONTRACTOR SHALL REMOVE ALL ABANDONED EQUIPMENT CURBS, STANCHIONS, VENT PIPES, ETC. WHERE NO LONGER IN USE.
15. CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL EXISTING CEILING, WALL, FLOOR, AND WALL BASE SYSTEMS SHOWN WITHIN THE LIMIT OF WORK.
16. WHERE FLOOR FINISHES REQUIRE DEMOLITION, CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL EXISTING FLOOR FINISHES ENTIRELY INCLUDING REMOVAL OF ALL ADHESIVES, THINSET, MASTIC, ETC. CONTRACTOR IS TO GRIND FLOOR AS REQUIRED TO REVOLVE ALL SUBSTRATES.
17. WHERE APPLICABLE LEVEL ALL EXISTING FLOORS AS REQUIRED TO RECEIVE NEW FLOOR FINISHES. INSTALL REQUIRED TRANSITION PIECES BETWEEN VARIOUS FLOOR FINISHES SUITABLE FOR CONDITIONS AND ACCEPTABLE TO THE OWNER. MATCH EXISTING WHEREVER POSSIBLE.
18. REFER TO STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR SPECIFIC DEMOLITION NOTES REGARDING THESE DISCIPLINES. ALL STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING ITEMS REMOVED SHALL BE PROPERLY TERMINATED PER CODE AND PROPERLY IDENTIFIED. ABANDONING ITEMS OR UNUSED UTILITIES IN PLACE IS STRICTLY PROHIBITED. CONTRACTOR SHALL PROVIDE ANY TEMPORARY CONNECTIONS REQUIRED TO MAINTAIN THE FACILITY WITH ESSENTIAL SERVICES SCHEDULED TO REMAIN PERFORMED BY WORKERS SKILLED IN THE APPLICABLE TRADES.



① 02 - Second Floor - Demolition
1/4" = 1'-0"



② 03 - Third Floor - Demolition
1/4" = 1'-0"



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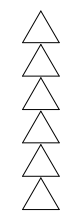
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Building Renovation for
Big Tom's Barbershop
 2178 Centre Avenue, Pittsburgh, PA 15219

Seal:

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Revisions:



Date:
April 19, 2021

Project Number
2020-06

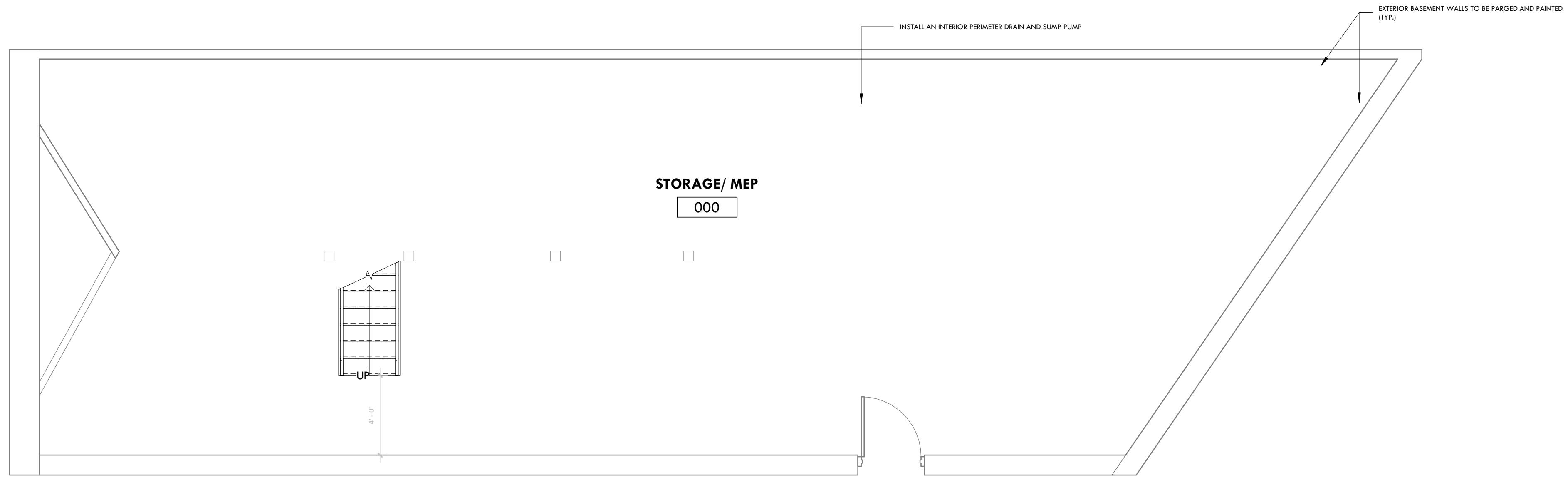
Owner / Client:
TomTom24 Development, LLC

Drawing Title:
**DEMOLITION PLAN
- LEVEL 02 & 03**

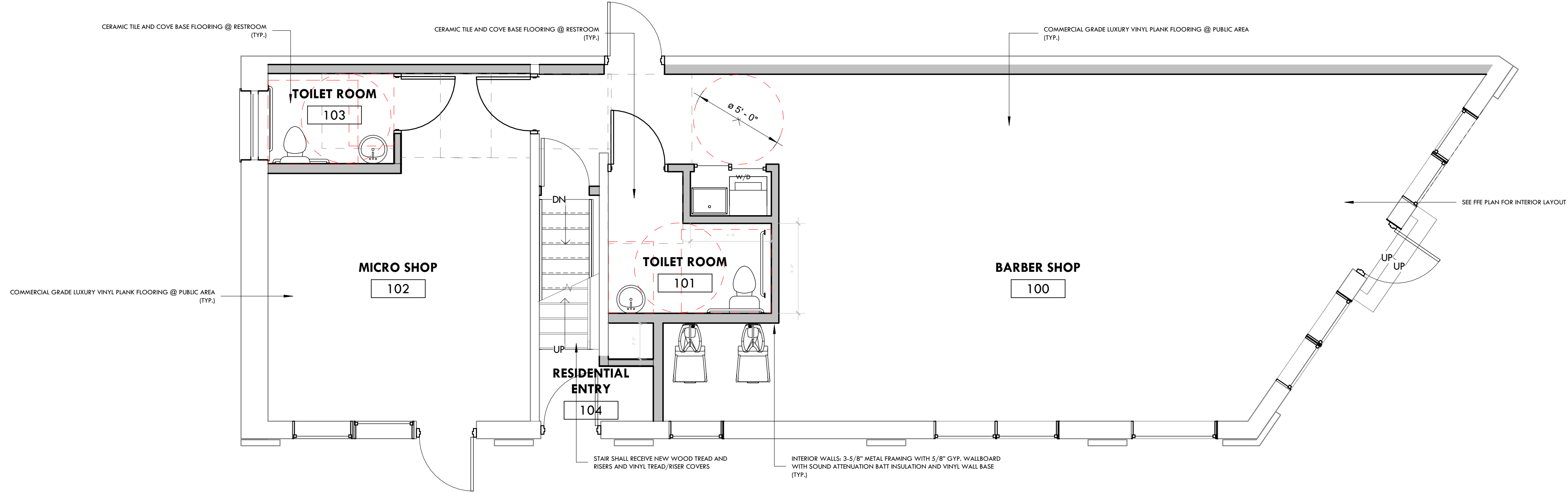
Scale: 1/4" = 1'-0"
Drawing Number:

AD-102

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② 00 - Basement - Proposed
1/4" = 1'-0"

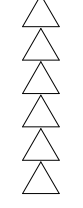


① 01 - First Floor - Proposed
1/4" = 1'-0"

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Date:
April 19, 2021

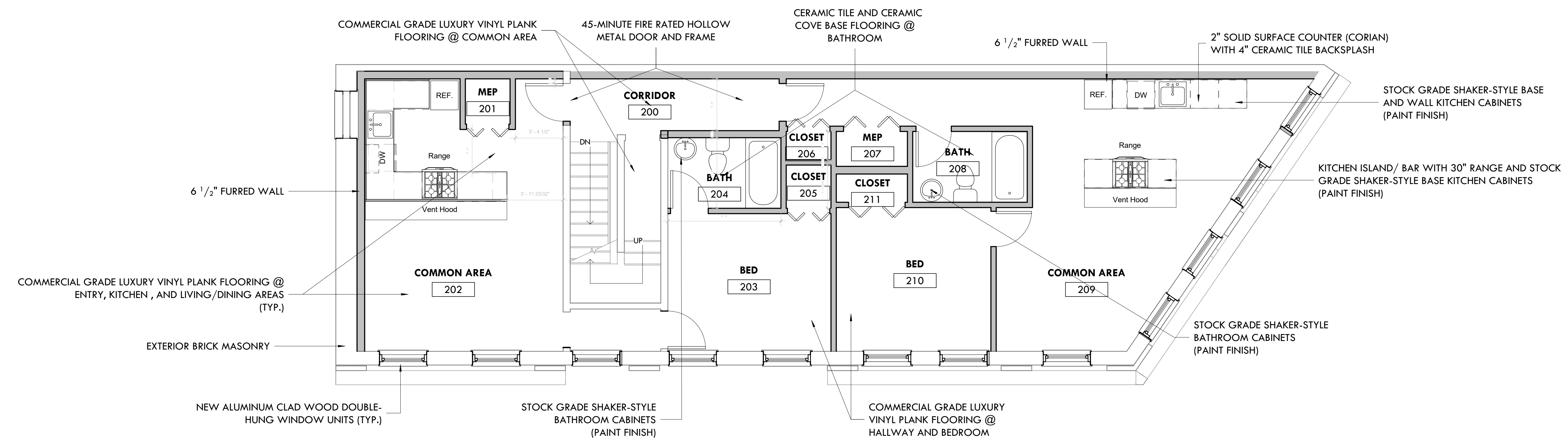
Project Number
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:
**CONSTRUCTION
PLAN - LEVEL 00 &
01**

Scale: 1/4" = 1'-0"
Drawing Number:

A-101

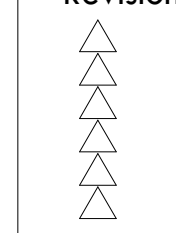


① 02 - Second Floor - Proposed
1/4" = 1'-0"

Seal:

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Revisions:



Date:
April 19, 2021

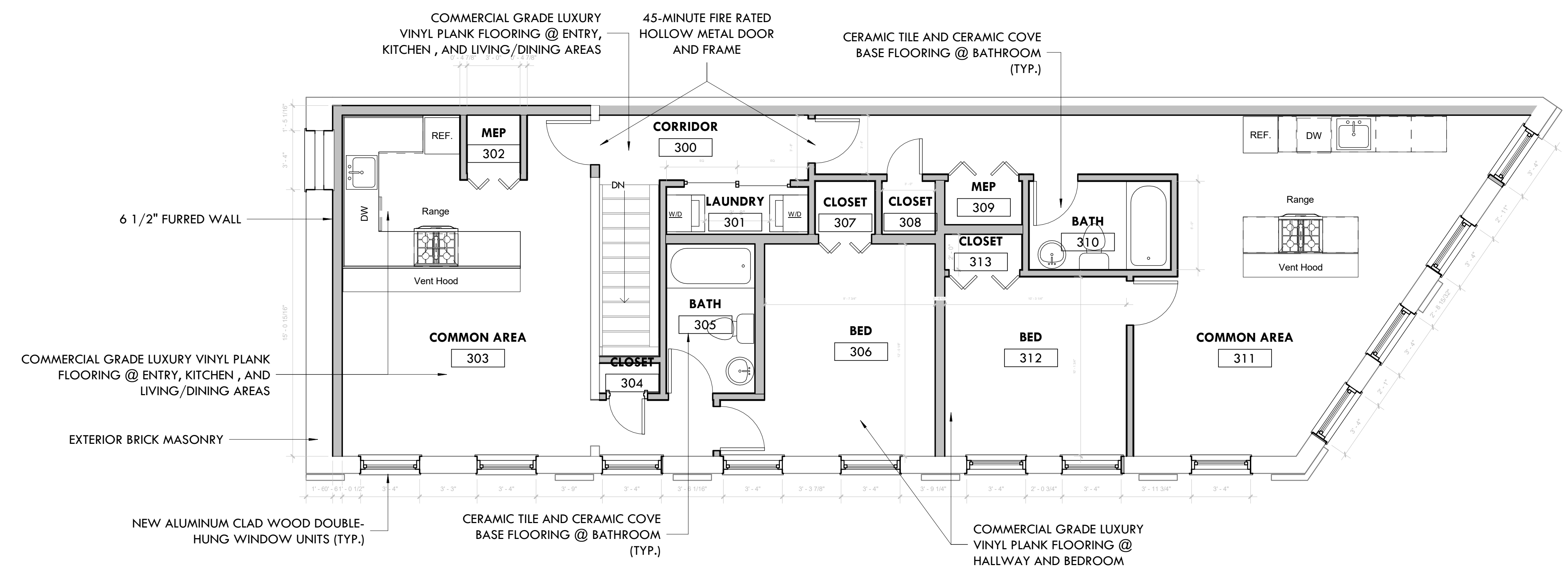
Project Number
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:
CONSTRUCTION PLAN - LEVEL 02 & 03

Scale: 1/4" = 1'-0"
Drawing Number:

A-102



② 03 - Third Floor - Proposed
1/4" = 1'-0"

Seal:

**NOT FOR
CONSTRUCTION**

Revisions:

- △
- △
- △
- △
- △

Date:
April 19, 2021

Project Number
2020-06

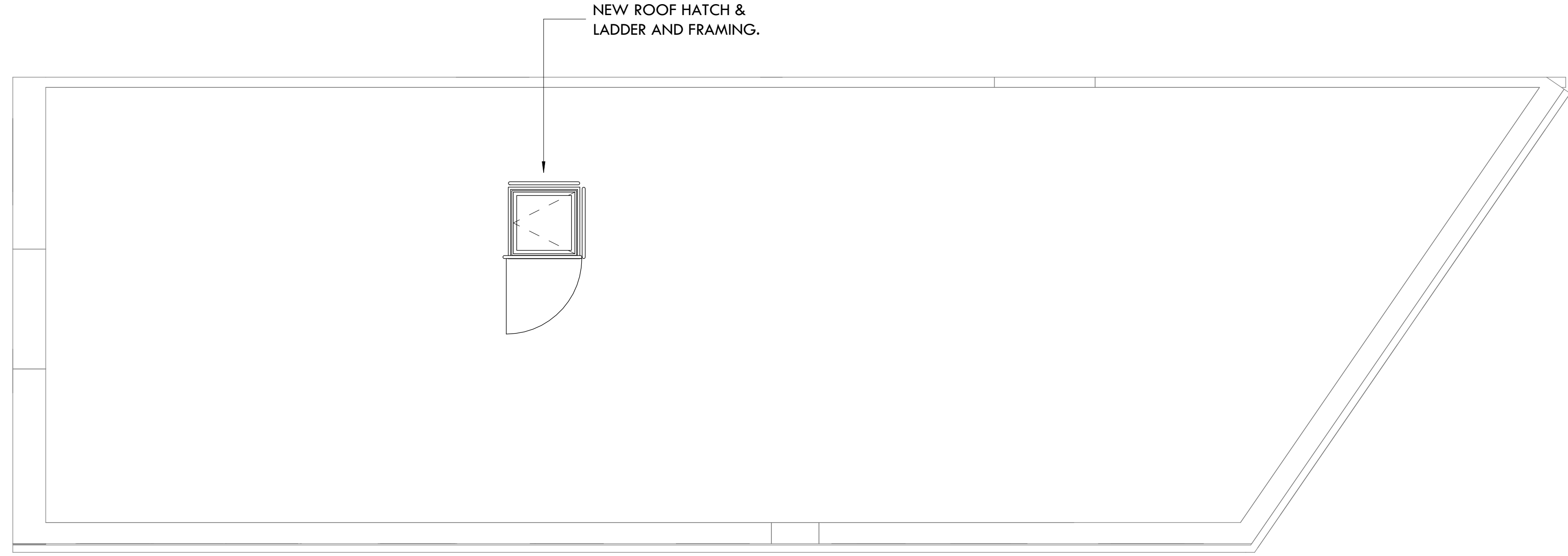
Owner / Client:
TomTom24 Development, LLC

Drawing Title:
**CONSTRUCTION
PLAN - ROOF**

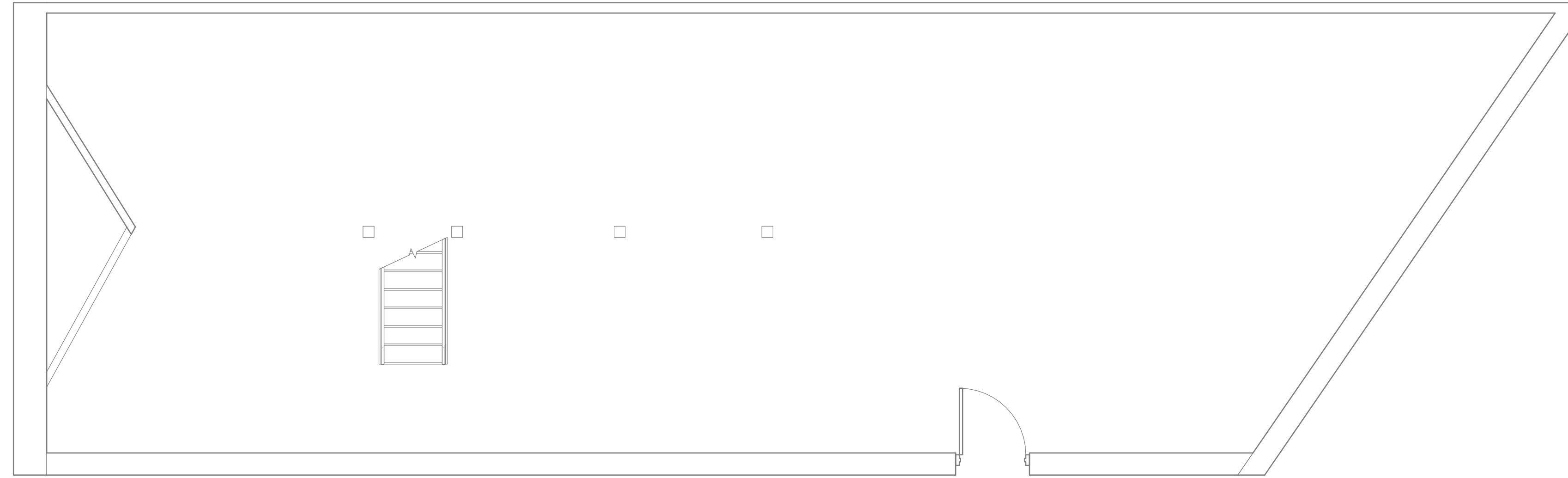
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Drawing Number:

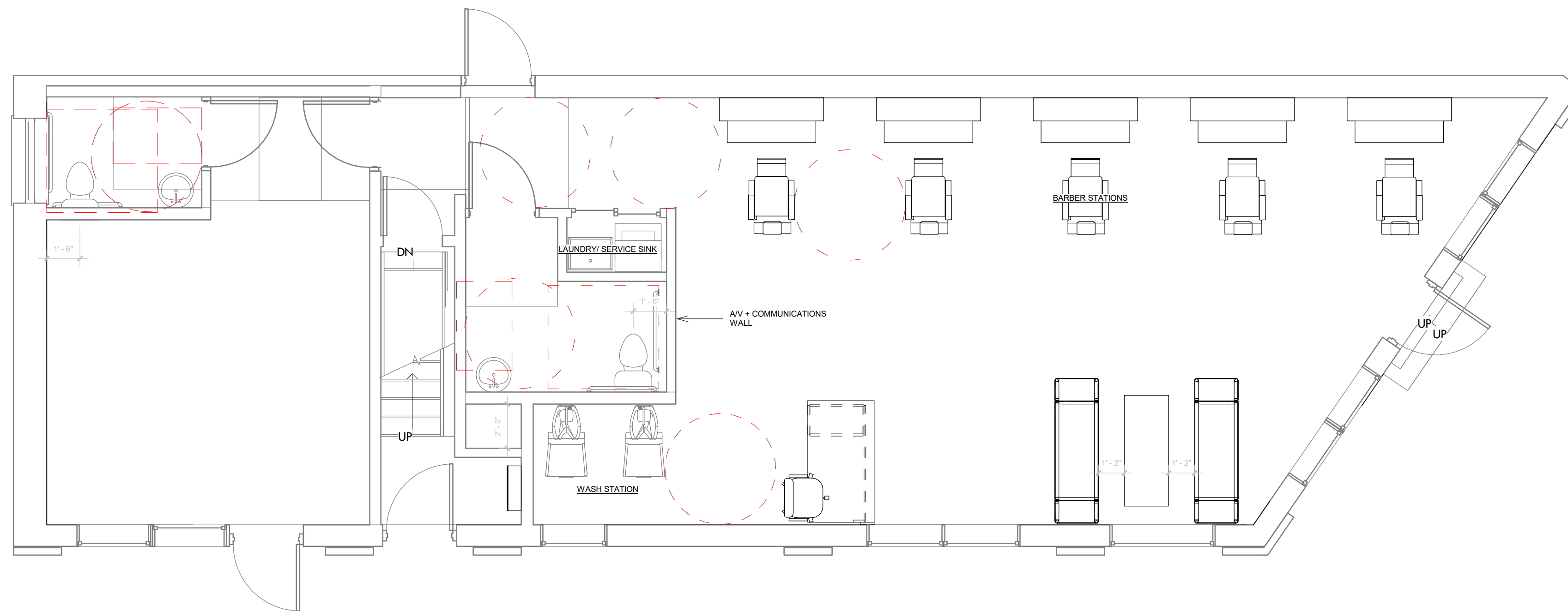
A-103



Building Renovation
for
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① 00 - Basement - Proposed FFE
1/4" = 1'-0"

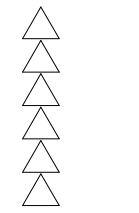


② 01 - First Floor - Proposed FFE
1/4" = 1'-0"

Seal:

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Revisions:



Date:
April 19, 2021

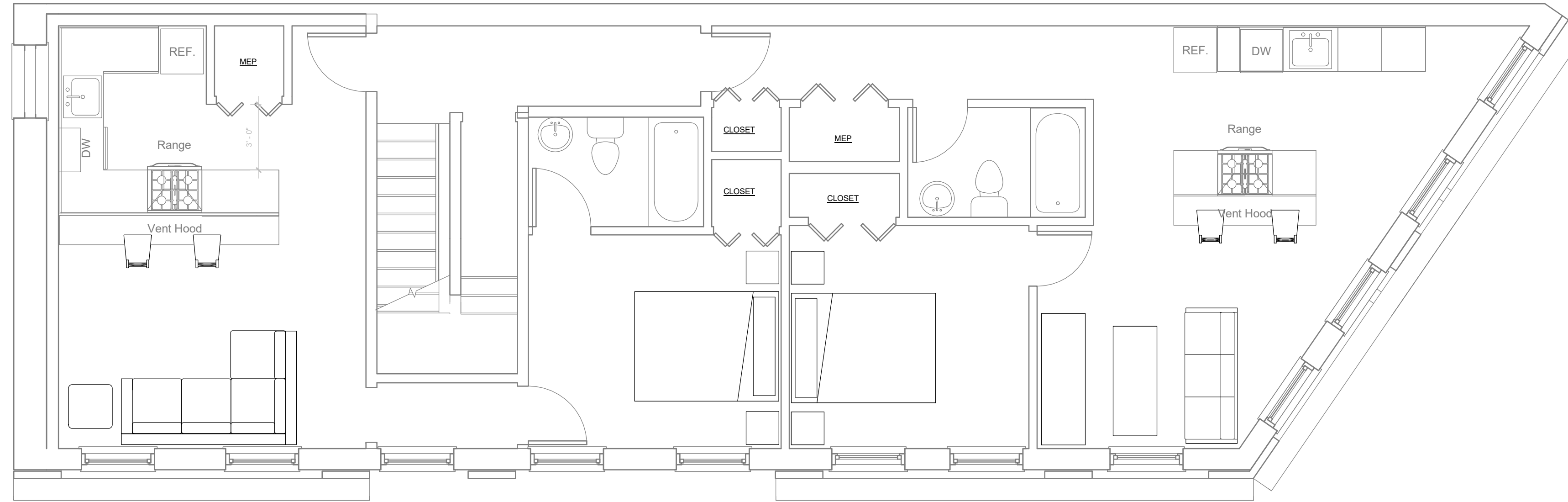
Project Number
2020-06

Owner / Client:
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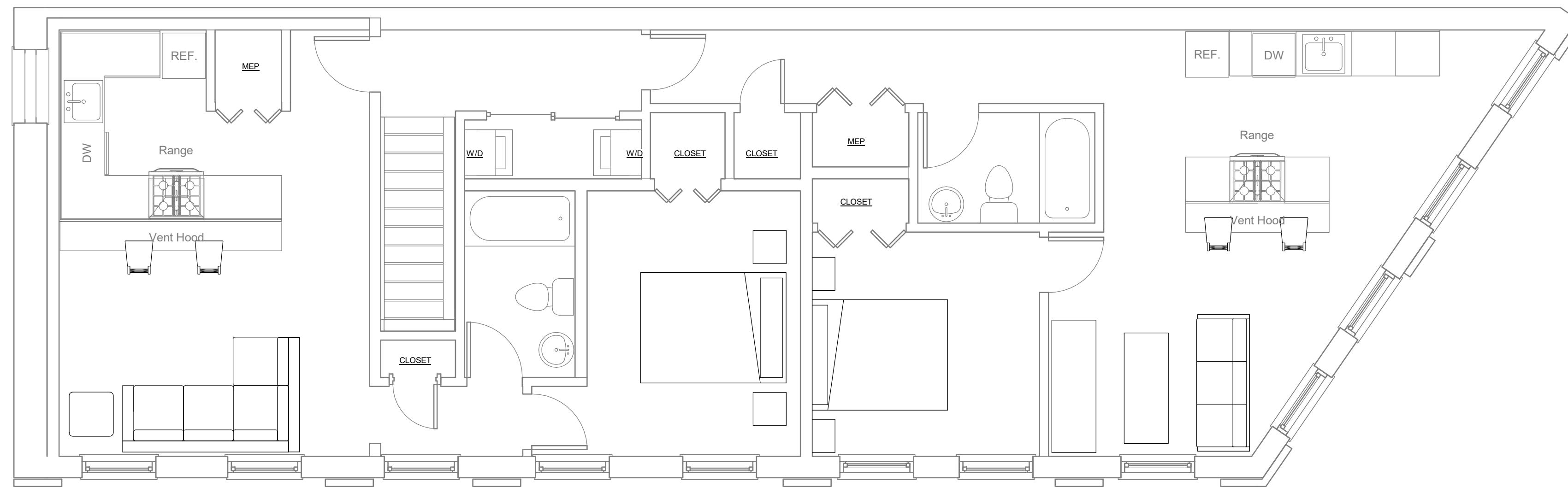
Drawing Title:
**FFE PLAN - LEVEL
00 & 01**

Scale: 1/4" = 1'-0"
Drawing Number:

A-109



② 02 - Second Floor - Proposed FFE
1/4" = 1'-0"



① 03 - Third Floor - Proposed FFE
1/4" = 1'-0"

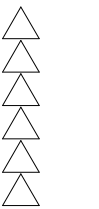
Building Renovation
for
Big Tom's Barbershop

2178 Centre Avenue, Pittsburgh, PA 15219

Seal:

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CONSTRUCTION**

Revisions:



Date:
April 19, 2021

Project Number
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Owner / Client:
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Drawing Title:
**FFE PLAN - LEVEL
02 & 03**

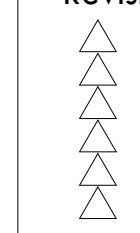
Scale: 1/4" = 1'-0"
Drawing Number:

A-110

Seal:

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Revisions:



Date:
April 19, 2021

Project Number
2020-06

Owner / Client:
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Drawing Title:
BUILDING ELEVATIONS

Scale: **1/8" = 1'-0"**
Drawing Number:

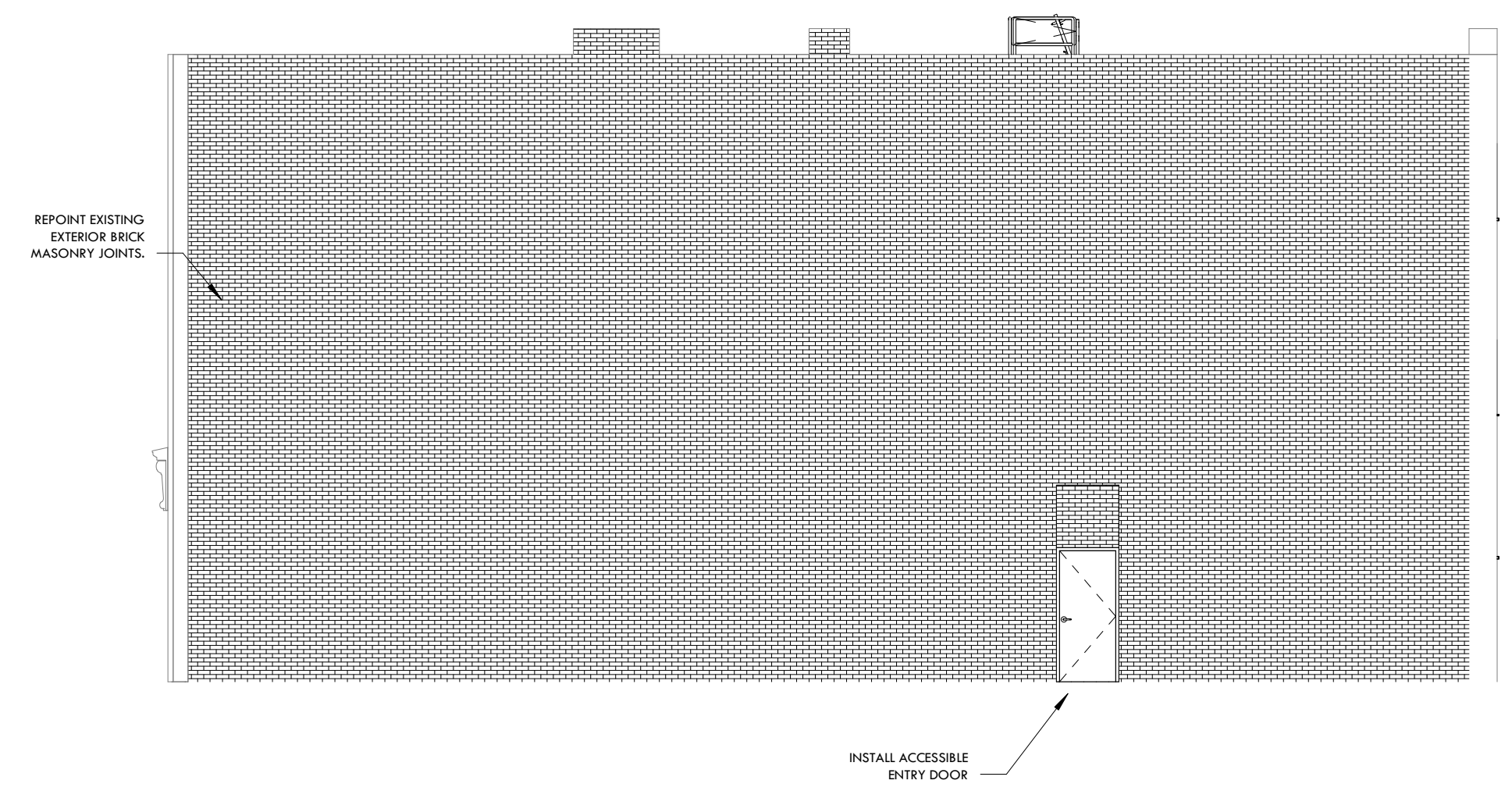
A-201



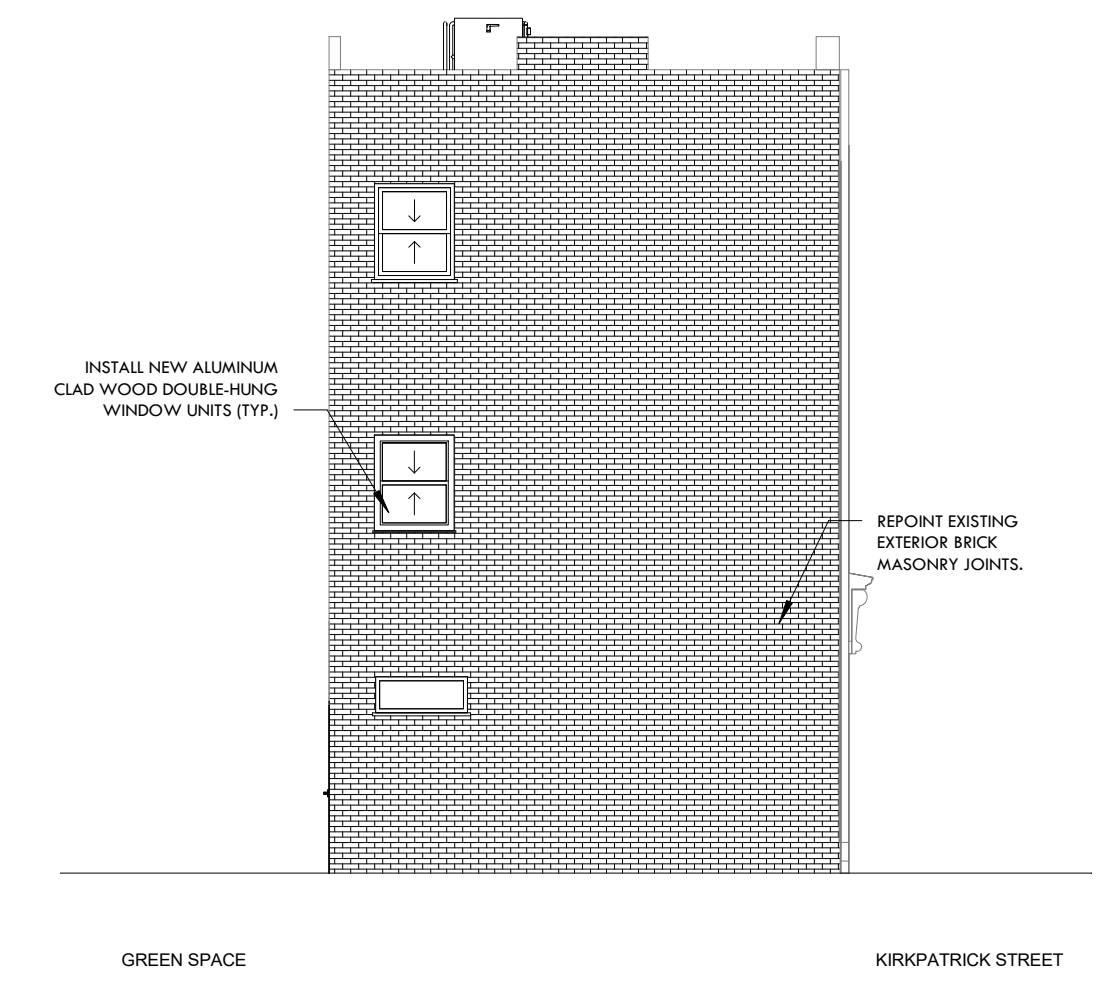
3 PROPOSED EAST ELEVATION - KIRKPATRICK STREET
1/8" = 1'-0"



1 PROPOSED NORTH ELEVATION - CENTRE AVENUE
1/8" = 1'-0"



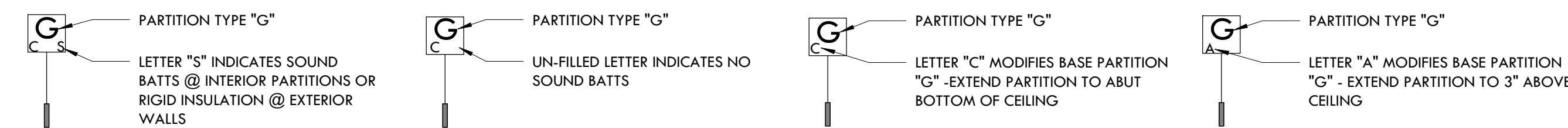
2 PROPOSED WEST ELEVATION - EXTERIOR LOT
1/8" = 1'-0"



4 PROPOSED SOUTH ELEVATION - HEMANS STREET
1/8" = 1'-0"

GENERAL PARTITION NOTES

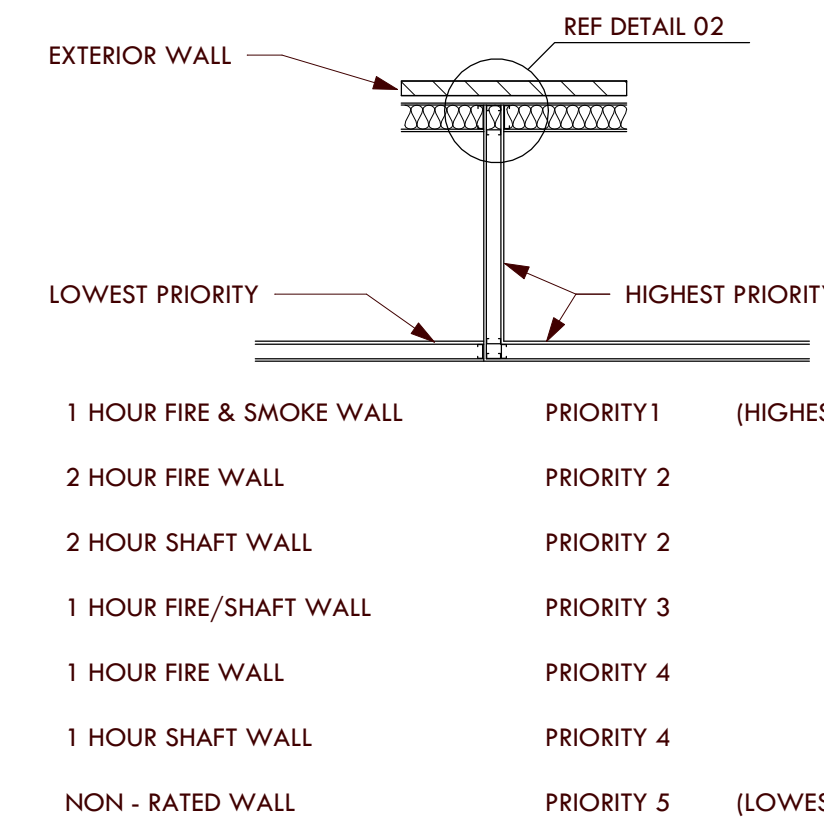
- ALL INTERIOR PARTITIONS ARE TYPE "G" W/SOUND ATTENUATION BATTS, UNLESS NOTED OTHERWISE ON FLOOR PLANS FOR PARTITIONS @ EXTERIOR WALL - PROVIDE THERMAL BATT INSULATION INSTEAD.
 - ALL EXTERIOR WALLS TO RECEIVE THERMAL BATT INSULATION WITH A THICKNESS TO MATCH THE RESPECTIVE STUD DEPTH.
 - REFER TO FLOOR PLAN FOR LOCATION OF SMOKE AND FIRE RATED PARTITIONS. REFER TO WALL PRIORITY LEGEND FOR CONDITIONS WHERE FIRE RATED PARTITIONS INTERSECT OTHER PARTITIONS.
 - REFER TO SCHEDULES AND DETAILS FOR FINISHES - PARTITION TYPES REFER TO BASE WALL ONLY.
 - ALL PARTITIONS EXTEND TO BOTTOM OF STRUCTURE. UNLESS OTHERWISE NOTED.
- LINE OF STRUCTURE AS SHOWN AT THE HEAD CONDITION OF EACH PARTITION TYPE IS DIAGRAMMATIC ONLY AND DOES NOT INDICATE EXACT CONSTRUCTION CONDITIONS. TERMINATE RATED PARTITIONS AT UNDERSIDE OF STRUCTURAL DECK TO MAINTAIN RATING. PROVIDE APPROPRIATE FRAMING AND DRYWALL TO OFFSET AROUND STRUCTURE OR OTHER OBSTRUCTIONS. SUCH AS PIPING OR DUCT WORK.
- PARTITIONS MAY TERMINATE AT STRUCTURAL MEMBERS WITH A RATING GREATER THAN OR EQUAL THE PARTITION. PROVIDED THAT RATING IS CONTINUOUS TO STRUCTURAL DECK ABOVE.
- NON-RATED PARTITIONS THAT EXTEND TO STRUCTURE SHALL TERMINATE AT UNDERSIDE OF STRUCTURAL DECK TO MAINTAIN A CONTINUOUS PLANE OF GYPSUM BOARD AS A NOISE, SMOKE, OR OTHER TYPE OF BARRIER.
- ALL PARTITIONS EXTENDING TO STRUCTURE ABOVE SHALL TERMINATE WITH DEFLECTION TRACKS - SEE TYPICAL DETAILS THIS SHEET.
 - ALL GYPSUM BOARD PARTITIONS NOT EXTENDING TO STRUCTURE SHALL BE BRACED.
 - UL DESIGN NUMBERS REFER TO FIRE RESISTANCE DIRECTORY. UNDERWRITERS LABORATORY, LATEST EDITION.
 - MISCELLANEOUS FURRING AROUND COLUMNS TO BE 5/8" GYPSUM BOARD OVER 1 5/8" METAL STUDS, UNLESS OTHERWISE NOTED.
 - MISCELLANEOUS NON-RATED CHASES TO BE 5/8" GYPSUM BOARD OVER 3 1/2" WOOD STUDS, UNLESS OTHERWISE NOTED.
 - AT CORRIDORS AND ROOMS WHERE THERE ARE DIFFERING NUMBERS OF GYPSUM BOARD LAYERS IN AN UNINTERRUPTED CONTINUOUS WALL PLANE (EXAMPLE: SAME WALL W/TYPE "G" AND TYPE "M" PARTITION). OFFSET STUDS AS REQUIRED SUCH THAT THE OTHER FACE LAYERS OF GYPSUM BOARD ALIGN ON CORRIDOR SIDE.
 - FIRE RATED PARTITIONS TO HAVE FIRESTOPPING SEALANTS AT HEAD, SILL, JUNCTURE WITH DISSIMILAR MATERIALS, ETC. AND AROUND ALL PENETRATIONS AND OPENINGS.
 - NON-RATED PARTITIONS TO HAVE ACOUSTICAL SEALANTS AT HEAD, SILL, JUNCTURES WITH DISSIMILAR MATERIALS, ETC. OR NON-RATED WALLS AND AROUND ALL PENETRATIONS AND OPENINGS.
 - CONSTRUCT ALL PARTITIONS WITH SOUND ATTENUATION BATTS WITH THE FOLLOWING SOUND BATTS THICKNESS:
 - 3 1/2" OR LARGER WOOD STUDS - 3" THICKNESS
 - SOUND ATTENUATION BATTS SHALL EXTEND FULL HEIGHT OF PARTITION.



PARTITION TYPES

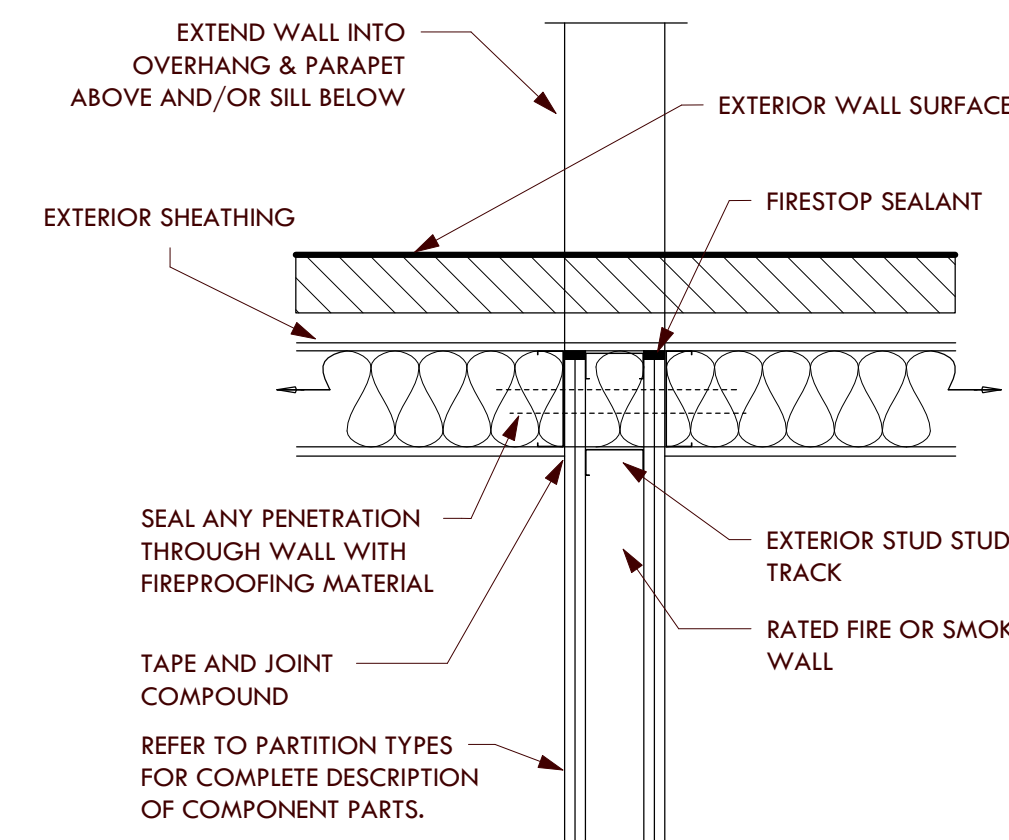
TYPE	FIRE RATING	THICKNESS	DETAIL & PHYSICAL DATA	DESCRIPTION & TEST NO.	STC
1	1-HR	4 3/4"		Wd Stud—5/8" Gypsum Board on each side— 2 x 4 @ 16" or 24" o.c.— UL U305	32 to 36
2	1-HR	5 1/4"		Wd Stud—5/8" Gypsum Board on each side— 2 x 4 @ 16" or 24" o.c.—3" SAFB Insulation—RC-1 channel one side— UL U327	50
3	N/A	4 3/4"		Wd Stud—5/8" Gypsum Board one side, interior— 2 x 4 @ 16" or 24" o.c.—Thermal Batt Insulation, exterior or Acoustical Batt Insulation, interior	-
4	2-HR	8 1/2"		Wd Stud—2 layers 5/8" Gypsum Board on each side— 2 x 6 @ 16" or 24" o.c.—3 1/2" SAFB Insulation—RC-1 channel one side— UL U301	56

Partition Type Details
1" = 1'-0"



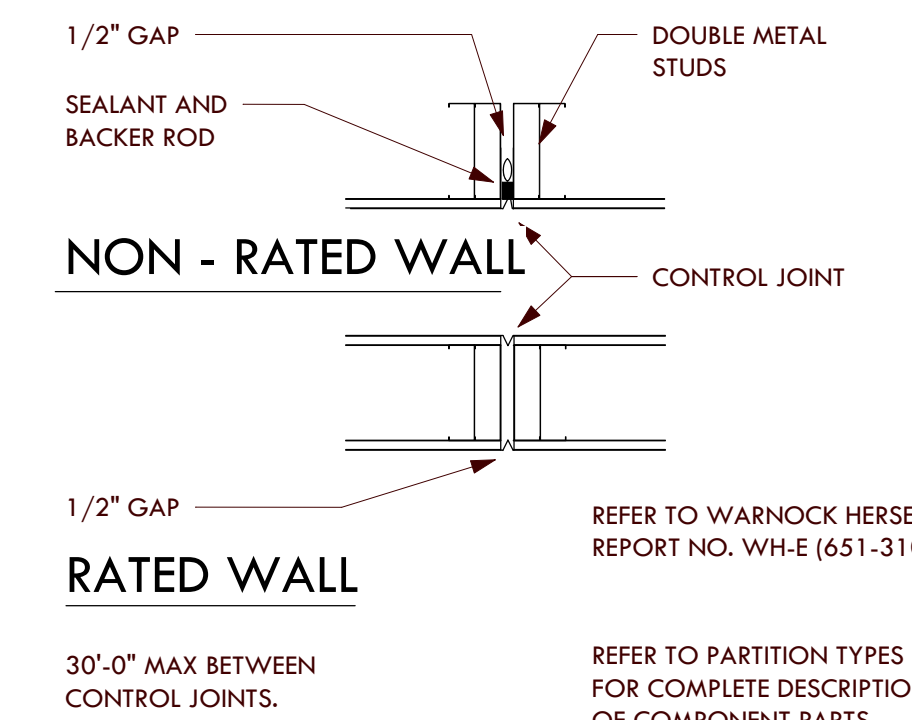
WALL PRIORITY LEGEND

0 1 SCALE: NO SCALE



EXTERIOR WALL TERMINATION

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



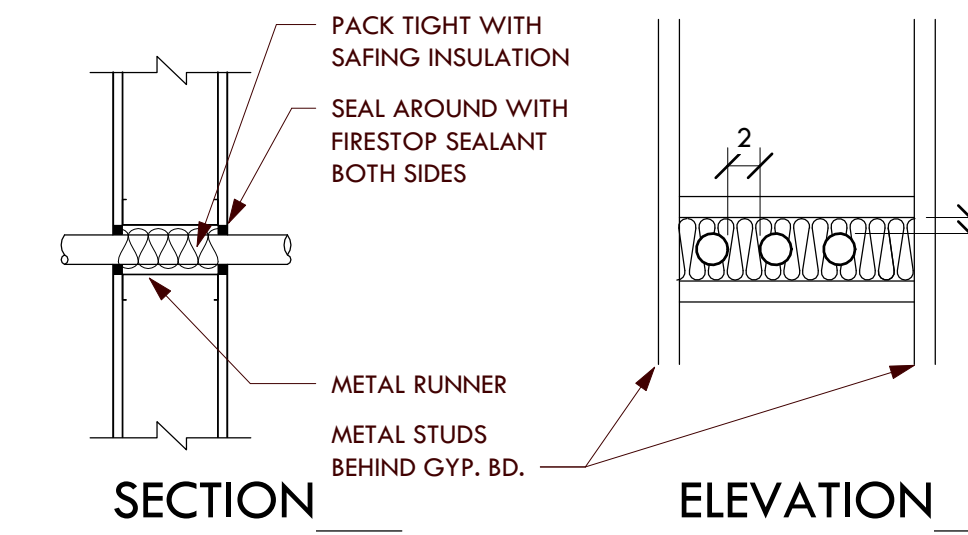
GYPSUM BOARD CONTROL JOINTS

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



PENETRATION GAP SEAL

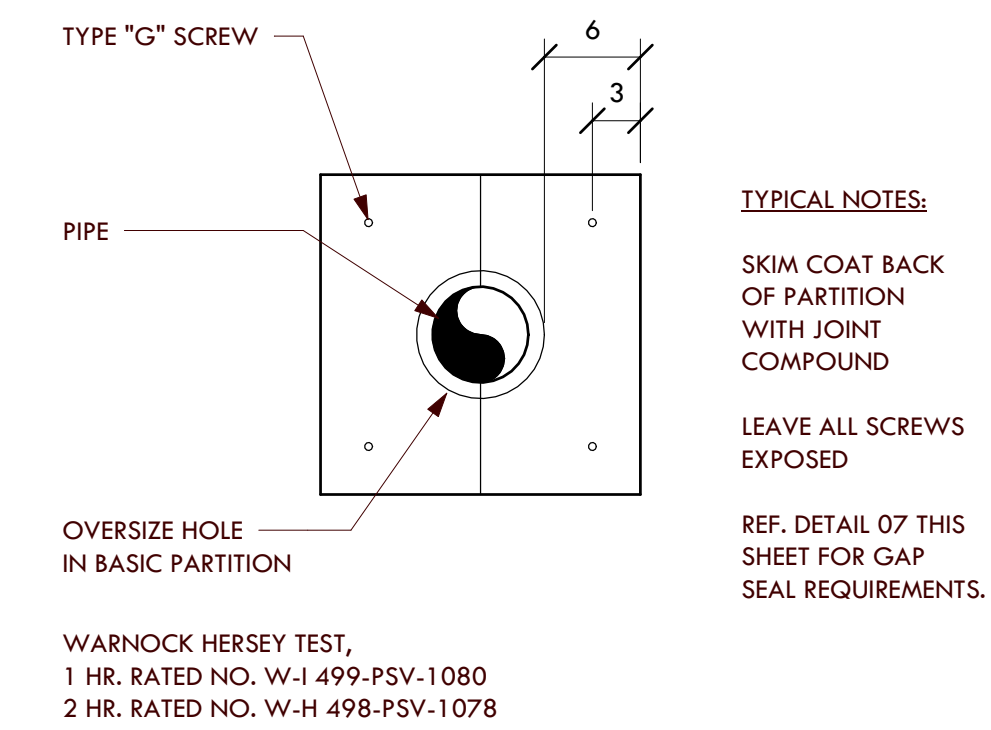
0 7 SCALE: NO SCALE



REF. PARTITION TYPES FOR COMPLETE DESCRIPTION OF COMPONENT PARTS

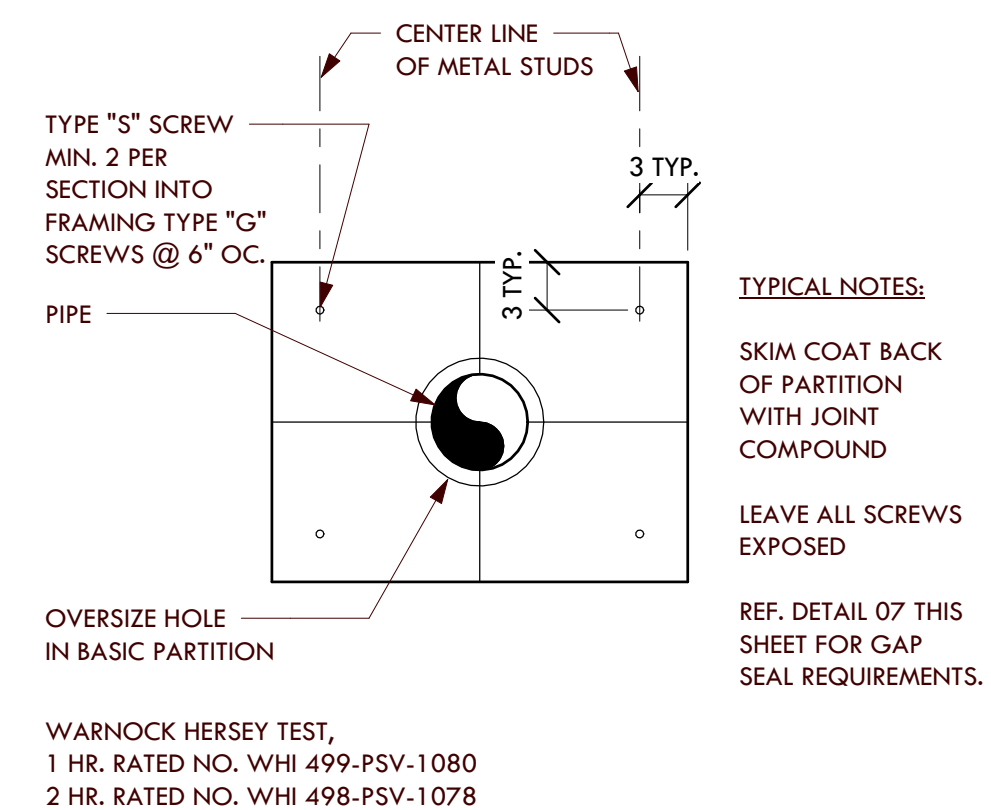
MULTIPLE PIPE PENETRATIONS

0 4 SCALE: NO SCALE



BLOWOUT PATCH (HOLES LESS THAN 3" DIA.)

0 5 SCALE: NO SCALE



BLOWOUT PATCH (HOLES GREATER THAN OR EQUAL TO 3" DIA.)

0 6 SCALE: NO SCALE



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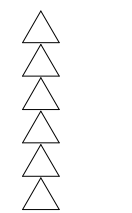
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Building Renovation for
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2178 Centre Avenue, Pittsburgh, PA 15219

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Owner / Client:
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Drawing Title:
WALL TYPES

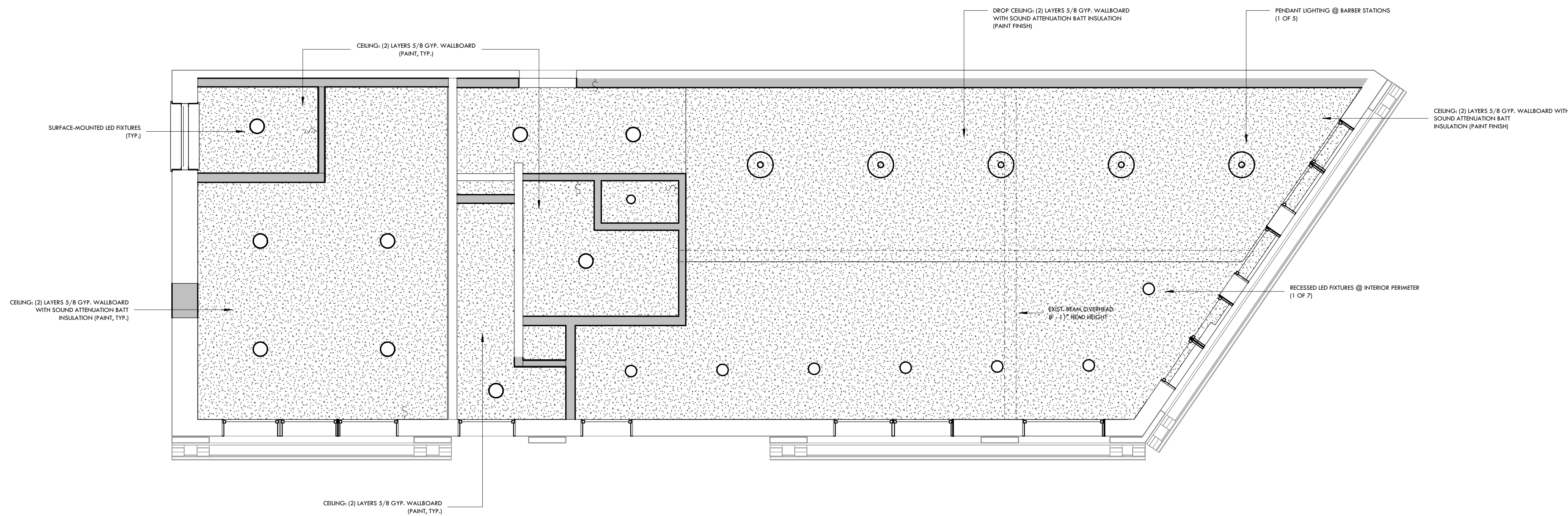
Scale:
Drawing Number:

A-601

CEILING LEGEND

	DECORATIVE PENDANT FIXTURE
	CEILING MOUNTED DOWNLIGHT FIXTURE
	CEILING MOUNTED DECORATIVE FIXTURE
	RECESSED 2x4 FLUORESCENT FIXTURE
	RECESSED 2x4 FLUORESCENT FIXTURE/ EMERGENCY BACKUP
	RECESSED 2x2 FLUORESCENT FIXTURE
	RECESSED 2x2 FLUORESCENT FIXTURE W/ EMERGENCY BACKUP
	RECESSED DOWNLIGHT: STANDARD / WET LISTED
	HIGH-BAY FIXTURE
	LINEAR DOWNLIGHT/UPLIGHT SUSPENDED FIXTURE
	8' STRIP FLUORESCENT FIXTURE
	FLUORESCENT, WALL-MOUNTED FIXTURE
	DECORATIVE WALL MOUNTED FIXTURE
	ELECTRICAL PANEL (FOR REFERENCE ONLY)
	SWITCH
	DUPLEX / WIRED 220
	TRIPLE / QUAD RECEPTACLE
	GFI / WEATHER RESISTANT / SPECIAL
	TELEPHONE / DATA / COMBO
	TELEVISION OUTLET
	SPEAKER
	THERMOSTAT
	UNIT HEATER
	CEILING SUPPLY DIFFUSER
	CEILING RETURN DIFFUSER
	EXHAUST FAN
	OCCUPANCY SENSOR

○ A-7 - Ceiling Legend
1/8" = 1'-0"

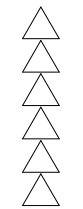


① First Floor Ceiling Plan
1/4" = 1'-0"

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Drawing Title:
**REFLECTED CEILING
PLAN - LEVEL 00 &
01**

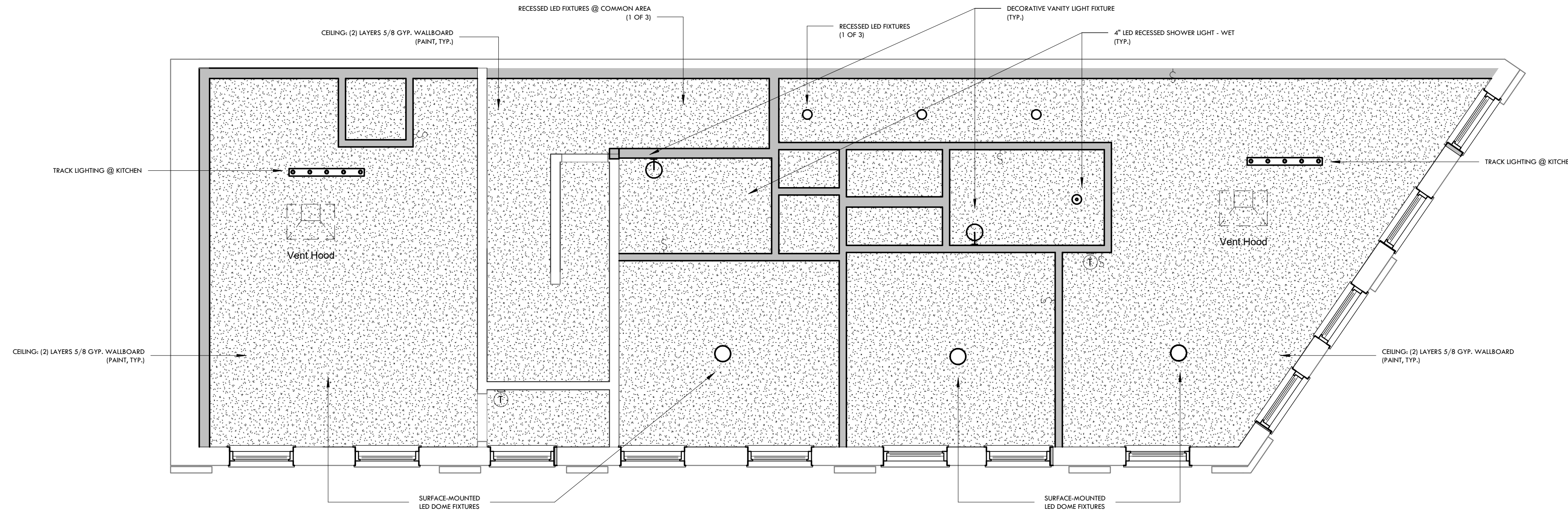
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Drawing Number:

A-701

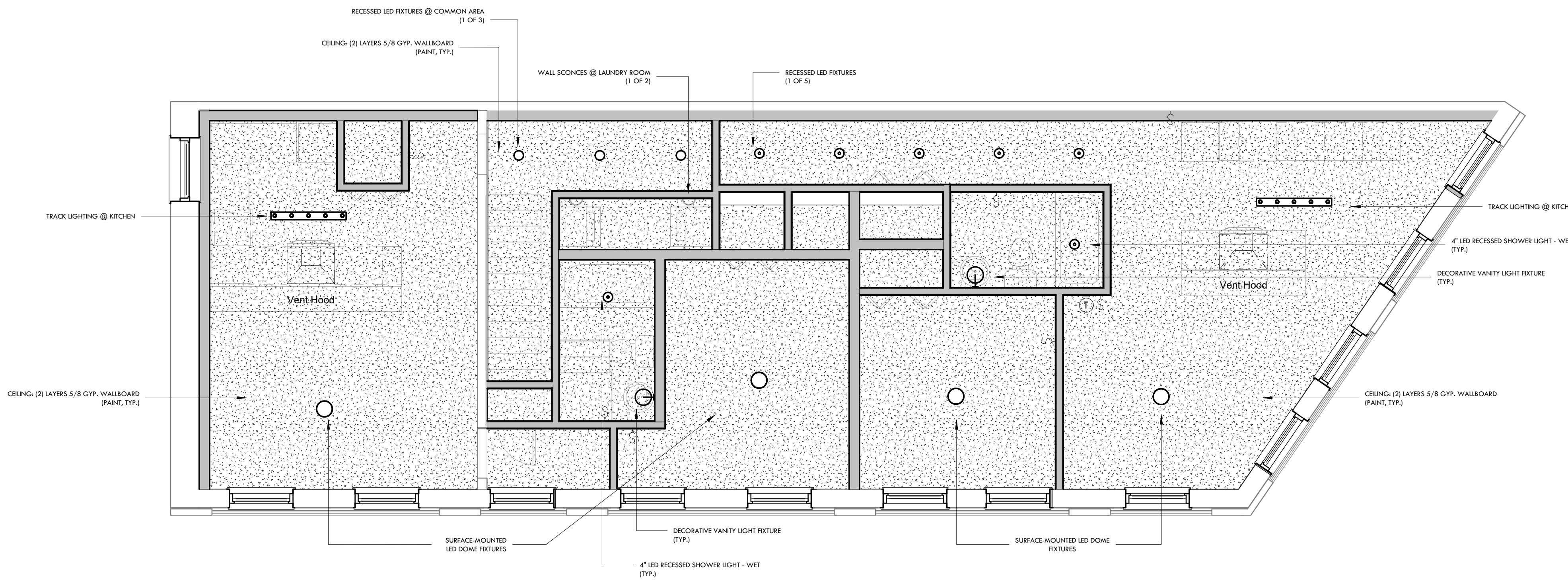
CEILING LEGEND

⊙	DECORATIVE PENDANT FIXTURE
●	CEILING-MOUNTED DOWNLIGHT FIXTURE
○	CEILING MOUNTED DECORATIVE FIXTURE
◻	RECESSED 2x4 FLUORESCENT FIXTURE
◻	RECESSED 2x4 FLUORESCENT FIXTURE/ EMERGENCY BACKUP
◻	RECESSED 2x2 FLUORESCENT FIXTURE
◻	RECESSED 2x2 FLUORESCENT FIXTURE W/ EMERGENCY BACKUP
○	RECESSED DOWNLIGHT: STANDARD / WET LISTED
⊙	HIGH-BAY FIXTURE
—	LINEAR DOWNLIGHT/UPLIGHT SUSPENDED FIXTURE
—	8' STRIP FLUORESCENT FIXTURE
—	FLUORESCENT, WALL-MOUNTED FIXTURE
—	DECORATIVE WALL MOUNTED FIXTURE
—EP	ELECTRICAL PANEL (FOR REFERENCE ONLY)
—S	SWITCH
⊙ 220	DUPLEX / WIRED 220
⊙	TRIPLE / QUAD RECEPTACLE
⊙ GFI WF	GFI / WEATHER RESISTANT / SPECIAL
⊙ T	TELEPHONE / DATA / COMBO
⊙ TV	TELEVISION OUTLET
⊙ S	SPEAKER
⊙ T	THERMOSTAT
⊙ UH	UNIT HEATER
⊙	CEILING SUPPLY DIFFUSER
⊙	CEILING RETURN DIFFUSER
⊙ EF	EXHAUST FAN
⊙ OS	OCCUPANCY SENSOR

○ A-7 - Ceiling Legend
1/8" = 1'-0"



① 02 - Second Floor - Reflected Ceiling Plan
1/4" = 1'-0"

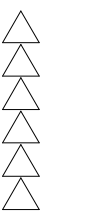


② 03 - Third Floor - Reflected Ceiling Plan
1/4" = 1'-0"

Seal:

NOT FOR CONSTRUCTION

Revisions:



Date:
April 19, 2021

Project Number
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:
REFLECTED CEILING PLAN - LEVEL 02 & 03

Scale: **As indicated**
Drawing Number:

A-702

APARTMENT FAN COILS											
UNIT DES.	SUPPLY FAN DATA			HEATING CAPACITY			ELECTRICAL DATA				
	CFM	E.S.P. IN. WG	HP	HEATING TYPE	KW	AMPS	VOLTS/PH	MCA/MOCP	WEIGHT (LB)	BASIS OF DESIGN	MODEL NUMBER
FCU-A	750	.3	1/3	ELECTRIC	5	18.1	230/1	27.8/30	112	BRYANT	FB4C024

REMARKS:
1. PROVIDE DISCONNECT.
2. PROVIDE CONDENSATE DRAIN.

APARTMENT CONDENSING UNITS										
UNIT DES.	DX COOLING COIL				ELECTRICAL DATA					
	EAT	LAT	SENS. MBH	TOTAL MBH	VOLTS/PH	MCA/MOCP	WEIGHT	BASIS OF DESIGN	MODEL NUMBER	
CU-A	85	99	23.5	17.8	230/1	17.7/30	147	BRYANT	116BNA024	

REMARKS:
1. PROVIDE DISCONNECT SWITCH.

BARBER SHOP FAN COILS												
UNIT DES.	SUPPLY FAN DATA				HEATING CAPACITY			ELECTRICAL DATA				
	CFM	MIN. OA CFM	E.S.P. IN. WG	HP	HEATING TYPE	INPUT MBH	OUTPUT MBH	VOLTS/PH	MCA/MOCP	WEIGHT (LB)	BASIS OF DESIGN	MODEL NUMBER
FCU-B	1200	475	.4	.75	GAS	7.5	42	230/1	21/30	428	AAON	H3-ARB-1-0-161C-3BS

REMARKS:
1. PROVIDE DISCONNECT.
2. PROVIDE CONDENSATE DRAIN.
3. PROVIDE HOT GAS REHEAT.

BARBER SHOP CONDENSING UNITS									
UNIT DES.	DX COOLING COIL		ELECTRICAL DATA				MODEL NUMBER		
	SEER	TOTAL MBH	VOLTS/PH	MCA/MOCP	WEIGHT	BASIS OF DESIGN			
CU-B	16	42.1	230/1	26/40	237	AAON	CB-B-036-1-D-1		

REMARKS:
1. PROVIDE DISCONNECT SWITCH.
2. PROVIDE CONDENSER ROOF MOUNTING PAD.

UNIT VENTILATORS									
TAG	LOCATION	DESIGN CFM (HIGH SP.)	EXT. SP IN W.C.	ELECTRIC		BASIS OF DESIGN	MODEL	WEIGHT LB.S	
				MCA/MOCP	VOLTS/PH				
ERV-A	BARBERSHOP	475	.5	3.1/15	230/1	LOSSNAY	LGH-F470RVX-E	110	

NOTES:
1. ERV TO RUN AT ALL TIMES DURING OPERATING HOURS.

SPLIT SYSTEM AIR-COOLED A/C UNIT SCHEDULE														
TAG	NOMINAL TONS	EVAPORATOR						CONDENSER						
		TOTAL CAPACITY MBH	SENS. CAPACITY MBH	CFM (DRY COIL)	E.S.P. IN. W.G.	MCA/MFS	ELECTRICAL VOLTS/PH.	MANUF. / EVAPORATOR MODEL	TAG	CFM	EER	MCA/MOCP	ELECTRICAL VOLTS/PH.	MANUF. / CONDENSER MODEL
AC-A	1	12	9.7	370	N/A	1	230/1	PKA-A12HA7	CU A	1590	12.0	11/28	230/1	PUY-A12NKA7

NOTES:
1. CAPACITY BASED ON 80 DEG. F. DB/67 DEG. F. WB EAT ON EVAPORATOR
2. UNIT SHALL BE EQUIPPED WITH A WIND BAFFLE FOR OPERATION DOWN TO 0 DEG.S.F.
3. PROVIDE CONDENSER ROOF MOUNTING PAD.
4. PROVIDE DISCONNECT AT EACH OUTDOOR AND INDOOR UNITS.
5. PROVIDE INTEGRAL UNIT CONTROLS AND A "HARD WIRED" WALL MOUNTED THERMOSTAT/CONTROLLER MODEL PAR-31MAA.
6. PROVIDE CONDENSATE PUMP (BASIS OF DESIGN: LITTLE GIANT VCMA-20). POWERED THROUGH EVAPORATOR.

EXHAUST FAN SCHEDULE										
TAG	TYPE	CFM	SP IN W.C.	FAN RPM	MAX SONES (INLET)	WT. LB.S	MOTOR		BASIS OF DESIGN	
							HP (WATT)	VOLTS/PH	MFG.	MODEL
EF-A	CEILING	70	.11	675	.5	9	(16)	115/1	GREENHECK	SP-B70
EF-B	CABINET	89	.7	950	3.2	11	(89)	115/1	GREENHECK	CSP-B110

REMARKS:
1. PROVIDE DISCONNECT SWITCH
2. PROVIDE SOLID STATE SPEED CONTROLLER, MOUNTED IN THE MOTOR COMPARTMENT, FOR BALANCING.
3. PROVIDE GRAVITY BACKDRAFT DAMPER.
4. EF-A TO BE CONTROLLED BY LIGHT.
5. EF-B TO RUN AT ALL TIMES.

HVAC LOUVERS									
TAG	MAKE/MODEL	AIR FLOW CFM	INTAKE OR EXH.	SIZE			FREE AREA VEL. FPM	BLADE TYPE	
				W	H	D			
L-1	GREENHECK/ESD-635	475	INTAKE	27	14	6	593	35° BLADE	
L-2	GREENHECK/ESD-635	555	EXH.	24	14	6	790	35° BLADE	

NOTES:
1. PROVIDE BIRD SCREEN ON INSIDE FACE OF LOUVER.
2. PROVIDE PLENUM BOX EQUAL TO LOUVER SIZE ON BACK OF LOUVER. SEE LOUVER DETAIL ON M301.
3. LOUVER COLOR TO BE CHOSEN BY ARCHITECT.

GRILLE, REGISTER & DIFFUSER SCHEDULE			
TAG	FACE SIZE (SLOT WIDTH)	BASIS OF DESIGN	MODEL
A	20/4	TITUS	S301FS
B	6/6	TITUS	350RL
C	36/14	TITUS	350RL

REMARKS:
1. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR CEILING TYPES AND MOUNTING REQUIREMENTS.
2. COLOR SELECTED BY ARCHITECT.
3. PROVIDE PLENUM BOX FOR ML-TYPE DIFFUSERS.

MECHANICAL DUCTWORK & GENERAL SYMBOLS LEGEND		
SYMBOL	ABRV.	DESCRIPTION
	XTR	EXISTING EQUIPMENT OR DUCTWORK TO REMAIN
	RX	EXISTING EQUIPMENT OR DUCTWORK TO BE REMOVED
		NEW EQUIPMENT OR DUCTWORK
		SUPPLY DUCT UP
		SUPPLY DUCT DOWN
		RETURN / EXHAUST DUCT UP
		RETURN / EXHAUST DUCT DOWN
		ROUND DUCT ELBOW UP
		ROUND DUCT ELBOW DOWN
		ELBOW WITH TURNING VANES
		DUCT OFFSET UP
		DUCT OFFSET DOWN
		SQUARE / RECTANGULAR DUCT TRANSITION
		SQUARE/RECTANGULAR TO ROUND DUCT TRANSITION
	CD	CEILING DIFFUSER - ROUND NECK - # THROW DIRECTIONS
	SG/EG	SIDEWALL SUPPLY or RETURN GRILLE - (R = REGISTER)
		SPIN TAP WITH VOLUME CONTROL DAMPER
		THERMOSTAT
		HUMIDISTAT
	TAG #	EQUIPMENT UNIT DESIGNATION
	TAG CFM	DIFFUSER, REGISTER & GRILLE UNIT DESIGNATION W/ CFM
		CONNECTION POINT, NEW TO EXISTING
		DISCONNECTION POINT
		DRAWING KEYNOTE
	RA or EA	RETURN OR EXHAUST AIR
	SA or OA	SUPPLY OR OUTSIDE AIR

DUCTWORK GENERAL NOTES (ALL DRAWINGS):

- ALL DUCTWORK INDICATED IS SCHEMATIC AND SHOW ONLY RELATIVE POSITIONS. PROVIDE OFFSETS, RISES, TRANSITIONS AND ELBOWS AS NEEDED TO INSTALL PROPERLY.
- PROVIDE ACCESS DOORS IN DUCTWORK FOR OPERATION, ADJUSTMENT, AND MAINTENANCE OF ALL HVAC DEVICES, FANS, DAMPERS, (FIRE, SMOKE, BALANCING) COILS, AND TERMINAL EQUIPMENT.
- LOCATIONS OF TERMINAL DEVICES, AIR OUTLETS AND INLETS ARE APPROXIMATE. LOCATE PER THE ARCHITECTURAL DRAWINGS AND TO AVOID OTHER TRADE'S WORK. COORDINATE LOCATIONS WITH OTHER TRADES. CONSULT ARCHITECT/ENGINEER FOR CLARIFICATION IF CONFLICTS OCCUR.
- DUCT DIMENSIONS SHOWN ARE CLEAR INSIDE FACE-TO-FACE DIMENSIONS AND DO NOT INCLUDE DUCT LINER WHERE SPECIFIED. INCREASE DIMENSIONS OF LINED DUCTWORK TO PROVIDE FREE INSIDE AREA EQUAL DIMENSIONS SHOWN. REFER TO THE SPECIFICATIONS FOR LOCATION OF LINED DUCTWORK.
- FINAL CONNECTIONS FROM HIGH VELOCITY MAIN DUCTS TO AIR TERMINAL UNITS SHALL BE MADE WITH FLEXIBLE DUCTWORK NOT EXCEEDING 3 FEET IN LENGTH. CONNECTIONS BETWEEN LOW VELOCITY DUCTWORK AND/OR TERMINAL UNITS TO AIR INLETS AND OUTLETS SHALL BE MADE WITH FLEXIBLE DUCTWORK NOT EXCEEDING 6 FEET IN LENGTH. LONGER DUCT RUN OUTS SHALL BE CONSTRUCTED OF HARD DUCT OF THE SAME MATERIAL, SPECIFIED FOR THE SYSTEM SERVED AND INSULATED AS SPECIFIED FOR THAT SYSTEM. FLEXIBLE DUCTWORK SHALL BE OF THE PRESSURE CLASS AND FACTORY INSULATED AS SPECIFIED FOR THE SYSTEM WHERE INSTALLED.
- FLEXIBLE DUCTWORK SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS WITHOUT ANY SAGS, SHARP TURNS OR KINKS. AT THE MINIMUM, THE FLEXIBLE DUCTWORK SHALL BE FASTENED TO THE HARD DUCT BY A NYLON STRAP SECURED BY SHEETMETAL SCREWS TO PREVENT SLIPPING OFF FROM COLLAR.
- PROVIDE VOLUME DAMPERS AT EACH AIR OUTLET, AIR INLET AND TERMINAL DEVICE AND AT EACH BRANCH TAKE-OFF CONNECTION FROM THE MAIN.

MECHANICAL ABBREVIATIONS	
ABRV.	DESCRIPTION
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
MBH	1000 - BRITISH THERMAL UNITS
KW	1000-WATT (1 KW = 3,412 BTUH)
SENS.	SENSIBLE
LAT.	LATENT
E.A.T.	ENTERING AIR TEMPERATURE
L.A.T.	LEAVING AIR TEMPERATURE
E.W.T.	ENTERING WATER TEMPERATURE
L.W.T.	LEAVING WATER TEMPERATURE
DB/WB	DRY BULB / WET BULB
IN. W.G.	INCHES WATER GAUGE (AIR)
FT. W.G.	FEET WATER GAUGE (HYDRONIC)
E.S.P.	EXTERNAL STATIC PRESSURE
T.S.P.	TOTAL STATIC PRESSURE
TG	TRANSFER GRILLE
TR	TOP REGISTER
(E)	EXISTING
R / R	REMOVE EXISTING ITEM & RELOCATE TO NEW LOCATION
UNO	UNLESS NOTED OTHERWISE
NTS	NOT TO SCALE
NIC	NOT IN CONTRACT
Ø OR PH	PHASE
Ø	DIAMETER
AFF	ABOVE FINISHED FLOOR
ELEV.	ELEVATION FROM DATUM

NOTES:
1. NOT ALL SYMBOLS AND ABBREVIATIONS ARE IN USE FOR THIS PROJECT.

MECHANICAL PIPING SYMBOLS LEGEND		
SYMBOL	ABRV.	DESCRIPTION
	R	REFRIGERANT PIPING
	CD	CONDENSATE PIPING
		ELBOW TURNED UP
		ELBOW TURNED DOWN

GENERAL MECHANICAL NOTES (ALL DRAWINGS):

- MECHANICAL CONTRACTOR SHALL PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE HVAC SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND REQUIRED BY CODE.
- THE CONTRACT DOCUMENT DRAWINGS ARE DIAGRAMMATIC ONLY, AND ARE INTENDED TO CONVEY THE SCOPE AND GENERAL ARRANGEMENT OF WORK.
- ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR BY FIELD INSPECTION PRIOR TO BIDDING. ANY INTERFERENCES TO INSTALLATION SHALL BE NOTED AND THE CONTRACTOR SHALL INCLUDE IN HIS BID PRICE THE COST TO AVOID OR RELOCATE ALL ITEMS, INCLUDING ITEMS OF OTHER TRADES, THAT INTERFERE. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. ALL OFFSETS, RISES, TRANSITIONS AND DROPS IN DUCTS AND PIPING AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
- VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS OR PIPE ADAPTERS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION.
- PROVIDE ACCESS IN WALLS & CEILINGS TO ACCESS ALL EQUIPMENT, VALVES, CONTROL DEVICES, VOLUME DAMPERS, AND FIRE/SMOKE DAMPERS.
- FOLLOW MANUFACTURE'S RECOMMENDATIONS FOR INSTALLATION OF EQUIPMENT. ALSO REFER TO TYPICAL DETAILS FOR INSTALLATION OF EQUIPMENT.
- ALL MATERIALS FURNISHED, AND ALL WORK PERFORMED BY THE MECHANICAL CONTRACTOR SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS, INCLUDING BUT NOT LIMITED TO THE LATEST APPLICABLE EDITIONS OF NFPA, IECC, OSHA, SMACNA, INTERNATIONAL MECHANICAL CODE, INTERNATIONAL BUILDING CODE, AND ANY STATE, COUNTY, AND LOCAL CODES.
- ALL EQUIPMENT, DUCTWORK, ETC., SHALL BE SUPPORTED SUFFICIENTLY AND ANY ADDITIONAL SUPPORT SHALL BE PROVIDED AS REQUIRED TO PROVIDE VIBRATION FREE AND SAFE INSTALLATION. ALL MISCELLANEOUS STEEL REQUIRED AND/OR AS SHOWN IN DETAILS FOR DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. SUPPORT ALL DUCTWORK, PIPING AND EQUIPMENT MOUNTED ABOVE THE CEILING DIRECTLY FROM THE STRUCTURE. ALL ATTACHMENTS TO BEAMS, TRUSSES, OR JOIST SHALL BE MADE AT PANEL POINTS WITH BEAM CLAMPS MEETING MSS STANDARDS.
- ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH NEC AND ELECTRICAL SPECIFICATIONS FOR THIS PROJECT.

MECHANICAL PIPING GENERAL NOTES (ALL DRAWINGS):

- ALL PIPING SHOWN HAS BEEN DRAWN SCHEMATICALLY FOR CLARITY AND SHOW ONLY RELATIVE POSITIONS. PROVIDE OFFSETS AND ELBOWS AS NEEDED TO INSTALL PROPERLY AND TO AVOID INTERFERENCES.
- ALL NEW OR REPLACED HYDRONIC PIPING SHALL BE INSTALLED SO THAT IT CAN BE COMPLETELY VENTED AT HIGH POINTS AND DRAINED AT LOW POINTS. PROVIDE AIR VENTS AT HIGH POINTS, TYPE PER SPECIFICATIONS. PROVIDE 1/2" BALL VALVES WITH HOSE END CONNECTIONS AND CAPS AT LOW POINT. ALL WATER MAINS SHALL BE INSTALLED LEVEL, UNLESS OTHERWISE NOTED.
- PROVIDE SERVICE VALVES AT EACH BRANCH CONNECTION FROM MAINS AND AT EACH TERMINAL DEVICE OR EQUIPMENT CONNECTION.
- CONTRACTOR SHALL PROVIDE NEW VALVES ON EXISTING PIPING WHERE THE PIPES ARE TO BE REMOVED SO THAT THE SYSTEM DOES NOT HAVE TO BE DRAINED WHILE REMOVING EXISTING UNITS, INSTALLING NEW UNITS AND MAKING CONNECTIONS TO NEW EQUIPMENT.



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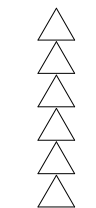
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Building Renovation
for
Big Tom's Barbershop
2178 Centre Avenue, Pittsburgh, PA 15219

Seal:

FOR PRICING ONLY
50% CD

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Owner / Client:
TomTom24 Development, LLC

Drawing Title:

**Mechanical
Data Sheet**

Scale: As indicated

Drawing Number:

M-001

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MECHANICAL SPECIFICATIONS

MECHANICAL GENERAL CONDITIONS (230010)

A. GENERAL

- CONFORM TO ALL GENERAL AND SPECIAL CONDITIONS OF CONTRACT AS SPECIFIED BY ARCHITECT AND/OR OWNER.
- PRODUCTS AND INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LAWS, CODES, GOVERNMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS, ETC. OF ALL AUTHORITIES HAVING JURISDICTION. WORK SHALL COMPLY WITH THE FOLLOWING CODES, STANDARDS AND ORGANIZATIONS: INTERNATIONAL MECHANICAL CODE (IMC), INTERNATIONAL PLUMBING CODE (IPC), INTERNATIONAL ENERGY CODE, NATIONAL ELECTRIC CODE, NFPA, UNDERWRITERS LABORATORY (UL), IRI, FM, SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" GUIDELINES, DETAILS, & MODEL SPECIFICATION, ASHRAE. WHERE CONFLICTS EXIST BETWEEN CODES, STANDARDS OR THIS SPECIFICATION, THE HIGHER REQUIREMENT SHALL APPLY. DEVIATIONS FROM THE CONTRACT DOCUMENTS REQUIRED BY THE ABOVE AUTHORITIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW, OBTAIN PERMITS AND PAY ALL FEES. ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS. CONFIRM ALL UTILITY COMPANY REQUIREMENTS AND CONNECTION POINTS IN FIELD, PRIOR TO STARTING WORK.
- ALL SPECIFICATIONS AND DRAWINGS, I.E., ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL ARE COMPLIMENTARY AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION. ANY INFORMATION CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION. DRAWINGS ARE DIAGRAMMATIC. CONFIRM ALL DIMENSIONS BY FIELD MEASUREMENT. THE EXACT LOCATIONS FOR APPARATUS, FIXTURES, EQUIPMENT AND PIPING WHICH IS NOT COVERED BY DRAWINGS, SHALL BE OBTAINED FROM THE ARCHITECT OR HIS REPRESENTATIVE IN THE FIELD, AND THE WORK SHALL BE LAID OUT ACCORDINGLY.
- VISIT SITE, CHECK FACILITIES AND CONDITIONS MAKE ALL NECESSARY OBSERVATIONS, MEASUREMENTS, NOTE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED, AND TAKE ALL ITEMS INTO CONSIDERATION IN BID.
- EACH CONTRACTOR SHALL PROVIDE FOR HIS OWN CLEAN-UP, REMOVAL AND LEGAL DISPOSAL OF ALL RUBBISH DAILY. CONTRACTOR SHALL PROTECT THEIR WORK AND EXISTING OR ADJACENT PROPERTY AGAINST WEATHER, TO MAINTAIN THEIR WORK MATERIALS, APPARATUS AND FIXTURES FREE FROM INJURY OR DAMAGE. ANY WORK DAMAGED BY FAILURE TO PROVIDE PROTECTION REQUIRED, SHALL BE REMOVED AND REPLACED WITH NEW WORK AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, SEQUENCES OF CONSTRUCTION AND THE SAFETY OF WORKMEN.
- NO PIPING, DUCTWORK, CONTROLS, ETC., SHALL BE INSTALLED OR ROUTED ABOVE ELECTRICAL PANELS AND EQUIPMENT OR THROUGH ELEVATOR ROOMS.
- THE CONTRACTOR SHALL COORDINATE AND OBTAIN A WRITTEN LISTING OF ELECTRICAL CHARACTERISTICS OF ALL MECHANICAL EQUIPMENT FROM ELECTRICAL CONTRACTOR PRIOR TO ORDERING OF EQUIPMENT. NO ADDITIONAL PAYMENT WILL BE MADE FOR LACK OF CONTRACTOR COORDINATION OF ELECTRICAL CHARACTERISTICS.
- DURING THE BUILDING CONSTRUCTION SOME EXISTING INSTALLATION MAY BE EXPOSED THAT WILL HAVE TO BE CHANGED, ALTERED, REROUTED AND/OR ABANDONED. ANY SUCH WORK WHICH COMES UNDER THE JURISDICTION OF THIS CONTRACTOR SHALL BE DONE BY THIS CONTRACTOR WITHOUT EXTRA COST TO THE OWNER, AS THOUGH FULLY DETAILED ON PLANS AND/OR DESCRIBED IN THE SPECIFICATIONS.
- WORK RELATED TO THE EXISTING BUILDING SHALL BE COORDINATED TO MINIMIZE INTERFERENCE OR INTERRUPTION OF NORMAL BUILDING USE BY OWNER. REFER TO ARCHITECTURAL PLANS FOR PHASING REQUIREMENTS.
- IN CASES OF DOUBT AS TO THE WORK INTENDED, OR IN THE EVENT OF NEED FOR EXPLANATION THEREOF, THE CONTRACTOR SHALL REQUEST SUPPLEMENTARY INSTRUCTIONS FROM THE ENGINEER. NO CHANGES ARE TO BE MADE TO THE WORK OF THIS CONTRACT WITHOUT PRIOR KNOWLEDGE AND APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL HOLD THE OWNER AND ITS CONSULTANTS HARMLESS AGAINST ALL CLAIMS AND JUDGMENTS ARISING OUT OF THE CONTRACTORS PERFORMANCE OF THE WORK OF THIS CONTRACT. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK, WHICH THE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT, WITHOUT WRITTEN AUTHORIZATION FROM THE APPROPRIATE AUTHORITY. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.
- IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO INSTALL THE HEATING, VENTILATION AND AIR CONDITIONING SYSTEM SO AS TO INSURE QUIET OPERATION. NO VIBRATION OR SOUND SHALL BE TRANSMITTED TO THE BUILDING, STRUCTURE OR OCCUPIED AREAS. THE DECISION OF THE ENGINEER AS TO THE QUIETNESS OF THE SYSTEM AND EQUIPMENT SHALL BE FINAL. IT SHALL BE THIS CONTRACTORS RESPONSIBILITY TO CORRECT OR REPLACE ANY NOISY SYSTEM OR EQUIPMENT AS REQUIRED.
- OBTAIN PERMITS AND PAY ALL FEES. ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS.

B. DEMOLITION

- DISCONNECT, DISASSEMBLE, CAP, PLUG AND REMOVE ALL MEP ELEMENTS (PIPING, DUCTS, ELECTRICAL DEVICES, WIRING, CONDUIT, EQUIPMENT, HANGERS, SUPPORTS, ETC) INDICATED ON THE DRAWINGS OR NOT OTHERWISE REQUIRED FOR COMPLETED PRODUCT, NO MEP ELEMENTS ARE TO BE ABANDONED IN PLACE UNLESS SPECIFICALLY NOTED. NOT ALL ITEMS TO BE REMOVED ARE INDICATED ON DRAWING.
- ALL OPENINGS ON PIPING AND DUCTS THAT REMAIN SHALL BE CAPPED AND PROPERLY SECURED. WIRING SHALL BE DISCONNECTED AT CIRCUIT BREAKERS AND REMOVED AND BREAKERS MARKED "SPARE." REMOVE AND RECLAIM ANY REFRIGERANT IN EXISTING SYSTEMS PRIOR TO DEMOLITION OF ANY EQUIPMENT ACCORDING TO FEDERAL REQUIREMENT.
- ANY EQUIPMENT DESIGNATED BY OWNER TO BE SALVAGED SHALL BE PROTECTED AND DELIVERED TO AN OWNER DESIGNATED AREA ON SITE.
- ALL ASBESTOS REMOVAL (IF REQUIRED) WILL BE HANDLED BY THE OWNER AND IS NOT A PART OF THIS WORK. IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; NOTIFY ARCHITECT AND OWNER IMMEDIATELY.

C. BASIS OF DESIGN AND SUBSTITUTIONS

- WHEREVER THE WORDS "APPROVED BY," "APPROVED EQUAL," "AS DIRECTED" OR SIMILAR PHRASES ARE USED IN THE FOLLOWING SPECIFICATIONS, THEY SHALL BE CONSIDERED TO REFER TO THE OWNER AS THE APPROVING AGENCY. THE NAME OR MAKE OF ANY EQUIPMENT OR MATERIALS NAMED IN THE SPECIFICATION (WHETHER OR NOT THE WORDS "OR APPROVED EQUAL" ARE USED) SHALL BE KNOWN AS THE "STANDARD".
- THESE SPECIFICATIONS ESTABLISH QUALITY STANDARDS OF MATERIALS AND EQUIPMENT TO BE PROVIDED. SPECIFIC ITEMS ARE IDENTIFIED BY MANUFACTURER, TRADE NAME OR CATALOG DESIGNATION. THE CONTRACTOR SHALL SUBMIT THE BASE BID PRICE BASED UPON STANDARD SPECIFIED EQUIPMENT DESCRIBED HEREIN AND AS DETAILED ON DRAWINGS AND ASSOCIATED CONTRACT DOCUMENTS. THE CONTRACTOR MAY SUBMIT INFORMATION ON MATERIALS AND MANUFACTURERS (OTHER THAN THOSE LISTED) FOR REVIEW BY THE OWNER, ARCHITECT, AND ENGINEER NO LATER THAN TEN (10) DAYS BEFORE BIDS ARE SUBMITTED. IN ADDITION, SAMPLES OF THE PROPOSED EQUIPMENT MAY BE REQUIRED TO BE SUBMITTED TO THE ENGINEER FOR REVIEW NO LATER THAN TEN (10) DAYS BEFORE BIDS ARE SUBMITTED. MANUFACTURERS OF PRODUCTS ACCEPTED BY THE OWNER, ARCHITECT, AND ENGINEER WILL BE LISTED IN AN ADDENDUM TO THE SPECIFICATIONS AS AN ACCEPTABLE SUBSTITUTION. EQUIPMENT ACCEPTED AS DETAILED BELOW SHALL BE SHOWN AS A SEPARATE ADD OR DEDUCT PRICE TO BE FACTORED INTO THE BASE PRICE BY THE ARCHITECT AND OWNER IF ACCEPTED.
- SHOULD THE CONTRACTOR PROPOSE TO FURNISH MATERIALS AND EQUIPMENT OTHER THAN THOSE SPECIFIED OR APPROVED BY ADDENDUM, SUBMIT A WRITTEN REQUEST FOR SUBSTITUTION TO THE OWNER, ARCHITECT AND ENGINEER AT BID OPENING. THE REQUEST SHALL BE AN ALTERNATE TO THE ORIGINAL BID; BE ACCOMPANIED WITH COMPLETE DESCRIPTIVE (MANUFACTURER, BRAND NAME, CATALOG NUMBER, ETC.) AND TECHNICAL DATA FOR ALL ITEMS. FAILURE BY THIS CONTRACTOR TO SUBMIT THE REQUISITE DOCUMENTATION DETAILED ABOVE SHALL BE UNDERSTOOD BY THE OWNER, ARCHITECT, AND ENGINEER TO INDICATE THAT SUBSTITUTE EQUIPMENT WILL NOT BE PRESENTED BY THE CONTRACTOR FOR REVIEW. SUBSTITUTIONS WILL NOT BE CONSIDERED AFTER THE BID OPENING DATE AND DELAY OF THE PROJECT WILL NOT BE PERMITTED FOR FURTHER INSPECTION AND EVALUATION AFTER THIS DATE.
- WHERE SUCH SUBSTITUTIONS ALTER THE DESIGN OR SPACE REQUIREMENTS INDICATED ON THE DRAWINGS, INCLUDE ALL ITEMS OF COST FOR THE REVISED DESIGN AND CONSTRUCTION INCLUDING COST OF ALL ALLIED TRADES INVOLVED.
- ACCEPTANCE OR REJECTION OF THE PROPOSED SUBSTITUTIONS SHALL BE SUBJECT TO APPROVAL OF THE OWNER, ARCHITECT, AND ENGINEER. IF REQUESTED, THE CONTRACTOR SHALL SUBMIT (AT THEIR COST) INSPECTION SAMPLES OF BOTH THE SPECIFIED AND PROPOSED SUBSTITUTE ITEMS.
- IN ALL CASES WHERE SUBSTITUTIONS ARE PERMITTED, THE CONTRACTOR SHALL BEAR ANY EXTRA COST OF EVALUATING THE QUALITY OF THE MATERIAL AND EQUIPMENT TO BE PROVIDED.
- ALL EQUIPMENT AND MATERIALS SHALL BE NEW, FREE OF DEFECTS AND U.L. LABELED.

D. CUTTING, PATCHING AND DRILLING

- CUTTING AND PATCHING OF THE BUILDING CONSTRUCTION REQUIRED FOR THIS WORK SHALL BE BY THIS CONTRACTOR UNLESS SHOWN ON ARCHITECTURAL DRAWINGS AND CONFIRMED AS TO SIZE AND LOCATION PRIOR TO NEW CONSTRUCTION. CUTTING SHALL BE IN A NEAT AND WORKMANLIKE MANNER. NEATLY SAW CUT ALL RECTANGULAR OPENINGS, SET SLEEVE THROUGH OPENING, AND FINISH PATCH OR PROVIDE TRIM FLANGE AROUND OPENING. CORE DRILL AND SLEEVE ALL ROUND OPENINGS. DO NOT CUT ANY STRUCTURAL COMPONENTS WITHOUT ARCHITECT'S APPROVAL.
- PATCH AND FINISH TO MATCH ADJACENT AREAS THAT HAVE BEEN CUT, DAMAGED OR MODIFIED AS A RESULT OF THE INSTALLATION OF THE MECHANICAL OR ELECTRICAL EQUIPMENT. FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER.
- ALL CONTRACTORS SHALL CONFIRM WITH OWNER, PRIOR TO BID, TIMES AVAILABLE FOR NOISE PRODUCING WORK SUCH AS CUTTING AND CORE DRILLING OF FLOORS, WALLS, ETC., AS WELL AS TIMES FOR WORK WHICH REQUIRE ACCESS INTO ADJOINING TENANT SPACES. INCLUDE ANY PREMIUM TIME IN BID.

4. EXACT LOCATION OF ROOFTOP EQUIPMENT SHALL BE APPROVED BY OWNER'S STRUCTURAL ENGINEER.

5. INFORMATION REGARDING REQUIRED PIPE OPENINGS IN WALLS, FLOORS, CHASES, ETC., AND CONCRETE EQUIPMENT PADS OR FOUNDATIONS SHALL BE GIVEN TO THE GENERAL CONTRACTOR BY THIS CONTRACTOR PRIOR TO THE CONSTRUCTION PERIOD. IF THIS CONTRACTOR FAILS TO COMPLY WITH THIS REQUEST, OR IF INCORRECT INFORMATION IS GIVEN, THE NECESSARY CUTTING AND PATCHING WILL BE PERFORMED BY THE GENERAL CONTRACTOR, AT THIS CONTRACTOR'S EXPENSE.

E. WARRANTY

- FULLY WARRANT ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE EXTEND ALL MANUFACTURER'S WARRANTIES TO OWNER, INCLUDING ALL EXTENDED WARRANTIES ON HVAC EQUIPMENT.
- REPAIR OR REPLACE WITHOUT CHARGE TO THE OWNER ALL ITEMS FOUND DEFECTIVE DURING THE WARRANTY PERIOD. IN THE CASE OF REPLACEMENT OR REPAIR DUE TO FAILURE WITHIN THE WARRANTY PERIOD, THE WARRANTY ON THAT PORTION OF THE WORK SHALL BE EXTENDED FOR A MINIMUM PERIOD OF ONE (1) YEAR FROM THE DATE OF SUCH REPLACEMENT OR REPAIR.

F. SHOP DRAWING SUBMITTALS

- SUBMIT SHOP DRAWINGS FOR MECHANICAL EQUIPMENT, FIRE PROTECTION SYSTEMS, DUCTWORK, AND PLUMBING FIXTURES AND EQUIPMENT WITH ADEQUATE DETAILS AND SCALES TO CLEARLY SHOW CONSTRUCTION. INDICATE THE OPERATING CHARACTERISTICS FOR EACH REQUIRED ITEM. CLEARLY IDENTIFY EACH ITEM ON THE SUBMITTALS AS TO MARK, LOCATION AND USE, USING SAME IDENTIFICATION AS PROVIDED ON DESIGN DRAWINGS.
- DUCTWORK AND FIRE PROTECTION DRAWINGS SHALL BE FULLY DIMENSIONED BASED ON FIELD VERIFIED BUILDING CLEARANCES AND ARCHITECTURAL CEILING LAYOUTS, AND INDICATE STRUCTURAL, LIGHTING, DUCTWORK AND PIPING AT ALL CRITICAL LOCATIONS.
- CONTRACTOR SHALL REVIEW AND INDICATE HIS APPROVAL OF EACH SHOP DRAWING PRIOR TO SUBMITTAL FOR REVIEW. DO NOT START WORK OR FABRICATION UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED BY THE ENGINEER AND RETURNED TO THE CONTRACTOR.
- SUBMITTALS WILL BE REVIEWED ONLY FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND NOT FOR DIMENSIONS OR QUANTITIES. THE SUBMITTAL REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PURCHASE OF ANY ITEM IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS OR ITS COMPLETE AND PROPER INSTALLATION.
- WHERE SUBMITTALS VARY FROM THE CONTRACT REQUIREMENTS, THE CONTRACTOR SHALL CLEARLY INDICATE ON SUBMITTAL OR ACCOMPANYING DOCUMENTS THE NATURE AND REASON FOR VARIATIONS.
- REFER TO VARIOUS SECTIONS FOR LISTING OF SHOP DRAWINGS REQUIRED ON THIS PROJECT.
- EACH MANUFACTURER OR HIS REPRESENTATIVE MUST CHECK THE APPLICATION OF HIS EQUIPMENT AND CERTIFY AT TIME OF SHOP DRAWING SUBMITTAL THAT EQUIPMENT HAS BEEN PROPERLY APPLIED AND CAN BE INSTALLED, SERVICED AND MAINTAINED WHERE INDICATED ON DRAWINGS. ADVISE ENGINEER IN WRITING WITH SUBMITTAL DRAWINGS OF ANY POTENTIAL PROBLEMS. THE MANUFACTURER SHALL BE RESPONSIBLE FOR ANY CHANGES THAT MIGHT BE NECESSARY BECAUSE OF PHYSICAL CHARACTERISTICS OF EQUIPMENT THAT HAVE NOT BEEN CALLED TO THE ENGINEER'S ATTENTION AT THE TIME OF SUBMITTAL.

G. RECORD DRAWINGS

- EACH CONTRACTOR OR SUBCONTRACTOR SHALL KEEP ONE (1) COMPLETE SET OF THE CONTRACT WORKING DRAWINGS ON THE JOB SITE ON WHICH HE SHALL REGULARLY RECORD ANY DEVIATIONS OR CHANGES FROM SUCH CONTRACT DRAWINGS MADE DURING CONSTRUCTION.
- THESE DRAWINGS SHALL RECORD THE LOCATION OF ALL CONCEALED EQUIPMENT, PIPING, ELECTRIC SERVICE, SEWERS, WASTES, VENTS, DUCTS, CONDUIT AND OTHER PIPING, BY MEASURED DIMENSIONS TO EACH SUCH ITEM FROM READILY IDENTIFIABLE AND ACCESSIBLE WALLS OR CORNERS OF THE BUILDING. PLANS ALSO SHALL SHOW INVERT ELEVATION OF SEWERS AND TOP ELEVATION OF ALL OTHER BELOW-GRADE LINES.
- RECORD DRAWINGS SHALL BE KEPT CLEAN AND UNDAMAGED AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN RECORDING DEVIATIONS FROM WORKING DRAWINGS AND EXACT LOCATIONS OF CONCEALED WORK.
- AFTER THE PROJECT IS COMPLETED, THESE SETS OF DRAWINGS SHALL BE DELIVERED TO THE ARCHITECT IN GOOD CONDITION, AS A PERMANENT RECORD OF THE INSTALLATION AS ACTUALLY CONSTRUCTED.

H. FIRESTOPPING

- ALL SERVICES THAT PASS THRU FIRE OR SMOKE RATED PARTITIONS, WALLS, FLOORS, SHALL BE FIRESTOPPED. FIRE STOPPING RATING SHALL MATCH PARTITION RATING. ALL FIRE STOPPING SYSTEM SHALL MEET THE REQUIREMENTS OF ASTM E 814, UL 1479, AND BE FACTORY MUTUAL APPROVED.
- ALL FIRESTOPPING AND/OR SMOKE STOPPING MATERIAL AND INSTALLATION SHALL BE AS MANUFACTURED BY HLTI OR APPROVED EQUAL.

I. ACCESS DOORS & PANELS

- ACCESS DOORS SHALL BE PROVIDED IN WALLS AND CEILINGS WHERE REQUIRED TO PERMIT PROPER ACCESS TO VALVES AND ANY OTHER SUCH DEVICES WHICH REQUIRE MAINTENANCE OR SERVICE. DOORS PLACED IN WALLS, PARTITIONS OR OTHER FIRE-RATED CONSTRUCTION SHALL HAVE A LABEL SIGNIFYING THAT THE DOOR HAS THE SAME FIRE RATING AS THE FIRE-RATED CONSTRUCTION.
- THIS CONTRACTOR SHALL FURNISH ACCESS PANELS TO THE GENERAL CONTRACTOR FOR INSTALLATION.
- ACCESS PANELS SHALL BE CONSTRUCTED OF 14 GAUGE STEEL, WITH 16 GAUGE STEEL FRAMES. DOORS SHALL FINISH FLUSH WITH THE SURROUNDING SURFACE. FRAMES SHALL HAVE 3 INCH WIDE EXPANDED METAL FOR PLASTERED SURFACES AND PLAIN FLANGED TYPE FRAME FOR TILE, MASONRY OR GYPSUM BOARD SURFACES. DOORS AND FRAMES SHALL BE FURNISHED PRIME COATED. DOORS INSTALLED IN CERAMIC TILE OR OTHER NON-PAINTED SURFACES SHALL BE STAINLESS STEEL. HINGES SHALL BE CONCEALED SPRING TYPE. TO ALLOW DOORS TO BE OPENED 175 DEGREES. LOCKS SHALL BE FLUSH SCREWDRIVER TYPE WITH STEEL CAMS. ACCESS PANELS SHALL BE 16 INCHES BY 16 INCHES OR LARGER AS MAY BE REQUIRED FOR PROPER ACCESS TO THE DEVICE BEING SERVED.
- ACCESS PANELS ARE NOT REQUIRED IN COMPLETELY ACCESSIBLE LIFT OUT TILE CEILINGS. CONTRACTOR SHALL REVIEW THE ROOM FINISH SCHEDULE ON THE ARCHITECTURAL DRAWINGS IN ORDER TO VERIFY THE NEED FOR ACCESS PANEL.

REFRIGERANT PIPING (232300)

- INSTALL REFRIGERANT PIPING BETWEEN CONDENSING UNIT AND DX COIL. PIPING SHALL BE REFRIGERANT GRADE TYPE "L" OR ACR COPPER WITH BRAZED JOINTS. PIPE PER MANUFACTURER'S PIPING DIAGRAMS AND RECOMMENDATIONS.
- ISOLATE PIPING FROM STRUCTURE WITH ONE (1) INCH INSULATION BETWEEN ALL PIPING AND SUPPORT POINTS.
- AFTER COMPLETION, PRESSURE TEST PIPING, PURGE AND EVACUATE SYSTEM TWICE AND CHARGE SYSTEM WITH REFRIGERANT AND OIL.
- INSTALL PIPING IN AS SHORT AND DIRECT ARRANGEMENT AS POSSIBLE TO MINIMIZE PRESSURE DROP, PROVIDE OIL TRAP AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
- INSTALL UNIONS TO ALLOW REMOVAL OF SOLENOID VALVES, PRESSURE REDUCING VALVES, EXPANSION VALVES, AND AT CONNECTIONS TO COMPRESSORS AND EVAPORATORS.
- FILL THE PIPE AND FITTINGS DURING BRAZING, WITH NITROGEN TO PREVENT FORMATION OF SCALE.

PIPE WALL SEALS (230517)

- WALL PIPE SEALS WITH RUBBER LINKS SHALL BE THUNDERLINE LINK SEAL, OR APPROVED EQUAL. WALL PIPE SEALS WITH INORGANIC MATERIAL LINKS THE PENETRATIONS OF FIRE RATED WALLS SHALL BE THUNDERLINE PYRO-PAC, OR APPROVED EQUAL.
- SEALS SHALL BE MODULAR MECHANICAL TYPE CONSISTING OF INTERLOCKING SYNTHETIC RUBBER OR INORGANIC MATERIAL LINKS SHAPED TO CONTINUOUSLY FILL THE ANNULAR SPACE BETWEEN THE PIPE AND WALL OPENING. LINKS SHALL BE LOOSELY ASSEMBLED WITH BOLTS TO FORM A CONTINUOUS BELT AROUND THE PIPE. A PRESSURE PLATE SHALL BE PROVIDED UNDER THE BOLT HEAD AND NUT OF EACH LINK. SEALS SHALL BE CONSTRUCTED TO PROVIDE ELECTRICAL INSULATION BETWEEN THE PIPE AND SLEEVE, THUS REDUCING CHANCES OF CATHODIC REACTION BETWEEN THESE TWO MEMBERS.
- AFTER THE SEAL ASSEMBLY IS POSITIONED IN THE SLEEVE, THE TIGHTENING OF THE BOLTS SHALL CAUSE THE SEALING ELEMENTS TO EXPAND AND PROVIDE AN ABSOLUTELY WATER-TIGHT SEAL BETWEEN THE PIPE AND SLEEVE.
- SLEEVES SHALL BE MANUFACTURED FROM HEAVY-WALL, WELDED OR SEAMLESS STEEL PIPE. A FULL CIRCLE CONTINUOUSLY WELDED WATER STOP PLATE SHALL BE PROVIDED TO ASSURE POSITIVE WATER SEALING OF THE SLEEVE. SLEEVE SHALL BE PROTECTED BY A COATING OF ENRICHED RED PRIMER.

DUCTWORK (233113)

- FABRICATE AND ERECT ALL DUCTWORK TO ASHRAE AND SMACNA STANDARDS FROM G90 GALVANIZED STEEL. COMPLY WITH NFPA BULLETIN 90A REQUIREMENTS.
- SUPPLY DUCTWORK UPSTREAM OF TERMINAL UNITS AND WITHIN 15' OF ANY AHU FAN OUTLET SHALL HAVE A SMACNA 3" STATIC PRESSURE RATING WITH SEAL CLASS A SEAMS AND JOINTS.
- GENERAL SUPPLY AND RETURN DUCTWORK HAVE A SMACNA 2" STATIC PRESSURE RATING WITH SEAL CLASS B SEAMS AND JOINTS.
- OUTDOOR AIR INTAKE DUCTWORK SHALL HAVE A SMACNA 2" STATIC PRESSURE RATING WITH SEAL CLASS A SEAMS AND JOINTS.
- ALL EXPOSED ROUND AND OVAL DUCTWORK IN SHALL HAVE SPIRAL LOCKSEAM CONSTRUCTION.
- ALL RECTANGULAR TRANSFER DUCTWORK SHALL HAVE 1" THICK ACOUSTICAL LINER. LINER SHALL BE FLEXIBLE AND CONSTRUCTED OF GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. THE SURFACE OF THE LINER SHALL HAVE AN ANTIMICROBIAL EROSION RESISTANCE COATING TESTED BY NRL AND REGISTERED BY THE EPA FOR USE IN HVAC SYSTEMS. MINIMUM R-VALUE SHALL BE 4.2.
- GENERAL EXHAUST DUCTWORK UNDER 45' IN LENGTH SHALL HAVE A SMACNA 1" STATIC PRESSURE RATING WITH SEAL CLASS B SEAM AND JOINTS. EXHAUST DUCTWORK OVER 45' IN LENGTH SHALL HAVE A SMACNA 2" STATIC PRESSURE RATING WITH SEAL CLASS A SEAM AND JOINTS.
- EXTERIOR DUCTWORK (ALL DUCTWORK EXPOSED TO AMBIENT CONDITIONS) SHALL BE 2" THICK RIGID PHENOLIC, MINIMUM R-10 INSULATION VALUE, NOT EXCEEDING 25 FLAME SPREAD AND 50 SMOKE DEVELOPED RATINGS, WITH FACTORY-APPLIED WEATHERPROOF JACKETING DESIGNED FOR EXTERIOR INSTALLATION. SUPPORT AND INSTALLATION SHALL BE PER MANUFACTURER'S RECOMMENDATIONS, UTILIZING SUPPORT SYSTEM THAT FULLY ENCLOSES THE DUCT. REINFORCE DUCT AS NECESSARY PER SMACNA HVAC PHENOLIC DUCT CONSTRUCTION STANDARDS. ACCEPTABLE MANUFACTURERS ARE AGC INDUSTRIES' Q-DUCT AND THERMADUCT.
- ALL FLEXIBLE DUCTWORK SHALL BEAR THE UL 181 LABEL (CLASS 1 AIR DUCT) AND SHALL BE FACTORY INSULATED (1-1/2", 0.6 LB., FIBERGLASS) ATCO UPC #0761 OR EQUAL. FLEXIBLE DUCTWORK SHALL COMPLY W/ NFPA 90A, AND NFPA 90B. ALL FLEXIBLE DUCTWORK CONNECTED TO DIFFUSERS SHALL NOT BE LESS THAN THE NECK SIZE OF THE DIFFUSER. MINIMUM FLEXIBLE DUCT BEND RADIUS OF CURVATURE SHALL BE 3 DUCT DIAMETERS. MAXIMUM LENGTH SHALL BE 30'-0", NO MORE THAN THE EQUIVALENT OF TWO (2) 90 DEGREE BENDS WILL BE ACCEPTABLE. FLEXIBLE DUCTS SHALL BE INDEPENDENTLY SUPPORTED FROM THE STRUCTURE AND CONNECTED WITH PLASTIC DRAW BANDS TIGHTENED WITH MANUFACTURER'S TOOL. FLEXIBLE DUCTS ARE NOT PERMITTED IN ROOMS WITHOUT CEILINGS.
- INCLUDE ALL ACOUSTIC, DOUBLE RADIUS AIRFOIL SHAPED PERFORATED ALUMINUM TURNING VANES, MANUAL DAMPERS, FLEXIBLE CONNECTORS, GRILLES AND DIFFUSERS, ACOUSTIC LINING, AND OTHER SHEET METAL ACCESSORIES FOR THE PROJECT. VOLUME DAMPERS TO BE OF OPPOSED BLADE TYPE CONSTRUCTED IN ACCORDANCE WITH "SMACNA" STANDARDS.
- ALL BRANCH CONNECTION FITTINGS IN RECTANGULAR DUCTWORK SHALL BE 45 DEGREE TRANSITION TYPE, CONICAL FITTINGS OR SPIN-IN FITTINGS. BUTT FITTINGS ARE NOT ACCEPTABLE.
- DRYER VENT ROUND DUCTWORK SHALL BE 22 GAUGE (MINIMUM) ALUMINUM CONSTRUCTION WITH DIESTAMPED OR FABRICATED FITTINGS. DUCTS SHALL BE CONSTRUCTED FOR LOW PRESSURE OPERATION WITH LONGITUDINAL SEAM UP. FABRICATED ELBOWS SHALL BE THE MULTI-PIECE TYPE WITH EACH SEGMENT NOT EXCEEDING 22-1/2 DEGREES. THROAT RADIUS OF ALL ELBOWS SHALL BE EQUAL TO THE DUCT DIAMETER. TEES SHALL BE THE CONCEALED TYPE. JOINTS SHALL BE THE SLIP OF FLANGED TYPE. DO NOT USE DRIVE SLIP COUPLING BANDS. MAKE-UP SLIP JOINTS WITH DUCT SEALER. DUCTS FOR EXHAUSTING CLOTHES DRYERS SHALL NOT BE ASSEMBLED WITH SCREWS OR OTHER FASTENING MEANS THAT EXTEND INTO THE DUCT AND THAT WOULD CATCH LINT. PROVIDE NFPA 90A APPROVED FLEXIBLE DUCT SECTION AT CONNECTION OF DRYER TO DUCTWORK. PROVIDE AND INSTALL EXTRUDED ALUMINUM DRYER FLAPPER VENT AT TERMINATION OF EACH DRYER VENT. WHERE CLOTHES DRYER VENT DUCTS PASS THROUGH WALLS, FLOORS, OR PARTITIONS, THAT SPACE AROUND THE DUCT SHALL BE SEALED WITH NON-COMBUSTIBLE MATERIAL AND FIRESTOPPED. SIGNAGE INDICATING EQUIVALENT LENGTH SHALL BE POSTED WITHIN 6' OF THE DRYER CONNECTION IN ACCORDANCE WITH IMC 504.6.5 2009.
- PROVIDE FIRE DAMPERS WITH ACCESS DOORS AT ALL FIRE RATED WALLS, PARTITIONS AND CEILINGS. DAMPERS SHALL HAVE RATING EQUIVALENT TO BARRIER. DAMPER SHALL BE THE DYNAMIC TYPE AND SHALL BE ABLE TO CLOSE AGAINST AN AIRSTREAM. DAMPERS SHALL MEET ALL NFPA AND IBC REQUIREMENTS.
- PROVIDE SMOKE DAMPERS WITH ACCESS DOORS AT ALL SMOKE BARRIERS/PARTITIONS. UNIT SHALL INCORPORATE BLADE END SWITCHES (OPEN AND CLOSED), AND OUTSIDE THE DUCT MOUNTED UL LISTED MOTOR. PROVIDE MANUFACTURER'S STANDARD UL LISTED OPEN-CLOSE-RESET SWITCH AND POSITION PILOT LIGHTS IN UNIT MOUNTED ENCLOSURE. ENCLOSURE TO BE CAPABLE OF BEING REMOVED FOR REMOTE MOUNTING TO ENSURE VISIBILITY AFTER SYSTEM INSTALLATION.
- PROVIDE COMBINATION FIRE/SMOKE DAMPERS AT ALL FIRE/SMOKE RATED SHAFT AND WALL LOCATIONS. EACH COMBINATION FIRE SMOKE DAMPER SHALL HAVE 16 GA. GALVANIZED BLADES STRENGTHENED WITH GROOVES MEETING REQUIREMENTS OF UL STANDARD 555 & 555S AND HAVE AN 1-1/2 HOUR RATING. BASIS OF DESIGN SHALL BE GREENHECK MODEL FSD 200 SERIES. DAMPERS SHALL BE EQUIPPED STANDARD WITH AN ELECTRIC HEAT-RESPONSIVE DEVICE THAT PERFORMS THE SAME FUNCTION AS A FUSIBLE LINK TO CLOSE DAMPER AT 350 °F. PROVIDE POSITION INDICATING SWITCHES TO MEET REQUIREMENTS OF SMOKE PURGE CONTROL AND/OR BUILDING MANAGEMENT SYSTEM CONTROLS. THE DAMPER OPERATION AND CONSTRUCTION SHALL MEET UL REQUIREMENTS.
- PROVIDE CURBS FOR ALL ROOF OPENINGS FOR DUCTS, FLUES, PIPING AND EQUIPMENT. CURBS SHALL BE FURNISHED AS ACCESSORIES TO THE EQUIPMENT OR 8" HIGH PATE OR EQUAL EQUIPMENT SUPPORTS SPANNING STRUCTURE AND FLASHED INTO ROOFING. ALL CUTTING, FLASHING, AND PATCHING OF ROOF SHALL BE BY OWNER'S ROOFING CONTRACTOR AND PAID FOR BY MECHANICAL CONTRACTOR.

DUCTWORK EXTERNAL INSULATION (230713, 230719)

- INSULATE DUCTWORK AS DESCRIBED IN DUCTWORK INSULATION SCHEDULE. FIBERGLASS DUCT WRAP SHALL BE FULLY SECURED TO DUCT. LAP AND TAPE SEAMS AND SECURE TIGHTLY TO THE DUCTS WITH WIRE OR STICK PINS.
- DO NOT INSULATE:
 - MAKE-UP AIR DUCTWORK OPERATING AT SURROUNDING AMBIENT CONDITIONS.
 - RETURN AND EXHAUST AIR DUCTWORK LOCATED WITHIN THE BUILDING ENVELOPE. (DOES NOT INCLUDE BUILDING SHAFTS.)
 - TRANSFER AIR DUCTWORK (ACOUSTICALLY LINE DUCT, CLEAR INSIDE DIMENSIONS SHOWN ON PLANS)
 - EXPOSED SUPPLY DUCTWORK LOCATED IN CONDITIONED SPACE. (DOES NOT INCLUDE RETURN AIR PLENUM)
 - PHENOLIC DUCTWORK
- INTERNAL DUCT INSULATION -- DUCTWORK INDICATED TO HAVE INTERNAL INSULATION SHALL BE INTERNALLY COVERED WITH 1" THICK FIBERGLASS INSULATION MANUFACTURED FROM A ROTARY PROCESS WITH A NON-WOVEN HYDROPHOBIC FACING. FOR DUCTWORK LOCATED OUTDOORS USE INSULATION AS ABOVE THAT IS 2" THICK. INSULATION SHALL HAVE AN "R" RATING OF 4.2 FOR 1" THICK INSULATION AND R/8 FOR 2" THICK INSULATION. INSULATION SHALL HAVE FLAME/SMOKE RATING OF 25/50. INSULATION SHALL WITHSTAND DUCT VELOCITIES OF 4000 FPM MINIMUM. DUCT SIZES SHOWN ON DRAWINGS ARE CLEAR INTERNAL DIMENSIONS. WHERE LINER IS USED, INCREASE OUTSIDE DIMENSIONS OF DUCT TO MAINTAIN INTERNAL DIMENSIONS. INSTALL LINER PER SMACNA OR NAIMA STANDARDS.
- HYDRONIC PIPING TO BE INSULATED AS DESCRIBED IN PIPING INSULATION SCHEDULE. PROVIDE SECTIONAL GLASS FIBER PIPE INSULATION HAVING FACTORY APPLIED WHITE "ALL SERVICE" JACKET. LONGITUDINAL FLAPS SHALL BE SELF-SEALING TYPE ADDITIONALLY SECURED WITH NONFERROUS FLARE DOOR STAPLES SPACED 6" ON CENTERS. END JOINTS SHALL BE CLOSED WITH 4" WIDE SELF-SEALING TAPE STAPLED IN PLACE. ALL FITTINGS TO BE FINISHED WITH PRE-MOLDED ONE-PIECE ZESTON TYPE PVC COVERS WITH FIBERGLASS INSULATION INSIDE. SEAL ALL VISIBLE RAW FIBERGLASS WITH BENJAMIN FEATER #3036 WHITE MASTIC.
- INSULATE REFRIGERANT PIPING LINES AS DESCRIBED IN PIPING INSULATION SCHEDULE WITH ELASTOMERIC FOAM INSULATION WITH SELF-SEALING SEAM. ARMACELL - AP ARMAFLEX INSULATION. PAINT OF ALL EXPOSED INSULATION SHALL BE IN ACCORDANCE WITH TWO COATS OF UV RESISTANT PAINT PER MANUFACTURER'S RECOMMENDATIONS. USE PRE-MOLDED COVERS OVER FITTINGS, VALVES, ELBOWS AND CONTROL DEVICES SEALED VAPOR TIGHT.
- STEAM SYSTEMS PIPING SHALL BE INSULATED AS DESCRIBED IN PIPING INSULATION SCHEDULE.
- INSULATION SHALL BE OMITTED FROM HOT SYSTEM VALVE BODIES STRAINERS AND UNIONS. SYSTEMS OPERATING BELOW AMBIENT TEMPERATURE SHALL HAVE ALL VALVE BODIES AND PIPING SPECIALTIES FULLY INSULATED. ALL VALVE BODIES, STRAINERS, UNIONS, PUMP CASING, WATER SEPARATORS, ETC. IN COLD PIPING SHALL BE COVERED SAME AS PIPING SYSTEM. PIPE HANGERS ON INSULATED PIPE SHALL BE OUTSIDE OF THE INSULATION, SIZED ACCORDINGLY, AND WITH SADDLE INSERT SUFFICIENT TO PROTECT INSULATION FROM CRUSHING.
- ALL INSULATION TO BE APPLIED IN FULL ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL INSULATION SHALL COMPLY WITH 25/50 FLAME AND SMOKE HAZARD RATINGS PER ASTM E-84, NFPA 255 AND UL 723.
- PROVIDE REMOVABLE INSULATION SECTIONS TO COVER PARTS OF EQUIPMENT WHICH MUST BE OPENED PERIODICALLY FOR MAINTENANCE; INCLUDE METAL VESSEL COVERS, FASTENERS, FLANGES, CHILLED WATER PUMPS, FRAMES AND ACCESSORIES.
- REPLACE DAMAGED INSULATION WHICH CANNOT BE REPAIRED SATISFACTORILY, INCLUDING UNITS WITH VAPOR BARRIER DAMAGE AND MOISTURE SATURATED UNITS.
- CONDENSATE DRAIN PIPING IN RETURN AIR RATED PLENUMS SHALL BE TYPE L COPPER WITH 1/2" FIBERGLASS INSULATION (MIN. R-VALUE = 3). SCHEDULE 40 PVC WITHOUT INSULATION MAY BE USED IN ALL OTHER LOCATIONS.



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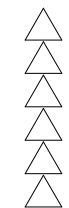
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Building Renovation for
Big Tom's Barbershop
2178 Centre Avenue, Pittsburgh, PA 15219

Seal:

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HANGERS AND SUPPORTS (230529)

1. SUPPORT ALL PIPING FROM STRUCTURE WITH UL LISTED HANGERS AND SUPPORTS SUITABLE FOR THE INTENDED INSTALLATION. DESIGN, SELECTION, SPACING, AND APPLICATION OF HANGERS AND SUPPORTS SHALL COMPLY WITH ANSI B31.1 AND MSS SP-69. HANGERS SHALL BE MANUFACTURED BY PENTAIR, OR APPROVED EQUAL. BLACK OR GALVANIZED STEEL PIPE = MODEL NO. 100, CAST IRON PIPE = MODEL NO. 400, COPPER TUBING = MODEL NO. 102-A.
2. CONTRACTOR SHALL PROVIDE INSULATION HANGER WITH PROTECTIVE SHIELDS, SUCH AS PENTAIR, MODEL NO. 125, OR APPROVED EQUAL FOR ALL INSULATED PIPING.
3. CONTRACTOR SHALL PROVIDE RISER CLAMPS FOR VERTICAL PIPING AT EACH LEVEL. RISER CLAPS SHALL BE PENTAIR MODEL NO. 510 FOR STEEL PIPING AND MODEL NO. 511 FOR COPPER TUBING OR APPROVED EQUAL. USE "SHORT-END" RISER CLAMPS WHERE SPACE IS LIMITED.
4. CONTRACTOR SHALL PROVIDE SIDE BEAM CLAMPS FOR SUPPORTING PIPING FROM STRUCTURAL STEEL MEMBERS. BEAM CLAMPS SHALL BE MANUFACTURED BY PENTAIR, MODEL 300 OR APPROVED EQUAL.
5. WHERE OTHER MEANS OF SUPPORT PIPING ARE REQUIRED OR DESIRED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ENGINEER'S APPROVAL PRIOR TO INSTALLING THOSE SUPPORTS.
6. HANGERS AND SUPPORTS SHALL BE SPACED AT INTERVALS WHICH WILL PREVENT SAGGING AND REDUCE STRAIN ON VALVES AND SPECIALTIES. HANGER SPACING SHALL BE NO GREATER AND ROD SIZE SHALL BE NO SMALLER THAN THAT SHOWN IN THE FOLLOWING TABLE. HANGERS SHALL ALLOW FOR EXPANSION AND CONTRACTION. HANGER SHALL BE PROVIDED AT EACH CHANGE OF DIRECTION.
7. RISER CLAMPS SHALL BE INSTALLED ABOVE THE FLOOR AT EACH LEVEL. RISER CLAMPS MAY BE SUSPENDED BELOW FLOOR LEVEL, WITH HANGER RODS AND INSERTS, WHERE THE INSTALLATION OF ESCUTCHEON PLATES IS REQUIRED.

EQUIPMENT (235000)

1. MAKE ALL FINAL EQUIPMENT CONNECTIONS AND PROVIDE THE NECESSARY ADAPTORS, FITTINGS, VALVES, DEVICES, ETC. FOR A COMPLETE AND OPERABLE SYSTEM. PROVIDE COMPLETE WITH BASES, ISOLATORS, SUPPORTS AND OTHER REQUIRED ACCESSORIES.
2. EQUIPMENT SHALL BE INSTALLED IN FULL ACCORDANCE WITH THE MANUFACTURER'S DATA AND INSTALLATION INSTRUCTIONS, INCLUDING CLEARANCES; LUBRICATE AND ADJUST AS REQUIRED. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO CHECK AND CONFORM TO THESE REQUIREMENTS PRIOR TO STARTING WORK. FURNISH AND INSTALL CLEAN SET OF FILTERS PRIOR TO BALANCING.
3. THE CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS OF ALL MECHANICAL EQUIPMENT PRIOR TO ORDERING OF EQUIPMENT. COORDINATE REQUIREMENT FOR PROVISION OF MOTOR STARTERS, DISCONNECTS, CONTACTORS, CONTROL WIRING, ETC. AS REQUIRED FOR PROPER FUNCTIONING SYSTEM WITH ELECTRICAL CONTRACTOR. NO ADDITIONAL PAYMENT WILL BE MADE FOR LACK OF CONTRACTOR COORDINATION OF ELECTRICAL CHARACTERISTICS.
4. ALL FLOOR MOUNTED EQUIPMENT SHALL BE INSTALLED ON CONCRETE HOUSEKEEPING PADS. MINIMUM PAD THICKNESS SHALL BE NOMINAL 4". PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 4" ON EACH SIDE. CONCRETE PADS SHALL BE PROVIDED BY THIS CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE THIS CONTRACTOR TO COORDINATE THE SIZE AND LOCATION OF THE CONCRETE HOUSEKEEPING PADS WITH THE GENERAL CONTRACTOR.
5. ALL EQUIPMENT SHALL BE MOUNTED ON VIBRATION ISOLATORS TO PREVENT THE TRANSMISSION OF VIBRATION AND MECHANICALLY TRANSMITTED SOUND TO THE BUILDING STRUCTURE.
6. ISOLATION EQUIPMENT SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER, AND SHALL BE DESIGNED SPECIFICALLY FOR THE APPLICATION REQUIRED. THIS INCLUDES, BUT IS NOT LIMITED TO, PIPING DUCTWORK, PUMPS, COMPRESSORS. VIBRATION ISOLATORS SHALL BE RATED FOR THE WEIGHT AND SPACING REQUIRED FOR THE EQUIPMENT REQUIRING ISOLATION.
7. PROVIDE CURBS FOR ALL ROOF OPENINGS FOR DUCTS, FLUES, PIPING AND EQUIPMENT. CURBS SHALL BE FURNISHED AS ACCESSORIES TO THE EQUIPMENT OR 8" HIGH PATE OR EQUAL EQUIPMENT SUPPORTS SPANNING STRUCTURE AND FLASHED INTO ROOFING. ALL CUTTING, FLASHING, AND PATCHING OF ROOF SHALL BE BY OWNER'S ROOFING CONTRACTOR AND PAID FOR BY MECHANICAL CONTRACTOR.

CONTROLS (230910)

1. PROVIDE COMPLETE TEMPERATURE CONTROLS FOR ALL HVAC SYSTEMS. PROVIDE NEW CONTROL DEVICES INCLUDING DAMPER OPERATORS, TEMPERATURE SENSORS, STAGING RELAYS AND OTHER REQUIRED DEVICES TO PROVIDE A COMPLETE OPERATIONAL SYSTEM PER THE FOLLOWING OPERATING SEQUENCE. MOUNT ALL CONTROLS FURNISHED AS ACCESSORIES TO EQUIPMENT AND PROVIDE ALL CONTROL WIRING REQUIRED FOR PROPER OPERATION WHERE NOT SPECIFICALLY SHOWN ON ELECTRICAL PLANS. ALL WIRING SHALL BE IN CONDUIT OR PER N.E.C. AND LOCAL CODE REQUIREMENTS. STANDARD MOUNTING HEIGHT TO TOP OF THERMOSTAT IS 48" ABOVE FINISHED FLOOR OR AS INDICATED ON THE ARCHITECTURAL DRAWINGS. DO NOT INSTALL THERMOSTATS NEAR DIMMER SWITCHES. WIRING OF ALL MOTORIZED OPERATORS AND THERMOSTATS (REGARDLESS OF VOLTAGE) ARE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.
2. THE CONTROL SYSTEM SHALL BE PROGRAMMED WITH THE FOLLOWING SEQUENCES AND FEATURES:
 - 2.1. UNOCCUPIED HEAT. THE SYSTEM SHALL USE THE BASEBOARD HEAT AS THE PRIMARY SOURCE OF HEAT DURING UNOCCUPIED PERIODS. IF THE BASEBOARD IS NOT ABLE TO MAINTAIN TEMPERATURE, THEN THE VAV FAN WITH THE HEAT VALVE 100% OPEN SHALL CYCLE TO PROVIDE ADDITIONAL HEAT IN THE SPACES.
 - 2.2. MORNING WARM UP. BEFORE THE OCCUPIED PERIOD BEGINS, THE SYSTEM SHALL USE THE BASEBOARD HEAT TO BRING THE CONNECTED SPACES UP TO OCCUPIED TEMPERATURE. IF THE BASEBOARD CANNOT BRING THE SPACE UP TO SETPOINT WITHIN AN HOUR, THEN UTILIZE THE VAV BOXES TO ASSIST. THE VAV BOXES SHALL USE THEIR FANS AND HW COILS WITH THE PRIMARY AIR DAMPER CLOSED TO ADD HEAT NEEDED IN THE SPACES.
 - 2.3. SUPPLY FAN PRESSURE RESET: THE CONTROL SYSTEM SHALL MONITOR ALL DAMPER POSITIONS THAT ARE CONNECTED TO THE AHU SUPPLY FAN. THE SUPPLY AIR PRESSURE SETPOINT SHALL BE REDUCED IF NONE OF THE DAMPERS ARE OPEN 95% OR GREATER.
 - 2.4. SUPPLY TEMPERATURE RESET: THE CONTROL SYSTEM SHALL MONITOR ALL DAMPER POSITIONS THAT ARE CONNECTED TO A PARTICULAR UNIT'S SUPPLY FAN. THE SUPPLY AIR TEMPERATURE SHALL BE RESET HIGHER IF THE RETURN AIR RELATIVE HUMIDITY IS BELOW 40% AND NONE OF THE VAV DAMPER POSITIONS ARE OPEN 95% OR GREATER.
 - 2.5. ECONOMIZER. THE CONTROL SYSTEM SHALL MONITOR THE ECONOMIZER OPERATION AND THE RELEVANT SENSORS FOR THE AHU. THE AHU SHALL CONTROL THE DAMPER POSITION AS DESIGNED FROM THE FACTORY. THE CONTROL SYSTEM SHALL MONITOR THE DAMPER POSITION AND THE OTHER SENSORS THAT ARE INTEGRATED INTO ECONOMIZER OPERATION.

IDENTIFICATION (230593)

7. CONTRACTOR SHALL PROVIDE IDENTIFICATION LABELS, TAGS, ETC. AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN. THE IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI STANDARD A13.1. PRESSURE SENSITIVE MARKERS SHALL BE MANUFACTURED BY THE BRADY CO. OR APPROVED EQUAL. MARKERS SHALL BE MANUFACTURER'S STANDARD PRODUCT. PRESSURE SENSITIVE PIPE MARKERS SHALL BE MANUFACTURED BY THE BRADY CO., OR APPROVED EQUAL. PIPE MARKERS SHALL BE MANUFACTURER'S STANDARD PRODUCT.

DISCONNECT SWITCHES (230514)

1. THIS CONTRACTOR SHALL FURNISH ALL SAFETY DISCONNECT SWITCHES (FUSED AND NON-FUSED) REQUIRED FOR EQUIPMENT FURNISHED UNDER THIS CONTRACT. IN ADDITION, THIS CONTRACTOR SHALL FURNISH A SAFETY DISCONNECT SWITCH FOR ALL MOTORS AND EQUIPMENT WHICH DO NOT HAVE COMBINATION STARTERS OR INTEGRAL DISCONNECTING MEANS. FUSIBLE DISCONNECT SWITCHES SHALL BE PROVIDED FOR ALL EQUIPMENT RATED FOR USE ONLY WITH FUSES (SUCH AS CONDENSING UNITS, COMPRESSORS, ETC.). SUCH SWITCHES SHALL BE ONE, TWO OR THREE POLE TYPE, WITH SOLID NEUTRAL FOR 4 WIRE SERVICE, AND SHALL HAVE THE PROPER CURRENT AND VOLTAGE RATING AS REQUIRED. INSTALLATION OF ALL DISCONNECT SWITCHES SHALL BE BY THE ELECTRICAL CONTRACTOR.
2. ALL SAFETY SWITCHES SHALL BE NEMA HEAVY DUTY TYPE AND SHALL CARRY THE UNDERWRITERS' LABORATORIES LABEL. FUSIBLE SWITCHES SHALL INCORPORATE CLASS "R" FUSE REJECTION FEATURE AND SHALL BE BRACED TO WITHSTAND 200,000 AMPERE RMS SYMMETRICAL FAULT CURRENT. SAFETY SWITCHES SHALL CONFORM TO FEDERAL SPECIFICATION W-S-865.
3. PROVIDE HEAVY-DUTY TYPE, SHEET ENCLOSED, SAFETY SWITCHES. THE TYPE, SIZE, AND RATING SHALL BE AS INDICATED ON THE DRAWINGS OR AS REQUIRED BY THE MOTOR OR EQUIPMENT SERVED. THE ENCLOSURE FOR DISCONNECT SWITCHES SHALL BE NEMA TYPE 1 FOR INDOOR USE, NEMA TYPE 4X FOR OUTDOOR USE AND NEMA TYPE 7 FOR EXPLOSION PROOF USE. DISCONNECTS SHALL BE MANUFACTURED BY ALLEN-BRADLEY, GENERAL ELECTRIC, CUTLER-HAMMER APPROVED EQUAL.
4. SWITCHES SHALL INCORPORATE QUICK-MAKE, QUICK-BREAK OPERATING HANDLES. THE MECHANISM SHALL BE AN INTEGRAL PART OF THE BOX, NOT THE COVER, AND SWITCHES SHALL HAVE A COVER INTERLOCK TO PREVENT UNAUTHORIZED OPENING OF THE SWITCH DOOR IN THE ON POSITION OR CLOSING OF THE SWITCH MECHANISM WITH THE DOOR OPEN. CURRENT CARRYING PARTS SHALL BE CONSTRUCTED OF HIGH-CONDUCTIVITY COPPER WITH SILVER-TUNGSTEN TYPE SWITCH CONTACT.
5. FUSE CLIPS SHALL BE POSITIVE PRESSURE TYPE REINFORCED FUSE CLIPS.
6. THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL POWER WIRING TO ALL MECHANICAL CONTRACTOR FURNISHED EQUIPMENT. THE MECHANICAL CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL CONTROL WIRING TO ALL FURNISHED EQUIPMENT, INCLUDING CONTROL DEVICES, STARTERS AND INTEGRAL DISCONNECT SWITCHES OF CONTRACTOR FURNISHED EQUIPMENT.

CHECK, TEST, START, ADJUST, BALANCE AND INSTRUCTIONS (230593)

1. AFTER INSTALLATION, CHECK ALL EQUIPMENT, AND PERFORM START UP IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

2. ALL PIPING SHALL BE TESTED AND FREE OF LEAKS.

3. CONCEALED OR INSULATED WORK SHALL REMAIN UNCOVERED UNTIL REQUIRED TESTS HAVE BEEN COMPLETED, BUT IF CONSTRUCTION SCHEDULE REQUIRES IT, ARRANGE FOR PRIOR TESTS ON PARTS OF SYSTEM AS APPROVED BY THE TENANT.

4. BALANCE ALL SYSTEMS, CALIBRATE CONTROLS, CHECK FOR PROPER OPERATION AND SEQUENCE UNDER ALL CONDITIONS AND MAKE ALL NECESSARY ADJUSTMENTS.

5. AFTER INSTALLATION AND EQUIPMENT IS PLACED IN OPERATION, HVAC CONTRACTOR IS RESPONSIBLE FOR BALANCING SYSTEMS. BALANCING SHALL BE PERFORMED BY AN INDEPENDENT AABC CERTIFIED CONTRACTOR.

6. ADJUST AND BALANCE THE AIR SYSTEMS BEFORE HYDRONIC, STEAM, AND REFRIGERANT SYSTEMS. TESTING AND BALANCING SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE. GPM'S SHALL BE BALANCED WITHIN 10% OF DESIGN. AFTER ALL AIR SYSTEMS ARE INSTALLED, EACH SUPPLY AIR OUTLET SHALL BE AIR BALANCED TO WITHIN 10% OF THE CFM SHOWN WITH AIR PATTERNS SET AS INDICATED ON DRAWINGS (OR WITHIN 10 CFM WHEN BELOW 100 CFM). FAN RPMS AND ZONE DAMPERS SHALL BE ADJUSTED AND SHEAVES SHALL BE REPLACED AS REQUIRED TO ACHIEVE AIR BALANCE. ALL ZONES OR PORTIONS THEREOF SERVING OTHER SPACES AND WHICH MAY BE AFFECTED BY THE PROJECT SHALL BE TRAVERSED PRIOR TO CONSTRUCTION. THE FINAL AIR BALANCE SHALL RESTORE THESE AIR QUANTITIES. BEFORE AND AFTER AIR QUANTITIES SHALL BE LISTED IN THE AIR BALANCE REPORT

7. START UP AND PLACE ALL SYSTEMS IN OPERATION AND TAG ALL SWITCHES AND CONTROLS WITH PERMANENT LABELS.

5. INSTRUCT OWNER IN OPERATION OF SYSTEMS AND SUBMIT OPERATING AND MAINTENANCE MANUAL ON ALL EQUIPMENT AND SYSTEMS.



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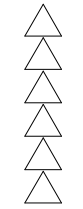
Allen + Shariff
MEP Engineering
2 Allegheny Center, West Tower 2 - Suite 1051 - Pittsburgh, PA 15212
ASE JOB #: 2041078

Building Renovation
for
Big Tom's Barbershop
2178 Centre Avenue, Pittsburgh, PA 15219

Seal:

FOR PRICING ONLY
50% CD

Revisions:



Date:
April 16, 2021

Project Number:
2020-06

Owner / Client:
TomTom24 Development, LLC

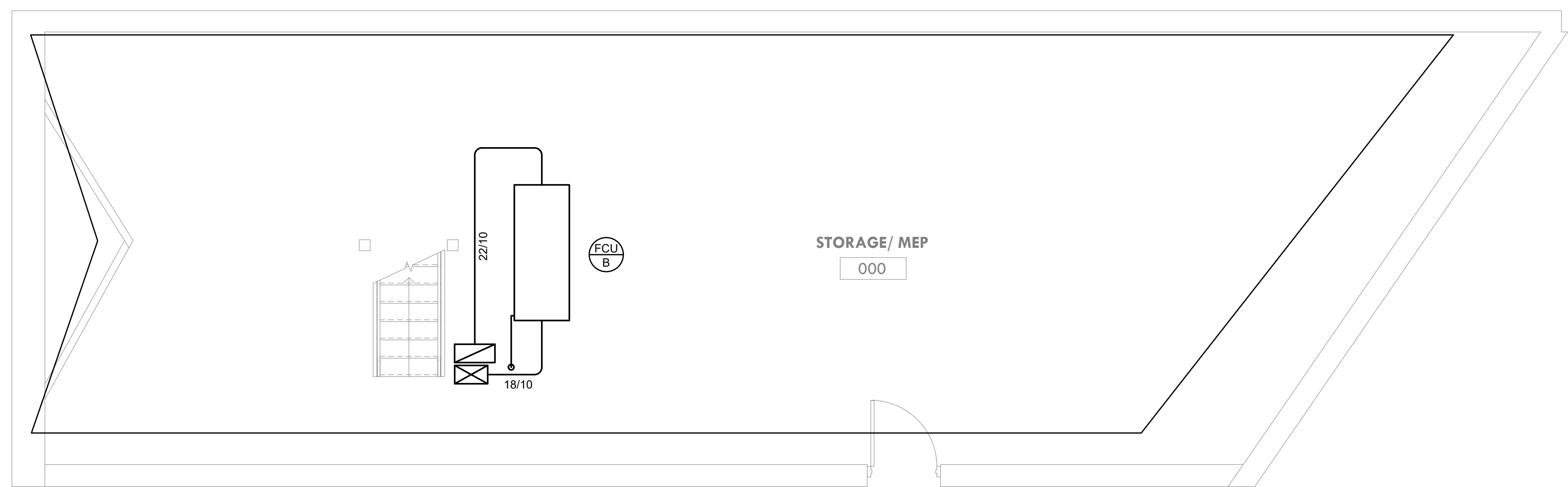
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Specifications**

Scale: **As indicated**
Drawing Number:

M-003

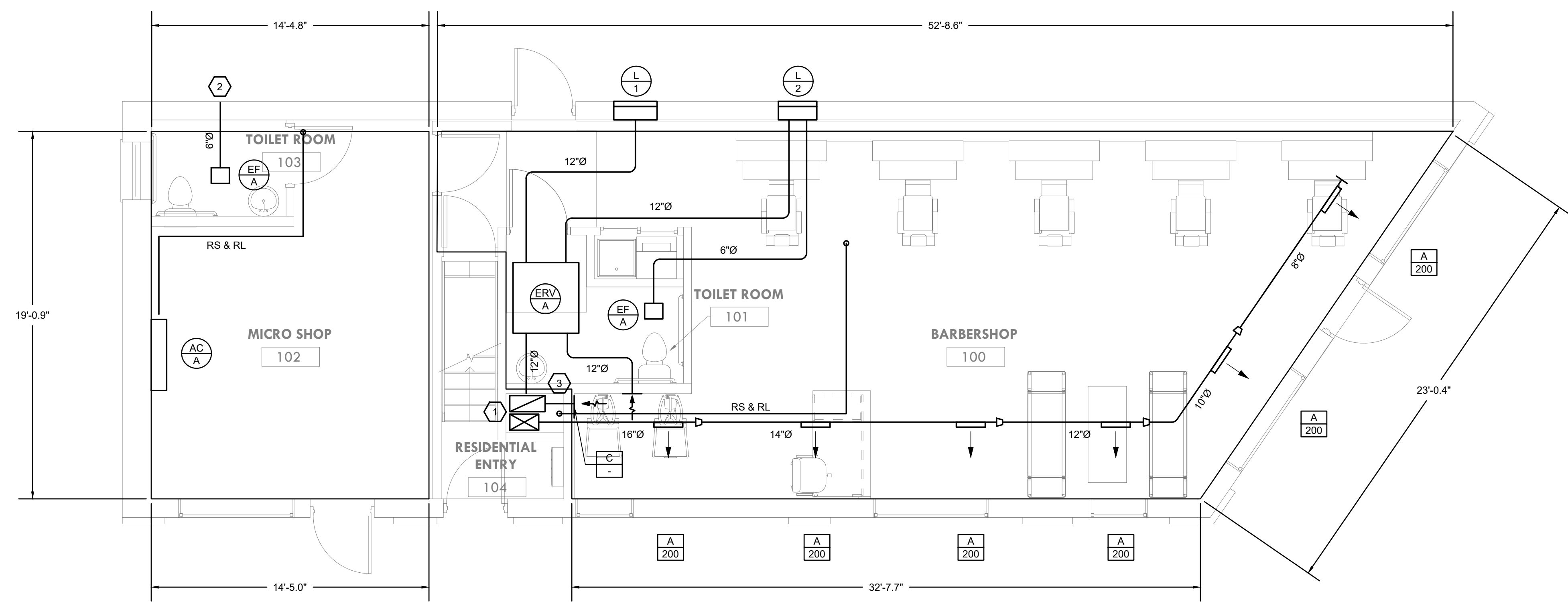
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- MECHANICAL GENERAL NOTES:**
1. RUN CONDENSATE DRAIN FROM FCU TO NEAREST FLOOR DRAIN.
 2. FCU TO BE MOUNTED HORIZONTALLY DUE TO HEIGHT RESTRICTIONS.
 3. SIZE REFRIGERANT LINES BASED ON MANUFACTURER RECOMMENDATIONS.
 4. EACH REFRIGERANT LINE SHOWN ON THE PLAN REPRESENTS 2 LINES.



1 BASEMENT MECHANICAL PLAN
M-201 1/4" = 1'-0"

- MECHANICAL GENERAL NOTES:**
1. SIZE REFRIGERANT LINES BASED ON MANUFACTURER RECOMMENDATIONS.
 2. EACH REFRIGERANT LINE SHOWN ON THE PLAN REPRESENTS 2 LINES.



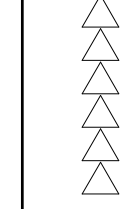
- MECHANICAL KEY NOTES:**
1. 18/10 SUPPLY DUCT FROM BELOW. 10/22 RETURN AIR DUCT FROM BELOW.
 2. 6" DUCT TO EXTERIOR. FINISH WITH HOODED WALL CAP.
 3. TRANSITION FROM RETURN AIR GRILLE TO RETURN AIR DUCT FROM BELOW AS NECESSARY.

2 FIRST FLOOR MECHANICAL PLAN
M-201 1/4" = 1'-0"

Seal:

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50% CD

Revisions:



Date:
April 16, 2021

Project Number:
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:
**Basment &
First Floor
Mechanical Plans**
Scale: **As indicated**
Drawing Number:

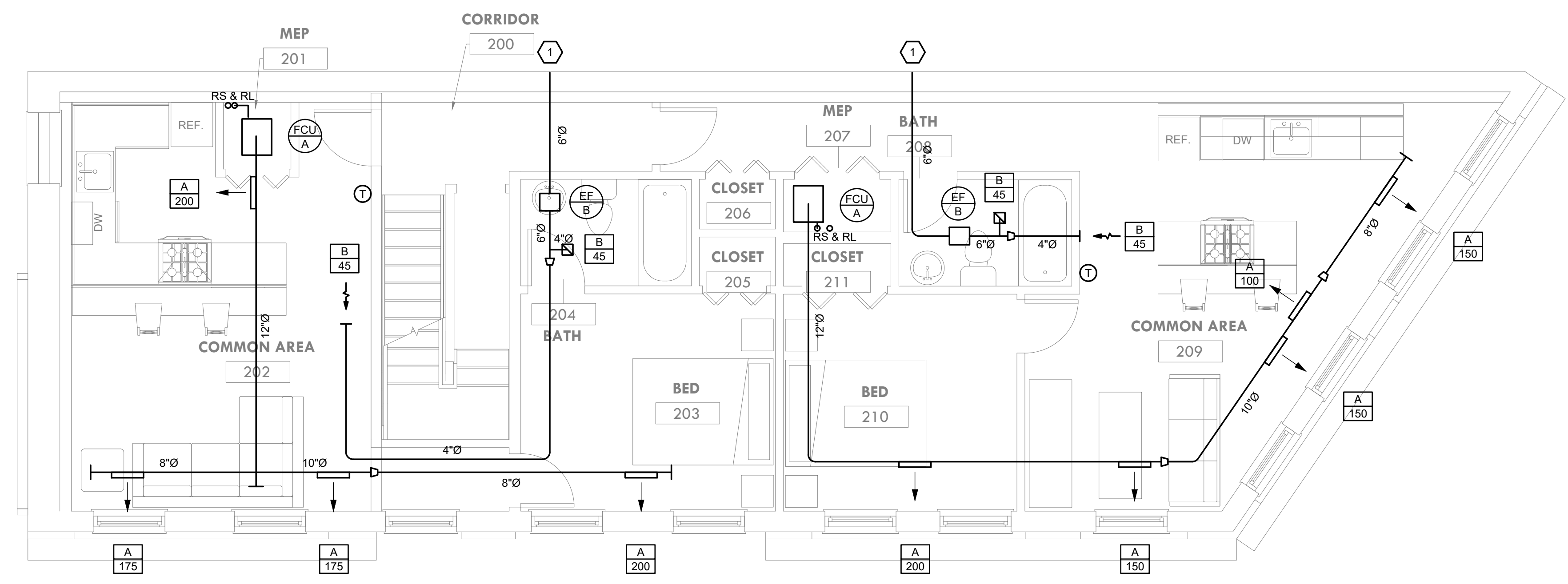
M-201

MECHANICAL GENERAL NOTES:

1. SIZE REFRIGERANT LINES BASED ON MANUFACTURER RECOMMENDATIONS.
2. EACH REFRIGERANT LINE SHOWN ON THE PLAN REPRESENTS 2 LINES.

MECHANICAL KEY NOTES: (⊕)

1. 6" DUCT TO EXTERIOR. FINISH WITH HOODED WALL CAP.



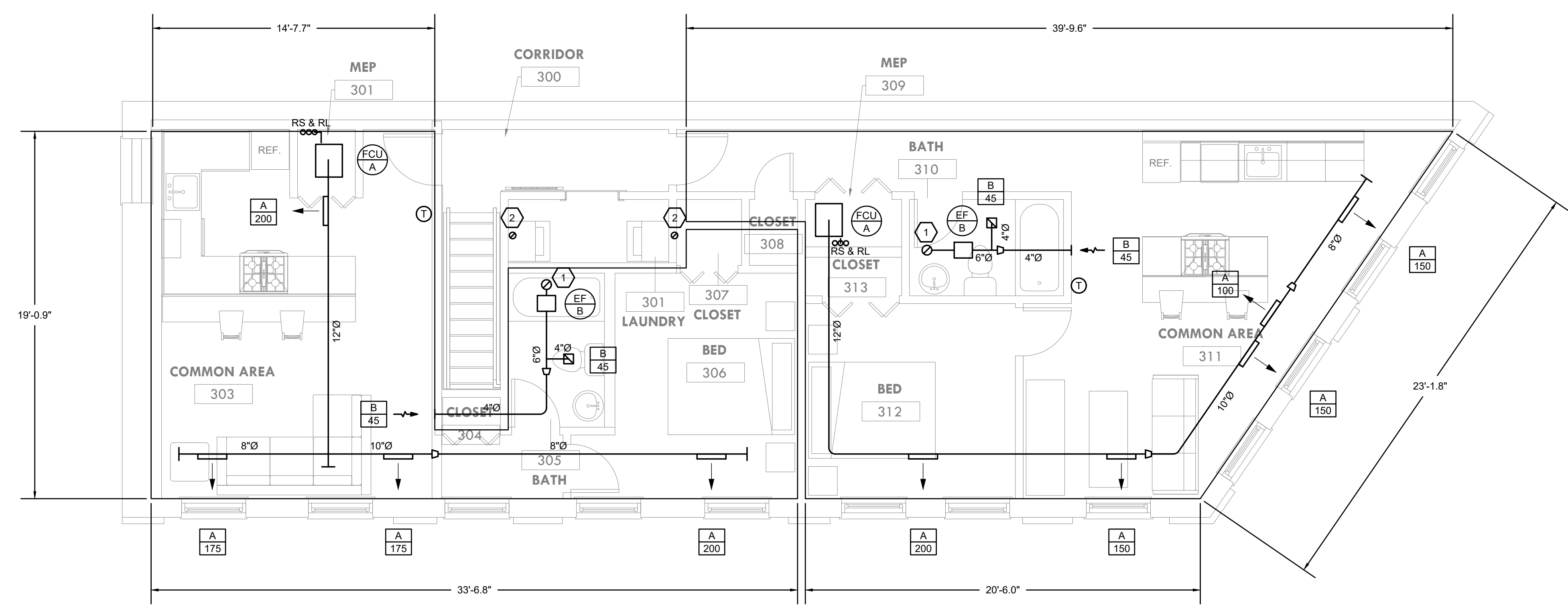
1 SECOND FLOOR MECHANICAL PLAN
M-202 1/4" = 1'-0"

MECHANICAL GENERAL NOTES:

1. SIZE REFRIGERANT LINES BASED ON MANUFACTURER RECOMMENDATIONS.
2. EACH REFRIGERANT LINE SHOWN ON THE PLAN REPRESENTS 2 LINES.

MECHANICAL KEY NOTES: (⊕)

1. 6" DUCT UP TO ROOF. TERMINATE WITH GOOSENECK. PROVIDE BIRDSCREEN AT TERMINATION POINT.
2. 4" DUCT UP TO ROOF. TERMINATE WITH GOOSENECK. PROVIDE BIRDSCREEN AT TERMINATION POINT.

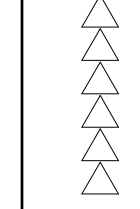


2 THIRD FLOOR MECHANICAL PLAN
M-202 1/4" = 1'-0"

Seal:

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Revisions:



Date:
April 16, 2021

Project Number:
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Owner / Client:
TomTom24 Development, LLC

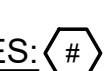
Drawing Title:
**Second & Third
Floor Mechanical
Plans**

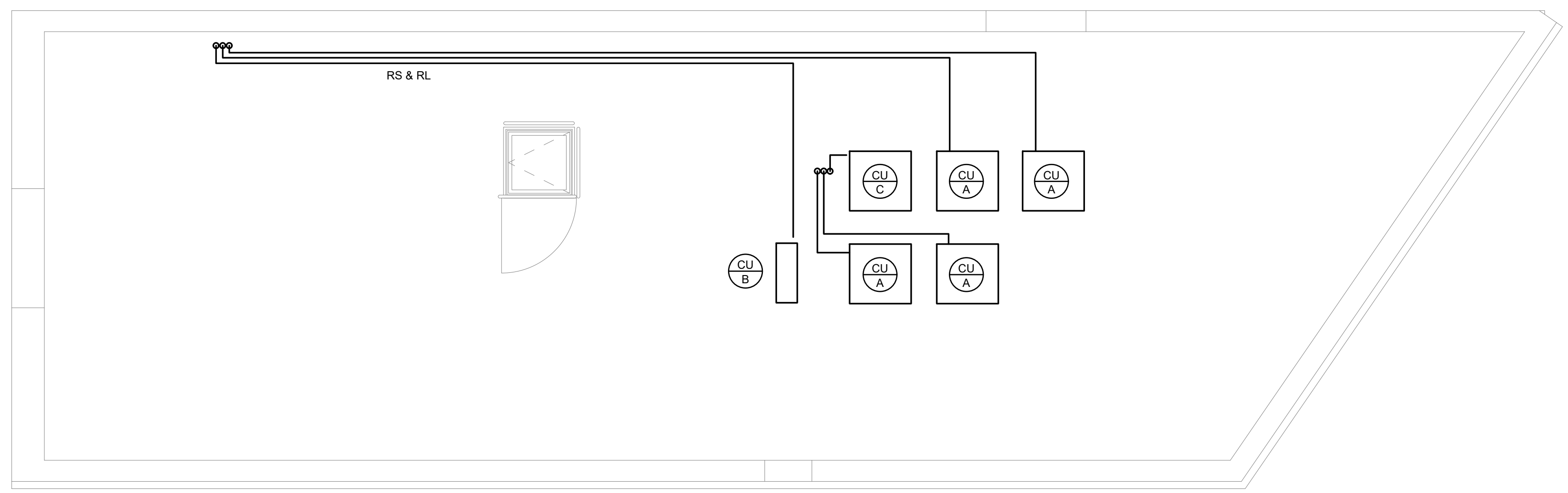
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Drawing Number:

M-202

MECHANICAL GENERAL NOTES:
1. SIZE REFRIGERANT LINES BASED ON MANUFACTURER RECOMMENDATIONS.
2. EACH REFRIGERANT LINE SHOWN ON THE PLAN REPRESENTS 2 LINES.

MECHANICAL KEY NOTES: 
1. XXXXXXXXXXXXXXXXXXXX

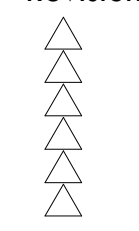


1 ROOF MECHANICAL PLAN
M-203 1/4" = 1'-0"

Building Renovation
for
Big Tom's Barbershop
2178 Centre Avenue, Pittsburgh, PA 15219

Seal:

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50% CD

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April 16, 2021

Project Number:
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:
Roof Mechanical Plan

Scale: **As indicated**
Drawing Number:

M-203

GENERAL ELECTRICAL NOTES:

GENERAL: UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL WORK SHOWN ON THE ELECTRICAL DRAWINGS IS NEW WORK TO BE PROVIDED UNDER THIS CONTRACT.

DEMOLITION: SEE "ELECTRICAL GENERAL DEMOLITION NOTES FOR ADDITIONAL DEMOLITION REQUIREMENTS.

COORDINATION: COORDINATE AND COOPERATE WITH ALL TRADES ON THE PROJECT.

RECORD DRAWINGS: SECURE AN EXTRA SET OF ELECTRICAL DRAWINGS TO BE KEPT ON SITE AND MARK DAILY THE PROGRESS IN RED AS THE PROJECT PROGRESSES IN ORDER TO KEEP AN ACCURATE RECORD OF ALL DEVIATIONS BETWEEN THE WORK SHOWN ON THE DRAWINGS AND THE WORK WHICH IS ACTUALLY INSTALLED.

TESTS: TEST ALL WIRING FOR CONTINUITY AND GROUNDS BEFORE CONNECTING ANY FIXTURES OR DEVICES. PERFORM INSULATION RESISTANCE TESTS ON ALL WIRING #8 OR LARGER TO ENSURE THAT ALL PORTIONS ARE FREE FROM SHORT-CIRCUITS AND GROUNDS.

INSPECTIONS: ARRANGE ALL NECESSARY INSPECTIONS. DELIVER ALL REQUIRED INSPECTION CERTIFICATES TO THE OWNER.

GROUNDING: PROVIDE GROUNDING IN ACCORDANCE WITH THE NEC FOR THE ELECTRICAL SYSTEM, INCLUDING EQUIPMENT FRAMES CONDUITS, SWITCHES, CONTROLLERS, WIRE-WAYS, NEUTRAL CONDUCTORS AND OTHER EQUIPMENT. PROVIDE A GROUNDING CONDUCTOR IN ALL CIRCUITS.

LABELS: PROVIDE LABELS FOR ALL PANELBOARDS, CABINETS, SAFETY SWITCHES, MOTOR-DISCONNECT SWITCHES, AND MOTOR CONTROLLERS. LABELS SHALL BE MACHINE ENGRAVED, LAMINATED PLASTIC.

J-BOX LABELING: LABEL ALL JUNCTION BOXES WITH PERMANENT MARKER IDENTIFYING CIRCUIT NUMBER AND PANELBOARD OF CIRCUITS WITHIN.

PANEL DIRECTORY: PROVIDE TYPEWRITTEN PANELBOARD DIRECTORY CARD IN EACH PANELBOARD, INCLUDING EXISTING PANELBOARDS MODIFIED FOR THIS PROJECT. WITH CIRCUIT LOAD INFORMATION AND ROOM NUMBER CLEARLY IDENTIFIED. USE ACTUAL ROOM NUMBERS IN THE BUILDING, NOT THE ROOM NUMBERS SHOWN ON THE CONTRACT DRAWINGS, AS THEY ARE OFTEN DIFFERENT.

MOTOR COORDINATION: MOTORS, MOTOR STARTERS, CONTROLLERS, INTEGRAL DISCONNECT SWITCHES, AND CONTACTORS SHALL BE PROVIDED WITH THEIR RESPECTIVE PIECES OF EQUIPMENT BY THE EQUIPMENT SUPPLIER. COMMUNICATE WITH THE TRADES PROVIDING THE EQUIPMENT, VERIFYING ALL REQUIREMENTS. PROVIDE ALL ELECTRICAL CONNECTIONS REQUIRED THEREIN AND INSTALL MOTOR STARTERS.

MOTOR DISCONNECTS: ALL MOTORS SHALL HAVE DISCONNECTING MEANS.

MOTOR FUSE PROTECTION: WHERE FUSE PROTECTION IS SPECIFICALLY REQUIRED BY THE EQUIPMENT MANUFACTURER, PROVIDE FUSIBLE SWITCHES IN LIEU OF NON-FUSIBLE SWITCHES OR FUSIBLE ENCLOSED CIRCUIT BREAKERS OR OTHER DEVICES INDICATED.

CONNECTION DETAILS: SECURE APPROVED SHOP DRAWINGS SHOWING WIRING DIAGRAMS, ROUGH-IN AND HOOK UP DETAILS FOR EQUIPMENT WHICH MUST BE CONNECTED ELECTRICALLY.

EQUIPMENT DETAILS: MECHANICAL EQUIPMENT WILL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. THE LOCATIONS SHOWN ON THE ELECTRICAL DRAWINGS ARE APPROXIMATE. COORDINATE WITH THE MECHANICAL CONTRACTOR TO DETERMINE THE EXACT LOCATION OF EACH PIECE OF EQUIPMENT AND DETERMINE THE EXACT ROUGH-IN AND CONNECTION REQUIREMENTS.

STARTER MOUNTING: WHERE AN INDIVIDUALLY MOUNTED SAFETY SWITCH, STARTER OR CIRCUIT BREAKER IS SHOWN ADJACENT TO ITS RESPECTIVE LOAD AND NOT MOUNTED ON A WALL, PROVIDE ALL SUPPORTS, BRACKETS, ANCHORING, ETC. NECESSARY TO PROPERLY SUPPORT THE DEVICE.

LIGHTING ARRANGEMENT: ARRANGE LIGHTING FIXTURES IN ACCORDANCE WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.

LIGHTING COORDINATION: COORDINATE LIGHTING FIXTURES WITH GRILLES, DIFFUSERS, SPRINKLER HEADS, ACCESS PANELS, ETC.

MATERIAL COORDINATION: VERIFY CEILING AND WALL CONSTRUCTION AND MATERIAL PRIOR TO ORDERING LIGHT FIXTURES OR OTHER DEVICES TO ENSURE PROPER FIXTURES OR DEVICES ARE FURNISHED TO MATCH CONSTRUCTION.

MOUNTING HEIGHTS: MOUNTING HEIGHTS INDICATED ARE FROM THE FINISHED FLOOR TO THE CENTERLINE OF THE WIRING DEVICE UNLESS OTHERWISE NOTED. MOUNTING HEIGHTS OF LIGHTING FIXTURES AND FIRE ALARM DEVICES ARE TO THE BOTTOM OF THE FIXTURE OR DEVICE UNLESS OTHERWISE NOTED.

DEVICE LOCATIONS: COORDINATE LOCATIONS OF SWITCHES, RECEPTACLES, AND TELE/DATA OUTLETS WITH OTHER WALL MOUNTED DEVICES SUCH AS THERMOSTATS AND CONTROL STATIONS. DO NOT MOUNT WIRING DEVICES BACK TO BACK.

EWV RECEPTACLES: RECEPTACLES FOR ELECTRIC WATER COOLERS (EWC) SHALL BE INSTALLED OUT OF VIEW AND BEHIND THE EWC ENCLOSURE. VERIFY THE MOUNTING HEIGHT WITH THE EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN.

DEVICE COORDINATION: THOROUGHLY REVIEW AND COORDINATE ALL CASEWORK, DOOR SWINGS, AND CABINET DRAWINGS AND ARCHITECTURAL ELEVATIONS WITH DEVICE LOCATIONS PRIOR TO ROUGH-IN OF OUTLET BOXES.

BARRIERS: WHERE A MULTIPLE GANG BOX HAS CIRCUITS OF DIFFERENT VOLTAGES OR SYSTEMS WHICH ARE REQUIRED TO BE SEPARATED, PROVIDE THE CODE-REQUIRED SEPARATION, USING A FULL HEIGHT AND DEPTH BARRIER PLATE.

FIRE PROOFING: FOR ANY WALL OR FLOOR PENETRATIONS THROUGH FIRE RATED STRUCTURES, PROVIDE FIRE-PROOFING TO SEAL ALL THE PENETRATIONS AFTER THE CONDUIT HAS BEEN INSTALLED. FIRE PROOFING FOR PENETRATIONS SHALL BE UL APPROVED PER THE PENETRATION MADE IN ORDER TO MAINTAIN FIRE RATED INTEGRITY OF THE STRUCTURE.

CLEAN UP: ON PROJECT CLOSE-OUT, CLEAN ALL ELECTRICAL DEVICES, LIGHTING FIXTURES, LAMPS AND LENSES, AND REMOVE ALL PAINT SPATTERS FROM DEVICES, FIXTURES, AND PLATES. REPLACE ALL INOPERATIVE LAMPS.

OWNER FURNISHED EQUIPMENT: CONTRACTOR SHALL OBTAIN CUT SHEETS, INSTALLATION DATA, AND ROUGH-IN REQUIREMENTS FOR OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT AND COORDINATE ROUGH-IN AND POWER REQUIREMENTS WITH THE OWNER'S REPRESENTATIVE PRIOR TO STARTING ANY ASSOCIATED WORK.

CONDUIT ROUTING: ALL CONDUIT RUN OVERHEAD SHALL BE RUN AT THE BOTTOM OF THE FLOOR, ROOF STRUCTURE, OR LOWEST CHORD OF JOIST SPACE (AS APPLICABLE) ABOVE IN ORDER TO AVOID CONFLICTS WITH OTHER TRADES.

WIRING DEVICES: ALL RECEPTACLES AND SWITCHES SHALL BE LABELED WITH CLEAR PLASTIC LAMINATED LABEL WITH BLACK TEXT, NOTING PANELBOARD DESIGNATION AND CIRCUIT NUMBER FROM WHICH IT IS FED.

EQUIPMENT DEMONSTRATION: PROVIDE A DEMONSTRATION OF THE OPERATION OF ALL ELECTRICAL COMPONENTS.

CEILING AND MECHANICAL ROOM PLENUM: ALL WIRING THAT WILL NOT BE RUN IN METAL CONDUIT SHALL BE PLENUM RATED.

ELECTRICAL GENERAL DEMOLITION NOTES:

GENERAL: DEMOLITION DRAWINGS ARE BASED ON EXISTING PLANS AND FIELD INVESTIGATION PRIOR TO DEMOLITION. VISIT THE EXISTING BUILDING PRIOR TO BID IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND IN ORDER TO AVOID CONFLICTS.

DASHED ITEMS: ALL ITEMS SHOWN DASHED ON DEMOLITION PLANS ARE EXISTING AND SHALL BE REMOVED COMPLETE INCLUDING BOXES, CONDUIT, WIRE, FASTENERS, AND ASSOCIATED APPURTENANCES UON.

SOLID ITEMS: ALL ITEMS SHOWN SOLID ON DEMOLITION PLANS ARE EXISTING TO REMAIN.

CIRCUITING TO REMAIN: WHERE AFFECTED BY NEW WORK, EXISTING CIRCUITING TO REMAIN SHALL BE REROUTED OR RECONNECTED AS REQUIRED, IN ORDER TO MAINTAIN CONTINUITY OF CIRCUIT.

REUSE OF EXISTING CIRCUITRY: EXISTING CIRCUITS SHALL BE REUSED WHERE CONVENIENT TO SERVE THE NEW LAYOUT. PROVIDE CIRCUIT MODIFICATIONS INDICATED OR REQUIRED TO MAINTAIN CONTINUITY OF EXISTING CIRCUITS THAT REMAIN.

EXISTING CONDUIT: ALL EXISTING CONDUITS AND WIRING THAT WILL NOT BE REUSED SHALL BE REMOVED. EXISTING CONDUIT TO REMAIN CONCEALED IN WALLS SHALL BE ABANDONED. EXISTING CONDUIT TO REMAIN BELOW FLOOR SLAB SHALL BE CUT OFF ONE INCH BELOW ROUGH FLOOR AND GROUDED FLUSH. ALL EXISTING WIRING IN CONDUITS TO BE ABANDONED SHALL BE DISCONNECTED FROM POWER SOURCE AND REMOVED.

REPAIR DAMAGE: EXERCISE CARE IN REMOVAL OF DEMOLITION ITEMS. REPAIR, AT NO ADDITIONAL COST TO OWNER, ANY DAMAGE CAUSED TO EXISTING CONSTRUCTION AND/OR EQUIPMENT TO REMAIN.

ASSOCIATED APPURTENANCES: REMOVE ALL ELECTRICAL APPURTENANCES (DISCONNECTS, STARTERS, WIRING, CONDUIT, ETC.) ASSOCIATED WITH EQUIPMENT TO BE REMOVED BY OTHERS.

KNOCKOUT PLUGS AND COVERS: ALL CONDUIT REMOVED SHALL BE REMOVED IN ITS ENTIRETY, INCLUDING FITTINGS, MOUNTING DEVICES, MOUNTING HARDWARE, ETC. PROVIDE CONDUIT PLUGS AND BLANKS FOR ALL OPENINGS CREATED BY THE REMOVAL OF CONDUIT. PROVIDE BLANK COVER PLATES FOR ALL OPENED OUTLET BOXES CREATED BY THE REMOVAL OF THE EQUIPMENT AND/OR DEVICES.

DEMOLISHED MATERIALS: ALL MATERIALS REMOVED UNDER DEMOLITION, NOT TO BE RELOCATED OR DESIGNATED TO BE TURNED OVER TO THE OWNER, SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED COMPLETELY FROM THE SITE.

SCHEDULE OUTAGES: ALL WORK AND ALL POWER OUTAGES SHALL BE SCHEDULED AT TIMES CONVENIENT TO THE OWNER.

NOTIFICATION: NOTIFY THE OWNER PRIOR TO TURNING OFF ANY CIRCUITS.

EXISTING CIRCUITS: IF DURING THE COURSE OF CONSTRUCTION, IT IS DETERMINED BY THE CONTRACTOR THAT AN EXISTING CIRCUIT BECOMES SPARE, THE CONTRACTOR SHALL UPDATE THE PANELBOARD DIRECTORY TO INDICATE SUCH, EVEN IF IT IS NOT EXPLICITLY MARKED ON THE ELECTRICAL PLANS.

GENERAL SPECIAL SYSTEM NOTES:

TELEPHONE AND DATA SYSTEMS

THE TELEPHONE AND DATA SYSTEMS WILL BE FURNISHED AND INSTALLED THROUGH THE OWNER'S VENDOR (THE VENDOR) UNDER A SEPARATE CONTRACT. ALL CABLING AND WIRING (EXCEPT FOR POWER WIRING), J-HOOKS, JACKS, COVER PLATE COMPATIBLE WITH THE EQUIPMENT, DEVICES, RACKS, AND COMPONENT EQUIPMENT WILL BE PROVIDED BY THE VENDOR, UNLESS INDICATED OTHERWISE. THE VENDOR WILL PROVIDE INSTALLATION DURING CONSTRUCTION. THE ELECTRICAL CONTRACTOR (THE CONTRACTOR) SHALL COORDINATE ALL ROUGH-IN, BOX SIZES AND CONFIGURATIONS, CONDUIT SIZES AND ROUTING WITH THE VENDOR PRIOR TO INSTALLATION OF THE RACEWAY SYSTEM.

THE CONTRACTOR SHALL PROVIDE ALL CONDUIT WITH PULL WIRE, AND 4"x4"x2 1/4" BOX WITH SINGLE GANG PLASTER RING UNLESS OTHERWISE NOTED. ELECTRICAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELECTRICAL REQUIREMENTS WITH THE VENDOR PRIOR TO ROUGH-IN.

STUB ALL CONDUITS WITH PULL WIRE FOR COMMUNICATIONS DEVICES TO ABOVE AN ACCESSIBLE CORRIDOR CEILING AND TERMINATE WITH INSULATED NYLON BUSHING. THE VENDOR WILL PROVIDE J-HOOKS ABOVE THE CEILING FROM THE STUB OUT TO EQUIPMENT LOCATION AS REQUIRED FOR HIS CABLING AND TERMINATE WITH INSULATED NYLON BUSHING. WHERE A WALL SEPARATES THE CONDUIT STUB OUT FROM THE EQUIPMENT LOCATION, PROVIDE A 1" MINIMUM SLEEVE THROUGH THE WALL ABOVE AN ACCESSIBLE CEILING TO ACCOMMODATE THE CABLING. ALL CONDUITS AND SLEEVES PENETRATING RATED FIRE OR SMOKE WALLS SHALL BE PROVIDED WITH APPROVED FIRE RETARDANT TO PROVIDE A UL RATED WALL PENETRATION ASSEMBLY. MAINTAIN VENDOR RECOMMENDED SEPARATION BETWEEN WIRING OF DIFFERENT SYSTEMS AND FROM INTERFERENCE PRODUCING ELECTRICAL DEVICES SUCH AS FLUORESCENT LIGHTS, BALLAST, TRANSFORMERS, RELAYS, MOTOR CONTROLS, ETC.

PROVIDE POWER CIRCUITS FOR TELECOMMUNICATIONS EQUIPMENT AS INDICATED.

THE CONTRACTOR SHALL PROVIDE ALL BACKBOXES, CONDUIT, GROUNDING AND SHALL INSTALL ALL SPECIAL BOXES WITH PLASTER RING FURNISHED BY THE VENDOR FOR THE TELECOMMUNICATIONS SYSTEMS IN ACCORDANCE WITH THE APPLICABLE CODES.

THE CONTRACTOR SHALL INSTALL ALL COMMUNICATIONS SLEEVES AND CONDUIT IN ACCORDANCE WITH DRAWINGS, ELECTRICAL SPECIFICATIONS, VENDOR WIRING DIAGRAMS, AND ALL APPLICABLE CODES.

THE GENERAL CONTRACTOR SHALL PROVIDE IN-WALL REINFORCEMENT AS NECESSARY FOR ALL COMMUNICATIONS CABINETS, SHELVES, BRACKETS, FURNITURE MOUNTS, ETC. AND SHALL MOUNT CABINETS, SHELVES, BRACKETS, AND FURNITURE MOUNTS IN ACCORDANCE WITH DRAWINGS, VENDOR SUBMITTALS, AND ALL APPLICABLE CODES.

COORDINATE FINAL LOCATIONS AND ELEVATIONS OF ALL TELECOMMUNICATIONS DEVICES AND OUTLETS WITH ARCHITECTURAL PLANS, CASEWORK AND ELEVATIONS, AND VENDOR REQUIREMENTS.

THE CONTRACTOR SHALL PROVIDE A COMPLETION SCHEDULE BROKEN DOWN BY PROJECT PHASES, FOR TURNOVER OF COMPLETED COMMUNICATIONS ROUGH-IN FOR VENDOR FINISH WORK. THE CONTRACTOR SHALL COORDINATE TURNOVER WITH VENDORS, AND SHALL TURNOVER AREAS FOR VENDOR FINISH WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EXTRA VENDOR COST RESULTING FROM INCORRECT COMMUNICATIONS ROUGH-IN.

LIGHTING

Table with 2 columns: Symbol and Description for various lighting fixtures and controls like Lighting Fixture, Downlight Fixture, Pendant Lighting Fixture, etc.

Table with 2 columns: Symbol and Description for lighting controls like Single Pole Switch, Three-Way Switch, Dimmer Switch, etc.

Table with 2 columns: Symbol and Description for lighting fixture key like Letter 'A', LP-B-3a, etc.

ACCESS CONTROL

Table with 2 columns: Symbol and Description for access control devices like Request-to-Exit Motion Sensor, Electric Strike Door Lock, etc.

POWER

Table with 2 columns: Symbol and Description for power components like Duplex Receptacle, Junction Box, Surge Protective Device, etc.

ELECTRICAL CIRCUIT RUN IN CONDUIT AND CIRCUIT HOMERUN TO PANELBOARD (PANEL AND CIRCUIT DESIGNATION AS INDICATED). AS A MINIMUM CONDITION, EACH SINGLE PHASE CIRCUIT SHALL HAVE 1 #12 PHASE CONDUCTOR, 1 #12 NEUTRAL CONDUCTOR, AND 1 #12 GROUNDING CONDUCTOR IN 3/4" CONDUIT. PROVIDE ADDITIONAL PHASE CONDUCTORS AS REQUIRED FOR "MULTIPLE PHASED" ELECTRICAL LOADS. PROVIDE ADDITIONAL "SWITCH LEG" CONDUCTORS TO PROVIDE THE LIGHT FIXTURE CONTROL INDICATED. MULTIPLE SINGLE PHASE CONDUCTORS SHALL BE GROUPED TOGETHER IN A COMMON CONDUIT IN ACCORDANCE WITH THE NEC AND AT THE CONTRACTOR'S DISCRETION. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE SHARED AS ALLOWED BY THE NEC. CONDUIT LARGER THAN 3/4" AND CONDUCTORS LARGER THAN #12 SHALL BE AS INDICATED.

COMMUNICATIONS

Table with 2 columns: Symbol and Description for communications devices like Tele/Data Box, Telephone Outlet, Cable Television Outlet, etc.

Table with 2 columns: Symbol and Description for general notes like Keynote.

Table with 2 columns: Symbol and Description for lineweights like New, Existing, Remove Existing.

FIRE ALARM

Table with 2 columns: Symbol and Description for fire alarm components like Fire Alarm Control Panel, Fire Alarm Manual Pull Station, etc.

ELECTRICAL ABBREVIATIONS

Table with 2 columns: Symbol and Description for electrical abbreviations like Ampere, Above Finished Floor, etc.

(TYPE R2 INSTALLATION NOTES) SPECIALTY INSTALLATION NOTES - APPLICABLE TO ALL RESIDENTIAL UNIT TYPICALS PER NEC ARTICLE 408.12. PROVIDE UL LISTED TAMPER-RESISTANT RECEPTACLES AS REQUIRED IN DWELLINGS FOR ALL 120 VOLT, 15 AND 20 AMPERE RECEPTACLES IN AREAS SPECIFIED IN NEC ARTICLES 210.52 AND 550.13. THE LOCATIONS INCLUDE BUT ARE NOT LIMITED TO: BEDROOMS, BATHROOMS, COUNTERTOPS, DINING ROOMS, FAMILRY ROOMS, HALLWAYS, KITCHENS, LAUNDRY AREAS, LIVING ROOMS, OUTDOORS. GROUP R-2 OCCUPANCIES OF THIS TYPE ARE REQUIRED BY SECTION 907 OF THE IBC TO HAVE A FIRE ALARM SYSTEM. ALL DWELLING UNITS SHALL BE PROVIDED WITH THE CAPABILITY TO SUPPORT VISUAL NOTIFICATION APPLIANCES IN ACCORDANCE WITH ICC A117.1. PROVIDE ALL CONDUIT PATHWAYS AND FIRE ALARM CABLING. TYPE B UNITS SHALL BE ABLE TO BE MODIFIED TO INCORPORATE VISUAL NOTIFICATION WITHOUT REQUIRING ADDITIONAL CIRCUITS OR WIRING. PER IBC 1109.13, ALL CONTROLS, OPERATING MECHANISMS, AND HARDWARE INTENDED FOR OPERATION BY THE OCCUPANT, INCLUDING SWITCHES, DISCONNECTS, ETC. SHALL BE ACCESSIBLE. ALL TYPE A AND TYPE B UNITS SHALL HAVE ALL OPERABLE PARTS MOUNTED SO THAT THE DEVICES ARE FULLY ACCESSIBLE PER ICC A117.1 REQUIREMENTS. INCLUDED WITH THIS REQUIREMENT FOR TYPE A AND TYPE B UNITS IS THE MOUNTING HEIGHT OF THE CIRCUIT BREAKERS WITHIN THE UNIT LOADCENTERS. THE HIGHEST OPERABLE BREAKER IN THE LOADCENTER SHALL NOT BE HIGHER THAN 66" AFF IN ALL TYPE A AND TYPE B UNITS. PER NEC 210.52 (DWELLING UNIT RECEPTACLE OUTLETS), RECEPTACLES SHALL BE INSTALLED SUCH THAT NO POINT MEASURED HORIZONTALLY ALONG THE FLOOR LINE OF ANY WALL SPACE IS MORE THAN 6 FT FROM A RECEPTACLE OUTLET. THIS SPACING APPLIES TO ALL ROOMS NOTED IN THIS NEC SECTION. WITHIN KITCHENS, PER NEC 210.52C, THE SPACING OF RECEPTACLES ALONG KITCHEN COUNTERTOPS SHALL HAVE NO POINT MEASURED HORIZONTALLY MORE THAN 2 FT FROM A RECEPTACLE. WITHIN BATHROOMS, RECEPTACLES SHALL BE LOCATED NO FURTHER THAN 3 FT FROM THE EDGE OF EACH SINK. THE ENGINEER HAS LAID OUT THE RECEPTACLES TO MEET THESE REQUIREMENTS. HOWEVER, DUE TO STUD SPACING AND FIELD CONDITIONS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE SPACING REQUIREMENTS OF THE NEC ARE FULLY MET IN THE FIELD. ANY RECEPTACLE REQUIRING MOVEMENT IN THE FIELD DUE TO LACK OF MEASUREMENT BY THE EC SHALL BE THE RESPONSIBILITY OF THE EC TO CORRECT. NEC 210.12 REQUIRES ARC-FAULT CIRCUIT-INTERRUPTER PROTECTION TO BE PROVIDED AS REQUIRED BY ITS SUBSECTIONS. THE ENGINEER HAS DESIGNED THE PROJECT FOR COMPLIANCE WITH THIS SECTION. THE EC SHALL INSTALL ALL AFCI DEVICES AS INDICATED ON THE DRAWINGS/SCHEDULES AND IN COMPLIANCE WITH THIS SECTION. ALL INSTALLATION METHODS AND MATERIALS SHALL MEET THE REQUIREMENTS OF NEC 210.12.



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Building Renovation for Big Tom's Barbershop 2178 Centre Avenue, Pittsburgh, PA 15219

FOR PRICING ONLY 50% CD

Revisions: 1, 2, 3, 4, 5, 6, 7, 8

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E-001

PART 1 - GENERAL

CODES AND STANDARDS - THE LATEST EFFECTIVE PUBLICATIONS OF ALL APPLICABLE STANDARDS, CODES, ETC., AS THEY APPLY, FORM PART OF THESE SPECIFICATIONS AS IF HERE WRITTEN FULLY HEREIN AND CONSTITUTE MINIMUM REQUIREMENTS. FOLLOWING WILL BE REFERRED TO THROUGHOUT IN ABBREVIATED FORMS.

NATIONAL ELECTRICAL CODE, (NFPA 70) (NEC).
 INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE).
 NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA).
 AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
 APPLICABLE STATE AND LOCAL CODES.
 APPLICABLE STANDARDS OF UNDERWRITER'S LABORATORIES, INC. (UL).
 APPLICABLE STANDARDS OF NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).
 THE INTERNATIONAL BUILDING CODE (IBC).
 THE INTERNATIONAL FIRE CODE (IFC).
 THE AMERICANS WITH DISABILITIES ACT (ADA).
 INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA).
 THE INTERNATIONAL ENERGY CONSERVATION CODE (IECC).
 ASHRAE 90.1.

1. SCOPE OF WORK - PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, APPURTENANCES AND SERVICES TO PROVIDE A COMPLETE ELECTRICAL INSTALLATION AS SHOWN ON THE DRAWINGS AND AS DESCRIBED IN THESE SPECIFICATIONS.
 2. SITE VISIT - THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING HIS BID TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND DETERMINE THE EXTENT OF WORK. LACK OF KNOWLEDGE OF EXISTING CONDITIONS WILL NOT BE CONSIDERED A BASIS FOR CHANGE ORDERS. PRIOR TO ORDERING EQUIPMENT, CONTRACTOR SHALL VERIFY THAT EQUIPMENT TO BE PROVIDED UNDER THIS CONTRACT IS ACCEPTABLE AND CAN FIT INTO BUILDING AND ROOM. EXPENSE INCURRED BY THE CONTRACTOR, WHICH IN THE ENGINEER'S OPINION COULD HAVE BEEN AVOIDED BY THIS STEP, SHALL NOT BE A BASIS FOR CHANGE ORDERS.
 3. DRAWINGS AND SPECIFICATIONS - THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT, CHARACTER AND ARRANGEMENT OF EQUIPMENT, FIXTURES AND CONDUIT AND WIRING SYSTEMS. IT IS THE INTENTION OF THESE SPECIFICATIONS AND DRAWINGS TO FULLY COVER ALL WORK AND MATERIALS FOR A COMPLETE, FIRST-CLASS ELECTRICAL INSTALLATION, AND ANY DEVICES SUCH AS PULL BOXES AND DISCONNECT SWITCHES, USUALLY EMPLOYED IN THIS CLASS OF WORK THOUGH NOT SPECIFICALLY MENTIONED OR SHOWN ON THE DRAWINGS OR IN THIS SPECIFICATION, BUT WHICH MAY BE NECESSARY FOR THE SATISFACTORY COMPLETION OF THE WORK, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR AS A PART OF HIS TOTAL WORK UNDER THIS DIVISION. CONSULT THE SPECIFICATIONS AND DRAWINGS OF ALL OTHER TRADES AND PERFORM ALL ELECTRICAL WORK REQUIRED THEREIN. COOPERATE WITH ALL OTHER CONTRACTORS OR SUBCONTRACTORS TO FURNISH COMPLETE WORKABLE SYSTEMS.
 4. DURING CONSTRUCTION - KEEP AN ACCURATE RECORD OF ALL DEVIATIONS BETWEEN THE WORK AS SHOWN ON THE CONTRACT DRAWINGS AND THAT WHICH IS ACTUALLY INSTALLED ON A SET OF PRINTS OF THE ELECTRICAL DRAWINGS AND NOTE CHANGES THEREON WITH RED MARKS, IN A NEAT AND ACCURATE MANNER. WHEN ALL REVISIONS HAVE BEEN SHOWN ON THESE PRINTS TO INDICATE THE WORK AS FINALLY INSTALLED, THE PRINTS SHALL BE DELIVERED TO THE ENGINEER, BEFORE FINAL PAYMENT.
 5. PERMITS, INSPECTION AND TESTS - THE RIGHT IS RESERVED FOR THE ENGINEER TO ORDER INSPECTION AND TESTING AT ANY INSTALLATION/EQUIPMENT DURING THE PROGRESS OF ITS ERECTION. THIS CONTRACTOR SHALL TEST ALL WIRING FOR CONTINUITY AND GROUNDS BEFORE CONNECTING ANY FIXTURES OR DEVICES. THIS CONTRACTOR SHALL TEST THE ENTIRE SYSTEM WHEN THE WORK IS FINALLY COMPLETED TO ASSURE THAT ALL PORTIONS ARE FREE FROM SHORT CIRCUITS AND GROUNDS.
 6. SECURE AND PAY - FOR ALL REQUIRED PERMITS AND INSPECTIONS. INSPECTION CERTIFICATES FROM LOCAL AUTHORITIES HAVING JURISDICTION SHALL BE DELIVERED TO THE OWNER BEFORE FINAL PAYMENT.
 7. SUBMITTALS - SUBMIT SHOP DRAWINGS, PRODUCT DATA AND SAMPLES WITHIN THIRTY (30) DAYS OF AWARD OF CONTRACT AND IN ACCORDANCE WITH THE GENERAL CONDITIONS AND SUPPLEMENTARY CONDITIONS. SUBMITTALS ARE REQUIRED FOR ALL SAFETY SWITCHES, ENCLOSED CIRCUIT BREAKERS, PANELBOARDS, TRANSIENT VOLTAGE SURGE SUPPRESSORS, TRANSFORMERS, LIGHTING FIXTURES, FIRE ALARM SYSTEM, AND ALL OTHER EQUIPMENT. REVIEW OF SUBMITTALS BY THE ENGINEER AND ANY ASSOCIATED ACTION TAKEN BY THE ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF ANY REQUIREMENTS SET FORTH BY THE CONTRACT DOCUMENTS.
 8. PROVIDE ALL CUTTING, PATCHING, PAINTING AND FINISHING WORK REQUIRED FOR INSTALLATION OF THE ELECTRICAL WORK.
 9. DAILY AND WHEN DIRECTED BY THE OWNER OR ENGINEER REMOVE ALL DEBRIS FROM THE PREMISES.
 10. DEFINITIONS:
 "FURNISH" SHALL MEAN TO PURCHASE, DELIVER TO JOB SITE, AND UNLOAD FROM TRUCK AT JOB SITE. "INSTALL" SHALL MEAN TO MOUNT IN PLACE, ALL NECESSARY CONNECTIONS AS SPECIFIED ON PLANS, AND ON SHOP DRAWINGS.
 "PROVIDE" SHALL MEAN TO FURNISH AND INSTALL.
 11. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL EQUIPMENT VOLTAGES WITH MECHANICAL CONTRACTORS PRIOR TO EQUIPMENT ORDER.

12. SCHEDULE OF WORK - THE SCHEDULE OF THE ELECTRICAL WORK SHALL BE ARRANGED TO SUIT THE PROGRESS OF WORK BY THE OTHER TRADES AND SHALL IN NO WAY RETARD PROGRESS OF CONSTRUCTION OF THE PROJECT.
 13. WORK UNDER THIS DIVISION - SHALL PROCEED IN ADVANCE OF THE OTHER TRADES TO BE SECURED EVERY SIX FEET AND WITHIN 12 INCHES OF EVERY BOX OR TERMINATION AS REQUIRED BY CODE. INSTALLATION OF METAL CLAD CABLING SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER AND FOLLOW OR BE PERPENDICULAR TO BUILDING LINES.
 14. EACH DESIGNED CIRCUIT HOMERUN SHALL HAVE ITS OWN INSULATED GROUND CONDUCTOR. CONDUIT SHALL NOT BE USED BY ELECTRICAL CONTRACTOR.
 15. CONNECTIONS
 A. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A-486B.
 B. TERMINALS THROUGH SHORT LENGTHS OF CONDUIT WITH CONDUCTOR MATERIAL AND THAT POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATINGS THAN UNSPLICED CONDUCTORS.
 C. WIRING AT OUTLETS - INSTALL CONDUCTOR AT EACH OUTLET, WITH AT LEAST 6 INCHES OF SLACK.
 D. WIRING IN WALLS AND ABOVE CEILING, OTHER THAN FOR LUMINAIRE DISCONNECTS, ARE NOT PERMITTED.
 E. ALL EXTERIOR WIRING CONNECTIONS, AND THOSE MADE AT OR BELOW GRADE SHALL BE WATERPROOF WITH UL LISTED WATERPROOF CONNECTORS.
 F. COPPER CONDUCTORS #10 AWG AND SMALLER SHALL BE TERMINATED AND SPliced WITH NUT AND CONNNECTORS. THE NUT OR SELF-INSULATED TUBE SHALL BE USED TO ISOLATE THE TERMINATION FROM OTHER METAL PARTS AND EQUIPMENT.
 G. COPPER CONDUCTORS #8 AWG AND LARGER SHALL BE TERMINATED, SPLICED, AND TAPPED WITH COLOR KEYED COMPRESSION CONNECTORS. THE MANUFACTURER'S RECOMMENDED TOOLS AND DIES SHALL BE USED.
 H. COPPER CABLE LUGS ON LARGER THAN COPPER BUS BAR MAINS AND BRANCHES SHALL USE COPPER SOLDERLESS CONNECTORS HAVING EITHER 2, BOLT CAST COPPER CLAMPS OR COMPRESSION CONNECTIONS, WITH MANUFACTURER'S RECOMMENDED HEXAGONAL DIES AND HYDRAULIC COMPRESSION TOOLS.
 16. COORDINATION - COOPERATE AND COORDINATE EFFORTS WITH ALL CONTRACTORS ON THE PROJECT. THIS IS ESPECIALLY IMPORTANT IN DETERMINING EXACT LOCATIONS OF ALL SWITCHES, RECEPTACLES AND LIGHTING FIXTURES. ARRANGE LIGHTING FIXTURES IN ACCORDANCE WITH THE ARCHITECTURAL REFLECTED CEILING PLANS UNLESS OTHERWISE INDICATED. COORDINATE LIGHTING FIXTURE LOCATIONS WITH GRILLES, DIFFUSERS, ACCESS PANELS, ETC. VERIFY CEILING AND WALL CONSTRUCTION AND MATERIAL PRIOR TO ORDERING LIGHTING FIXTURES OR OTHER DEVICES TO ENSURE PROPER FITTURE OR DEVICE IS FURNISHED TO MATCH CONSTRUCTION. THIS VERIFICATION MUST BE EXECUTED REGARDLESS OF INFORMATION PLACED ON THE DRAWINGS. ANY COST INCURRED WHICH IN THE OPINION OF THE OWNER, COULD HAVE BEEN AVOIDED BY THIS STEP SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
 17. GUARANTEE OF WORK - CONTRACTOR GUARANTEES BY HIS ACCEPTANCE OF THE CONTRACT THAT ALL WORK INSTALLED IS FREE FROM ANY AND ALL DEFECTS IN WORKMANSHIP AND/OR MATERIALS, AND THAT THE APPARATUS WILL DEVELOP CAPACITIES AND CHARACTERISTICS SPECIFIED, AND THAT IT WILL OPERATE PROPERLY FOR ONE YEAR OR AS OTHERWISE SPECIFIED, FROM DATE OF CERTIFICATE OF COMPLETION AND ACCEPTANCE OF THE WORK ANY SUCH DEFECTS IN WORKMANSHIP, MATERIAL OR PERFORMANCE APPEAR, HE WILL, WITHOUT COST TO THE OWNER, REMEDY SUCH DEFECTS WITHIN A REASONABLE TIME TO BE SPECIFIED IN NOTICE OF DEFICIENCY. THEREOF. THE OWNER MAY HAVE SUCH WORK DONE AND CHARGE COST TO CONTRACTOR. EQUIPMENT GUARANTEES FROM DATE OF "START-UP" WILL NOT BE RECOGNIZED.

PART OF THIS WORK UNDER THIS DIVISION, EXCEPT THAT THEY SHALL BE CONNECTED HEREUNDER.
 18. OBTAIN APPROVED SHOP DRAWINGS - SHOWING WIRING DIAGRAMS, CONNECTION DIAGRAMS, ROUGH-IN AND HOOKUP DETAILS, FROM ALL CONTRACTORS FOR ALL EQUIPMENT AND COMPLY THEREWITH.
 19. POWER-LIMITED FIRE ALARM AND CONTROL - SOLID FOR NO. 12 AWG AND SMALLER.
 20. CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS.
 21. FEEDERS AND BRANCH CIRCUITING: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.
 22. METAL-CLAD CABLE, TYPE MC, SHALL BE PERMISSIBLE WHERE INSTALLED AS BRANCH CIRCUITING CONCEALED IN ACCESSIBLE CEILING, WALLS, AND PARTITIONS, OR WHERE INSTALLED BELOW RAISED FLOORING.
 23. INSTALLATION OF CONDUCTORS AND CABLES
 A. CONCEAL CABLES IN FINISHED WALLS, CEILING, AND FLOORS UNLESS OTHERWISE INDICATED.
 B. USE MANUFACTURER-APPROVED PULLING COMPOUND OR LUBRICANT WHERE NECESSARY; COMPOUND USE MUST NOT DAMAGE CONDUCTOR OR INSULATION AND AS OTHERWISE MANUFACTURER'S RECOMMENDED MAXIMUM PULLING TENSIONS AND SIDEWALL PRESSURE VALUES.
 C. INSTALL EXPOSED CABLES PARALLEL AND PERPENDICULAR TO SURFACES OF EXPOSED STRUCTURAL MEMBERS, AND FOLLOW SURFACE CONTOURS WHERE POSSIBLE.
 D. WIRING SHALL BE SECURED EVERY SIX FEET AND WITHIN 12 INCHES OF EVERY BOX OR TERMINATION AS REQUIRED BY CODE. INSTALLATION OF METAL CLAD CABLING SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER AND FOLLOW OR BE PERPENDICULAR TO BUILDING LINES.
 E. EACH DESIGNED CIRCUIT HOMERUN SHALL HAVE ITS OWN INSULATED GROUND CONDUCTOR. CONDUIT SHALL NOT BE USED BY ELECTRICAL CONTRACTOR.
 24. CONNECTIONS
 A. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A-486B.
 B. TERMINALS THROUGH SHORT LENGTHS OF CONDUIT WITH CONDUCTOR MATERIAL AND THAT POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATINGS THAN UNSPLICED CONDUCTORS.
 C. WIRING AT OUTLETS - INSTALL CONDUCTOR AT EACH OUTLET, WITH AT LEAST 6 INCHES OF SLACK.
 D. WIRING IN WALLS AND ABOVE CEILING, OTHER THAN FOR LUMINAIRE DISCONNECTS, ARE NOT PERMITTED.
 E. ALL EXTERIOR WIRING CONNECTIONS, AND THOSE MADE AT OR BELOW GRADE SHALL BE WATERPROOF WITH UL LISTED WATERPROOF CONNECTORS.
 F. COPPER CONDUCTORS #10 AWG AND SMALLER SHALL BE TERMINATED AND SPliced WITH NUT AND CONNNECTORS. THE NUT OR SELF-INSULATED TUBE SHALL BE USED TO ISOLATE THE TERMINATION FROM OTHER METAL PARTS AND EQUIPMENT.
 G. COPPER CONDUCTORS #8 AWG AND LARGER SHALL BE TERMINATED, SPLICED, AND TAPPED WITH COLOR KEYED COMPRESSION CONNECTORS. THE MANUFACTURER'S RECOMMENDED TOOLS AND DIES SHALL BE USED.
 H. COPPER CABLE LUGS ON LARGER THAN COPPER BUS BAR MAINS AND BRANCHES SHALL USE COPPER SOLDERLESS CONNECTORS HAVING EITHER 2, BOLT CAST COPPER CLAMPS OR COMPRESSION CONNECTIONS, WITH MANUFACTURER'S RECOMMENDED HEXAGONAL DIES AND HYDRAULIC COMPRESSION TOOLS.

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
 PART 1 - GENERAL
 1.1 SUBMITTALS
 A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED.
 2.1 SYSTEM DESCRIPTION
 A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 B. COMPLY WITH UL 467 FOR GROUNDING AND BONDING MATERIALS AND EQUIPMENT.
 2.2 CONDUCTORS
 A. INSULATED CONDUCTORS: COPPER OR TINNED-COPPER WIRE OR CABLE INSULATED FOR 600 V UNLESS OTHERWISE REQUIRED BY APPLICABLE CODE OR AUTHORITIES HAVING JURISDICTION.
 B. GROUNDING BUS: PREDRILLED RECTANGULAR BARS OF ANNEALED COPPER OR COPPER-PLATED STEEL, WITH 9/32-INCH HOLES SPACED 1-1/8 INCHES APART, STAND-OFF INSULATORS FOR MOUNTING SHALL COMPLY WITH UL 891 FOR USE IN SWITCHBOARDS, 600 V AND SHALL BE LEXAN OR PVC, IMPULSE TESTED AT 5000 V.
 2.3 CONNECTORS
 A. LISTED AND LABELED BY AN NRTL, ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION FOR APPLICATIONS IN WHICH USED AND FOR SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS CONNECTED.
 2.4 GROUNDING ELECTRODES
 A. GROUND RODS: COPPER-CLAD STEEL, 3/4 INCH BY 10 FEET. GROUND PLATES: 1/4 INCH THICK, HOT-DIP GALVANIZED.
 PART 2 - EXECUTION
 3.1 APPLICATIONS
 A. CONDUCTORS: INSTALL SOLID CONDUCTOR FOR NO. 8 AWG AND SMALLER, AND STRANDED CONDUCTORS FOR NO. 6 AWG AND LARGER UNLESS OTHERWISE INDICATED.
 B. UNDERGROUND GROUNDING CONDUCTORS: INSTALL BARE COPPER CONDUCTOR, NO. 3/0 AWG MINIMUM, BURY AT LEAST 24 INCHES BELOW GRADE.
 C. ISOLATED GROUNDING CONDUCTORS: GREEN-COLORED INSULATION WITH CONTINUOUS YELLOW STRIPE, ON FEEDERS WITH ISOLATED GROUND, IDENTIFY GROUNDING CONDUCTOR WHERE VISIBLE TO NORMAL INSPECTION, WITH ALTERNATING GREEN AND YELLOW STRIPE, WITH AT LEAST THREE BANDS OF GREEN AND TWO BANDS OF YELLOW.
 D. GROUNDING BUS: INSTALL IN ELECTRICAL EQUIPMENT ROOMS, IN ROOMS HOUSING SERVICE EQUIPMENT, AND ELSEWHERE AS INDICATED.
 1. INSTALL BUS HORIZONTALLY, ON INSULATED SPACERS 2 INCHES MINIMUM FROM WALL, 6 INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.
 2. WHERE INDICATED ON BOTH SIDES OF DOORWAYS, ROUTE BUS UP TO TOP OF DOOR FRAME, ACROSS TOP OF DOORWAY, AND DOWN, CONNECT TO HORIZONTAL BUS.
 E. CONDUCTOR TERMINATIONS AND CONNECTIONS:
 1. PIPE AND EQUIPMENT GROUNDING CONDUCTOR TERMINATIONS SHALL BE MADE UNDER THE FOLLOWING CONDITIONS:
 2. UNDERGROUND CONNECTIONS: WELDED CONNECTORS EXCEPT AT TEST WELLS AND AS OTHERWISE INDICATED.
 3. CONNECTIONS TO GROUND RODS AT TEST WELLS: BOLTED CONNECTORS.
 4. CONNECTIONS TO STRUCTURAL STEEL: WELDED CONNECTIONS.
 3.2 GROUNDING AT THE SERVICE
 A. EQUIPMENT GROUNDING CONDUCTORS AND GROUNDING ELECTRODE CONDUCTORS SHALL BE CONNECTED TO THE GROUND BUS. INSTALL A MAIN BONDING JUMPER BETWEEN THE NEUTRAL AND GROUND BUSES.
 3.3 EQUIPMENT GROUNDING
 A. ALL EXTERIOR SERVICE GROUNDING CONDUCTORS WITH ALL FEEDERS AND BRANCH CIRCUITS.

3. CONDUCTOR MATERIAL APPLICATIONS
 A. FEEDERS: COPPER. CONDUCTORS SHALL BE SOLID OR STRANDED FOR NO. 10 AWG AND SMALLER; STRANDED FOR NO. 8 AWG AND LARGER.
 B. BRANCH CIRCUITS: COPPER. SOLID OR STRANDED FOR NO. 10 AWG AND SMALLER; STRANDED FOR NO. 8 AWG AND LARGER. CONTROL INTERLOCK MOTORS AND APPLIANCE BRANCH CIRCUITS, AND APPLIANCE OTHER THAN NO. 2 AWG SHALL NOT BE USED FOR LIGHTING AND POWER CIRCUITS.
 C. POWER-LIMITED FIRE ALARM AND CONTROL: SOLID FOR NO. 12 AWG AND SMALLER.
 3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS.
 A. FEEDERS AND BRANCH CIRCUITING: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.
 B. FEEDERS AND BRANCH CIRCUITING: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.
 C. METAL-CLAD CABLE, TYPE MC, SHALL BE PERMISSIBLE WHERE INSTALLED AS BRANCH CIRCUITING CONCEALED IN ACCESSIBLE CEILING, WALLS, AND PARTITIONS, OR WHERE INSTALLED BELOW RAISED FLOORING.
 3.3 INSTALLATION OF CONDUCTORS AND CABLES
 A. CONCEAL CABLES IN FINISHED WALLS, CEILING, AND FLOORS UNLESS OTHERWISE INDICATED.
 B. USE MANUFACTURER-APPROVED PULLING COMPOUND OR LUBRICANT WHERE NECESSARY; COMPOUND USE MUST NOT DAMAGE CONDUCTOR OR INSULATION AND AS OTHERWISE MANUFACTURER'S RECOMMENDED MAXIMUM PULLING TENSIONS AND SIDEWALL PRESSURE VALUES.
 C. INSTALL EXPOSED CABLES PARALLEL AND PERPENDICULAR TO SURFACES OF EXPOSED STRUCTURAL MEMBERS, AND FOLLOW SURFACE CONTOURS WHERE POSSIBLE.
 D. WIRING SHALL BE SECURED EVERY SIX FEET AND WITHIN 12 INCHES OF EVERY BOX OR TERMINATION AS REQUIRED BY CODE. INSTALLATION OF METAL CLAD CABLING SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER AND FOLLOW OR BE PERPENDICULAR TO BUILDING LINES.
 E. EACH DESIGNED CIRCUIT HOMERUN SHALL HAVE ITS OWN INSULATED GROUND CONDUCTOR. CONDUIT SHALL NOT BE USED BY ELECTRICAL CONTRACTOR.
 3.4 CONNECTIONS
 A. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A-486B.
 B. TERMINALS THROUGH SHORT LENGTHS OF CONDUIT WITH CONDUCTOR MATERIAL AND THAT POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATINGS THAN UNSPLICED CONDUCTORS.
 C. WIRING AT OUTLETS - INSTALL CONDUCTOR AT EACH OUTLET, WITH AT LEAST 6 INCHES OF SLACK.
 D. WIRING IN WALLS AND ABOVE CEILING, OTHER THAN FOR LUMINAIRE DISCONNECTS, ARE NOT PERMITTED.
 E. ALL EXTERIOR WIRING CONNECTIONS, AND THOSE MADE AT OR BELOW GRADE SHALL BE WATERPROOF WITH UL LISTED WATERPROOF CONNECTORS.
 F. COPPER CONDUCTORS #10 AWG AND SMALLER SHALL BE TERMINATED AND SPliced WITH NUT AND CONNNECTORS. THE NUT OR SELF-INSULATED TUBE SHALL BE USED TO ISOLATE THE TERMINATION FROM OTHER METAL PARTS AND EQUIPMENT.
 G. COPPER CONDUCTORS #8 AWG AND LARGER SHALL BE TERMINATED, SPLICED, AND TAPPED WITH COLOR KEYED COMPRESSION CONNECTORS. THE MANUFACTURER'S RECOMMENDED TOOLS AND DIES SHALL BE USED.
 H. COPPER CABLE LUGS ON LARGER THAN COPPER BUS BAR MAINS AND BRANCHES SHALL USE COPPER SOLDERLESS CONNECTORS HAVING EITHER 2, BOLT CAST COPPER CLAMPS OR COMPRESSION CONNECTIONS, WITH MANUFACTURER'S RECOMMENDED HEXAGONAL DIES AND HYDRAULIC COMPRESSION TOOLS.

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
 PART 1 - GENERAL
 1.1 SUBMITTALS
 A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED.
 2.1 SYSTEM DESCRIPTION
 A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 B. COMPLY WITH UL 467 FOR GROUNDING AND BONDING MATERIALS AND EQUIPMENT.
 2.2 CONDUCTORS
 A. INSULATED CONDUCTORS: COPPER OR TINNED-COPPER WIRE OR CABLE INSULATED FOR 600 V UNLESS OTHERWISE REQUIRED BY APPLICABLE CODE OR AUTHORITIES HAVING JURISDICTION.
 B. GROUNDING BUS: PREDRILLED RECTANGULAR BARS OF ANNEALED COPPER OR COPPER-PLATED STEEL, WITH 9/32-INCH HOLES SPACED 1-1/8 INCHES APART, STAND-OFF INSULATORS FOR MOUNTING SHALL COMPLY WITH UL 891 FOR USE IN SWITCHBOARDS, 600 V AND SHALL BE LEXAN OR PVC, IMPULSE TESTED AT 5000 V.
 2.3 CONNECTORS
 A. LISTED AND LABELED BY AN NRTL, ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION FOR APPLICATIONS IN WHICH USED AND FOR SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS CONNECTED.
 2.4 GROUNDING ELECTRODES
 A. GROUND RODS: COPPER-CLAD STEEL, 3/4 INCH BY 10 FEET. GROUND PLATES: 1/4 INCH THICK, HOT-DIP GALVANIZED.
 PART 2 - EXECUTION
 3.1 APPLICATIONS
 A. CONDUCTORS: INSTALL SOLID CONDUCTOR FOR NO. 8 AWG AND SMALLER, AND STRANDED CONDUCTORS FOR NO. 6 AWG AND LARGER UNLESS OTHERWISE INDICATED.
 B. UNDERGROUND GROUNDING CONDUCTORS: INSTALL BARE COPPER CONDUCTOR, NO. 3/0 AWG MINIMUM, BURY AT LEAST 24 INCHES BELOW GRADE.
 C. ISOLATED GROUNDING CONDUCTORS: GREEN-COLORED INSULATION WITH CONTINUOUS YELLOW STRIPE, ON FEEDERS WITH ISOLATED GROUND, IDENTIFY GROUNDING CONDUCTOR WHERE VISIBLE TO NORMAL INSPECTION, WITH ALTERNATING GREEN AND YELLOW STRIPE, WITH AT LEAST THREE BANDS OF GREEN AND TWO BANDS OF YELLOW.
 D. GROUNDING BUS: INSTALL IN ELECTRICAL EQUIPMENT ROOMS, IN ROOMS HOUSING SERVICE EQUIPMENT, AND ELSEWHERE AS INDICATED.
 1. INSTALL BUS HORIZONTALLY, ON INSULATED SPACERS 2 INCHES MINIMUM FROM WALL, 6 INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.
 2. WHERE INDICATED ON BOTH SIDES OF DOORWAYS, ROUTE BUS UP TO TOP OF DOOR FRAME, ACROSS TOP OF DOORWAY, AND DOWN, CONNECT TO HORIZONTAL BUS.
 E. CONDUCTOR TERMINATIONS AND CONNECTIONS:
 1. PIPE AND EQUIPMENT GROUNDING CONDUCTOR TERMINATIONS SHALL BE MADE UNDER THE FOLLOWING CONDITIONS:
 2. UNDERGROUND CONNECTIONS: WELDED CONNECTORS EXCEPT AT TEST WELLS AND AS OTHERWISE INDICATED.
 3. CONNECTIONS TO GROUND RODS AT TEST WELLS: BOLTED CONNECTORS.
 4. CONNECTIONS TO STRUCTURAL STEEL: WELDED CONNECTIONS.
 3.2 GROUNDING AT THE SERVICE
 A. EQUIPMENT GROUNDING CONDUCTORS AND GROUNDING ELECTRODE CONDUCTORS SHALL BE CONNECTED TO THE GROUND BUS. INSTALL A MAIN BONDING JUMPER BETWEEN THE NEUTRAL AND GROUND BUSES.
 3.3 EQUIPMENT GROUNDING
 A. ALL EXTERIOR SERVICE GROUNDING CONDUCTORS WITH ALL FEEDERS AND BRANCH CIRCUITS.

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
 PART 1 - GENERAL
 1.1 ACTION SUBMITTALS
 A. PRODUCT DATA: FOR SURFACE RACEWAYS, WIREWAYS, AND FITTINGS, FLOOR BOXES, HINGED-COVER ENCLOSURES, AND CABINETS.
 PART 2 - PRODUCTS
 2.1 METAL CONDUITS AND FITTINGS
 A. METAL CONDUITS: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 1. LISTING AND LABELING: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 2. GRG: COMPLY WITH ANSI C80.1.
 3. IMC: COMPLY WITH ANSI C80.6.
 4. PVC-COATED STEEL: DEFENDIVE PVC-COATED RIGID STEEL CONDUIT IMC, COMPLY WITH NEMA RN 1.
 5. EMT: COMPLY WITH ANSI C80.3.
 6. FMC: COMPLY WITH UL 1, ZINC-COATED STEEL OR ALUMINUM.
 7. LFMC: FLEXIBLE STEEL CONDUIT WITH PVC JACKET AND COMPLYING WITH UL 360.
 B. METAL FITTINGS:
 1. COMPLY WITH NEMA FB 1 AND UL 514B.
 2. LISTING AND LABELING: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 3. FITTINGS, GENERAL: LISTED AND LABELED FOR TYPE OF CONDUIT, LOCATION, AND USE.
 4. EXPANSION FITTINGS: GREEN-COLORED (CLASSIFIED) FITTINGS: COMPLY WITH UL 1203 AND NFPA 70.
 5. FITTINGS FOR EMT: MATERIAL: STEEL OR DIE CAST. TYPE: COMPRESSION.
 6. EXPANSION FITTINGS: PVC OR STEEL TO MATCH CONDUIT TYPE, COMPLYING WITH UL 651, RATED FOR ENVIRONMENTAL CONDITIONS AND MARKED FOR INTENDED LOCATION AND USE.
 7. COATING FOR FITTINGS FOR PVC-COATED CONDUIT: MINIMUM THICKNESS OF 0.040 INCH, WITH OVERLAPPING SLEEVES PROTECTING JOINED JOINTS.
 C. JOINT COMPOUND FOR IMC, GRG, OR ARC: APPROVED, AS DEFINED IN NFPA 70, BY AUTHORITIES HAVING JURISDICTION FOR USE IN CONDUIT ASSEMBLIES, AND SHOWN ON DRAWINGS. USE ONLY FITTINGS LISTED FOR USE WITH THIS TYPE OF CONDUIT.
 2.2 CORROSION AND TO ENHANCE THEIR CONDUCTIVITY, NONMETALLIC CONDUITS AND FITTINGS
 A. NONMETALLIC CONDUIT:
 1. LISTING AND LABELING: NONMETALLIC CONDUIT SHALL BE LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 2. FIBERGLASS: COMPLY WITH NEMA TC 14, COMPLY WITH UL 2515 FOR ABOVEGROUND RACEWAYS, COMPLY WITH UL 2420 FOR BELOWGROUND RACEWAYS.
 3. ENT: COMPLY WITH NEMA TC 13.
 4. RNC: TYPE EPC-80-PVC, COMPLYING WITH NEMA TC 2 AND UL 651 UNLESS OTHERWISE INDICATED.
 5. LFNC: COMPLY WITH UL 1660.
 B. NONMETALLIC FITTINGS:
 1. FITTINGS, GENERAL: LISTED AND LABELED FOR TYPE OF CONDUIT, LOCATION, AND USE.
 2. FITTINGS FOR ENT AND RNC: COMPLY WITH NEMA TC 3; MATCH TO CONDUIT OR TUBING TYPE AND MATERIAL.
 FITTINGS FOR LFNC: COMPLY WITH UL 514B.
 2.3 METAL WIREWAYS AND AUXILIARY GUTTERS
 A. DESCRIPTION: SHEET METAL, COMPLYING WITH UL 870 AND NEMA 250, TYPE 1, TYPE 3R, OR TYPE 4 UNLESS OTHERWISE INDICATED, AND SIZED ACCORDING TO NFPA 70.
 1. METAL WIREWAYS INSTALLED OUTDOORS SHALL BE LISTED AND LABELED BY THE TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 B. FITTINGS AND ACCESSORIES: INCLUDE COVERS, COUPLINGS, OFFSETS, ELBOWS, EXPANSION JOINTS, ADAPTERS, HOLD-DOWN STRAPS, END CAPS, AND OTHER FITTINGS TO MATCH AND MATE WITH WIREWAYS AND ACCESSORIES FOR COMPLETE SYSTEM.
 C. WIREWAY COVERS: HINGED TYPE SCREW-COVER TYPE FLANGED-AND-GASKETED TYPE UNLESS OTHERWISE INDICATED.
 D. FINISH: MANUFACTURER'S STANDARD ENAMEL FINISH.
 2.4 SURFACE RACEWAYS
 A. LISTING AND LABELING: SURFACE RACEWAYS AND TELE-POWER FLOOR SHALL BE LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 B. SURFACE METAL RACEWAYS: GALVANIZED STEEL WITH SNAP-ON COVERS COMPLYING WITH UL 5, MANUFACTURER'S STANDARD ENAMEL FINISH IN COLOR SELECTED BY ARCHITECT.
 2.5 BOXES, ENCLOSURES, AND CABINETS
 A. GENERAL REQUIREMENTS: ALL ENCLOSURES, AND CABINETS, BOXES, ENCLOSURES, AND CABINETS INSTALLED IN WET LOCATIONS SHALL BE LISTED FOR USE IN WET LOCATIONS, SHEET METAL OUTLET AND DEVICE BOXES: COMPLY WITH NEMA OS 1 AND UL 514A.
 B. CAST-METAL OUTLET AND DEVICE BOXES: COMPLY WITH NEMA FB 1, FERROUS METAL AND ALUMINUM, TYPE FD, WITH GASKETED COVER.
 C. NONMETALLIC OUTLET AND DEVICE BOXES: COMPLY WITH NEMA METAL FLOOR BOXES: MATERIAL: CAST METAL OR SHEET METAL. TYPE: FULLY ADJUSTABLE SHAPE; RECTANGULAR.
 F. LUMINAIRE OUTLET BOXES: NOMINALLY DESIGNED FOR ATTACHMENT OF LUMINAIRE WEIGHING 50 LB. OUTLET BOXES DESIGNED FOR ATTACHMENT OF LUMINAIRES WEIGHING MORE THAN 50 LB SHALL BE LISTED AND MARKED FOR THE MAXIMUM ALLOWABLE WEIGHT.
 G. SMALL SHEET METAL PULL AND JUNCTION BOXES: NEMA OS 1.
 H. CAST-METAL ACCESS, PULL, AND JUNCTION BOXES: COMPLY WITH NEMA FB 1 AND UL 173, CAST ALUMINUM OR GALVANIZED, CAST IRON WITH GASKETED COVER.
 I. BOX EXTENSIONS USED TO ACCOMMODATE NEW BUILDING FINISHES SHALL BE OF SAME MATERIAL AS RECESSED BOX.
 J. DEVICE BOX DIMENSIONS: 4 INCHES SQUARE BY 2-1/8 INCHES DEEP OR 4 INCHES BY 2-1/8 INCHES BY 2-1/8 INCHES DEEP.
 K. GANGABLE BOXES: LISTED AND MARKED FOR USE WITH HINGED-COVER ENCLOSURES: COMPLY WITH UL 50 AND NEMA 250, TYPE 1 TYPE 3R TYPE 4 WITH CONTINUOUS-HINGE COVER WITH FLUSH LATCH UNLESS OTHERWISE INDICATED.
 1. METAL ENCLOSURES: STEEL, FINISHED INSIDE AND OUT WITH MANUFACTURER'S STANDARD ENAMEL.
 2. NONMETAL ENCLOSURES: FIBERGLASS.
 3. INTERIOR PANELS: STEEL, ALL SIDES FINISHED WITH MANUFACTURER'S STANDARD ENAMEL.
 M. CABINETS:
 NEMA 250, TYPE 1 TYPE 3R TYPE 12 GALVANIZED-STEEL BOX WITH REMOVABLE INTERIOR PANEL AND REMOVABLE FRONT, FINISHED INSIDE AND OUT WITH MANUFACTURER'S STANDARD ENAMEL, HINGED DOOR IN FRONT COVER WITH FLUSH LATCH AND CONCEALED HINGE, KEY LATCH TO MATCH PANELBOARDS, METAL BARRIERS TO SEPARATE WIRING OF DIFFERENT SYSTEMS AND VOLTAGE. ACCESSORY FEET WHERE REQUIRED FOR FREESTANDING EQUIPMENT.
 NONMETALLIC CABINETS SHALL BE LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 2.6 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING
 A. GENERAL REQUIREMENTS FOR HANDHOLES AND BOXES:
 1. BOXES AND HANDHOLES FOR USE IN UNDERGROUND SYSTEMS SHALL BE DESIGNED AND IDENTIFIED AS DEFINED IN NFPA 70, AND INTENDED FOR USE IN UNDERGROUND BOXES IN WET AREAS SHALL BE LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 PART 3 - EXECUTION
 3.1 RACEWAY APPLICATION
 A. GENERAL REQUIREMENTS FOR RACEWAYS AS SPECIFIED BELOW UNLESS OTHERWISE INDICATED:
 1. EXPOSED CONDUIT, GRG, IMC, RNC, TYPE EPC-80-PVC, 2. CONCEALED CONDUIT, ABOVEGROUND: GRG, IMC AND EMT, 3. UNDERGROUND CONDUIT: RNC, TYPE EPC-80-PVC, DIRECT BURYED AND CONCRETE ENCASED WHERE UNDER DRIVES AND PARKING AREAS.
 4. CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT): LFMC AND LFNC.
 5. BOXES AND ENCLOSURES, ABOVEGROUND: NEMA 250, TYPE 3R AND TYPE 4.
 B. UNDERGROUND RACEWAY PRODUCTS AS SPECIFIED BELOW UNLESS OTHERWISE INDICATED:
 1. EXPOSED, NOT SUBJECT TO PHYSICAL DAMAGE: EMT, 2. EXPOSED, NOT SUBJECT TO SEVERE PHYSICAL DAMAGE: EMT, 3. EXPOSED AND SUBJECT TO SEVERE PHYSICAL DAMAGE: GRG. RACEWAY LOCATIONS INCLUDE THE FOLLOWING: ENAMEL FINISHED FLOOR SURFACES, UNDER FLOOR TRAFFIC OF MECHANIZED CARTS, FORKLIIFTS, AND PALLET-HANDLING UNITS, MECHANICAL ROOMS,
 4. CONCEALED IN CEILINGS AND INTERIOR WALLS AND PARTITIONS: EMT,
 5. CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT): FMC, EXCEPT USE LFMC IN DAMP OR WET LOCATIONS,
 6. DAMP OR WET LOCATIONS: GRG,
 7. BOXES AND ENCLOSURES: NEMA 250, TYPE 1, EXCEPT USE NEMA 250, TYPE 4 STAINLESS STEEL, IN INSTITUTIONAL AND COMMERCIAL WET LOCATIONS.
 C. MINIMUM RACEWAY SIZE: AT LEAST 1/2 INCH TRADE SIZE,
 4. RACEWAY FITTINGS: COMPATIBLE WITH RACEWAYS AND SUITABLE FOR USE AND LOCATION,
 1. RIGID AND INTERMEDIATE STEEL CONDUIT: USE THREADED RIGID STEEL CONDUIT FITTINGS UNLESS OTHERWISE INDICATED. COMPLY WITH NEMA FB 2-10,
 2. NONMETALLIC CONDUIT AND FITTINGS: USE ONLY FITTINGS LISTED FOR USE WITH THIS TYPE OF

CORROSION AND TO ENHANCE THEIR CONDUCTIVITY, NONMETALLIC CONDUITS AND FITTINGS
 A. NONMETALLIC CONDUIT:
 1. LISTING AND LABELING: NONMETALLIC CONDUIT SHALL BE LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 2. FIBERGLASS: COMPLY WITH NEMA TC 14, COMPLY WITH UL 2515 FOR ABOVEGROUND RACEWAYS, COMPLY WITH UL 2420 FOR BELOWGROUND RACEWAYS.
 3. ENT: COMPLY WITH NEMA TC 13.
 4. RNC: TYPE EPC-80-PVC, COMPLYING WITH NEMA TC 2 AND UL 651 UNLESS OTHERWISE INDICATED.
 5. LFNC: COMPLY WITH UL 1660.
 B. NONMETALLIC FITTINGS:
 1. FITTINGS, GENERAL: LISTED AND LABELED FOR TYPE OF CONDUIT, LOCATION, AND USE.
 2. FITTINGS FOR ENT AND RNC: COMPLY WITH NEMA TC 3; MATCH TO CONDUIT OR TUBING TYPE AND MATERIAL.
 FITTINGS FOR LFNC: COMPLY WITH UL 514B.
 2.3 METAL WIREWAYS AND AUXILIARY GUTTERS
 A. DESCRIPTION: SHEET METAL, COMPLYING WITH UL 870 AND NEMA 250, TYPE 1, TYPE 3R, OR TYPE 4 UNLESS OTHERWISE INDICATED, AND SIZED ACCORDING TO NFPA 70.
 1. METAL WIREWAYS INSTALLED OUTDOORS SHALL BE LISTED AND LABELED BY THE TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 B. FITTINGS AND ACCESSORIES: INCLUDE COVERS, COUPLINGS, OFFSETS, ELBOWS, EXPANSION JOINTS, ADAPTERS, HOLD-DOWN STRAPS, END CAPS, AND OTHER FITTINGS TO MATCH AND MATE WITH WIREWAYS AND ACCESSORIES FOR COMPLETE SYSTEM.
 C. WIREWAY COVERS: HINGED TYPE SCREW-COVER TYPE FLANGED-AND-GASKETED TYPE UNLESS OTHERWISE INDICATED.
 D. FINISH: MANUFACTURER'S STANDARD ENAMEL FINISH.
 2.4 SURFACE RACEWAYS
 A. LISTING AND LABELING: SURFACE RACEWAYS AND TELE-POWER FLOOR SHALL BE LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 B. SURFACE METAL RACEWAYS: GALVANIZED STEEL WITH SNAP-ON COVERS COMPLYING WITH UL 5, MANUFACTURER'S STANDARD ENAMEL FINISH IN COLOR SELECTED BY ARCHITECT.
 2.5 BOXES, ENCLOSURES, AND CABINETS
 A. GENERAL REQUIREMENTS: ALL ENCLOSURES, AND CABINETS, BOXES, ENCLOSURES, AND CABINETS INSTALLED IN WET LOCATIONS SHALL BE LISTED FOR USE IN WET LOCATIONS, SHEET METAL OUTLET AND DEVICE BOXES: COMPLY WITH NEMA OS 1 AND UL 514A.
 B. CAST-METAL OUTLET AND DEVICE BOXES: COMPLY WITH NEMA FB 1, FERROUS METAL AND ALUMINUM, TYPE FD, WITH GASKETED COVER.
 C. NONMETALLIC OUTLET AND DEVICE BOXES: COMPLY WITH NEMA OS 1 AND UL 514C.
 D. METAL FLOOR BOXES: MATERIAL: CAST METAL OR SHEET METAL. TYPE: FULLY ADJUSTABLE SHAPE; RECTANGULAR.
 F. LUMINAIRE OUTLET BOXES: NOMINALLY DESIGNED FOR ATTACHMENT OF LUMINAIRE WEIGHING 50 LB. OUTLET BOXES DESIGNED FOR ATTACHMENT OF LUMINAIRES WEIGHING MORE THAN 50 LB SHALL BE LISTED AND MARKED FOR THE MAXIMUM ALLOWABLE WEIGHT.
 G. SMALL SHEET METAL PULL AND JUNCTION BOXES: NEMA OS 1.
 H. CAST-METAL ACCESS, PULL, AND JUNCTION BOXES: COMPLY WITH NEMA FB 1 AND UL 173, CAST ALUMINUM OR GALVANIZED, CAST IRON WITH GASKETED COVER.
 I. BOX EXTENSIONS USED TO ACCOMMODATE NEW BUILDING FINISHES SHALL BE OF SAME MATERIAL AS RECESSED BOX.
 J. DEVICE BOX DIMENSIONS: 4 INCHES SQUARE BY 2-1/8 INCHES DEEP OR 4 INCHES BY 2-1/8 INCHES BY 2-1/8 INCHES DEEP.
 K. GANGABLE BOXES: LISTED AND MARKED FOR USE WITH HINGED-COVER ENCLOSURES: COMPLY WITH UL 50 AND NEMA 250, TYPE 1 TYPE 3R TYPE 4 WITH CONTINUOUS-HINGE COVER WITH FLUSH LATCH UNLESS OTHERWISE INDICATED.
 1. METAL ENCLOSURES: STEEL, FINISHED INSIDE AND OUT WITH MANUFACTURER'S STANDARD ENAMEL.
 2. NONMETAL ENCLOSURES: FIBERGLASS.
 3. INTERIOR PANELS: STEEL, ALL SIDES FINISHED WITH MANUFACTURER'S STANDARD ENAMEL.
 M. CABINETS:
 NEMA 250, TYPE 1 TYPE 3R TYPE 12 GALVANIZED-STEEL BOX WITH REMOVABLE INTERIOR PANEL AND REMOVABLE FRONT, FINISHED INSIDE AND OUT WITH MANUFACTURER'S STANDARD ENAMEL, HINGED DOOR IN FRONT COVER WITH FLUSH LATCH AND CONCEALED HINGE, KEY LATCH TO MATCH PANELBOARDS, METAL BARRIERS TO SEPARATE WIRING OF DIFFERENT SYSTEMS AND VOLTAGE. ACCESSORY FEET WHERE REQUIRED FOR FREESTANDING EQUIPMENT.
 NONMETALLIC CABINETS SHALL BE LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 2.6 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING
 A. GENERAL REQUIREMENTS FOR HANDHOLES AND BOXES:
 1. BOXES AND HANDHOLES FOR USE IN UNDERGROUND SYSTEMS SHALL BE DESIGNED AND IDENTIFIED AS DEFINED IN NFPA 70, AND INTENDED FOR USE IN UNDERGROUND BOXES IN WET AREAS SHALL BE LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 PART 3 - EXECUTION
 3.1 RACEWAY APPLICATION
 A. GENERAL REQUIREMENTS FOR RACEWAYS AS SPECIFIED BELOW UNLESS OTHERWISE INDICATED:
 1. EXPOSED CONDUIT, GRG, IMC, RNC, TYPE EPC-80-PVC, 2. CONCEALED CONDUIT, ABOVEGROUND: GRG, IMC AND EMT, 3. UNDERGROUND CONDUIT: RNC, TYPE EPC-80-PVC, DIRECT BURYED AND CONCRETE ENCASED WHERE UNDER DRIVES AND PARKING AREAS.
 4. CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT): LFMC AND LFNC.
 5. BOXES AND ENCLOSURES, ABOVEGROUND: NEMA 250, TYPE 3R AND TYPE 4.
 B. UNDERGROUND RACEWAY PRODUCTS AS SPECIFIED BELOW UNLESS OTHERWISE INDICATED:
 1. EXPOSED, NOT SUBJECT TO PHYSICAL DAMAGE: EMT, 2. EXPOSED, NOT SUBJECT TO SEVERE PHYSICAL DAMAGE: EMT, 3. EXPOSED AND SUBJECT TO SEVERE PHYSICAL DAMAGE: GRG. RACEWAY LOCATIONS INCLUDE THE FOLLOWING: ENAMEL FINISHED FLOOR SURFACES, UNDER FLOOR TRAFFIC OF MECHANIZED CARTS, FORKLIIFTS, AND PALLET-HANDLING UNITS, MECHANICAL ROOMS,
 4. CONCEALED IN CEILINGS AND INTERIOR WALLS AND PARTITIONS: EMT,
 5. CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT): FMC, EXCEPT USE LFMC IN DAMP OR WET LOCATIONS,
 6. DAMP OR WET LOCATIONS: GRG,
 7. BOXES AND ENCLOSURES: NEMA 250, TYPE 1, EXCEPT USE NEMA 250, TYPE 4 STAINLESS STEEL, IN INSTITUTIONAL AND COMMERCIAL WET LOCATIONS.
 C. MINIMUM RACEWAY SIZE: AT LEAST 1/2 INCH TRADE SIZE,
 4. RACEWAY FITTINGS: COMPATIBLE WITH RACEWAYS AND SUITABLE FOR USE AND LOCATION,
 1. RIGID AND INTERMEDIATE STEEL CONDUIT: USE THREADED RIGID STEEL CONDUIT FITTINGS UNLESS OTHERWISE INDICATED. COMPLY WITH NEMA FB 2-10,
 2. NONMETALLIC CONDUIT AND FITTINGS: USE ONLY FITTINGS LISTED FOR USE WITH THIS TYPE OF

CORROSION AND TO ENHANCE THEIR CONDUCTIVITY, NONMETALLIC CONDUITS AND FITTINGS
 A. NONMETALLIC CONDUIT:
 1. LISTING AND LABELING: NONMETALLIC CONDUIT SHALL BE LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
 2. FIBERGLASS: COMPLY WITH NEMA TC 14, COMPLY WITH UL 2515 FOR ABOVEGROUND RACEWAYS, COMPLY WITH UL 2420 FOR BELOWGROUND RACEWAYS.
 3. ENT: COMPLY WITH NEMA TC 13.
 4. RNC: TYPE EPC-80-P

- MINUTE BEFORE THE LIGHTS TURN OFF.
- TIME SWITCH SHALL HAVE THE OPTION FOR A BEEP WARNING THAT SHALL SOUND EVERY FIVE SECONDS ONCE THE TIME SWITCH COUNTDOWN REACHES ONE MINUTE.
 - TIME SWITCH SHALL HAVE MANUAL FEATURE FOR TIMER RESET WHERE PRESSING THE ON/OFF SWITCH FOR MORE THAN 2 SECONDS RESETS THE TIMER TO THE PROGRAMMED TIME-OUT PERIOD.
 - TIME SWITCH SHALL BE CAPABLE OF OPERATING AS AN ON/OFF SWITCH.
 - TIME SWITCH CAN OPERATE WITH POWER PACKS IN ORDER TO CONTROL ADDITIONAL LOADS.
 - OUTDOOR PHOTOELECTRIC SWITCHES
 - DESCRIPTION: SOLID STATE, WITH DPST DRY CONTACTS RATED FOR 120V AC, 10A, 200VA. UNIT SHALL BE TO OPERATE CONNECTED RELAY, CONTACTOR COILS, OR MICROPROCESSOR INPUT, COMPLYING WITH UL 773A. SPECIFIC PRODUCT AS INDICATED ON DRAWINGS.
 - DAYLIGHTING SENSORS
 - DESCRIPTION: SOLID-STATE, LIGHT-LEVEL SENSOR UNIT, WITH SEPARATE RELAY UNIT, TO DETECT CHANGES IN LIGHTING LEVELS THAT ARE PERCEIVED BY THE EYE, COMPATIBLE WITH LIGHTING SYSTEM AS SPECIFIED.
 - INDOOR OCCUPANCY SENSORS
 - GENERAL DESCRIPTION: WALL- OR CEILING-MOUNTING, SOLID-STATE UNITS WITH A SEPARATE RELAY UNIT. SPECIFIC PRODUCT AS INDICATED ON DRAWINGS.

- GENERAL DESCRIPTIONS, DIMENSIONS, AND PROFILES.
 - OTHER CIRCUIT TYPES:
 - ON WHEN COVERED AREA IS OCCUPIED AND OFF WHEN UNOCCUPIED; WITH A TIME DELAY FOR TURNING LIGHTS OFF, ADJUSTABLE OVER A MINIMUM RANGE OF 1 TO 30 MINUTES.
- INSTALLATION
 - SENSOR- SUITABLE FOR MOUNTING IN ANY POSITION ON CEILING OR WALL, AS SPECIFIED.
 - INDICATOR: LED, TO SHOW WHEN MOTION IS BEING DETECTED DURING TESTING AND NORMAL OPERATION OF THE SENSOR.
 - BYPASS SWITCH: OVERRIDE THE ON FUNCTION IN CASE OF SENSOR FAILURE.
- PIR PHOTOELECTRIC MOUNTING: DETECT OCCUPANCY BY SENSING A COMBINATION OF HEAT AND MOVEMENT IN AREA OF COVERAGE. SPECIFIC PRODUCT AS INDICATED ON DRAWINGS.
 - DETECTOR SENSITIVITY: DETECT OCCURRENCES OF 6-INCH- (150-MM-) MINIMUM MOVEMENT OF ANY PORTION OF A HUMAN BODY THAT PRESENTS A TARGET OF NOT LESS THAN 36 SQ. IN. (232 SQ. CM).
 - DETECTION COVERAGE (ROOM): DETECT OCCUPANCY ANYWHERE IN A CIRCULAR AREA OF 1000 SQ. FT. (93 SQ. M) WHEN MOUNTED ON A 96-INCH- (2440-MM-) HIGH CEILING.
 - DETECTION COVERAGE (CORRIDOR): DETECT OCCUPANCY WITHIN 90 FEET (27.4 M) WHEN MOUNTED ON A 10-FOOT- (3-M-) HIGH CEILING.
- ULTRASONIC MOUNTING: DETECT OCCUPANCY BY SENSING A CHANGE IN PATTERN OF REFLECTED ULTRASONIC ENERGY IN AREA OF COVERAGE. SPECIFIC PRODUCT AS INDICATED ON DRAWINGS.
 - DETECTOR SENSITIVITY: DETECT A PERSON OF AVERAGE SIZE AND WEIGHT MOVING NOT LESS THAN 12 INCHES (305 MM) EITHER IN A HORIZONTAL OR A VERTICAL MANNER AT AN APPROXIMATE SPEED OF 12 INCHES/ (305 MM/S).
 - DETECTION COVERAGE (SMALL ROOM): DETECT OCCUPANCY ANYWHERE WITHIN A CIRCULAR AREA OF 600 SQ. FT. (56 SQ. M) WHEN MOUNTED ON A 96-INCH- (2440-MM-) HIGH CEILING.
 - DETECTION COVERAGE (STANDARD ROOM): DETECT OCCUPANCY ANYWHERE WITHIN A CIRCULAR AREA OF 1000 SQ. FT. (930 SQ. M) WHEN MOUNTED ON A 96-INCH- (2440-MM-) HIGH CEILING.
 - DETECTION COVERAGE (LARGE ROOM): DETECT OCCUPANCY ANYWHERE WITHIN A CIRCULAR AREA OF 2000 SQ. FT. (186 SQ. M) WHEN MOUNTED ON A 96-INCH- (2440-MM-) HIGH CEILING.
 - DETECTION COVERAGE (CORRIDOR): DETECT OCCUPANCY ANYWHERE WITHIN 90 FEET (27.4 M) WHEN MOUNTED ON A 10-FOOT- (3-M-) HIGH CEILING IN A CORRIDOR NOT WIDER THAN 14 FEET (4.3 M).
- DUAL-TECHNOLOGY TYPE: CEILING MOUNTING, DETECT OCCUPANCY BY USING A COMBINATION OF PIR AND ULTRASONIC DETECTION METHODS IN AREA OF COVERAGE. PARTICULAR TECHNOLOGY OR COMBINATION OF TECHNOLOGIES THAT CONTROLS ON-OFF FUNCTIONS SHALL BE SELECTABLE IN THE FIELD BY OPERATING CONTROLS ON UNIT. SPECIFIC PRODUCT AS INDICATED ON DRAWINGS.
 - SENSITIVITY ADJUSTMENT: SEPARATE FOR EACH SENSING
 - DETECTOR SENSITIVITY: DETECT OCCURRENCES OF 6-INCH- (150-MM-) MINIMUM MOVEMENT OF ANY PORTION OF A HUMAN BODY THAT PRESENTS A TARGET OF NOT LESS THAN 36 SQ. IN. (232 SQ. CM), AND DETECT A PERSON OF AVERAGE SIZE AND WEIGHT MOVING NOT LESS THAN 12 INCHES (305 MM) IN EITHER A HORIZONTAL OR A VERTICAL MANNER AT AN APPROXIMATE SPEED OF 12 INCHES/ (305 MM/S).
 - DETECTION COVERAGE (STANDARD ROOM): DETECT OCCUPANCY ANYWHERE WITHIN A CIRCULAR AREA OF 1000 SQ. FT. (930 SQ. M) WHEN MOUNTED ON A 96-INCH- (2440-MM-) HIGH CEILING.

- EMERGENCY TRANSFER DEVICE -SPECIFIC PRODUCT AS INDICATED ON DRAWINGS.
 - THE EMERGENCY TRANSFER DEVICE SHALL PROVIDE ALL REQUIRED FUNCTIONALITY TO ALLOW ANY STANDARD LIGHTING CONTROL DEVICE TO CONTROL EMERGENCY LIGHTING IN CONJUNCTION WITH NORMAL LIGHTING IN ANY AREA WITHIN A BUILDING.
 - THE EMERGENCY LIGHTING CONTROL UNIT SHALL ALLOW CONTROL OF EMERGENCY LIGHTING FIXTURES IN TANDEM WITH NORMAL LIGHTING IN AN AREA WHILE ENSURING THAT EMERGENCY LIGHTING WILL TURN ON IMMEDIATELY TO FULL BRIGHTNESS UPON LOSS OF NORMAL POWER SUPPLYING THE CONTROL DEVICE. EMERGENCY LIGHTING OPERATION SHALL BE INDEPENDENT FOR EACH CONTROLLED AREA AND SHALL NOT REQUIRE A GENERALIZED POWER FAILURE FOR PROPER OPERATION.
 - THE UNIT SHALL AUTOMATICALLY SWITCH EMERGENCY LIGHTING ON AND ALLOW NORMAL LIGHTING TO SWITCHED WHEN NORMAL POWER IS NOT AVAILABLE. THE UNIT SHALL FORCE AND HOLD EMERGENCY LIGHTING ON REGARDLESS OF THE STATE OF ANY EXTERNAL CONTROL DEVICE UNTIL NORMAL POWER IS RESTORED.
 - THE UNIT SHALL BE UL924 AND CUL LISTED AND LABELED FOR CONNECTION TO BOTH NORMAL AND NORMAL-EMERGENCY LIGHTING POWER SOURCES.
- SENSOR INSTALLATION
 - INSTALL AND AIM SENSORS IN LOCATIONS TO ACHIEVE NOT LESS THAN 90 PERCENT COVERAGE OF AREAS INDICATED. DO NOT EXCEED COVERAGE LIMITS SPECIFIED IN MANUFACTURER'S WRITING INSTRUCTIONS.
 - SENSOR LOCATIONS SHOWN ON THE DRAWINGS ARE TO DENOTE ROOMS THAT SHALL HAVE SENSOR CONTROL. PROVIDE SENSORS IN LOCATIONS AND QUANTITY AS REQUIRED BY THE MANUFACTURER FOR PROPER COVERAGE AND OPERATION OF SPACE.
 - PROVIDE ALL RELATED PARTS AND ACCESSORIES FOR A COMPLETE AND OPERATIONAL SYSTEM.
 - CEILING MOUNTED OCCUPANCY SENSORS AND DAYLIGHT SENSORS SHALL BE INSTALLED CENTERED IN CEILING TILES.
 - UNLESS NOTED OTHERWISE WALL MOUNTED SWITCHES SHALL BE INSTALLED ON THE LATCH SIDE OF THE DOOR.
 - INSTALL DAYLIGHTING SENSORS AS INDICATED TO CONTROL

- LAMPS AS DETAIL ON CONTRACT DOCUMENTS. LOCATE IN CEILING TO NOT INTERFERE OPERATION BY OTHER OBJECTS AND AS REQUIRED BY MANUFACTURER TO DETECT NATURAL LIGHT LEVELS. SET SENSITIVITY LEVELS FOR CONTROL AS RECOMMENDED BY MANUFACTURER.
- FIELD QUALITY CONTROL
 - ALL OCCUPANCY SENSORS AND DAYLIGHT SENSORS SHALL BE COMMISSIONED. DUAL TECHNOLOGY SENSORS SHALL BE SET TO "TURN ON" WHEN BOTH TECHNOLOGIES SENSE MOTION AND MAINTAIN "ON" WITH EITHER TECHNOLOGY. SET SENSOR TO MID-RANGE SENSITIVITY WITH A 15 MINUTE DELAY TIME TO OFF. SET LIGHT LEVEL FUNCTION FOR DAYLIGHT SENSORS BETWEEN 11AM AND 1PM DURING A DAY OF MODERATE CLOUD COVER WHERE ILLUMINATION AT THE DESK IS AT LEAST 40 FOOT CANS WITH THE LUMINAIRES OFF.
 - ADJUSTING
 - OCCUPANCY ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTING SENSORS TO SUIT OCCUPIED CONDITIONS. PROVIDE UP TO TWO VISITS TO PROJECT DURING OTHER THAN NORMAL OCCUPANCY HOURS FOR THIS PURPOSE.
 - DEMOS/TRACTION
 - ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE, AND MAINTAIN LIGHTING CONTROL DEVICES. REFER TO DIVISION 01 SECTION 017900 "DEMONSTRATION AND TRAINING."

- SECTION 262213 - LOW-VOLTAGE DISTRIBUTION TRANSFORMERS
- PART 1 - GENERAL
- SUBMITTALS
 - PRODUCT DATA: FOR EACH TYPE OF PRODUCT.
 - INCLUDE CONSTRUCTION DETAILS, MATERIAL DESCRIPTIONS, DIMENSIONS OF INDIVIDUAL COMPONENTS AND PROFILES, AND FINISHES FOR EACH TYPE AND SIZE OF TRANSFORMER.
 - INCLUDE RATED NAMEPLATE DATA, CAPACITIES, WEIGHTS, DIMENSIONS, MINIMUM CLEARANCES, INSTALLED DEVICES AND FEATURES, AND PERFORMANCE FOR EACH TYPE AND SIZE OF TRANSFORMER.
 - GENERAL DESCRIPTIONS, DIMENSIONS, AND PROFILES.
 - OTHER CIRCUIT TYPES:
 - GENERAL TRANSFORMER REQUIREMENTS
 - DESCRIPTION: FACTORY-ASSEMBLED AND -TESTED, AIR-COOLED UNITS FOR 60-HZ SERVICE.
 - COMPLY WITH NFPA 70.
 - TRANSFORMERS RATED 15 KVA AND LARGER:
 - COMPLY WITH IFCR 431 (DOE 2016) EFFICIENCY LEVELS.
 - MARKED AS COMPLIANT WITH DOE 2016 EFFICIENCY LEVELS BY AN NRTL.
 - TRANSFORMERS
 - COMPLY WITH NFPA 70, AND LIST AND LABEL AS COMPLYING WITH UL 1561.
 - CORES: ELECTRICAL GRADE, NON-AGING SILICON STEEL WITH HIGH PERMEABILITY AND LOW HYSTERESIS LOSSES.
 - ONE LEG PER PHASE
 - INTERNAL COIL CONNECTIONS: BRAZED OR PRESSURE TYPED OPERATION AT 10 PERCENT ABOVE THE NOMINAL TAP VOLTAGE.
 - GROUNDING TO ENCLOSURE.
 - COILS: CONTINUOUS WINDINGS WITHOUT SPLICES EXCEPT FOR TAPS.
 - COIL MATERIAL: COPPER.
 - INTERNAL COIL CONNECTIONS: BRAZED OR PRESSURE TYPED.
 - ENCAPSULATION: TRANSFORMERS SMALLER THAN 30 KVA SHALL HAVE CORE AND COILS COMPLETELY RESIN ENCAPSULATED.
 - ENCLOSURE: VENTILATED.
 - NEMA 250, TYPE 2 TYPE 3R: CORE AND COIL SHALL BE ENCAPSULATED WITHIN RESIN COMPOUND USING A VACUUM CASTING AND IMPREGNATION PROCESS TO SEAL OUT MOISTURE AND AIR.
 - KVA RATINGS: BASED ON CONVECTION COOLING ONLY AND NOT RELYING ON AUXILIARY FANS.
 - WIRING COMPARTMENT: SIZED FOR CONDUIT ENTRY AND WIRING INSTALLATION.
 - FINISH: COMPLY WITH NEMA 250.
 - FINISH COLOR: GRAY, ANSI 49 OR GRAY ANSI 61 GRAY WEATHER-RESISTANT ENAMEL.
 - TAPS FOR TRANSFORMERS 3 KVA AND SMALLER: NONE.
 - TAPS FOR TRANSFORMERS 7.5 TO 24 KVA: ONE 5 PERCENT TAP ABOVE AND ONE 5 PERCENT TAP BELOW NORMAL FULL CAPACITY.
 - TAPS FOR TRANSFORMERS 25 KVA AND LARGER: TWO 2.5 PERCENT TAPS ABOVE AND FOUR 2.5 PERCENT TAPS BELOW NORMAL FULL CAPACITY.
 - INSULATION CLASS, SMALLER THAN 30 KVA: 180 DEG C, UL-COMPONENT-RECOGNIZED INSULATION SYSTEM WITH A MAXIMUM OF 115 DEG C RISE ABOVE 40 DEG C AMBIENT TEMPERATURE.
 - INSULATION CLASS, 30 KVA AND LARGER: 220 DEG C, UL-COMPONENT-RECOGNIZED INSULATION SYSTEM WITH A MAXIMUM OF 150 DEG C RISE ABOVE 40 DEG C AMBIENT TEMPERATURE.
 - GROUNDING: PROVIDE GROUND-BAR KIT OR A GROUND BAR INSTALLED ON THE INSIDE OF THE TRANSFORMER ENCLOSURE.
 - ELECTROSTATIC SHIELDING: EACH WINDING SHALL HAVE AN INDEPENDENT, SINGLE, FULL-WIDTH COPPER ELECTROSTATIC SHIELD ARRANGED TO MINIMIZE INTERWINDING CAPACITANCE.
 - ARRANGE COIL LEADS AND TERMINAL STRIPS TO MINIMIZE CAPACITIVE COUPLING BETWEEN INPUT AND OUTPUT TERMINALS.
 - INCLUDE SPECIAL TERMINAL FOR GROUNDING THE SHIELD.
 - WALL BRACKETS: WALL BRACKETS FABRICATED FROM DESIGN DRAWINGS SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER.
 - EXECUTION
 - EXAMINATION
 - EXTERNAL CONDITIONS FOR COMPLIANCE WITH ENCLOSURE- AND AMBIENT-TEMPERATURE REQUIREMENTS FOR EACH TRANSFORMER.
 - VERIFY THAT FIELD MEASUREMENTS ARE AS NEEDED TO MAINTAIN WORKING CLEARANCES REQUIRED BY NFPA 70 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.
 - VERIFY THAT UNITS SHALL BE RATED FOR THE ENVIRONMENT IN WHICH THEY ARE LOCATED. COVERS FOR NEMA 250, TYPE 4X ENCLOSURES SHALL NOT CAUSE ACCESSIBILITY PROBLEMS.
 - INSTALLATION
 - INSTALL WALL-MOUNTED TRANSFORMERS LEVEL AND PLUMB WITH WALL BRACKETS FABRICATED FROM DESIGN DRAWINGS SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER.
 - COORDINATE INSTALLATION OF WALL-MOUNTED AND STRUCTURE-HANGING SUPPORTS WITH ACTUAL TRANSFORMER PROVIDED.
 - BRACE WALL-MOUNTED TRANSFORMERS AS SPECIFIED IN SECTION 260548.16 "SEISMIC CONTROLS FOR ELECTRICAL TUBING."
 - INSTALL TRANSFORMERS LEVEL AND PLUMB ON A CONCRETE BASE WITH VIBRATION-DAMPENING SUPPORTS. LOCATE TRANSFORMERS AWAY FROM CORNERS AND NOT PARALLEL TO ADJACENT WALL SURFACE.
 - CONSTRUCT CONCRETE BASES AND ANCHOR FLOOR-MOUNTED TRANSFORMERS TO MEET MANUFACTURER'S WRITTEN INSTRUCTIONS, AND SEISMIC CODES APPLICABLE TO PROJECT.
 - COORDINATE SIZE AND LOCATION OF CONCRETE BASES WITH ACTUAL TRANSFORMER PROVIDED. CAST ANCHOR-BOLT INSERTS INTO BASES. CONCRETE, REINFORCEMENT, AND FORMWORK REQUIREMENTS ARE SPECIFIED WITH CONCRETE.

- SECTION 262416 - PANELBOARDS
- PART 1 - GENERAL
- SUBMITTALS
 - PRODUCT DATA: FOR EACH TYPE OF PRODUCT.
 - INCLUDE MATERIALS, SWITCHING AND OVERCURRENT PROTECTIVE DEVICES, SPDS, ACCESSORIES, AND COMPONENTS INSTALLED.
 - INCLUDE DIMENSIONS AND MANUFACTURER'S TECHNICAL DATA ON FEATURES, PERFORMANCE, ELECTRICAL CHARACTERISTICS, RATINGS, AND FINISHES.
 - PANELBOARD CIRCUITS: LISTED FOR INSTALLATION IN PANELBOARDS, SUBMIT FINAL VERSIONS AFTER LOAD BALANCING.
 - MAINTENANCE MATERIAL SUBMITTALS
 - FURNISH EXTRA MATERIALS THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR OTHER TYPES OF EQUIPMENT WITH LABELS DESCRIBING CONTENTS.
 - KEYS: TWO SPARES FOR EACH TYPE OF PANELBOARD CABINET LOCK.
 - CIRCUIT BREAKERS INCLUDING GFCI AND GFEP TYPES: TWO SPARES FOR EACH PANELBOARD.
 - FUSES FOR FUSED SWITCHES: EQUAL TO 10 PERCENT OF QUANTITY INSTALLED FOR EACH SIZE AND TYPE, BUT NO FEWER THAN THREE OF EACH SIZE AND TYPE.
 - FUSES FOR FUSED POWER-CIRCUIT DEVICES: EQUAL TO 10 PERCENT OF QUANTITY INSTALLED FOR EACH SIZE AND TYPE, BUT NO FEWER THAN THREE OF EACH SIZE AND TYPE.
 - GENERAL DESCRIPTIONS, DIMENSIONS, AND PROFILES.
 - PRODUCT DATA: FOR EACH TYPE OF PANELBOARD.
 - INCLUDE MATERIALS, SWITCHING AND OVERCURRENT PROTECTIVE DEVICES, SPDS, ACCESSORIES, AND COMPONENTS INSTALLED.
 - INCLUDE DIMENSIONS AND MANUFACTURER'S TECHNICAL DATA ON FEATURES, PERFORMANCE, ELECTRICAL CHARACTERISTICS, RATINGS, AND FINISHES.
 - PANELBOARD CIRCUITS: LISTED FOR INSTALLATION IN PANELBOARDS, SUBMIT FINAL VERSIONS AFTER LOAD BALANCING.
 - MAINTENANCE MATERIAL SUBMITTALS
 - FURNISH EXTRA MATERIALS THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR OTHER TYPES OF EQUIPMENT WITH LABELS DESCRIBING CONTENTS.
 - KEYS: TWO SPARES FOR EACH TYPE OF PANELBOARD CABINET LOCK.
 - CIRCUIT BREAKERS INCLUDING GFCI AND GFEP TYPES: TWO SPARES FOR EACH PANELBOARD.
 - FUSES FOR FUSED SWITCHES: EQUAL TO 10 PERCENT OF QUANTITY INSTALLED FOR EACH SIZE AND TYPE, BUT NO FEWER THAN THREE OF EACH SIZE AND TYPE.
 - FUSES FOR FUSED POWER-CIRCUIT DEVICES: EQUAL TO 10 PERCENT OF QUANTITY INSTALLED FOR EACH SIZE AND TYPE, BUT NO FEWER THAN THREE OF EACH SIZE AND TYPE.
 - EXECUTION
 - GENERAL TRANSFORMER REQUIREMENTS
 - DESCRIPTION: FACTORY-ASSEMBLED AND -TESTED, AIR-COOLED UNITS FOR 60-HZ SERVICE.
 - COMPLY WITH NFPA 70.
 - TRANSFORMERS RATED 15 KVA AND LARGER:
 - COMPLY WITH IFCR 431 (DOE 2016) EFFICIENCY LEVELS.
 - MARKED AS COMPLIANT WITH DOE 2016 EFFICIENCY LEVELS BY AN NRTL.
 - TRANSFORMERS
 - COMPLY WITH NFPA 70, AND LIST AND LABEL AS COMPLYING WITH UL 1561.
 - CORES: ELECTRICAL GRADE, NON-AGING SILICON STEEL WITH HIGH PERMEABILITY AND LOW HYSTERESIS LOSSES.
 - ONE LEG PER PHASE
 - INTERNAL COIL CONNECTIONS: BRAZED OR PRESSURE TYPED OPERATION AT 10 PERCENT ABOVE THE NOMINAL TAP VOLTAGE.
 - GROUNDING TO ENCLOSURE.
 - COILS: CONTINUOUS WINDINGS WITHOUT SPLICES EXCEPT FOR TAPS.
 - COIL MATERIAL: COPPER.
 - INTERNAL COIL CONNECTIONS: BRAZED OR PRESSURE TYPED.
 - ENCAPSULATION: TRANSFORMERS SMALLER THAN 30 KVA SHALL HAVE CORE AND COILS COMPLETELY RESIN ENCAPSULATED.
 - ENCLOSURE: VENTILATED.
 - NEMA 250, TYPE 2 TYPE 3R: CORE AND COIL SHALL BE ENCAPSULATED WITHIN RESIN COMPOUND USING A VACUUM CASTING AND IMPREGNATION PROCESS TO SEAL OUT MOISTURE AND AIR.
 - KVA RATINGS: BASED ON CONVECTION COOLING ONLY AND NOT RELYING ON AUXILIARY FANS.
 - WIRING COMPARTMENT: SIZED FOR CONDUIT ENTRY AND WIRING INSTALLATION.
 - FINISH: COMPLY WITH NEMA 250.
 - FINISH COLOR: GRAY, ANSI 49 OR GRAY ANSI 61 GRAY WEATHER-RESISTANT ENAMEL.
 - TAPS FOR TRANSFORMERS 3 KVA AND SMALLER: NONE.
 - TAPS FOR TRANSFORMERS 7.5 TO 24 KVA: ONE 5 PERCENT TAP ABOVE AND ONE 5 PERCENT TAP BELOW NORMAL FULL CAPACITY.
 - TAPS FOR TRANSFORMERS 25 KVA AND LARGER: TWO 2.5 PERCENT TAPS ABOVE AND FOUR 2.5 PERCENT TAPS BELOW NORMAL FULL CAPACITY.
 - INSULATION CLASS, SMALLER THAN 30 KVA: 180 DEG C, UL-COMPONENT-RECOGNIZED INSULATION SYSTEM WITH A MAXIMUM OF 115 DEG C RISE ABOVE 40 DEG C AMBIENT TEMPERATURE.
 - INSULATION CLASS, 30 KVA AND LARGER: 220 DEG C, UL-COMPONENT-RECOGNIZED INSULATION SYSTEM WITH A MAXIMUM OF 150 DEG C RISE ABOVE 40 DEG C AMBIENT TEMPERATURE.
 - GROUNDING: PROVIDE GROUND-BAR KIT OR A GROUND BAR INSTALLED ON THE INSIDE OF THE TRANSFORMER ENCLOSURE.
 - ELECTROSTATIC SHIELDING: EACH WINDING SHALL HAVE AN INDEPENDENT, SINGLE, FULL-WIDTH COPPER ELECTROSTATIC SHIELD ARRANGED TO MINIMIZE INTERWINDING CAPACITANCE.
 - ARRANGE COIL LEADS AND TERMINAL STRIPS TO MINIMIZE CAPACITIVE COUPLING BETWEEN INPUT AND OUTPUT TERMINALS.
 - INCLUDE SPECIAL TERMINAL FOR GROUNDING THE SHIELD.
 - WALL BRACKETS: WALL BRACKETS FABRICATED FROM DESIGN DRAWINGS SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER.
 - EXECUTION
 - EXAMINATION
 - EXTERNAL CONDITIONS FOR COMPLIANCE WITH ENCLOSURE- AND AMBIENT-TEMPERATURE REQUIREMENTS FOR EACH TRANSFORMER.
 - VERIFY THAT FIELD MEASUREMENTS ARE AS NEEDED TO MAINTAIN WORKING CLEARANCES REQUIRED BY NFPA 70 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.
 - VERIFY THAT UNITS SHALL BE RATED FOR THE ENVIRONMENT IN WHICH THEY ARE LOCATED. COVERS FOR NEMA 250, TYPE 4X ENCLOSURES SHALL NOT CAUSE ACCESSIBILITY PROBLEMS.
 - INSTALLATION
 - INSTALL WALL-MOUNTED TRANSFORMERS LEVEL AND PLUMB WITH WALL BRACKETS FABRICATED FROM DESIGN DRAWINGS SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER.
 - COORDINATE INSTALLATION OF WALL-MOUNTED AND STRUCTURE-HANGING SUPPORTS WITH ACTUAL TRANSFORMER PROVIDED.
 - BRACE WALL-MOUNTED TRANSFORMERS AS SPECIFIED IN SECTION 260548.16 "SEISMIC CONTROLS FOR ELECTRICAL TUBING."
 - INSTALL TRANSFORMERS LEVEL AND PLUMB ON A CONCRETE BASE WITH VIBRATION-DAMPENING SUPPORTS. LOCATE TRANSFORMERS AWAY FROM CORNERS AND NOT PARALLEL TO ADJACENT WALL SURFACE.
 - CONSTRUCT CONCRETE BASES AND ANCHOR FLOOR-MOUNTED TRANSFORMERS TO MEET MANUFACTURER'S WRITTEN INSTRUCTIONS, AND SEISMIC CODES APPLICABLE TO PROJECT.
 - COORDINATE SIZE AND LOCATION OF CONCRETE BASES WITH ACTUAL TRANSFORMER PROVIDED. CAST ANCHOR-BOLT INSERTS INTO BASES. CONCRETE, REINFORCEMENT, AND FORMWORK REQUIREMENTS ARE SPECIFIED WITH CONCRETE.

- SECTION 262416 - PANELBOARDS
- PART 1 - GENERAL
- SUBMITTALS
 - PRODUCT DATA: FOR EACH TYPE OF PANELBOARD.
 - INCLUDE MATERIALS, SWITCHING AND OVERCURRENT PROTECTIVE DEVICES, SPDS, ACCESSORIES, AND COMPONENTS INSTALLED.
 - INCLUDE DIMENSIONS AND MANUFACTURER'S TECHNICAL DATA ON FEATURES, PERFORMANCE, ELECTRICAL CHARACTERISTICS, RATINGS, AND FINISHES.
 - PANELBOARD CIRCUITS: LISTED FOR INSTALLATION IN PANELBOARDS, SUBMIT FINAL VERSIONS AFTER LOAD BALANCING.
 - MAINTENANCE MATERIAL SUBMITTALS
 - FURNISH EXTRA MATERIALS THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR OTHER TYPES OF EQUIPMENT WITH LABELS DESCRIBING CONTENTS.
 - KEYS: TWO SPARES FOR EACH TYPE OF PANELBOARD CABINET LOCK.
 - CIRCUIT BREAKERS INCLUDING GFCI AND GFEP TYPES: TWO SPARES FOR EACH PANELBOARD.
 - FUSES FOR FUSED SWITCHES: EQUAL TO 10 PERCENT OF QUANTITY INSTALLED FOR EACH SIZE AND TYPE, BUT NO FEWER THAN THREE OF EACH SIZE AND TYPE.
 - FUSES FOR FUSED POWER-CIRCUIT DEVICES: EQUAL TO 10 PERCENT OF QUANTITY INSTALLED FOR EACH SIZE AND TYPE, BUT NO FEWER THAN THREE OF EACH SIZE AND TYPE.
 - GENERAL DESCRIPTIONS, DIMENSIONS, AND PROFILES.
 - PRODUCT DATA: FOR EACH TYPE OF PANELBOARD.
 - INCLUDE MATERIALS, SWITCHING AND OVERCURRENT PROTECTIVE DEVICES, SPDS, ACCESSORIES, AND COMPONENTS INSTALLED.
 - INCLUDE DIMENSIONS AND MANUFACTURER'S TECHNICAL DATA ON FEATURES, PERFORMANCE, ELECTRICAL CHARACTERISTICS, RATINGS, AND FINISHES.
 - PANELBOARD CIRCUITS: LISTED FOR INSTALLATION IN PANELBOARDS, SUBMIT FINAL VERSIONS AFTER LOAD BALANCING.
 - MAINTENANCE MATERIAL SUBMITTALS
 - FURNISH EXTRA MATERIALS THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR OTHER TYPES OF EQUIPMENT WITH LABELS DESCRIBING CONTENTS.
 - KEYS: TWO SPARES FOR EACH TYPE OF PANELBOARD CABINET LOCK.
 - CIRCUIT BREAKERS INCLUDING GFCI AND GFEP TYPES: TWO SPARES FOR EACH PANELBOARD.
 - FUSES FOR FUSED SWITCHES: EQUAL TO 10 PERCENT OF QUANTITY INSTALLED FOR EACH SIZE AND TYPE, BUT NO FEWER THAN THREE OF EACH SIZE AND TYPE.
 - FUSES FOR FUSED POWER-CIRCUIT DEVICES: EQUAL TO 10 PERCENT OF QUANTITY INSTALLED FOR EACH SIZE AND TYPE, BUT NO FEWER THAN THREE OF EACH SIZE AND TYPE.
 - EXECUTION
 - GENERAL TRANSFORMER REQUIREMENTS
 - DESCRIPTION: FACTORY-ASSEMBLED AND -TESTED, AIR-COOLED UNITS FOR 60-HZ SERVICE.
 - COMPLY WITH NFPA 70.
 - TRANSFORMERS RATED 15 KVA AND LARGER:
 - COMPLY WITH IFCR 431 (DOE 2016) EFFICIENCY LEVELS.
 - MARKED AS COMPLIANT WITH DOE 2016 EFFICIENCY LEVELS BY AN NRTL.
 - TRANSFORMERS
 - COMPLY WITH NFPA 70, AND LIST AND LABEL AS COMPLYING WITH UL 1561.
 - CORES: ELECTRICAL GRADE, NON-AGING SILICON STEEL WITH HIGH PERMEABILITY AND LOW HYSTERESIS LOSSES.
 - ONE LEG PER PHASE
 - INTERNAL COIL CONNECTIONS: BRAZED OR PRESSURE TYPED OPERATION AT 10 PERCENT ABOVE THE NOMINAL TAP VOLTAGE.
 - GROUNDING TO ENCLOSURE.
 - COILS: CONTINUOUS WINDINGS WITHOUT SPLICES EXCEPT FOR TAPS.
 - COIL MATERIAL: COPPER.
 - INTERNAL COIL CONNECTIONS: BRAZED OR PRESSURE TYPED.
 - ENCAPSULATION: TRANSFORMERS SMALLER THAN 30 KVA SHALL HAVE CORE AND COILS COMPLETELY RESIN ENCAPSULATED.
 - ENCLOSURE: VENTILATED.
 - NEMA 250, TYPE 2 TYPE 3R: CORE AND COIL SHALL BE ENCAPSULATED WITHIN RESIN COMPOUND USING A VACUUM CASTING AND IMPREGNATION PROCESS TO SEAL OUT MOISTURE AND AIR.
 - KVA RATINGS: BASED ON CONVECTION COOLING ONLY AND NOT RELYING ON AUXILIARY FANS.
 - WIRING COMPARTMENT: SIZED FOR CONDUIT ENTRY AND WIRING INSTALLATION.
 - FINISH: COMPLY WITH NEMA 250.
 - FINISH COLOR: GRAY, ANSI 49 OR GRAY ANSI 61 GRAY WEATHER-RESISTANT ENAMEL.
 - TAPS FOR TRANSFORMERS 3 KVA AND SMALLER: NONE.
 - TAPS FOR TRANSFORMERS 7.5 TO 24 KVA: ONE 5 PERCENT TAP ABOVE AND ONE 5 PERCENT TAP BELOW NORMAL FULL CAPACITY.
 - TAPS FOR TRANSFORMERS 25 KVA AND LARGER: TWO 2.5 PERCENT TAPS ABOVE AND FOUR 2.5 PERCENT TAPS BELOW NORMAL FULL CAPACITY.
 - INSULATION CLASS, SMALLER THAN 30 KVA: 180 DEG C, UL-COMPONENT-RECOGNIZED INSULATION SYSTEM WITH A MAXIMUM OF 115 DEG C RISE ABOVE 40 DEG C AMBIENT TEMPERATURE.
 - INSULATION CLASS, 30 KVA AND LARGER: 220 DEG C, UL-COMPONENT-RECOGNIZED INSULATION SYSTEM WITH A MAXIMUM OF 150 DEG C RISE ABOVE 40 DEG C AMBIENT TEMPERATURE.
 - GROUNDING: PROVIDE GROUND-BAR KIT OR A GROUND BAR INSTALLED ON THE INSIDE OF THE TRANSFORMER ENCLOSURE.
 - ELECTROSTATIC SHIELDING: EACH WINDING SHALL HAVE AN INDEPENDENT, SINGLE, FULL-WIDTH COPPER ELECTROSTATIC SHIELD ARRANGED TO MINIMIZE INTERWINDING CAPACITANCE.
 - ARRANGE COIL LEADS AND TERMINAL STRIPS TO MINIMIZE CAPACITIVE COUPLING BETWEEN INPUT AND OUTPUT TERMINALS.
 - INCLUDE SPECIAL TERMINAL FOR GROUNDING THE SHIELD.
 - WALL BRACKETS: WALL BRACKETS FABRICATED FROM DESIGN DRAWINGS SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER.
 - EXECUTION
 - EXAMINATION
 - EXTERNAL CONDITIONS FOR COMPLIANCE WITH ENCLOSURE- AND AMBIENT-TEMPERATURE REQUIREMENTS FOR EACH TRANSFORMER.
 - VERIFY THAT FIELD MEASUREMENTS ARE AS NEEDED TO MAINTAIN WORKING CLEARANCES REQUIRED BY NFPA 70 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.
 - VERIFY THAT UNITS SHALL BE RATED FOR THE ENVIRONMENT IN WHICH THEY ARE LOCATED. COVERS FOR NEMA 250, TYPE 4X ENCLOSURES SHALL NOT CAUSE ACCESSIBILITY PROBLEMS.
 - INSTALLATION
 - INSTALL WALL-MOUNTED TRANSFORMERS LEVEL AND PLUMB WITH WALL BRACKETS FABRICATED FROM DESIGN DRAWINGS SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER.
 - COORDINATE INSTALLATION OF WALL-MOUNTED AND STRUCTURE-HANGING SUPPORTS WITH ACTUAL TRANSFORMER PROVIDED.
 - BRACE WALL-MOUNTED TRANSFORMERS AS SPECIFIED IN SECTION 260548.16 "SEISMIC CONTROLS FOR ELECTRICAL TUBING."
 - INSTALL TRANSFORMERS LEVEL AND PLUMB ON A CONCRETE BASE WITH VIBRATION-DAMPENING SUPPORTS. LOCATE TRANSFORMERS AWAY FROM CORNERS AND NOT PARALLEL TO ADJACENT WALL SURFACE.
 - CONSTRUCT CONCRETE BASES AND ANCHOR FLOOR-MOUNTED TRANSFORMERS TO MEET MANUFACTURER'S WRITTEN INSTRUCTIONS, AND SEISMIC CODES APPLICABLE TO PROJECT.
 - COORDINATE SIZE AND LOCATION OF CONCRETE BASES WITH ACTUAL TRANSFORMER PROVIDED. CAST ANCHOR-BOLT INSERTS INTO BASES. CONCRETE, REINFORCEMENT, AND FORMWORK REQUIREMENTS ARE SPECIFIED WITH CONCRETE.

- SECTION 262726 - WIRING DEVICES
- PART 1 - GENERAL
- SUBMITTALS
 - PRODUCT DATA: FOR EACH TYPE OF PRODUCT.
 - INCLUDE MATERIALS, SWITCHING AND OVERCURRENT PROTECTIVE DEVICES, SPDS, ACCESSORIES, AND COMPONENTS INSTALLED.
 - INCLUDE DIMENSIONS AND MANUFACTURER'S TECHNICAL DATA ON FEATURES, PERFORMANCE, ELECTRICAL CHARACTERISTICS, RATINGS, AND FINISHES.
 - PANELBOARD CIRCUITS: LISTED FOR INSTALLATION IN PANELBOARDS, SUBMIT FINAL VERSIONS AFTER LOAD BALANCING.
 - MAINTENANCE MATERIAL SUBMITTALS
 - FURNISH EXTRA MATERIALS THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR OTHER TYPES OF EQUIPMENT WITH LABELS DESCRIBING CONTENTS.
 - KEYS: TWO SPARES FOR EACH TYPE OF PANELBOARD CABINET LOCK.
 - CIRCUIT BREAKERS INCLUDING GFCI AND GFEP TYPES: TWO SPARES FOR EACH PANELBOARD.
 - FUSES FOR FUSED SWITCHES: EQUAL TO 10 PERCENT OF QUANTITY INSTALLED FOR EACH SIZE AND TYPE, BUT NO FEWER THAN THREE OF EACH SIZE AND TYPE.
 - FUSES FOR FUSED POWER-CIRCUIT DEVICES: EQUAL TO 10 PERCENT OF QUANTITY INSTALLED FOR EACH SIZE AND TYPE, BUT NO FEWER THAN THREE OF EACH SIZE AND TYPE.
 - GENERAL DESCRIPTIONS, DIMENSIONS, AND PROFILES.
 - PRODUCT DATA: FOR EACH TYPE OF PRODUCT.
 - INCLUDE MATERIALS, SWITCHING AND OVERCURRENT PROTECTIVE DEVICES, SPDS, ACCESSORIES, AND COMPONENTS INSTALLED.
 - INCLUDE DIMENSIONS AND MANUFACTURER'S TECHNICAL DATA ON FEATURES, PERFORMANCE, ELECTRICAL CHARACTERISTICS, RATINGS, AND FINISHES.
 - PANELBOARD CIRCUITS: LISTED FOR INSTALLATION IN PANELBOARDS, SUBMIT FINAL VERSIONS AFTER LOAD BALANCING.
 - EXECUTION
 - GENERAL TRANSFORMER REQUIREMENTS
 - DESCRIPTION: FACTORY-ASSEMBLED AND -TESTED, AIR-COOLED UNITS FOR 60-HZ SERVICE.
 - COMPLY WITH NFPA 70.
 - TRANSFORMERS RATED 15 KVA AND LARGER:
 - COMPLY WITH IFCR 431 (DOE 2016) EFFICIENCY LEVELS.
 - MARKED AS COMPLIANT WITH DOE 2016 EFFICIENCY LEVELS BY AN NRTL.
 - TRANSFORMERS
 - COMPLY WITH NFPA 70, AND LIST AND LABEL AS COMPLYING WITH UL 1561.
 - CORES: ELECTRICAL GRADE, NON-AGING SILICON STEEL WITH HIGH PERMEABILITY AND LOW HYSTERESIS LOSSES.
 - ONE LEG PER PHASE
 - INTERNAL COIL CONNECTIONS: BRAZED OR PRESSURE TYPED OPERATION AT 10 PERCENT ABOVE THE NOMINAL TAP VOLTAGE.
 - GROUNDING TO ENCLOSURE.
 - COILS: CONTINUOUS WINDINGS WITHOUT SPLICES EXCEPT FOR TAPS.
 - COIL MATERIAL: COPPER.
 - INTERNAL COIL CONNECTIONS: BRAZED OR PRESSURE TYPED.
 - ENCAPSULATION: TRANSFORMERS SMALLER THAN 30 KVA SHALL HAVE CORE AND COILS COMPLETELY RESIN ENCAPSULATED.
 - ENCLOSURE: VENTILATED.
 - NEMA 250, TYPE 2 TYPE 3R: CORE AND COIL SHALL BE ENCAPSULATED WITHIN RESIN COMPOUND USING A VACUUM CASTING AND IMPREGNATION PROCESS TO SEAL OUT MOISTURE AND AIR.
 - KVA RATINGS: BASED ON CONVECTION COOLING ONLY AND NOT RELYING ON AUXILIARY FANS.
 - WIRING COMPARTMENT: SIZED FOR CONDUIT ENTRY AND WIRING INSTALLATION.
 - FINISH: COMPLY WITH NEMA 250.
 - FINISH COLOR: GRAY, ANSI 49 OR GRAY ANSI 61 GRAY WEATHER-RESISTANT ENAMEL.
 - TAPS FOR TRANSFORMERS 3 KVA AND SMALLER: NONE.
 - TAPS FOR TRANSFORMERS 7.5 TO 24 KVA: ONE 5 PERCENT TAP ABOVE AND ONE 5 PERCENT TAP BELOW NORMAL FULL CAPACITY.
 - TAPS FOR TRANSFORMERS 25 KVA AND LARGER: TWO 2.5 PERCENT TAPS ABOVE AND FOUR 2.5 PERCENT TAPS BELOW NORMAL FULL CAPACITY.
 - INSULATION CLASS, SMALLER THAN 30 KVA: 180 DEG C, UL-COMPONENT-RECOGNIZED INSULATION SYSTEM WITH A MAXIMUM OF 115 DEG C RISE ABOVE 40 DEG C AMBIENT TEMPERATURE.
 - INSULATION CLASS, 30 KVA AND LARGER: 220 DEG C, UL-COMPONENT-RECOGNIZED INSULATION SYSTEM WITH A MAXIMUM OF 150 DEG C RISE ABOVE 40 DEG C AMBIENT TEMPERATURE.
 - GROUNDING: PROVIDE GROUND-BAR KIT OR A GROUND BAR INSTALLED ON THE INSIDE OF THE TRANSFORMER ENCLOSURE.
 - ELECTROSTATIC SHIELDING: EACH WINDING SHALL HAVE AN INDEPENDENT, SINGLE, FULL-WIDTH COPPER ELECTROSTATIC SHIELD ARRANGED TO MINIMIZE INTERWINDING CAPACITANCE.
 - ARRANGE COIL LEADS AND TERMINAL STRIPS TO MINIMIZE CAPACITIVE COUPLING BETWEEN INPUT AND OUTPUT TERMINALS.
 - INCLUDE SPECIAL TERMINAL FOR GROUNDING THE SHIELD.
 - WALL BRACKETS: WALL BRACKETS FABRICATED FROM DESIGN DRAWINGS SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER.
 - EXECUTION
 - EXAMINATION
 - EXTERNAL CONDITIONS FOR COMPLIANCE WITH ENCLOSURE- AND AMBIENT-TEMPERATURE REQUIREMENTS FOR EACH TRANSFORMER.
 - VERIFY THAT FIELD MEASUREMENTS ARE AS NEEDED TO MAINTAIN WORKING CLEARANCES REQUIRED BY NFPA 70 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.
 - VERIFY THAT UNITS SHALL BE RATED FOR THE ENVIRONMENT IN WHICH THEY ARE LOCATED. COVERS FOR NEMA 250, TYPE 4X ENCLOSURES SHALL NOT CAUSE ACCESSIBILITY PROBLEMS.
 - INSTALLATION
 - INSTALL WALL-MOUNTED TRANSFORMERS LEVEL AND PLUMB WITH WALL BRACKETS FABRICATED FROM DESIGN DRAWINGS SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER.
 - COORDINATE INSTALLATION OF WALL-MOUNTED AND STRUCTURE-HANGING SUPPORTS WITH ACTUAL TRANSFORMER PROVIDED.
 - BRACE WALL-MOUNTED TRANSFORMERS AS SPECIFIED IN SECTION 260548.16 "SEISMIC CONTROLS FOR ELECTRICAL TUBING."
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 - CONSTRUCT CONCRETE BASES AND ANCHOR FLOOR-MOUNTED TRANSFORMERS TO MEET MANUFACTURER'S WRITTEN INSTRUCTIONS, AND SEISMIC CODES APPLICABLE TO PROJECT.
 - COORDINATE SIZE AND LOCATION OF CONCRETE BASES WITH ACTUAL TRANSFORMER PROVIDED. CAST ANCHOR-BOLT INSERTS INTO BASES. CONCRETE, REINFORCEMENT, AND FORMWORK REQUIREMENTS ARE SPECIFIED WITH CONCRETE.

- SECTION 262726 - WIRING DEVICES
- PART 1 - GENERAL
- SUBMITTALS
 - PRODUCT DATA: FOR EACH TYPE OF PRODUCT.
 - INCLUDE MATERIALS, SWITCHING AND OVERCURRENT PROTECTIVE DEVICES, SPDS, ACCESSORIES, AND COMPONENTS INSTALLED.
 - INCLUDE DIMENSIONS AND MANUFACTURER'S TECHNICAL DATA ON FEATURES, PERFORMANCE, ELECTRICAL CHARACTERISTICS, RATINGS, AND FINISHES.
 - PANELBOARD CIRCUITS: LISTED FOR INSTALLATION IN PANELBOARDS, SUBMIT FINAL VERSIONS AFTER LOAD BALANCING.
 - MAINTENANCE MATERIAL SUBMITTALS
 - FURNISH EXTRA MATERIALS THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR OTHER TYPES OF EQUIPMENT WITH LABELS DESCRIBING CONTENTS.
 - KEYS: TWO SPARES FOR EACH TYPE OF PANELBOARD CABINET LOCK.
 - CIRCUIT BREAKERS INCLUDING GFCI AND GFEP TYPES: TWO SPARES FOR EACH PANELBOARD.
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 - FUSES FOR FUSED POWER-CIRCUIT DEVICES: EQUAL TO 10 PERCENT OF QUANTITY INSTALLED FOR EACH SIZE AND TYPE, BUT NO FEWER THAN THREE OF EACH SIZE AND TYPE.
 - GENERAL DESCRIPTIONS, DIMENSIONS, AND PROFILES.
 - PRODUCT DATA: FOR EACH TYPE OF PRODUCT.
 - INCLUDE MATERIALS, SWITCHING AND OVERCURRENT PROTECTIVE DEVICES, SPDS, ACCESSORIES, AND COMPONENTS INSTALLED.
 - INCLUDE DIMENSIONS AND MANUFACTURER'S TECHNICAL DATA ON FEATURES, PERFORMANCE, ELECTRICAL CHARACTERISTICS, RATINGS, AND FINISHES.
 - PANELBOARD CIRCUITS: LISTED FOR INSTALLATION IN PANELBOARDS, SUBMIT FINAL VERSIONS AFTER LOAD BALANCING.
 - EXECUTION
 - GENERAL TRANSFORMER REQUIREMENTS
 - DESCRIPTION: FACTORY-ASSEMBLED AND -TESTED, AIR-COOLED UNITS FOR 60-HZ SERVICE.
 - COMPLY WITH NFPA 70.
 - TRANSFORMERS RATED 15 KVA AND LARGER:
 - COMPLY WITH IFCR 431 (DOE 2016) EFFICIENCY LEVELS.
 - MARKED AS COMPLIANT WITH DOE 2016 EFFICIENCY LEVELS BY AN NRTL.
 - TRANSFORMERS
 - COMPLY WITH NFPA 70, AND LIST AND LABEL AS COMPLYING WITH UL 1561.
 - CORES: ELECTRICAL GRADE, NON-AGING SILICON STEEL WITH HIGH PERMEABILITY AND LOW HYSTERESIS LOSSES.
 - ONE LEG PER PHASE
 - INTERNAL COIL CONNECTIONS: BRAZED OR PRESSURE TYP

PERCENT OF RATED VOLTAGE WITHOUT INTENTIONAL OR UNEXPECTED INSTANTaneous (1 TO 0.8-SECOND TIME DELAY).

7. AUXILIARY SWITCH; ONE SPOT SWITCH OR TWO SPOT SWITCHES WITH "A" AND "B" CONTACTS; "A" CONTACTS MIMIC CIRCUIT-BREAKER CONTACTS, "B" CONTACTS OPERATE IN REVERSE OF CIRCUIT-BREAKER CONTACTS.

2.5 ENCLOSURES

A. NEMA AB 1 AND NEMA KS 1 TO MEET ENVIRONMENTAL CONDITIONS OF INSTALLED LOCATION.

1. INDOOR LOCATIONS: NEMA 250, TYPE 1.

2. OUTDOOR LOCATIONS: NEMA 250, TYPE 3R.

3. OTHER WET OR DAMP INDOOR LOCATIONS: NEMA 250, TYPE 4.

B. CONDUIT ENTRY: NEMA 250 TYPES 4, 4X, AND 12 ENCLOSURES SHALL BE PROVIDED WITH THEADDED CONDUIT OPENINGS IN BOTH ENDWALLS.

C. ENCLOSURES DESIGNATED AS NEMA 250 TYPE 4, 4X STAINLESS STEEL, 12, OR 12K SHALL HAVE A DUAL COVER INTERLOCK MECHANISM TO PREVENT UNINTENTIONAL OPENING OF THE ENCLOSURE COVER WHEN THE CIRCUIT BREAKER IS ON AND TO PREVENT TURNING THE CIRCUIT BREAKER ON WHEN THE ENCLOSURE COVER IS OPEN.

D. ALL ENCLOSURES SHALL INCLUDE A BONDED EQUIPMENT BUS.

PART 3 - EXECUTION

3.1 INSTALLATION

A. COORDINATE LAYOUT AND INSTALLATION OF SWITCHES, CIRCUIT BREAKERS, AND COMPONENTS WITH EQUIPMENT SERVED AND ADJACENT SURFACES. MAINTAIN REQUIRED WORKSPACE CLEARANCES AND REQUIRED CLEARANCES FOR EQUIPMENT ACCESS DOORS AND PANELS.

B. INSTALL INDIVIDUAL WALL-MOUNTED SWITCHES AND CIRCUIT BREAKERS WITH TOPS AT UNIFORM HEIGHT UNLESS OTHERWISE INDICATED.

C. INSTALL FUSES IN FUSIBLE DEVICES.

D. COMPLY WITH NFPA 70 AND NECA 1.

SECTION 265119 - LED LIGHTING

PART 1 - PART 1- GENERAL

1.1 SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT.

B. PRODUCT SCHEDULE: FOR LUMINAIRES AND LAMPS. USE SAME DESIGNATIONS INDICATED ON DRAWINGS.

1.2 QUALITY ASSURANCE

A. LUMINAIRE PHOTOMETRIC DATA TESTING LABORATORY QUALIFICATIONS: PROVIDED BY AN INDEPENDENT AGENCY, WITH THE EXPERIENCE AND CAPABILITY TO CONDUCT THE TESTING INDICATED. THAT IS AN NRTL AS DEFINED BY OSHA IN 29 CFR 1910.7, ACCREDITED UNDER THE NVLAP FOR ENERGY EFFICIENT LIGHTING PRODUCTS, AND COMPLYING WITH THE APPLICABLE IES TESTING STANDARDS.

B. PROVIDE LUMINAIRES FROM A SINGLE MANUFACTURER FOR EACH LUMINAIRE TYPE.

C. EACH LUMINAIRE TYPE SHALL BE BINNED WITHIN A THREE-STEP MACADAM ELLIPSE TO ENSURE COLOR CONSISTENCY AMONG LUMINAIRES.

D. MOCKUPS: FOR INTERIOR LUMINAIRES IN ROOM OR MODULE MOCKUPS, COMPLETE WITH POWER AND CONTROL CONNECTIONS.

1. OBTAIN ARCHITECT'S APPROVAL OF LUMINAIRES IN MOCKUPS BEFORE STARTING INSTALLATIONS.

2. MAINTAIN MOCKUPS DURING CONSTRUCTION IN AN UNDISTURBED CONDITION AS A STANDARD FOR JUDGING THE COMPLETED WORK.

3. APPROVAL OF MOCKUPS DOES NOT CONSTITUTE APPROVAL OF DEVIATIONS FROM THE CONTRACT DOCUMENTS CONTAINED IN MOCKUPS UNLESS ARCHITECT SPECIFICALLY APPROVES SUCH DEVIATIONS IN WRITING.

4. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, APPROVED MOCKUPS MAY BECOME PART OF THE COMPLETED WORK IF UNDISTURBED AT TIME OF SUBSTANTIAL COMPLETION.

1.3 DELIVERY, STORAGE, AND HANDLING

A. PROTECT FINISHES OF EXPOSED SURFACES BY APPLYING A STRIPPABLE, TEMPORARY PROTECTIVE COVERING BEFORE SHIPPING.

1.4 WARRANTY

A. WARRANTY: MANUFACTURER AND INSTALLER AGREE TO REPAIR OR REPLACE COMPONENTS OF LUMINAIRES THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD; WARRANTY PERIOD: FIVE YEAR(S) FROM DATE OF SUBSTANTIAL COMPLETION.

PART 2 - PRODUCTS

2.1 LUMINAIRE REQUIREMENTS

A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.

B. CRI AS INDICATED IN LIGHTING FIXTURE SCHEDULE. CCT AS INDICATED IN LIGHTING FIXTURE SCHEDULE.

C. RATED LAMP LIFE OF 50,000 HOURS TO L70.

D. LAMPS DIMMABLE FROM 100 PERCENT TO 0 PERCENT OF MAXIMUM LIGHT OUTPUT.

E. LAMPS BOTH INTEGRAL TO THE FIXTURE AND SCREW-IN TYPE, SHALL POSSESS A MINIMUM 75% EFFICACY TO MEET ENERGY CODES. LAMPS WITH EFFICACY LESS THAN 75% ARE NOT ACCEPTABLE AND SHALL NOT BE UTILIZED.

F. INTERNAL DRIVER

G. NOMINAL OPERATING VOLTAGE: AS INDICATED IN LIGHTING FIXTURE SCHEDULE

2.2 LUMINAIRE SUPPORT

A. SINGLE-STEM HANGERS: 1/2-INCH (13-MM) STEEL TUBING WITH SWIVEL BALL FITTINGS AND CEILING CANOPY. FINISH SAME AS LUMINAIRE.

B. WIRES: ASTM A 641/A 641 M, CLASS 3, SOFT TEMPER, ZINC-COATED STEEL, 1/2 GAGE (2.68 MM)

C. ROD HANGERS: 3/16-INCH (5-MM) MINIMUM DIAMETER, CADIUM-PLATED, THREADED STEEL ROD.

D. HOOK HANGERS: INTEGRATED ASSEMBLY MATCHED TO LUMINAIRE, LINE VOLTAGE, AND EQUIPMENT WITH THREADED ATTACHMENT, COORD, AND LOCKING-TYPE PLUG.

PART 3 - EXECUTION

3.1 INTERIOR LIGHTING INSTALLATION

A. COMPLY WITH NECA 1.

B. INSTALL LUMINAIRES LEVEL, PLUMB, AND SQUARE WITH CEILINGS AND WALLS UNLESS OTHERWISE INDICATED.

C. INSTALL LAMPS IN EACH LUMINAIRE.

D. SUPPORTS

1. SIZED AND RATED FOR LUMINAIRE WEIGHT.

2. ABLE TO MAINTAIN LUMINAIRE POSITION AFTER CLEANING AND RELAMPING.

3. PROVIDE SUPPORT FOR LUMINAIRE WITHOUT CAUSING DEFLECTION OF CEILING OR WALL.

4. LUMINAIRE MOUNTING DEVICES SHALL BE CAPABLE OF SUPPORTING A HORIZONTAL FORCE OF 100 PERCENT OF LUMINAIRE WEIGHT AND VERTICAL FORCE OF 400 PERCENT OF LUMINAIRE WEIGHT.

E. FLUSH-MOUNTED LUMINAIRE SUPPORT:

1. SECURED TO OUTLET BOX.

2. ATTACHED TO CEILING STRUCTURAL MEMBERS AT FOUR POINTS EQUALLY SPACED AROUND CIRCUMFERENCE OF LUMINAIRE.

3. TRIM RING FLUSH WITH FINISHED SURFACE.

F. WALL-MOUNTED LUMINAIRE SUPPORT:

1. ATTACHED TO STRUCTURAL MEMBERS IN WALLS.

2. DO NOT ATTACH LUMINAIRES DIRECTLY TO GYPSUM BOARD.

G. CEILING-MOUNTED LUMINAIRE SUPPORT:

1. CEILING MOUNT WITH FOUR-POINT PENDANT MOUNT WITH 5/32-INCH- (4-MM-) DIAMETER AIRCAFT CABLE SUPPORTS ADJUSTABLE TO 120 INCHES (6 M) IN LENGTH.

2. CEILING MOUNT WITH HOOK MOUNT.

H. SUSPENDED LUMINAIRE SUPPORT:

1. PENDANTS AND RODS: WHERE LONGER THAN 48 INCHES

(1200 MM), BRACE TO LIMIT SWINGING.

2. STEM ITEM HANGERS: SUSPEND WITH TWO-STEM HANGERS; SUPPORT WITH APPROVED OUTLET BOX AND ACCESSORIES THAT HOLD STEM AND PROVIDE DAMPING OF LUMINAIRE OSCILLATIONS. SUPPORT OUTLET BOX VERTICALLY TO BUILDING STRUCTURE USING APPROVED DEVICES.

3. CONTINUOUS ROWS OF LUMINAIRES: USE TUBING OR STEM FROM THE HANGING POINT AND WIRE SUPPORT WITH SUSPENSION FOR EACH UNIT LENGTH OF LUMINAIRE CHASSIS, INCLUDING ONE AT EACH END.

4. DO NOT USE CEILING GRID AS SUPPORT FOR PENDANT LUMINAIRES. CONNECT SUPPORT WIRES OR RODS TO BUILDING STRUCTURE.

5. CEILING-MOUNTED LUMINAIRES:

1. SECURE TO ANY REQUIRED OUTLET BOX.

2. SECURE LUMINAIRE TO THE LUMINAIRE OPENING USING APPROVED FASTENERS IN A MINIMUM OF FOUR LOCATIONS, SPACED NEAR CORNERS OF LUMINAIRE.

3. USE APPROVED DEVICES AND SUPPORT COMPONENTS TO CONNECT LUMINAIRE TO CEILING GRID AND BUILDING STRUCTURE IN A MINIMUM OF FOUR LOCATIONS, SPACED NEAR CORNERS OF LUMINAIRE.

3.2 ADJUSTING

A. OCCUPANCY ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTING THE DIRECTION OF AIM OF LUMINAIRE TO SUIT OCCUPIED CONDITIONS. MAKE UP TO TWO VISITS TO PROJECT DURING OTHER-THAN-NORMAL HOURS FOR THIS PURPOSE. SOME OF THIS WORK MAY BE REQUIRED DURING HOURS OF DARKNESS, ADJUST THE AIM OF LUMINAIRES IN THE PRESENCE OF THE ARCHITECT.

3.3 GENERAL EXTERIOR LIGHTING INSTALLATION REQUIREMENTS COMPLY WITH NECA 1.

B. USE FASTENING METHODS AND MATERIALS SELECTED TO RESIST SEISMIC FORCES DEFINED FOR THE APPLICATION AND APPROVED BY MANUFACTURER.

C. INSTALL LAMPS IN EACH LUMINAIRE.

D. FASTEN LUMINAIRE TO STRUCTURAL SUPPORT.

E. SUPPORTS:

1. SIZED AND RATED FOR LUMINAIRE WEIGHT.

2. ABLE TO MAINTAIN LUMINAIRE POSITION AFTER CLEANING AND RELAMPING.

3. SUPPORT LUMINAIRES WITHOUT CAUSING DEFLECTION OF FINISHED SURFACE.

4. LUMINAIRE-MOUNTING DEVICES SHALL BE CAPABLE OF SUPPORTING A HORIZONTAL FORCE OF 100 PERCENT OF LUMINAIRE WEIGHT AND A VERTICAL FORCE OF 400 PERCENT OF LUMINAIRE WEIGHT.

F. INSTALL LUMINAIRES LEVEL, PLUMB, AND SQUARE WITH FINISHED GRADE UNLESS OTHERWISE INDICATED. INSTALL LUMINAIRES AT HEIGHT AND AIMING ANGLE AS INDICATED ON DRAWINGS.

G. COORDINATE LAYOUT AND INSTALLATION OF LUMINAIRES WITH OTHER CONSTRUCTION.

H. ADJUST LUMINAIRE THAT REQUIRE FIELD ADJUSTMENT OR AIMING.

3.4 BOLLARD LUMINAIRE INSTALLATION:

A. ALIGN UNITS FOR OPTIMUM DIRECTIONAL ALIGNMENT OF LIGHT DISTRIBUTION

1. INSTALL ON CONCRETE BASE WITH TOP 4 INCHES (100 MM) ABOVE FINISHED GRADE OR SURFACE AT LUMINAIRE LOCATION. CAST CONDUIT INTO BASE, AND SHAPE BASE TO MATCH SHAPE OF BOLLARD BASE. FINISH BY TROWELING AND RUBBING SMOOTH.

3.5 INSTALLATION OF INDIVIDUAL GROUND-MOUNTED LUMINAIRES

A. AIM AS INDICATED ON DRAWINGS.

B. INSTALL ON CONCRETE BASE WITH TOP 4 INCHES (100 MM) ABOVE FINISHED GRADE OR SURFACE AT LUMINAIRE LOCATION. CAST CONDUIT INTO BASE, AND FINISH BY TROWELING AND RUBBING SMOOTH.

SECTION 283111 - ADDRESSABLE FIRE ALARM SYSTEM

PART 1 - GENERAL

1.1 GENERAL DESCRIPTION - PROVIDE ADDRESSABLE DIGITAL FIRE ALARM SYSTEM INSTALLED AS SHOWN ON DRAWINGS AND DESCRIBED HEREIN. THE OPERATION SHALL BE SUCH THAT ACTUATION OF ANY MANUAL FIRE ALARM STATION OR ANY OTHER INITIATION DEVICE SHALL CAUSE AUDIBLE/VISIBLE SIGNAL DEVICES THROUGHOUT THE BUILDING TO OPERATE, SHALL CAUSE THE MAIN ANNUNCIATOR TO DISPLAY THE "ADDRESS"/"ZONE" OF THE INITIATING DEVICE UNTIL THE DEVICE IS RESTORED TO ITS NORMAL POSITION AND THE CONTROL PANEL IS RESET AND SHALL CAUSE AN ALARM SIGNAL TO BE TRANSMITTED TO A CENTRAL STATION. ALL INITIATING DEVICES SHALL BE FULLY COMPATIBLE WITH EXISTING SYSTEMS AND SHALL BE PER MANUFACTURER'S RECOMMENDATIONS. ALL COMPONENTS SHALL BE ADDRESSABLE OR BE PROVIDED WITH ADDRESSABLE ZONE INTERFACE MODULES.

1.2 SUBMITTALS

A. GENERAL SUBMITTAL REQUIREMENTS:

1. SUBMITTALS SHALL BE APPROVED BY AUTHORITIES HAVING JURISDICTION IN THE AREA OF SUBMITTING THEM TO ARCHITECT.

2. SHOP DRAWINGS SHALL BE PREPARED BY PERSONS WITH THE FOLLOWING QUALIFICATIONS:

a. TRAINED AND CERTIFIED BY MANUFACTURER IN FIRE-ALARM SYSTEM DESIGN.

b. NICET-CERTIFIED FIRE-ALARM TECHNICIAN, LEVEL III MINIMUM.

c. LICENSED OR CERTIFIED BY AUTHORITIES HAVING JURISDICTION.

B. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED.

C. SHOP DRAWINGS: FOR FIRE-ALARM SYSTEM. INCLUDE PLANS, ELEVATIONS, SECTIONS, DETAILS, AND ATTACHMENTS TO OTHER WORK.

1. COMPLY WITH RECOMMENDATIONS IN THE "DOCUMENTATION" SECTION OF THE "FUNDAMENTALS OF FIRE ALARM SYSTEMS" CHAPTER IN NFPA 72.

2. INCLUDE VOLTAGE DROP CALCULATIONS FOR NOTIFICATION APPLIANCE CIRCUITS.

3. INCLUDE BATTERY-SIZE CALCULATIONS.

4. INCLUDE PERFORMANCE PARAMETERS AND INSTALLATION DETAILS FOR EACH DETECTOR, VERIFYING THAT EACH DETECTOR IS LISTED FOR COMPLETE RANGE OF AIR VELOCITY, TEMPERATURE, AND HUMIDITY POSSIBLE WHEN AIR-HANDLING SYSTEM IS OPERATING.

5. INCLUDE AUDIO/ALARM SIGNALING-SERVICE EQUIPMENT RACK OR CONSOLE LAYOUT, GROUNDING SCHEMATIC, AMPLIFIER POWER CALCULATION, AND SINGLE-LINE CONNECTION DIAGRAM.

6. INCLUDE FLOOR PLANS TO INDICATE FINAL OUTLET LOCATIONS SHOWING ADDRESS OF EACH ADDRESSABLE DEVICE. SHOW SIZE AND ROUTE OF CABLE AND CONDUITS.

1.3 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: PERSONNEL SHALL BE TRAINED AND CERTIFIED BY MANUFACTURER FOR INSTALLATION OF UNITS REQUIRED FOR THIS PROJECT.

B. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.

C. NFPA CERTIFICATION: OBTAIN CERTIFICATION ACCORDING TO NFPA 72 BY A UL-LISTED ALARM COMPANY.

1.4 EXTRA MATERIALS

A. FURNISH EXTRA MATERIALS THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR STORAGE AND IDENTIFIED WITH LABEL DESCRIBING CONTENTS.

1. LAMPS FOR REMOTE INDICATING LAMP UNITS: QUANTITY EQUAL TO 10 PERCENT OF AMOUNT INSTALLED.

2. LAMPS FOR STROBE UNITS: QUANTITY EQUAL TO 10 PERCENT OF AMOUNT INSTALLED.

3. SMOKE DETECTORS, FIRE DETECTORS: QUANTITY EQUAL TO 10 PERCENT OF AMOUNT OF EACH TYPE INSTALLED, BUT NO FEWER THAN 1 UNIT OF EACH TYPE

4. DETECTOR DETECTOR UNITS: QUANTITY EQUAL TO 2 PERCENT OF AMOUNT OF EACH TYPE INSTALLED, BUT NO FEWER THAN 1 UNIT OF EACH TYPE.

5. KEYS AND TOOLS: ONE EXTRA SET FOR ACCESS TO LOCKED AND TAMPERPROOFED COMPONENTS.

6. AUDIBLE AND VISUAL NOTIFICATION APPLIANCES: ONE OF EACH TYPE INSTALLED.

7. REMOTE INDICATING APPLIANCE TYPE INSTALLED IN THE SYSTEM.

1.5 SEQUENCING AND SCHEDULING

A. EXISTING FIRE-ALARM EQUIPMENT: MAINTAIN EXISTING EQUIPMENT FULLY OPERATIONAL UNTIL NEW EQUIPMENT HAS BEEN TESTED AND ACCEPTED. AS NEW EQUIPMENT IS INSTALLED, LABEL IT "NOT IN SERVICE" UNTIL IT IS ACCEPTED. REMOVE LABEL AND RE-TEST SYSTEM. LABEL EXISTING FIRE-ALARM EQUIPMENT "NOT IN SERVICE" UNTIL REMOVED FROM THE BUILDING.

B. EQUIPMENT REMOVAL: AFTER ACCEPTANCE OF NEW FIRE-ALARM SYSTEM, REMOVE EXISTING DISCONNECTED FIRE-ALARM EQUIPMENT AND WIRING.

1.6 WARRANTY

A. SPECIAL WARRANTY: MANUFACTURER AGREES TO REPAIR OR REPLACE FIRE-ALARM SYSTEM EQUIPMENT AND COMPONENTS THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD.

1. WARRANTY EXTENT: ALL EQUIPMENT AND COMPONENTS NOT COVERED IN THE MAINTENANCE SERVICE AGREEMENT.

2. WARRANTY PERIOD: FIVE YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

1. NOTIFIER, A HONEYWELL COMPANY.

2. SIEMENS BUILDING TECHNOLOGIES, INC.; FIRE SAFETY DIVISION.

3. SIMPLEX GRINNELL LP; A TYCO INTERNATIONAL COMPANY.

4. EDWARDS

2.2 SYSTEM DESCRIPTION

A. NONCODED, UL-CERTIFIED ADDRESSABLE SYSTEM, WITH MULTIPLEXED SIGNAL TRANSMISSION AND HORN/STROBE EVACUATION.

B. AUTOMATIC SENSITIVITY CONTROL OF CERTAIN SMOKE DETECTORS.

C. ALL COMPONENTS PROVIDED SHALL BE LISTED FOR USE WITH THE SELECTED SYSTEM.

D. ALPHANUMERIC DISPLAY, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.

2.3 FIRE-ALARM CONTROL UNIT

A. GENERAL REQUIREMENTS FOR FIRE-ALARM CONTROL UNIT:

1. FIELD-PROGRAMMABLE, MICROPROCESSOR-BASED, MODULAR, POWER-LIMITED DESIGN WITH ELECTRONIC MODULES, COMPLYING WITH UL 864 AND LISTED AND LABELED BY AN NRTL.

a. SYSTEM SOFTWARE AND PROGRAMS SHALL BE HELD IN NONVOLATILE FLASH, ELECTRICALLY ERASABLE, PROGRAMMABLE, READ-ONLY MEMORY, RETAINING THE INFORMATION THROUGH FAILURE OF PRIMARY AND SECONDARY POWER SUPPLIES.

b. INCLUDE A REAL-TIME CLOCK FOR TIME ANNOTATION OF EVENTS ON THE EVENT RECORDER AND PRINTER.

c. PROVIDE COMMUNICATION BETWEEN THE FACP AND REMOTE CIRCUIT INTERFACE PANELS, ANNUNCIATORS, AND EQUIPMENT.

d. THE FACP SHALL BE LISTED FOR CONNECTION TO A CENTRAL-STATION SIGNALING SYSTEM SERVICE.

e. PROVIDE NONVOLATILE MEMORY FOR SYSTEM DATABASE, LOGIC, AND OPERATING SYSTEM AND EVENT HISTORY. THE SYSTEM SHALL REQUIRE NO MANUAL INPUT TO INITIALIZE IN THE EVENT OF A COMPLETE POWER DOWN CONDITION. THE FACP SHALL PROVIDE A MINIMUM 500-EVENT HISTORY LOG.

2. ADDRESSABLE INITIATION DEVICES THAT COMMUNICATE DEVICE IDENTITY AND STATUS.

a. SMOKE SENSORS SHALL ADDITIONALLY COMMUNICATE SENSITIVITY SETTING AND ALLOW FOR ADJUSTMENT OF SENSITIVITY TO FIRE-ALARM CONTROL UNIT.

b. TEMPERATURE SENSORS SHALL ADDITIONALLY TEST FOR AND COMMUNICATE THE SENSITIVITY RANGE OF THE DEVICE.

3. ADDRESSABLE CONTROL CIRCUITS FOR OPERATION OF MECHANICAL EQUIPMENT.

B. ALPHANUMERIC DISPLAY AND SYSTEM CONTROLS: ARRANGED FOR INTERFACE BETWEEN HUMAN OPERATOR AT FIRE-ALARM CONTROL UNIT AND ADDRESSABLE SYSTEM COMPONENTS INCLUDING ANNUNCIATION AND SUPERVISION, DISPLAY ALARM, SUPERVISORY, AND COMPONENT STATUS MESSAGES AND THE PROGRAMMING AND CONTROL MENU.

C. INITIATING DEVICES, NOTIFICATION APPLIANCE, AND SIGNALING-LINE CIRCUITS:

1. PATHWAY CLASS DESIGNATIONS: NFPA 72, CLASS B.

D. PRIMARY POWER: 24-DC OBTAINED FROM 120-V AC SERVICE AND A POWER-SUPPLY MODULE. INITIATING DEVICES, NOTIFICATION APPLIANCES, SIGNALING LINES, TROUBLE SIGNALS, SUPERVISORY AND DIGITAL ALARM COMMUNICATOR TRANSMITTERS SHALL BE POWERED BY 24-V DC SOURCE.

1. ALARM CURRENT DRAW OF ENTIRE FIRE-ALARM SYSTEM SHALL NOT EXCEED 80 PERCENT OF THE POWER-SUPPLY MODULE RATING.

E. SECONDARY POWER: 24-V DC SUPPLY SYSTEM WITH BATTERIES, AUTOMATIC BATTERY CHARGER, AND AUTOMATIC TRANSFER SWITCH.

1. BATTERIES: SEALED LEAD CALCIUM.

2. GENERAL DESCRIPTION - PROVIDE ADDRESSABLE DIGITAL FIRE ALARM SYSTEM INSTALLED AS SHOWN ON DRAWINGS AND DESCRIBED HEREIN. THE OPERATION SHALL BE SUCH THAT ACTUATION OF ANY MANUAL FIRE ALARM STATION OR ANY OTHER INITIATION DEVICE SHALL CAUSE AUDIBLE/VISIBLE SIGNAL DEVICES THROUGHOUT THE BUILDING TO OPERATE. SHALL CAUSE THE MAIN ANNUNCIATOR TO DISPLAY THE "ADDRESS"/"ZONE" OF THE INITIATING DEVICE UNTIL THE DEVICE IS RESTORED TO ITS NORMAL POSITION AND THE CONTROL PANEL IS RESET AND SHALL CAUSE AN ALARM SIGNAL TO BE TRANSMITTED TO A CENTRAL STATION. ALL INITIATING DEVICES SHALL BE FULLY COMPATIBLE WITH EXISTING SYSTEMS AND SHALL BE PER MANUFACTURER'S RECOMMENDATIONS. ALL COMPONENTS SHALL BE ADDRESSABLE OR BE PROVIDED WITH ADDRESSABLE ZONE INTERFACE MODULES.

2.4 MANUAL FIRE-ALARM BOXES

A. INSTALLER QUALIFICATIONS: ACTION MANUAL STATIONS WHERE SHOWN ON THE DRAWINGS, TO BE FLUSH OR SURFACE MOUNTED AS REQUIRED. PULL STATION ACTIVATION SHALL PROVIDE ALARM INPUT TO THE SYSTEM AND ALARM OUTPUT FROM THE SYSTEM WITHIN FOUR (4) SECONDS. THE MANUAL STATION SHALL BE EQUIPPED WITH TERMINAL STRIP AND PRESSURE STYLE SCREW TERMINALS FOR THE CONNECTION OF FIELD WIRING. HOUSINGS SHALL BE MADE OF THERMOPLASTIC MATERIAL WITH RAISED FIRE ALARM LETTERING AND BE COLORED RED. STATIONS THAT REQUIRE THE BREAKING OF GLASS WILL NOT BE ACCEPTABLE. SURFACE MOUNTED STATIONS WHERE INDICATED ON THE DRAWINGS SHALL BE MOUNTED USING MANUFACTURER'S PRESCRIBED MATCHING RED ENAMEL OUTLET BOX.

2.5 SYSTEM SMOKE DETECTORS

A. PROVIDE PHOTOELECTRIC TYPE. DETECTORS SHALL BE LISTED FOR USE AS OPEN AREA PROTECTIVE COVERAGE AND SHALL BE INSENSITIVE TO AIR VELOCITY CHANGES. THE SMOKE DETECTOR SHALL CONTAIN A MULTI-COLORED LED INDICATOR THAT WILL FLASH GREEN TO INDICATE THAT THE DETECTOR IS OPERATIONAL AND FLASH RED WHEN THE DETECTOR IS IN ALARM. THE DETECTOR SHALL BE CONTINUALLY SELF-TESTING AND BE DESIGNED TO ELIMINATE CALIBRATION ERRORS ASSOCIATED WITH FIELD CLEANING OF THE CHAMBER. DETECTOR SHALL TWIST LOCK INTO A BASE ASSEMBLY WITH SCREW CLAMP TERMINALS. DETECTOR ACTIVATION SHALL PROVIDE ALARM INPUT TO THE SYSTEM AND ALARM OUTPUT FROM THE SYSTEM WITHIN FOUR (4) SECONDS. THE DETECTOR SHALL SUPPORT THE USE OF A RELAY OR LED REMOTE INDICATOR. DETECTOR SPACING AND LOCATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, THE REQUIREMENTS OF NFPA 72, AND AS INDICATED. NO DETECTOR SHALL BE LOCATED CLOSER THAN 12 INCHES TO ANY PART OF FLAMMABLE FURNITURE OR EQUIPMENT. ANY DETECTOR BE MOUNTED CLOSER THAN 36 INCHES TO ANY AHU AIR DIFFUSER.

2.6 HEAT DETECTORS

A. HEAT DETECTOR (SYSTEM) - THERMAL DETECTORS SHALL BE RATED AT 135 DEGREES FIEEL TEMPERATURE AND 15 DEGREES PER MINUTE RATE OF RISE. DETECTORS SHALL BE CONSTRUCTED TO COMPENSATE FOR THE THERMAL LAG INHERENT IN CONVENTIONAL TYPE DETECTORS DUE TO THE THERMAL MASS, AND ALARM AT THE SET POINT OF 135 DEGREES FAHRENHEIT. THE DETECTORS FURNISHED SHALL HAVE A LISTED SPACING FOR COVERAGE UP TO 2,500 SQUARE FEET AND SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS OF NFPA 72 FOR OPEN AREA COVERAGE.

2.7 NOTIFICATION APPLIANCES

A. NOTIFICATION APPLIANCES - THE HORN, STROBE OR HORN/STROBE APPLIANCE AS INDICATED ON THE DRAWINGS SHALL BE A SYNCHRONIZED STROBE LIGHT WITH MULTIPLE CANDELA TAPS TO MEET THE INTENDED APPLICATION. THE STROBE LIGHT TAPS SHALL BE ADJUSTABLE FOR 15, 30, 75, AND 110 CANDELA. THE STROBE SHALL FLASH AT A RATE BETWEEN 1/3 AND 3 FLASHES/SECOND. THE APPLIANCE SHALL BE RED FOR WALL MOUNTED AND WHITE FOR CEILING MOUNTED. CEILING MOUNTED APPLIANCES SHALL BE RATED FOR THAT APPLICATION.

2.8 REMOTE ANNUNCIATOR

A. PROVIDE ANNUNCIATOR WITH FUNCTIONS TO MATCH THOSE OF FIRE-ALARM CONTROL UNIT FOR ALARM, SUPERVISORY, AND TROUBLE INDICATIONS. MANUAL SWITCHING FUNCTIONS SHALL MATCH THOSE OF FIRE-ALARM CONTROL UNIT, INCLUDING ACKNOWLEDGING, SILENCING, RESETING, AND TESTING. MOUNTING SHALL BE FLUSH CABINET MOUNTED. TYPE 1 ALPHANUMERIC DISPLAY AND LED COATING LIGHTS SHALL MATCH THOSE OF FIRE ALARM CONTROL UNIT. PROVIDE CONTROLS TO ACKNOWLEDGE, SILENCE, RESET, AND TEST FUNCTIONS FOR ALARM, SUPERVISORY, AND TROUBLE SIGNALS.

2.9 ADDRESSABLE INTERFACE DEVICE

A. PROVIDE ADDRESSABLE INTERFACE DEVICES WITH THE FOLLOWING FUNCTIONS:

1. INCLUDE ADDRESS-SETTING MEANS ON THE MODULE.

2. STORE AN INTERNAL IDENTIFYING CODE FOR CONTROL PANEL USE TO IDENTIFY THE MODULE TYPE.

3. LISTED FOR CONTROLLING HVAC FAN MOTOR CONTROLLERS.

B. MONITOR MODULE: MICROELECTRONIC MODULE PROVIDING A SYSTEM ADDRESS FOR ALARM-INITIATING DEVICES FOR WIRED APPLICATIONS WITH NORMALLY OPEN CONTACTS.

C. INTEGRAL RELAY: CAPABLE OF PROVIDING A DIRECT SIGNAL TO ELEVATOR CONTROLLER TO INITIATE ELEVATOR RECALL OR TO CIRCUIT-BREAKER SHUNT TRIP FOR POWER SHUTDOWN.

1. ALLOW THE CONTROL PANEL TO SWITCH THE RELAY CONTACTS ON OR OFF.

2. HAVE A MINIMUM OF TWO NORMALLY OPEN AND TWO NORMALLY CLOSED CONTACTS AVAILABLE FOR FIELD WIRING.

D. CONTROL MODULE:

1. OPERATE NOTIFICATION DEVICES.

2. OPERATE SOLENOIDS FOR USE IN SPRINKLER SERVICE.

2.10 DIGITAL ALARM COMMUNICATOR TRANSMITTER

A. PROVIDE DIGITAL ALARM COMMUNICATOR TRANSMITTER ACCEPTABLE TO THE REMOTE CENTRAL STATION AND COMPLYING WITH UL 632.

B. FUNCTIONAL PERFORMANCE: UNIT SHALL RECEIVE AN ALARM, SUPERVISORY, OR TROUBLE SIGNAL FROM FIRE-ALARM CONTROL UNIT AND AUTOMATICALLY CAPTURE TWO TELEPHONE LINE(S) AND DIAL A PRESET NUMBER FOR A REMOTE CENTRAL STATION. WHEN CONTACT IS MADE WITH CENTRAL STATION(S), SIGNALS SHALL BE TRANSMITTED. IF SERVICE ON EITHER LINE IS INTERRUPTED FOR LONGER THAN 45 SECONDS, TRANSMITTER SHALL INITIATE A LOCAL TROUBLE SIGNAL AND TRANSMIT THE SIGNAL, INDICATING LOSS OF TELEPHONE LINE TO THE REMOTE ALARM RECEIVING STATION OVER THE REMAINING LINE. TRANSMITTER SHALL AUTOMATICALLY REPORT TELEPHONE SERVICE RESTORATION TO THE CENTRAL STATION. IF SERVICE IS LOST ON BOTH TELEPHONE LINES, TRANSMITTER SHALL INITIATE THE LOCAL TROUBLE SIGNAL.

C. LOCAL FUNCTIONS AND DISPLAY AT THE DIGITAL ALARM COMMUNICATOR TRANSMITTER SHALL INCLUDE THE FOLLOWING:

1. VERIFICATION THAT BOTH TELEPHONE LINES ARE AVAILABLE.

2. PROGRAMMING DEVICE.

3. LED DISPLAY.

4. MANUAL TEST REPORT FUNCTION AND MANUAL TRANSMISSION CLEAR INDICATION.

5. COMMUNICATIONS FAILURE WITH THE CENTRAL STATION OR FIRE-ALARM CONTROL UNIT.

D. SECONDARY POWER: INTEGRAL RECHARGEABLE BATTERY AND AUTOMATIC CHARGER.

E. SELF-TEST: CONDUCTED AUTOMATICALLY EVERY 24 HOURS WITH REPORT TRANSMITTED TO CENTRAL STATION.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

A. COMPLY WITH NFPA 72, NFPA 101, AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION FOR INSTALLATION AND TESTING OF FIRE-ALARM EQUIPMENT. INSTALL ALL ELECTRICAL WIRING TO COMPLY WITH REQUIREMENTS IN NFPA 70 INCLUDING, BUT NOT LIMITED TO, ARTICLE 760, "FIRE ALARM SYSTEMS."

B. CONNECTING TO EXISTING EQUIPMENT: VERIFY THAT EXISTING FIRE-ALARM SYSTEM IS OPERATIONAL BEFORE MAKING CHANGES OR CONNECTIONS.

C. INSTALL WALL-MOUNTED EQUIPMENT, WITH TOPS OF CABINETS NOT MORE THAN 78 INCHES (1980 MM) ABOVE THE FINISHED FLOOR.

D. MANUAL FIRE-ALARM BOXES:

1. INSTALL MANUAL FIRE-ALARM BOX IN THE NORMAL PATH OF EGRESS WITHIN 60 INCHES (1520 MM) OF THE EXIT DOORWAY.

2. MOUNT MANUAL FIRE-ALARM BOX ON A BACKGROUND OF A CONTRASTING COLOR.

3. THE OPERABLE PART OF MANUAL FIRE-ALARM BOX SHALL BE BETWEEN 42 INCHES (1060 MM) AND 48 INCHES (1220 MM) ABOVE FLOOR LEVEL. ALL DEVICES SHALL BE MOUNTED AT THE SAME HEIGHT UNLESS OTHERWISE INDICATED.

E. SMOKE- OR HEAT-DETECTOR SPACING: COMPLY WITH NFPA 72.

F. DUCT SMOKE DETECTORS: COMPLY WITH NFPA 72 AND NFPA 90A. INSTALL SAMPLING TUBES SO THEY EXTEND THE FULL WIDTH OF DUCT. TUBES MORE THAN 36 INCHES (9100 MM) LONG SHALL BE SUPPORTED AT BOTH ENDS.

G. SINGLE-STATION SMOKE DETECTORS: WHERE MORE THAN ONE SMOKE ALARM IS INSTALLED WITHIN ROOM OR SUITE, THEY SHALL BE CONNECTED SO THAT THE OPERATION OF ANY SMOKE ALARM CAUSES THE ALARM IN ALL SMOKE ALARMS TO SOUND.

H. REMOTE STATUS AND ALARM INDICATORS: INSTALL IN A VISIBLE LOCATION NEAR EACH SMOKE DETECTOR, SPRINKLER WATER-FLOW SWITCH, AND VALVE-TAMPER SWITCH THAT IS NOT READILY VISIBLE FROM NORMAL VIEWING POSITION.

I. AUDIBLE ALARM-INDICATING DEVICES: INSTALL NOT LESS THAN 6 INCHES (150 MM) BELOW THE CEILING. INSTALL BELLS AND HORNS ON FLUSH-MOUNTED BACK BOXES WITH THE DEVICE-OPERATING MECHANISM CONCEALED BEHIND A GRILLE. INSTALL ALL DEVICES AT THE SAME HEIGHT UNLESS OTHERWISE INDICATED.

J. VISIBLE ALARM-INDICATING DEVICES: INSTALL ADJACENT TO EACH ALARM BELL OR ALARM HORN AND AT LEAST 6 INCHES (150 MM) BELOW THE CEILING. INSTALL ALL DEVICES AT THE SAME HEIGHT UNLESS OTHERWISE INDICATED.

K. DEVICE LOCATION-INDICATING LIGHTS: LOCATE IN PUBLIC SPACE NEAR THE DEVICE THEY MONITOR.

3.2 PATHWAYS

A. PATHWAYS SHALL BE INSTALLED IN EMT. FIRE ALARM MC CABLE IS SUITABLE ONLY WHERE NOT EXPOSED.

B. FIRE ALARM BOXES SHALL BE PAINTED RED ENAMEL.

C. WIRING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE AND NFPA 72, AND ALL OTHER APPLICABLE STATE AND LOCAL CODES. THE CONTRACTOR SHALL PROVIDE, IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, ALL WIRING, CONDUIT, AND OUTLET BOXES REQUIRED FOR THE ERECTION OF THE COMPLETE SYSTEM AS DESCRIBED HEREIN AND AS SHOWN ON THE DRAWINGS. CONDUIT AND WIRE SHALL CONFORM TO THE APPLICABLE REQUIREMENTS FOR LIGHTING AND RECEPTACLE BRANCH CIRCUITS. THE SIZES OF THE DIFFERENT WIRES SHALL BE AS REQUIRED FOR SYSTEM OPERATION. COLOR-CODED WIRES SHALL BE USED.

3.3 CONNECTIONS

A. FOR FIRE-PROTECTION SYSTEMS RELATED TO DOORS IN FIRE-RATED WALLS AND PARTITIONS AND TO DOORS IN SMOKE PARTITIONS, COMPLY WITH REQUIREMENTS IN SECTION 087100 "DOOR HARDWARE," CONNECT HARDWARE AND DEVICES TO FIRE-ALARM SYSTEM.

1. VERIFY THAT HARDWARE AND DEVICES ARE LISTED FOR USE WITH INSTALLED FIRE-ALARM SYSTEM BEFORE MAKING CONNECTIONS.

B. MAKE ADDRESSABLE CONNECTIONS WITH A SUPERVISED INTERFACE DEVICE TO THE FOLLOWING DEVICES AND SYSTEMS. INSTALL THE INTERFACE DEVICE LESS THAN 36 INCHES (910 MM) FROM THE DEVICE CONTROLLED. MAKE AN ADDRESSABLE CONFIRMATION CONNECTION WHEN SUCH FEEDBACK IS AVAILABLE AT THE DEVICE OR SYSTEM BEING CONTROLLED.

1. SMOKE DAMPERS IN AIR DUCTS OF DESIGNATED HVAC DUCT SYSTEMS.

2. MAGNETICALLY HELD-OPEN DOORS.

3. ELECTRONICALLY LOCKED DOORS AND ACCESS GATES.

4. ALARM-INITIATING CONNECTION TO ELEVATOR RECALL SYSTEM AND COMPONENTS.

5. ALARM-INITIATING CONNECTION TO ACTIVATE EMERGENCY LIGHTING CONTROL.

6. ALARM-INITIATING CONNECTION TO ACTIVATE EMERGENCY SHUTOFFS FOR GAS AND FUEL SUPPLIES.

7. SUPERVISORY CONNECTIONS AT VALVE SUPERVISORY SWITCHES.

8. SUPERVISORY CONNECTIONS AT LOW-AIR-PRESSURE SWITCH OF EACH DRY-PIPE SPRINKLER SYSTEM.

9. SUPERVISORY CONNECTIONS AT ELEVATOR SHUNT-TRIP BREAKER.

10. SUPERVISORY CONNECTIONS AT FIRE-EXTINGUISHER LOCATIONS.

3.4 GROUNDING

A. GROUND FIRE-ALARM CONTROL UNIT AND ASSOCIATED CIRCUITS: COMPLY WITH IEEE 1100. INSTALL A GROUND WIRE FROM MAIN SERVICE GROUND TO FIRE-ALARM CONTROL UNIT.

3.5 FIELD QUALITY CONTROL

A. FIELD TESTS SHALL BE WITNESSED BY AUTHORITIES HAVING JURISDICTION.

B. PERFORM THE FOLLOWING TESTS AND INSPECTIONS WITH THE ASSISTANCE OF A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE:

1. VISUAL INSPECTION: CONDUCT VISUAL INSPECTION PRIOR TO TESTING.

a. INSPECTION SHALL BE BASED ON COMPLETED RECORD DRAWINGS AND SYSTEM DOCUMENTATION THAT IS REQUIRED BY NFPA 72 IN ITS "COMPLETION DOCUMENTS, PREPARATION" TABLE IN THE "DOCUMENTATION" SECTION OF THE "FUNDAMENTALS" CHAPTER.

b. COMPLY WITH THE "VISUAL INSPECTION FREQUENCIES" TABLE IN THE "INSPECTION" SECTION OF THE "INSPECTION, TESTING AND MAINTENANCE" CHAPTER IN NFPA 72; RETAIN THE "INITIAL REACCEPTANCE" COLUMN AND LIST ONLY THE INSTALLED COMPONENTS.

2. SYSTEM TESTING: COMPLY WITH THE "TEST METHODS" TABLE IN THE "TESTING" SECTION OF THE "INSPECTION, TESTING AND MAINTENANCE" CHAPTER IN NFPA 72.

3. TEST AUDIBLE APPLIANCES FOR THE PUBLIC OPERATING MODE ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS. PERFORM THE TEST USING A PORTABLE SOUND-LEVEL METER COMPLYING WITH TYPE 2 REQUIREMENTS IN ANSI S1.4.

4. TEST AUDIBLE APPLIANCES FOR THE PRIVATE OPERATING MODE ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.

5. TEST VISIBLE APPLIANCES FOR THE PUBLIC OPERATING MODE ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.

6. FACTORY-AUTHORIZED SERVICE REPRESENTATIVE SHALL PREPARE THE "FIRE ALARM SYSTEM RECORD OF COMPLETION" IN THE "DOCUMENTATION" SECTION OF THE "FUNDAMENTALS" CHAPTER IN NFPA 72 AND THE "INSPECTION AND TESTING FORM" IN THE "RECORDS" SECTION OF THE "INSPECTION, TESTING AND MAINTENANCE" CHAPTER IN NFPA 72.

C. REACCEPTANCE TESTING: PERFORM REACCEPTANCE TESTING TO VERIFY THE PROPER OPERATION OF ADDED OR REPLACED DEVICES AND APPLIANCES.

D. FIRE-ALARM SYSTEM WILL BE CONSIDERED DEFECTIVE IF IT DOES NOT PASS TESTS AND INSPECTIONS.

3.6 DEMONSTRATION

A. TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE, AND MAINTAIN FIRE-ALARM SYSTEM.

PERCENT OF RATED VOLTAGE WITHOUT INTENTIONAL OR UNEXPECTED INSTANTaneous (1 TO 0.8-SECOND TIME DELAY).

7. AUXILIARY SWITCH; ONE SPOT SWITCH OR TWO SPOT SWITCHES WITH "A" AND "B" CONTACTS; "A" CONTACTS MIMIC CIRCUIT-BREAKER CONTACTS, "B" CONTACTS OPERATE IN REVERSE OF CIRCUIT-BREAKER CONTACTS.

2.5 ENCLOSURES

A. NEMA AB 1 AND NEMA KS 1 TO MEET ENVIRONMENTAL CONDITIONS OF INSTALLED LOCATION.

1. INDOOR LOCATIONS: NEMA 250, TYPE 1.

2. OUTDOOR LOCATIONS: NEMA 250, TYPE 3R.

3. OTHER WET OR DAMP INDOOR LOCATIONS: NEMA 250, TYPE 4.

B. CONDUIT ENTRY: NEMA 250 TYPES 4, 4X, AND 12 ENCLOSURES SHALL BE PROVIDED WITH THEADDED CONDUIT OPENINGS IN BOTH ENDWALLS.

C. ENCLOSURES DESIGNATED AS NEMA 250 TYPE 4, 4X STAINLESS STEEL, 12, OR 12K SHALL HAVE A DUAL COVER INTERLOCK MECHANISM TO PREVENT UNINTENTIONAL OPENING OF THE ENCLOSURE COVER WHEN THE CIRCUIT BREAKER IS ON AND TO PREVENT TURNING THE CIRCUIT BREAKER ON WHEN THE ENCLOSURE COVER IS OPEN.

D. ALL ENCLOSURES SHALL INCLUDE A BONDED EQUIPMENT BUS.

PART 3 - EXECUTION

3.1 INSTALLATION

A. COORDINATE LAYOUT AND INSTALLATION OF SWITCHES, CIRCUIT BREAKERS, AND COMPONENTS WITH EQUIPMENT SERVED AND ADJACENT SURFACES. MAINTAIN REQUIRED WORKSPACE CLEARANCES AND REQUIRED CLEARANCES FOR EQUIPMENT ACCESS DOORS AND PANELS.

B. INSTALL INDIVIDUAL WALL-MOUNTED SWITCHES AND CIRCUIT BREAKERS WITH TOPS AT UNIFORM HEIGHT UNLESS OTHERWISE INDICATED.

C. INSTALL FUSES IN FUSIBLE DEVICES.

D. COMPLY WITH NFPA 70 AND NECA 1.

SECTION 265119 - LED LIGHTING

PART 1 - PART 1- GENERAL

1.1 SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT.

B. PRODUCT SCHEDULE: FOR LUMINAIRES AND LAMPS. USE SAME DESIGNATIONS INDICATED ON DRAWINGS.

1.2 QUALITY ASSURANCE

A. LUMINAIRE PHOTOMETRIC DATA TESTING LABORATORY QUALIFICATIONS: PROVIDED BY AN INDEPENDENT AGENCY, WITH THE EXPERIENCE AND CAPABILITY TO CONDUCT THE TESTING INDICATED. THAT IS AN NRTL AS DEFINED BY OSHA IN 29 CFR 1910.7, ACCREDITED UNDER THE NVLAP FOR ENERGY EFFICIENT LIGHTING PRODUCTS, AND COMPLYING WITH THE APPLICABLE IES TESTING STANDARDS.

B. PROVIDE LUMINAIRES FROM A SINGLE MANUFACTURER FOR EACH LUMINAIRE TYPE.

C. EACH LUMINAIRE TYPE SHALL BE BINNED WITHIN A THREE-STEP MACADAM ELLIPSE TO ENSURE COLOR CONSISTENCY AMONG LUMINAIRES.

D. MOCKUPS: FOR INTERIOR LUMINAIRES IN ROOM OR MODULE MOCKUPS, COMPLETE WITH POWER AND CONTROL CONNECTIONS.

1. OBTAIN ARCHITECT'S APPROVAL OF LUMINAIRES IN MOCKUPS BEFORE STARTING INSTALLATIONS.

2. MAINTAIN MOCKUPS DURING CONSTRUCTION IN AN UNDISTURBED CONDITION AS A STANDARD FOR JUDGING THE COMPLETED WORK.

3. APPROVAL OF MOCKUPS DOES NOT CONSTITUTE APPROVAL OF DEVIATIONS FROM THE CONTRACT DOCUMENTS CONTAINED IN MOCKUPS UNLESS ARCHITECT SPECIFICALLY APPROVES SUCH DEVIATIONS IN WRITING.

4. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, APPROVED MOCKUPS MAY BECOME PART OF THE COMPLETED WORK IF UNDISTURBED AT TIME OF SUBSTANTIAL COMPLETION.

1.3 DELIVERY, STORAGE, AND HANDLING

A. PROTECT FINISHES OF EXPOSED SURFACES BY APPLYING A STRIPPABLE, TEMPORARY PROTECTIVE COVERING BEFORE SHIPPING.

1.4 WARRANTY

A. WARRANTY: MANUFACTURER AND INSTALLER AGREE TO REPAIR OR REPLACE COMPONENTS OF LUMINAIRES THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD; WARRANTY PERIOD: FIVE YEAR(S) FROM DATE OF SUBSTANTIAL COMPLETION.

PART 2 - PRODUCTS

2.1 LUMINAIRE REQUIREMENTS

A. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.

B. CRI AS INDICATED IN LIGHTING FIXTURE SCHEDULE. CCT AS INDICATED IN LIGHTING FIXTURE SCHEDULE.

C. RATED LAMP LIFE OF 50,000 HOURS TO L70.

D. LAMPS DIMMABLE FROM 100 PERCENT TO 0 PERCENT OF MAXIMUM LIGHT OUTPUT.

E. LAMPS BOTH INTEGRAL TO THE FIXTURE AND SCREW-IN TYPE, SHALL POSSESS A MINIMUM 75% EFFICACY TO MEET ENERGY CODES. LAMPS WITH EFFICACY LESS THAN 75% ARE NOT ACCEPTABLE AND SHALL NOT BE UTILIZED.

F. INTERNAL DRIVER

G. NOMINAL OPERATING VOLTAGE: AS INDICATED IN LIGHTING FIXTURE SCHEDULE

2.2 LUMINAIRE SUPPORT

A. SINGLE-STEM HANGERS: 1/2-INCH (13-MM) STEEL TUBING WITH SWIVEL BALL FITTINGS AND CEILING CANOPY. FINISH SAME AS LUMINAIRE.

B. WIRES: ASTM A 641/A 641 M, CLASS 3, SOFT TEMPER, ZINC-COATED STEEL, 1/2 GAGE (2.68 MM)

C. ROD HANGERS: 3/16-INCH (5-MM) MINIMUM DIAMETER, CADIUM-PLATED, THREADED STEEL ROD.

D. HOOK HANGERS: INTEGRATED ASSEMBLY MATCHED TO LUMINAIRE, LINE VOLTAGE, AND EQUIPMENT WITH THREADED ATTACHMENT, COORD, AND LOCKING-TYPE PLUG.

PART 3 - EXECUTION

3.1 INTERIOR LIGHTING INSTALLATION

A. COMPLY WITH NECA 1.

B. INSTALL LUMINAIRES LEVEL, PLUMB, AND SQUARE WITH CEILINGS AND WALLS UNLESS OTHERWISE INDICATED.

C. INSTALL LAMPS IN EACH LUMINAIRE.

D. SUPPORTS

1. SIZED AND RATED FOR LUMINAIRE WEIGHT.

2. ABLE TO MAINTAIN LUMINAIRE POSITION AFTER CLEANING AND RELAMPING.

3. PROVIDE SUPPORT FOR LUMINAIRE WITHOUT CAUSING DEFLECTION OF CEILING OR WALL.

4. LUMINAIRE MOUNTING DEVICES SHALL BE CAPABLE OF SUPPORTING A HORIZONTAL FORCE OF 100 PERCENT OF LUMINAIRE WEIGHT AND VERTICAL FORCE OF 400 PERCENT OF LUMINAIRE WEIGHT.

E. FLUSH-MOUNTED LUMINAIRE SUPPORT:

1. SECURED TO OUTLET BOX.

2. ATTACHED TO CEILING STRUCTURAL MEMBERS AT FOUR POINTS EQUALLY SPACED AROUND CIRCUMFERENCE OF LUMINAIRE.

3. TRIM RING FLUSH WITH FINISHED SURFACE.

F. WALL-MOUNTED LUMINAIRE SUPPORT:

1. ATTACHED TO STRUCTURAL MEMBERS IN WALLS.

2. DO NOT ATTACH LUMINAIRES DIRECTLY TO GYPSUM BOARD.

G. CEILING-MOUNTED LUMINAIRE SUPPORT:

1. CEILING MOUNT WITH FOUR-POINT PENDANT MOUNT WITH 5/32-INCH- (4-MM-) DIAMETER AIRCAFT CABLE SUPPORTS ADJUSTABLE TO 120 INCHES (6 M) IN LENGTH.

2. CEILING MOUNT WITH HOOK MOUNT.

H. SUSPENDED LUMINAIRE SUPPORT:

1. PENDANTS AND RODS: WHERE LONGER THAN 48 INCHES

(1200 MM), BRACE TO LIMIT SWINGING.

2. STEM ITEM HANGERS: SUSPEND WITH TWO-STEM HANGERS; SUPPORT WITH APPROVED OUTLET BOX AND ACCESSORIES THAT HOLD STEM AND PROVIDE DAMPING OF LUMINAIRE OSCILLATIONS. SUPPORT OUTLET BOX VERTICALLY TO BUILDING STRUCTURE USING APPROVED DEVICES.

3. CONTINUOUS ROWS OF LUMINAIRES: USE TUBING OR STEM FROM THE HANGING POINT AND WIRE SUPPORT WITH SUSPENSION FOR EACH UNIT LENGTH OF LUMINAIRE CHASSIS, INCLUDING ONE AT EACH END.

4. DO NOT USE CEILING GRID AS SUPPORT FOR PENDANT LUMINAIRES. CONNECT SUPPORT WIRES OR RODS TO BUILDING STRUCTURE.

5. CEILING-MOUNTED LUMINAIRES:

1. SECURE TO ANY REQUIRED OUTLET BOX.

2. SECURE LUMINAIRE TO THE LUMINAIRE OPENING USING APPROVED FASTENERS IN A MINIMUM OF FOUR LOCATIONS, SPACED NEAR CORNERS OF LUMINAIRE.

3. USE APPROVED DEVICES AND SUPPORT COMPONENTS TO CONNECT LUMINAIRE TO CEILING GRID AND BUILDING STRUCTURE IN A MINIMUM OF FOUR LOCATIONS, SPACED NEAR CORNERS OF LUMINAIRE.

3.2 ADJUSTING

A. OCCUPANCY ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTING THE DIRECTION OF AIM OF LUMINAIRE TO SUIT OCCUPIED CONDITIONS. MAKE UP TO TWO VISITS TO PROJECT DURING OTHER-THAN-NORMAL HOURS FOR THIS PURPOSE. SOME OF THIS WORK MAY BE REQUIRED DURING HOURS OF DARKNESS, ADJUST THE AIM OF LUMINAIRES IN THE PRESENCE OF THE ARCHITECT.

3.3 GENERAL EXTERIOR LIGHTING INSTALLATION REQUIREMENTS COMPLY WITH NECA 1.

B. USE FASTENING METHODS AND MATERIALS SELECTED TO RESIST SEISMIC FORCES DEFINED FOR THE APPLICATION AND APPROVED BY MANUFACTURER.

C. INSTALL LAMPS IN EACH LUMINAIRE.

D. FASTEN LUMINAIRE TO STRUCTURAL SUPPORT.

E. SUPPORTS:

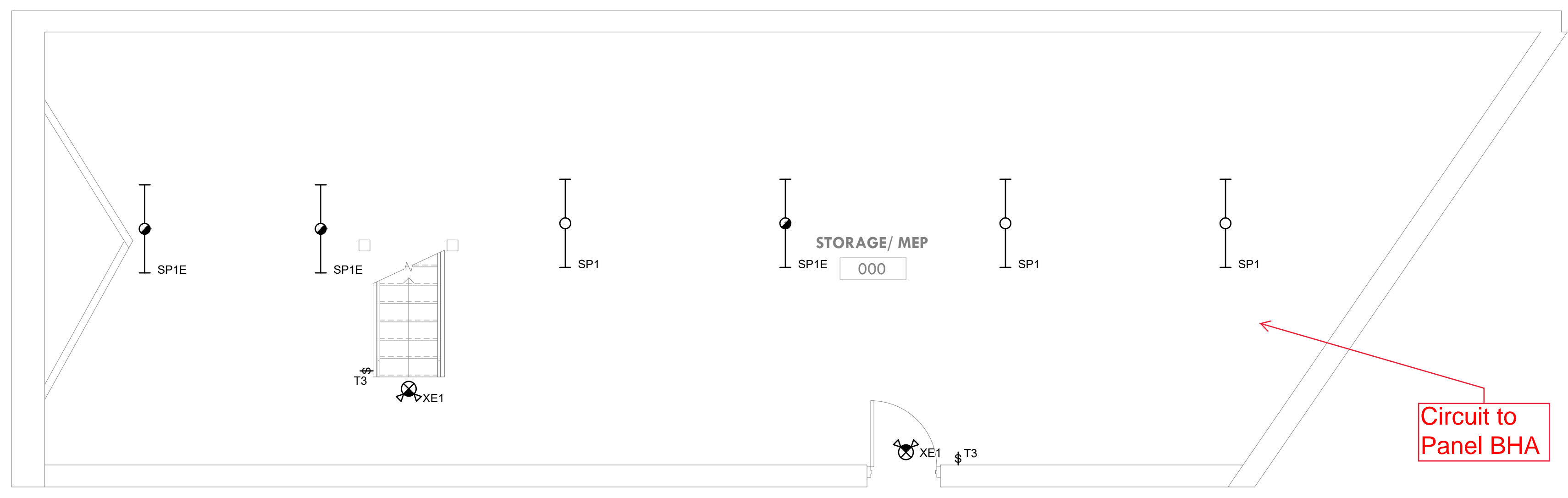
1. SIZED AND RATED FOR LUMINAIRE WEIGHT.

2. ABLE TO MAINTAIN LUMINAIRE POSITION AFTER CLEANING AND RELAMPING.

3. SUPPORT LUMINAIRES WITHOUT CAUSING DEFLECTION OF FINISHED SURFACE.

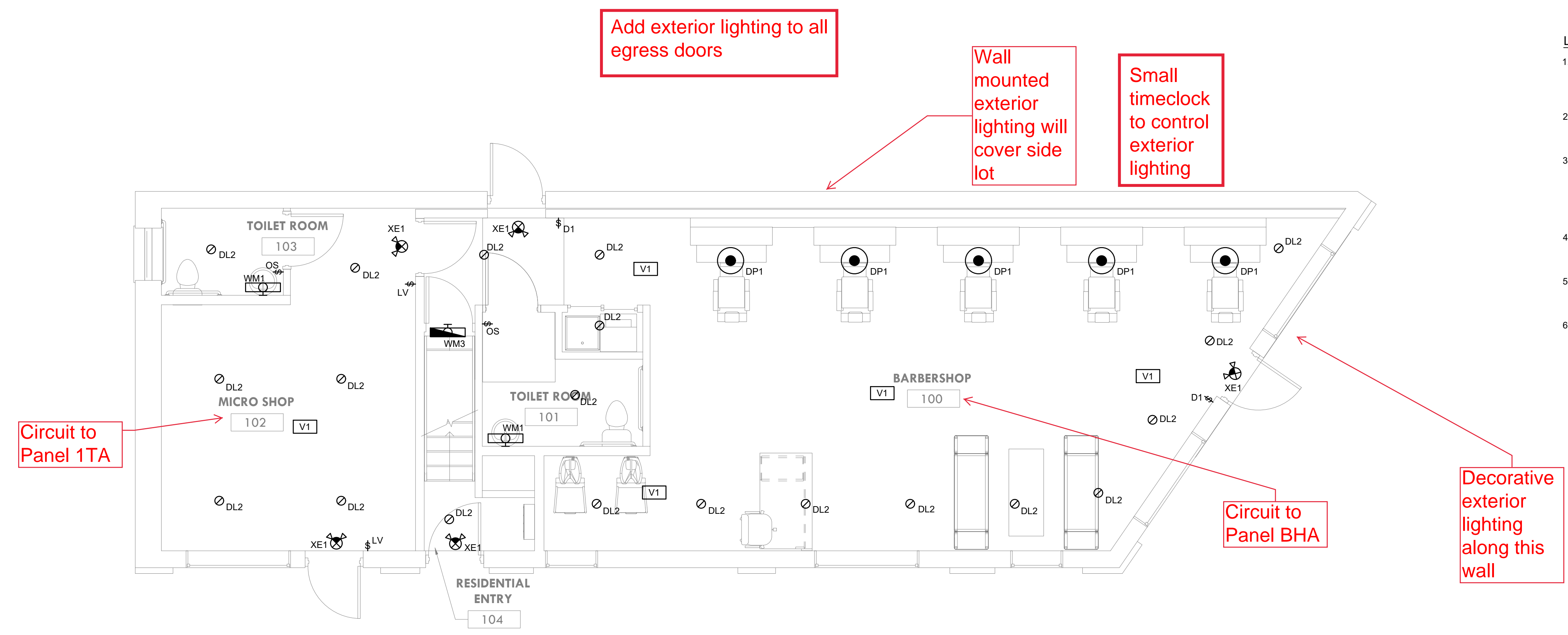
4. LUMINAIRE-MOUNTING DEVICES SHALL BE CAPABLE OF SUPPORTING A HORIZONTAL FORCE OF 10

- LIGHTING GENERAL NOTES:**
1. FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE. PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
 2. PROVIDE EXPANSION FITTINGS AS REQUIRED AT ALL EXPANSION JOINTS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
 3. WHERE EXPOSED, BRANCH CIRCUITS SHALL BE RUN IN EMT CONDUIT ROUTED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE. WHERE CONCEALED WITHIN WALLS OR ABOVE CEILING, MC CABLE IS PERMISSIBLE. EXPOSED CONDUIT SHALL BE PAINTED PER THE ARCHITECTURAL DRAWINGS.
 4. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES AND EXACT LIGHTING FIXTURE LOCATIONS AND DIMENSIONAL INFORMATION.
 5. EXIT SIGNS AND BATTERY PACKS SHALL BE CIRCUITED TO AN UNSWITCHED HOT LEG OF THE CIRCUIT NOTED AHEAD OF LOCAL CONTROLS.
 6. OCCUPANCY / VACANCY SENSORS HAVE BEEN LOCATED PER THE RECOMMENDED SPACING OF THE BASIS OF DESIGN PRODUCTS. THE EXACT LOCATIONS AND QUANTITY OF SENSORS SHALL BE VERIFIED BY THE MANUFACTURER FOR PRODUCTS SUBMITTED AS EQUALS.



1 BASEMENT LIGHTING PLAN
E-201 1/4" = 1'-0"

- LIGHTING GENERAL NOTES:**
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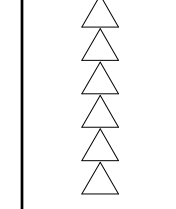


2 FIRST FLOOR LIGHTING PLAN
E-201 1/4" = 1'-0"

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Revisions:



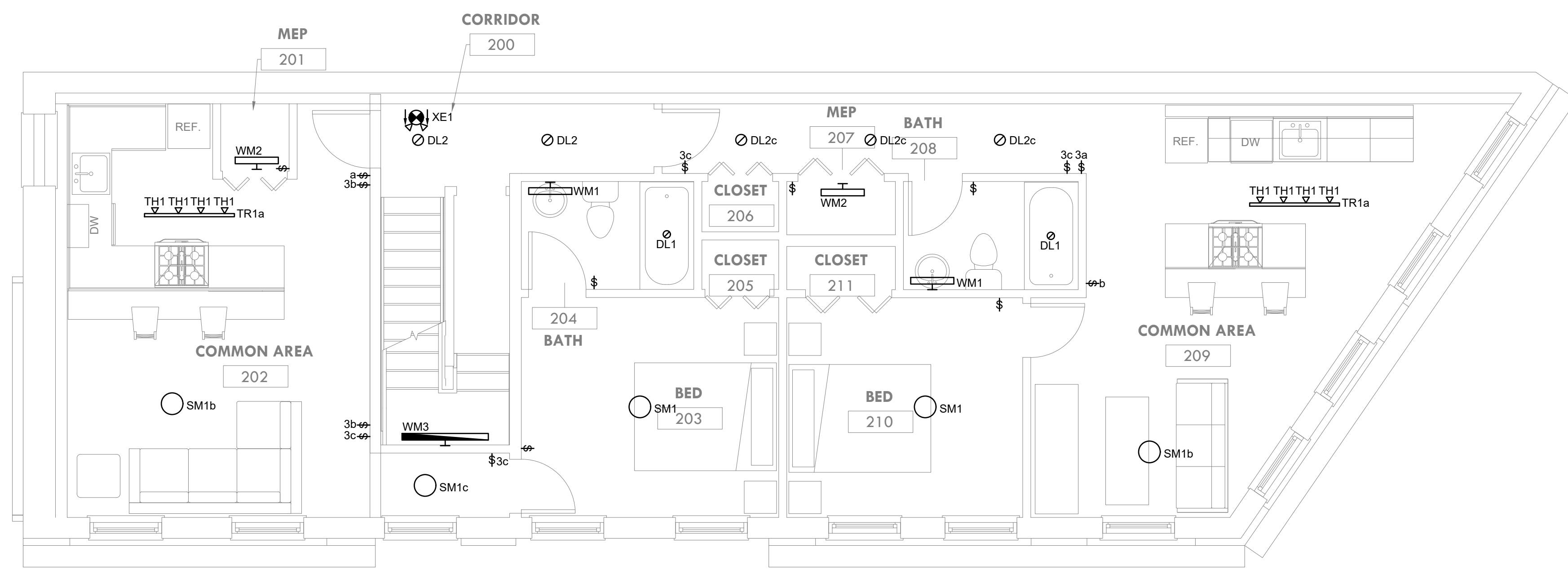
Date:
April 16, 2021

Project Number:
2020-06

Owner / Client:
TomTom24 Development, LLC

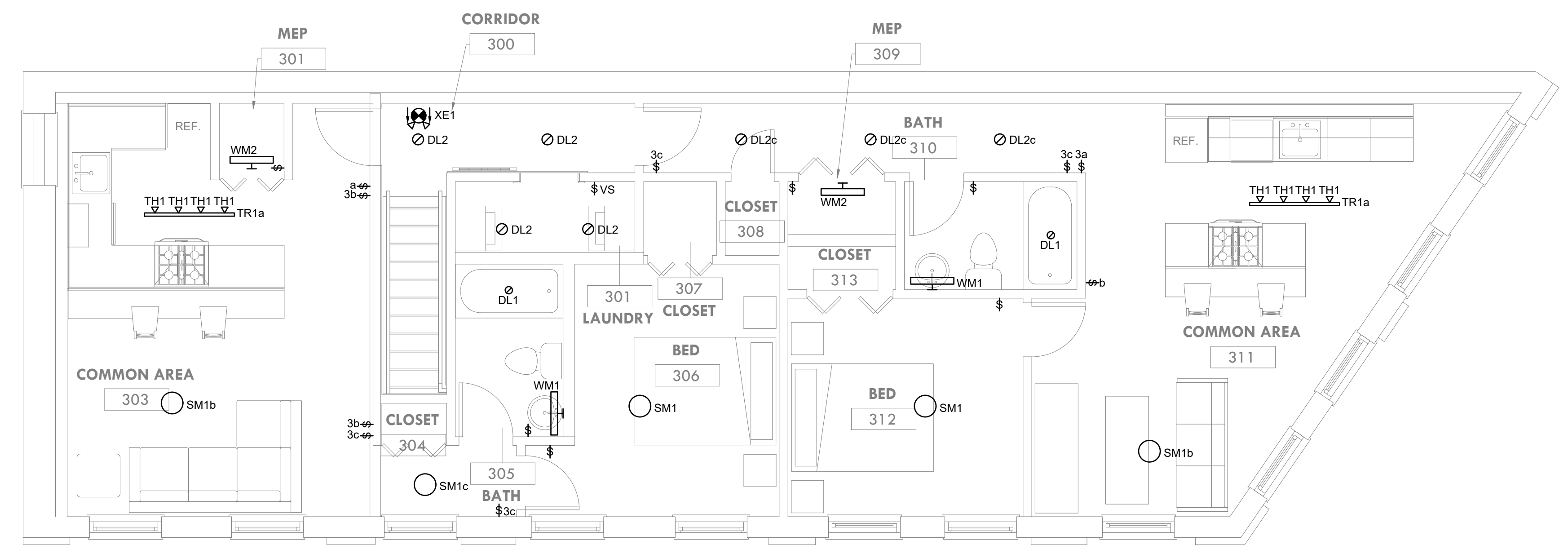
Drawing Title:
Basment & First Floor Lighting Plans
Scale: **As indicated**
Drawing Number:

E-201



- LIGHTING GENERAL NOTES:**
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1 SECOND FLOOR LIGHTING PLAN
E-202 1/4" = 1'-0"



- LIGHTING GENERAL NOTES:**
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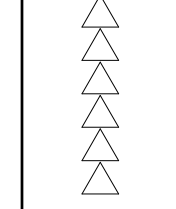
2 THIRD FLOOR LIGHTING PLAN
E-202 1/4" = 1'-0"

Building Renovation
for
Big Tom's Barbershop
2178 Centre Avenue, Pittsburgh, PA 15219

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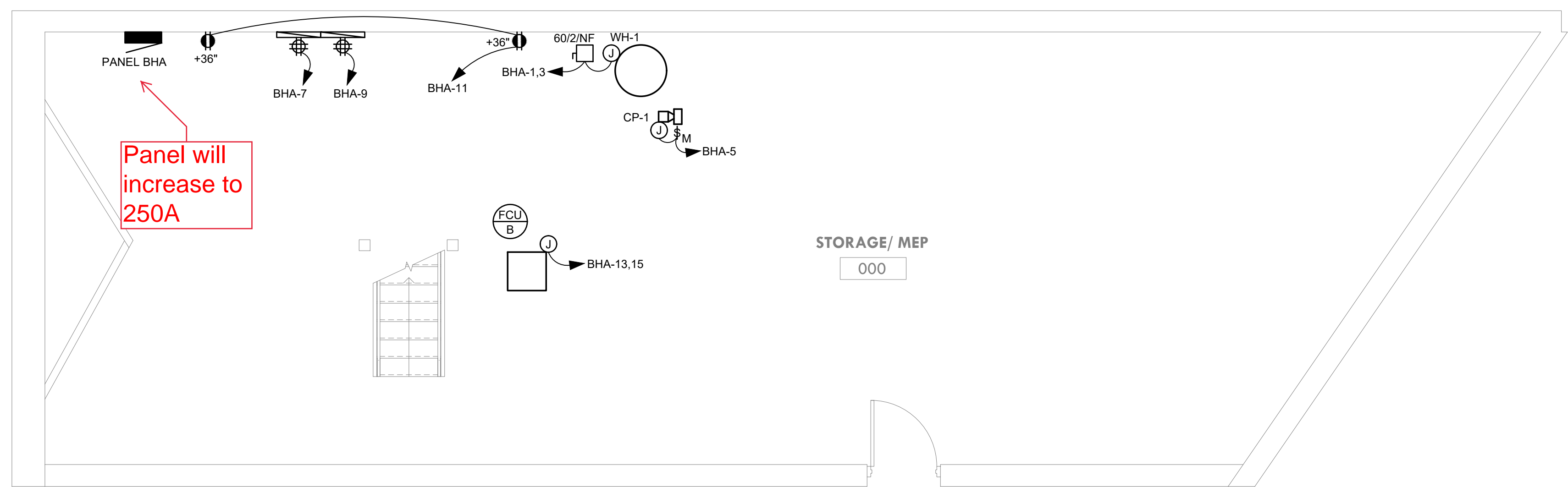
Project Number:
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:
**Second & Third
Floor Lighting Plans**

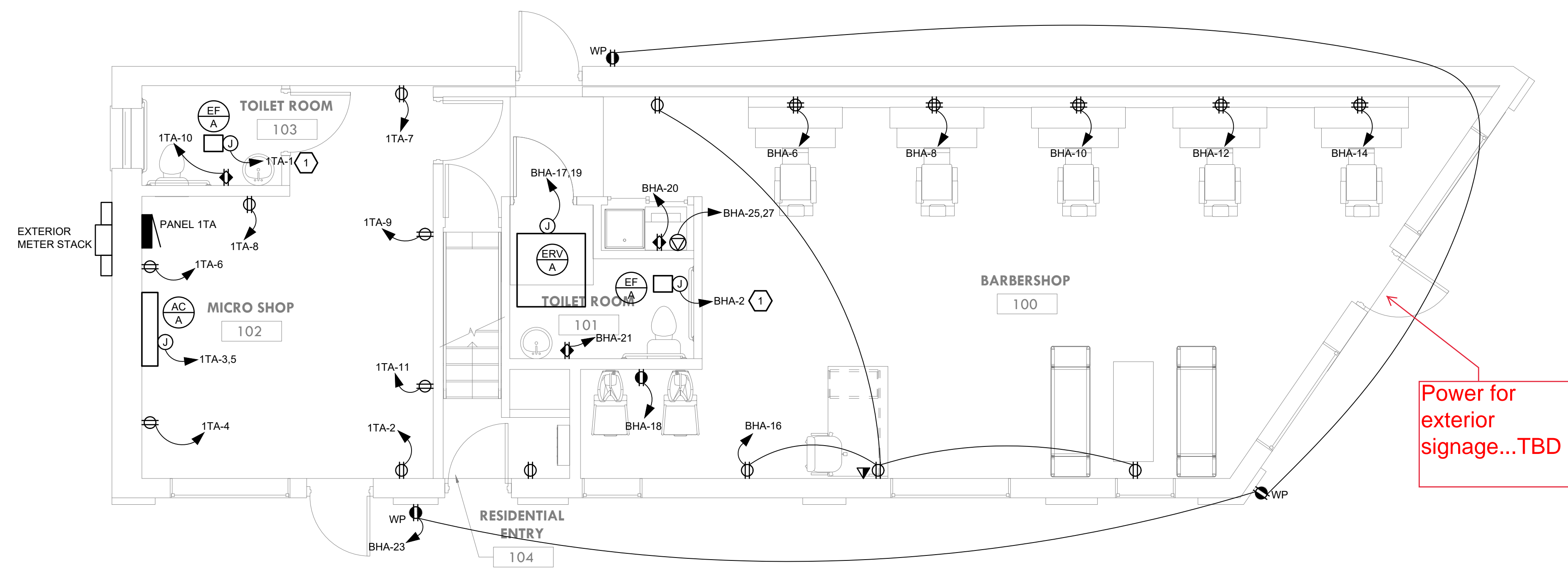
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Drawing Number:

E-202



- POWER GENERAL NOTES:**
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 4. COORDINATE EXACT LOCATIONS OF MECHANICAL EQUIPMENT WITH DIVISION 23. UNLESS NOTED OTHERWISE, MECHANICAL EQUIPMENT DISCONNECTS AND VARIABLE FREQUENCY DRIVES SHALL BE FURNISHED BY DIVISION 23, INSTALLED AND WIRED BY EC. THESE DISCONNECTS HAVE NOT BEEN SHOWN ON THIS PLAN.
 5. EC SHALL NOT HAVE MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A CONDUIT WITHOUT DERATING AMPACITIES PER THE NEC.
 6. WHERE DEVICES ARE INCLUDED AND DIMENSIONED ON THE ARCHITECTURAL DRAWINGS, THOSE LOCATIONS SHALL GOVERN. WHERE DEVICES ARE OMITTED FROM THE ARCHITECTURAL DRAWINGS, INSTALL IN ACCORDANCE WITH THIS PLAN AND THE DEFAULT LOCATIONS IN THE ELECTRICAL SPECIFICATIONS. ALL DEVICES SHALL BE INSTALLED PER ADA. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO VERIFY EXACT DEVICE LOCATIONS. WHERE DEVICES ARE INSTALLED IN THE FIELD AND DIFFER FROM DESIGN DOCUMENT DIMENSIONS, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CORRECT DEVICE LOCATIONS TO MATCH CONSTRUCTION DOCUMENTS, AT NO COST TO THE OWNER.

1 BASEMENT POWER PLAN
E-301 1/4" = 1'-0"



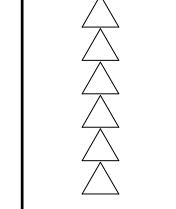
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- POWER KEY NOTES:** (#)
1. EF-A SHALL BE CIRCUITED TO THE SAME CIRCUIT AS THE LIGHTING IN THIS SPACE AND SHALL BE CONTROLLED VIA THE LIGHT SWITCH IN THIS SPACE.

Seal:

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Revisions:



Date:
April 16, 2021

Project Number:
2020-06

Owner / Client:
TomTom24 Development, LLC

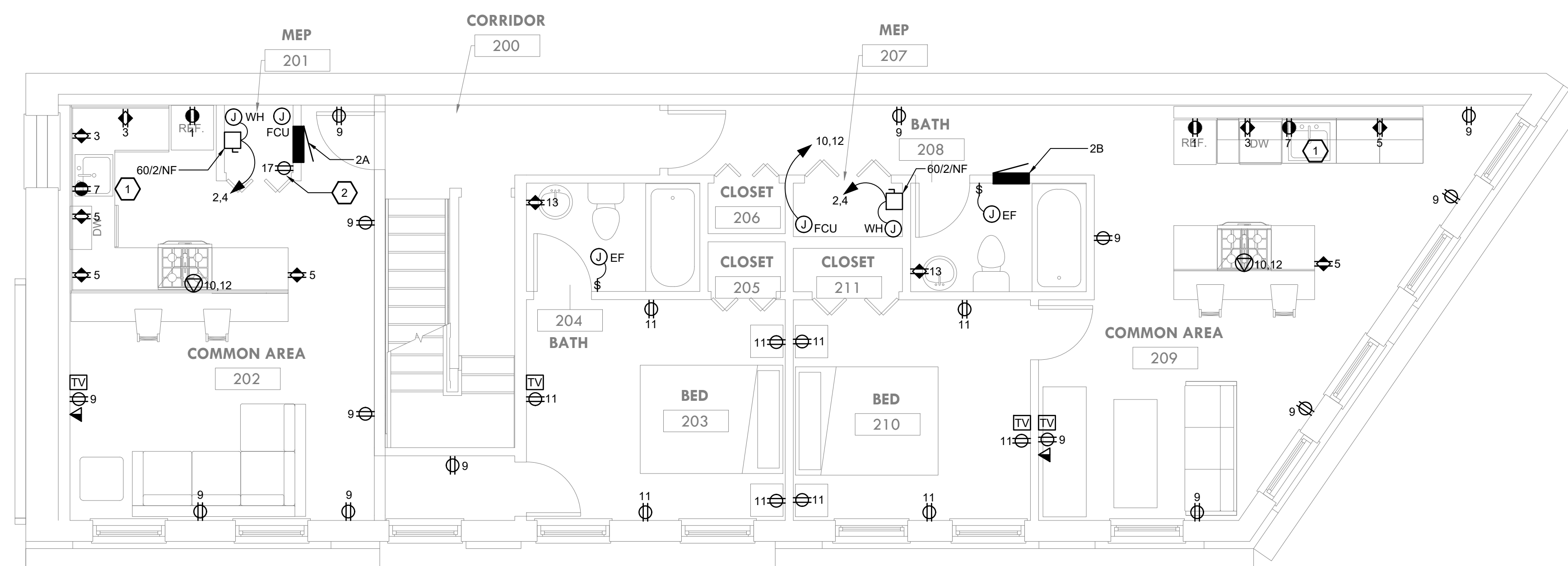
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Basment & First Floor Power Plans

Scale: **As indicated**

Drawing Number:

E-301

2 FIRST FLOOR POWER PLAN
E-301 1/4" = 1'-0"



1 SECOND FLOOR POWER PLAN
E-302 1/4" = 1'-0"

POWER GENERAL NOTES:

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7. UNLESS OTHERWISE NOTED, ALL CIRCUIT NUMBERS CORRESPOND TO THE LOAD CENTER LOCATED WITHIN THE UNIT.

POWER KEY NOTES: (#)

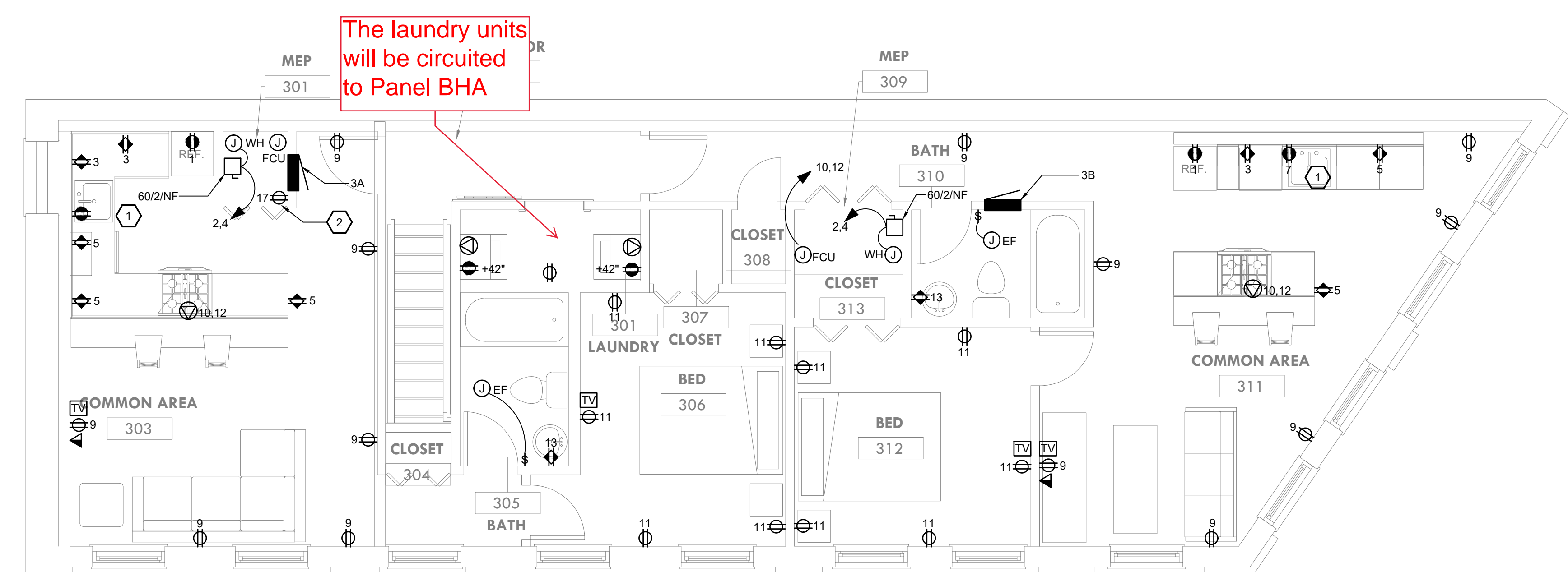
1. RECEPTACLE SERVING DISHWASHER SHALL BE MOUNTED WITHIN CASEWORK UNDER SINK TO MAINTAIN ACCESSIBILITY FOR GFCCI TESTING.
2. CABLE/TELE/DATA ENCLOSURE BY CABLE PROVIDER. PROVIDE 3/4" CONDUIT WITH PULL STRING FROM ELECTRICAL CLOSET TO ENCLOSURE LOCATION. VERIFY FINAL LOCATION WITH CABLE PROVIDER.

PROVIDE UL LISTED TAMPER-RESISTANT RECEPTACLES WHICH ARE REQUIRED IN DWELLINGS FOR ALL 125 VOLT, 15 AND 20 AMPERE RECEPTACLES IN AREAS SPECIFIED IN NEC ARTICLE 210.52. THE LOCATIONS IN 210.52 INCLUDE BUT ARE NOT LIMITED TO:

- BEDROOMS
- BALCONIES, DECKS, PORCHES,
- BATHROOMS
- COUNTERTOPS
- DENS
- DINING ROOMS
- FAMILY ROOMS
- HALLWAYS
- KITCHENS
- LAUNDRY AREAS
- LIVING ROOMS
- OUTDOORS

Possible electrical connection for garbage disposal in all apt units

6 electrical connections to mechanical equipment on the roof



2 THIRD FLOOR POWER PLAN
E-302 1/4" = 1'-0"

POWER GENERAL NOTES:

1. FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE. PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
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POWER KEY NOTES: (#)

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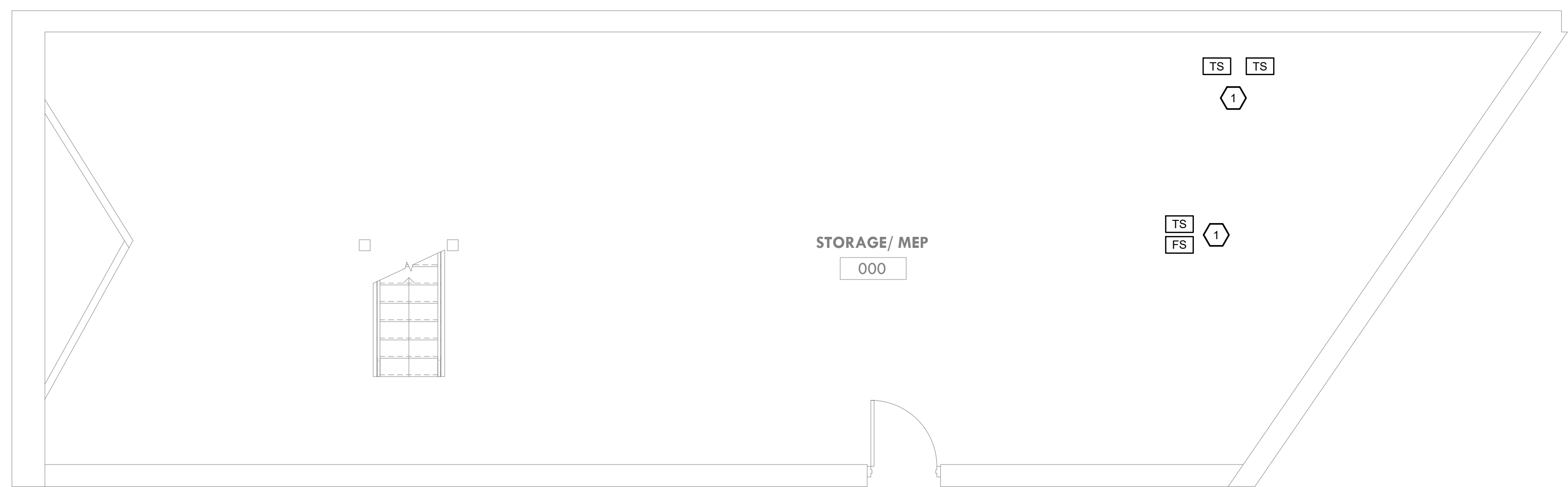
Project Number:
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:
Second & Third Floor Power Plans

Scale: **As indicated**
Drawing Number:

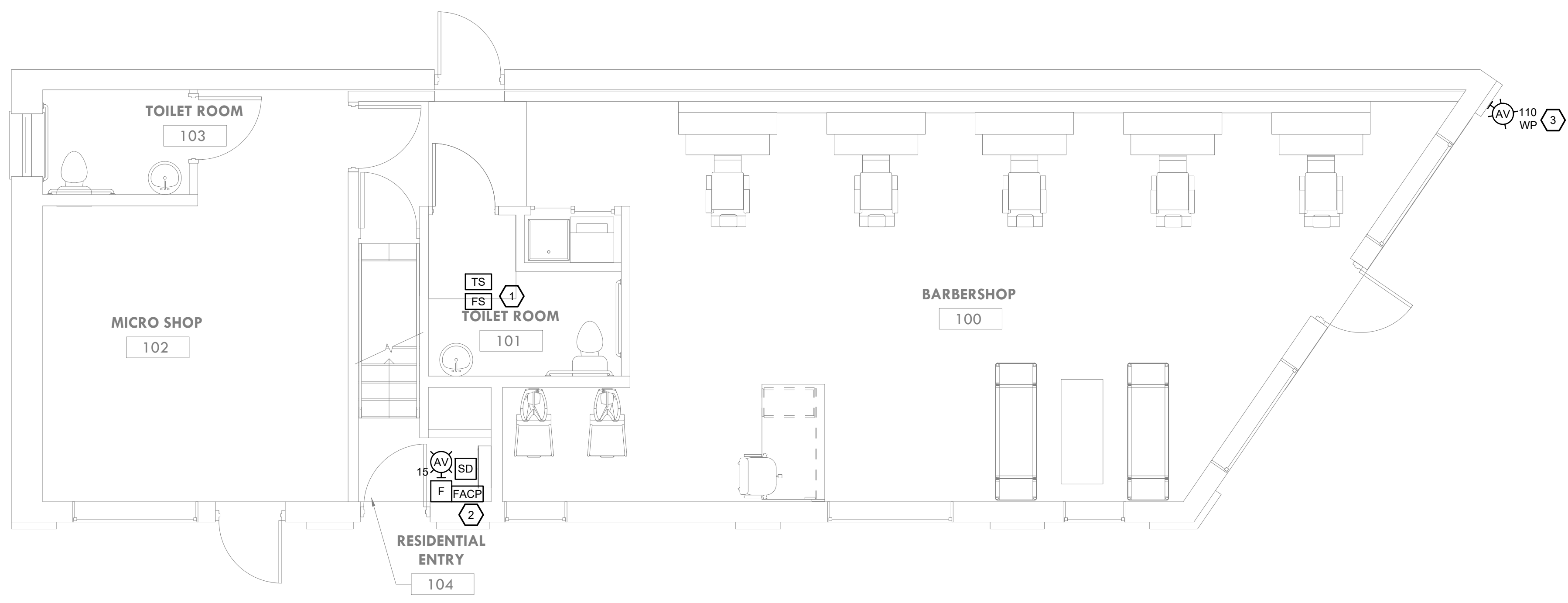
E-302



- FIRE ALARM GENERAL NOTES:**
- REFER TO PARTIAL FIRE ALARM RISER DIAGRAM 2/E602 FOR GENERAL FIRE ALARM SYSTEM NOTES.
 - FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE. PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
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 - THE COLOR OF FIRE ALARM NOTIFICATION DEVICES SHALL BE VERIFIED WITH ARCHITECT PRIOR TO PROCUREMENT.
 - THE EXACT LOCATION OF ALL DEVICES AND ASSOCIATED EQUIPMENT SHALL BE LOCATED PER NFPA, ADA, AND ALL OTHER CODES HAVING JURISDICTION.

- FIRE ALARM KEY NOTES: (#)**
- COORDINATE THE EXACT QUANTITY OF TAMPER, FLOW, AND PRESSURE SWITCH CONNECTIONS, AS APPLICABLE, WITH DIVISION 21 PRIOR TO PROCUREMENT.

1 BASEMENT FIRE ALARM PLAN
E-401 1/4" = 1'-0"



- FIRE ALARM GENERAL NOTES:**
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- FIRE ALARM KEY NOTES: (#)**
- COORDINATE THE EXACT QUANTITY OF TAMPER, FLOW, AND PRESSURE SWITCH CONNECTIONS, AS APPLICABLE, WITH DIVISION 21 PRIOR TO PROCUREMENT.
 - COORDINATE LOCATION OF MOUNTING OF SUPERVISORY ALARM CONTROL PANEL WITH AHJ AND OWNER PRIOR TO ROUGH-IN.
 - PROVIDE WEATHERPROOF FIRE ALARM NOTIFICATION DEVICE OVER THE FIRE DEPARTMENT CONNECTION. WHERE REQUIRED BY THE LOCAL JURISDICTION, ALSO PROVIDE A SPRINKLER BELL. COORDINATE EXACT LOCATION WITH DIVISION 21.

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Revisions:
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Date:
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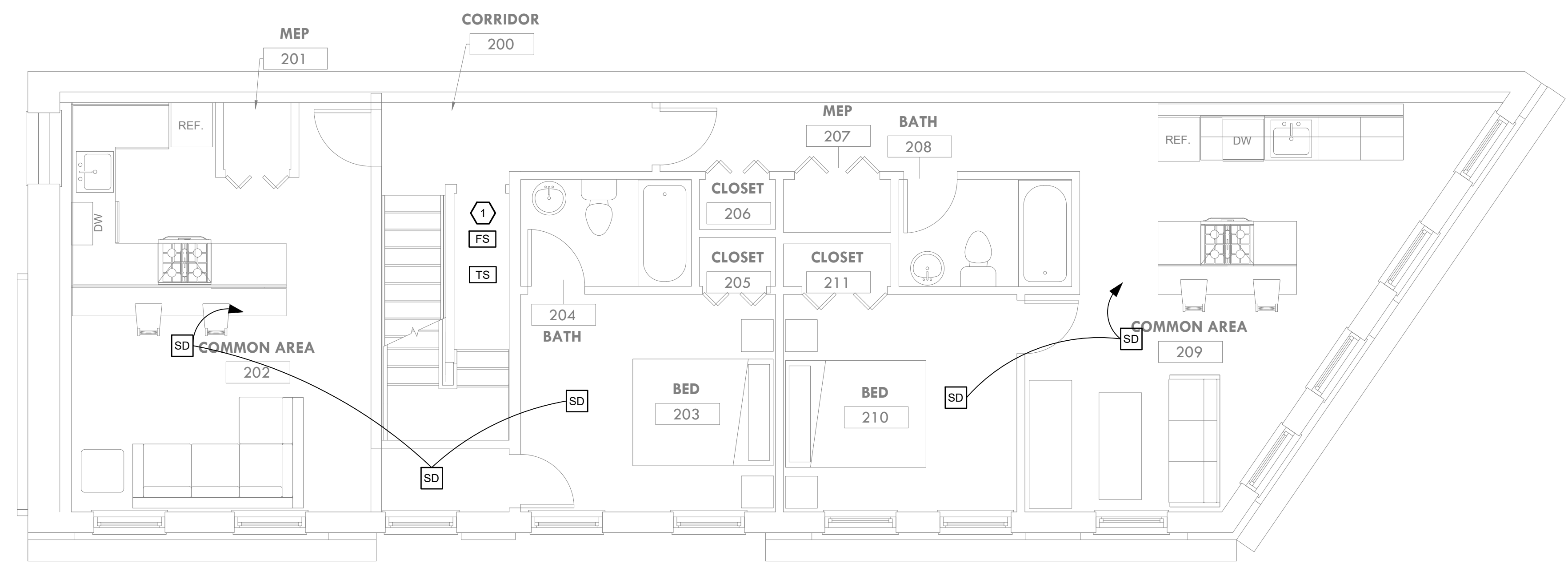
Project Number:
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:
**Basment &
First Floor
Fire Alarm Plans**
Scale: **As indicated**
Drawing Number:

E-401

2 FIRST FLOOR FIRE ALARM PLAN
E-401 1/4" = 1'-0"



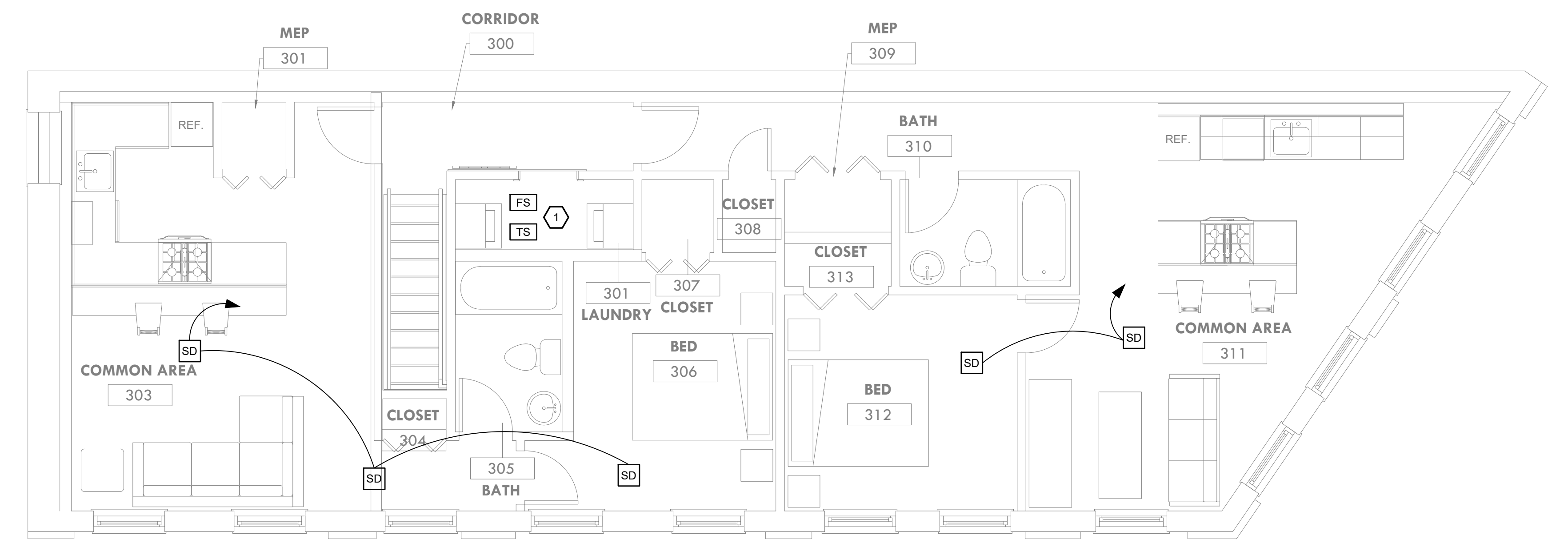
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4. WHERE EXPOSED, BRANCH CIRCUITS SHALL BE RUN IN EMT CONDUIT ROUTED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE. WHERE CONCEALED WITHIN WALLS OR ABOVE CEILING, MC CABLE IS PERMISSIBLE. EXPOSED CONDUIT SHALL BE PAINTED PER THE ARCHITECTURAL DRAWINGS.
5. THE COLOR OF FIRE ALARM NOTIFICATION DEVICES SHALL BE VERIFIED WITH ARCHITECT PRIOR TO PROCUREMENT.
6. THE EXACT LOCATION OF ALL DEVICES AND ASSOCIATED EQUIPMENT SHALL BE LOCATED PER NFPA, ADA, AND ALL OTHER CODES HAVING JURISDICTION.

FIRE ALARM KEY NOTES: (#)

1. COORDINATE THE EXACT QUANTITY OF TAMPER, FLOW, AND PRESSURE SWITCH CONNECTIONS, AS APPLICABLE, WITH DIVISION 21 PRIOR TO PROCUREMENT.

1 SECOND FLOOR FIRE ALARM PLAN
E-402 1/4" = 1'-0"



FIRE ALARM GENERAL NOTES:

1. REFER TO PARTIAL FIRE ALARM RISER DIAGRAM 2/E602 FOR GENERAL FIRE ALARM SYSTEM NOTES.
2. FIRE STOP ALL FIRE RATED FLOORS, CEILINGS, AND WALLS AS REQUIRED BY CODE. PENETRATIONS INTO OR THROUGH FIRE RESISTANCE RATED WALLS SHALL COMPLY WITH IBC CHAPTER 7.
3. PROVIDE EXPANSION FITTINGS AS REQUIRED AT ALL EXPANSION JOINTS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
4. WHERE EXPOSED, BRANCH CIRCUITS SHALL BE RUN IN EMT CONDUIT ROUTED PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE. WHERE CONCEALED WITHIN WALLS OR ABOVE CEILING, MC CABLE IS PERMISSIBLE. EXPOSED CONDUIT SHALL BE PAINTED PER THE ARCHITECTURAL DRAWINGS.
5. THE COLOR OF FIRE ALARM NOTIFICATION DEVICES SHALL BE VERIFIED WITH ARCHITECT PRIOR TO PROCUREMENT.
6. THE EXACT LOCATION OF ALL DEVICES AND ASSOCIATED EQUIPMENT SHALL BE LOCATED PER NFPA, ADA, AND ALL OTHER CODES HAVING JURISDICTION.

FIRE ALARM KEY NOTES: (#)

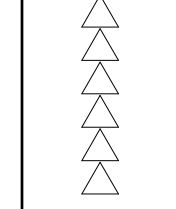
1. COORDINATE THE EXACT QUANTITY OF TAMPER, FLOW, AND PRESSURE SWITCH CONNECTIONS, AS APPLICABLE, WITH DIVISION 21 PRIOR TO PROCUREMENT.

2 THIRD FLOOR FIRE ALARM PLAN
E-402 1/4" = 1'-0"

Seal:

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50% CD

Revisions:



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April 16, 2021

Project Number:
2020-06

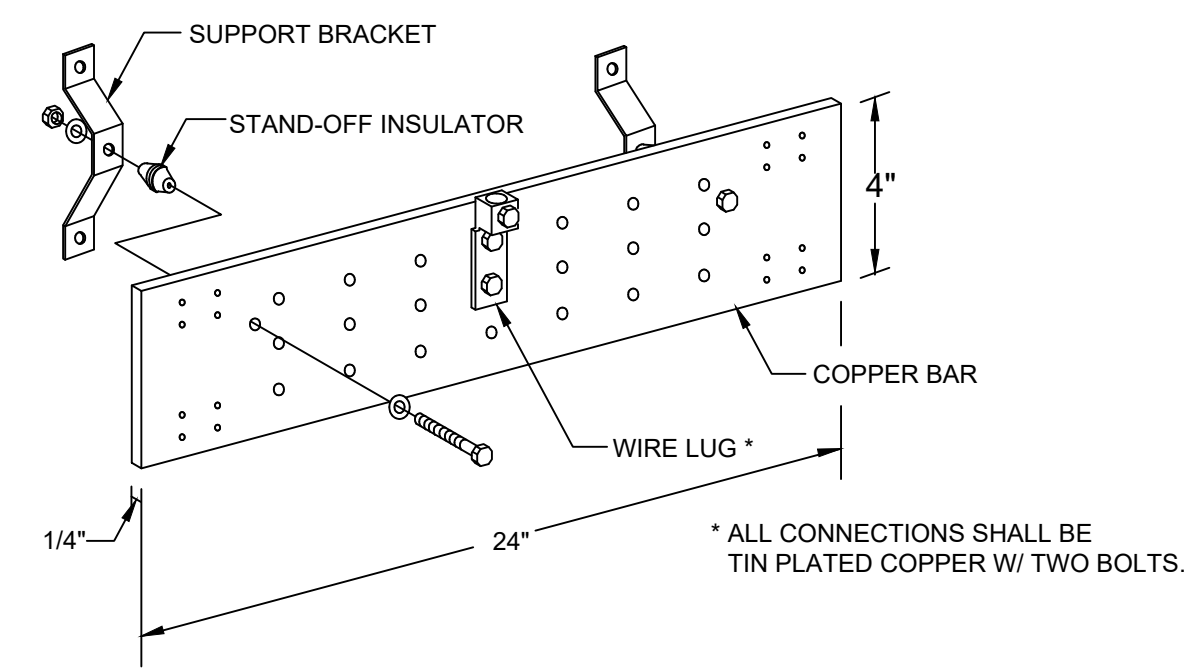
Owner / Client:
TomTom24 Development, LLC

Drawing Title:
Second & Third Floor Fire Alarm Plans

Scale: **As indicated**

Drawing Number:

E-402



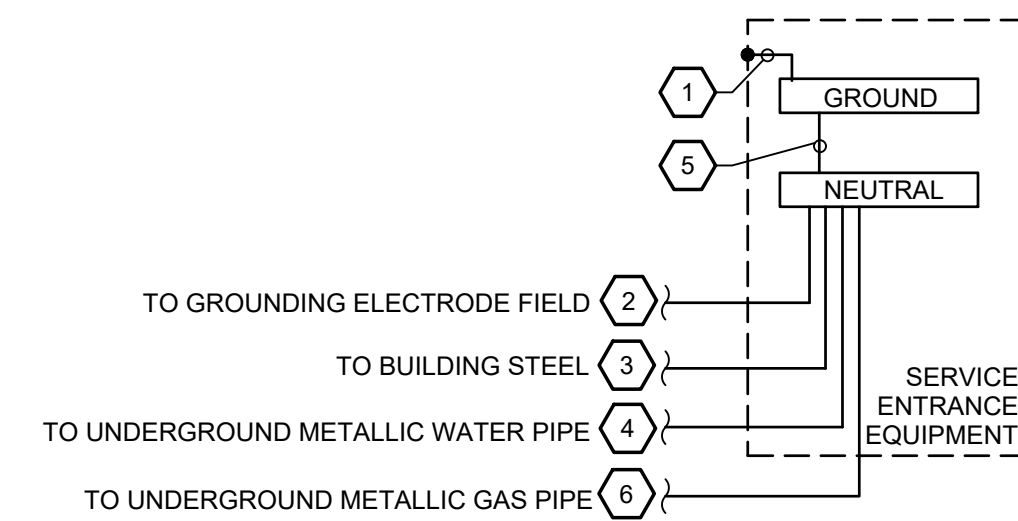
1 GROUND BAR DETAIL MGB | TMGB | TGB
E-501 NOT TO SCALE

GROUNDING SYSTEM GENERAL NOTES:

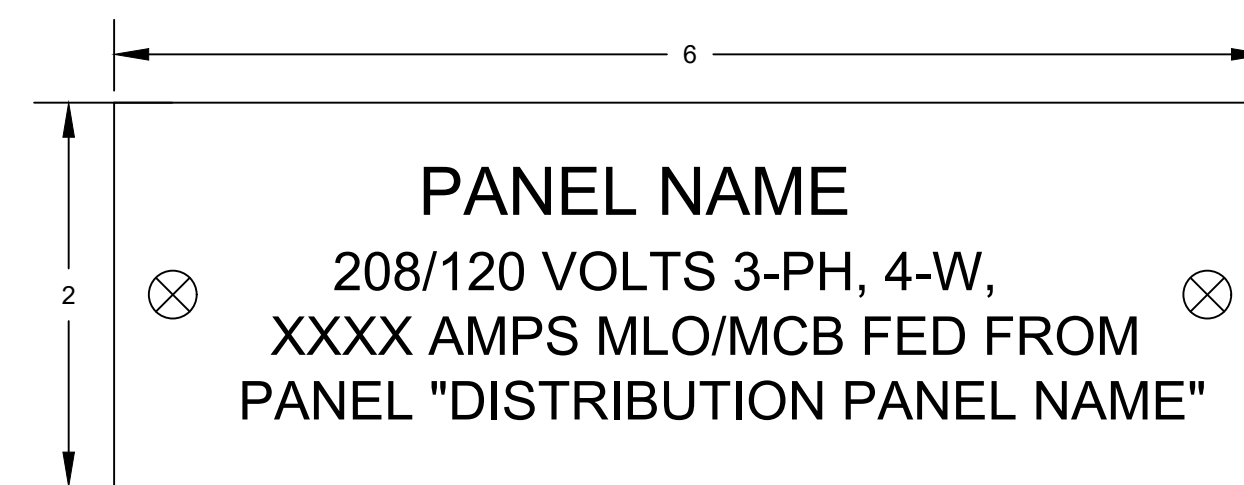
1. REFER TO ELECTRICAL SPECIFICATIONS AND RISER DIAGRAM FOR ADDITIONAL INFORMATION.
2. ALL BUILDING STEEL COMPONENTS SHALL BE EFFECTIVELY BONDED TOGETHER.
3. ALL CONDUCTORS INDICATED ARE COPPER.

GROUNDING SYSTEM KEY NOTES: #

1. BONDING CONDUCTOR TO GROUND BUS AND ENCLOSURE, SIZED PER NEC.
2. GROUNDING ELECTRODE CONDUCTOR TO A GROUNDING ELECTRODE FIELD PER NEC 250.52, SIZED PER NEC.
3. BONDING JUMPER TO METAL FRAME OF BUILDING STRUCTURE PER NEC 250.52, SIZED PER NEC.
4. BONDING JUMPER TO METAL UNDERGROUND WATER PIPE PER NEC 250.52, SIZED PER NEC.
5. PROVIDE NEUTRAL TO GROUND BONDING JUMPER SIZED PER NEC.
6. BONDING JUMPER TO A METAL UNDERGROUND GAS PIPE PER NEC 250.104(B), SIZED PER NEC.



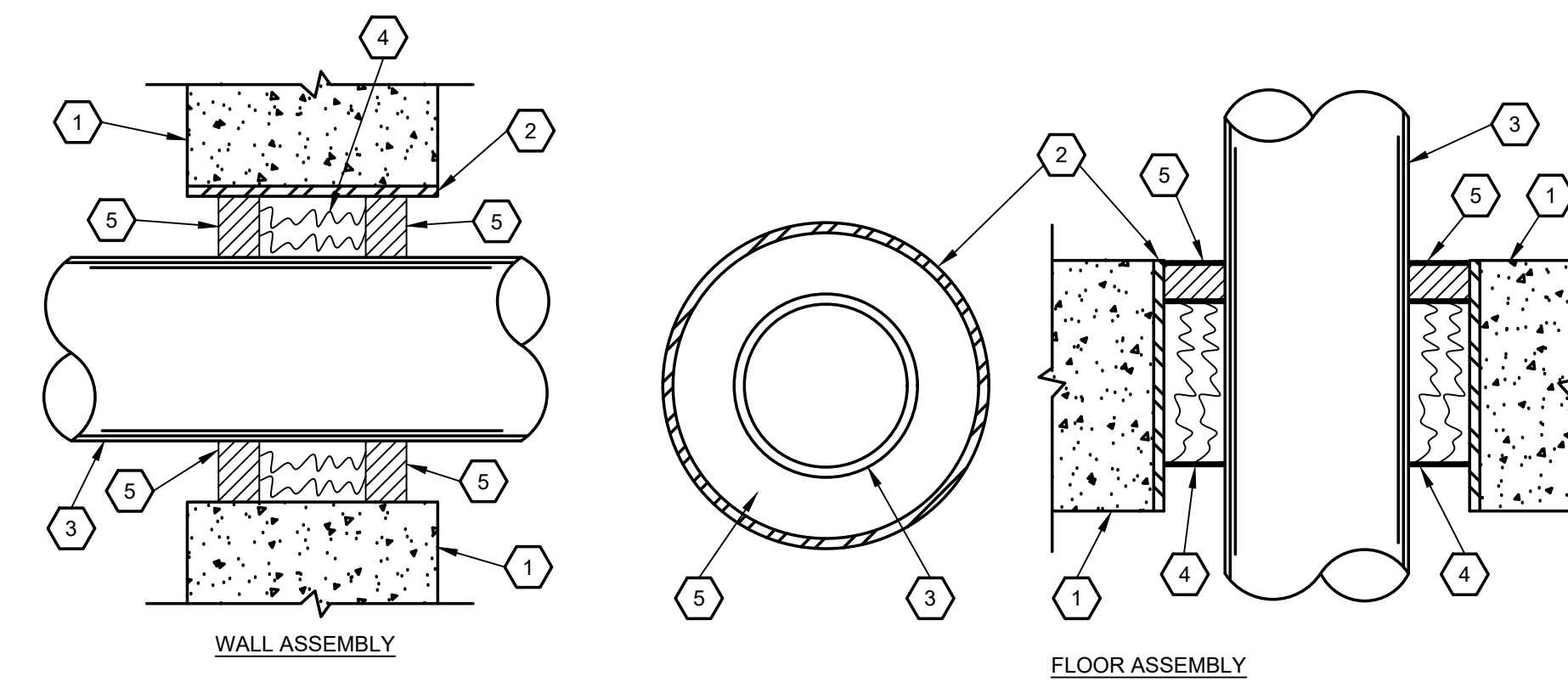
2 GROUNDING RISER DIAGRAM
E-501 NOT TO SCALE



NOTES:

1. PANEL NAME SHALL HAVE A MINIMUM LETTER HEIGHT OF 3/8". ALL OTHER TEXT SHALL HAVE A MINIMUM LETTER HEIGHT OF 1/4".
2. NAMEPLATE SHALL BE MACHINE ENGRAVED, LAMINATED PLASTIC, WITH WHITE LETTERING. BACKGROUND COLOR SHALL BE BLACK.
3. NAMEPLATE SHALL BE ATTACHED WITH RIVETS OR SELF TAPPING SCREWS.
4. DIMENSIONS INDICATED ARE MINIMUM DIMENSIONS. PROVIDE LARGER NAMEPLATE IF REQUIRED TO FIT ALL SPECIFIED INFORMATION ON NAMEPLATE.
5. "X" INDICATES FIELD TO BE FILLED IN PER PANEL SCHEDULE.

3 ELECTRICAL EQUIPMENT NAMEPLATE DETAIL
E-501 NOT TO SCALE



KEYED NOTES: #

1. FLOOR OR WALL ASSEMBLY MINIMUM 5" THICK NORMAL WEIGHT CONCRETE FLOOR OR WALL OR MINIMUM 7-5/8" THICK MASONRY WALL HAVING A MINIMUM 2 HOUR FIRE RESISTIVE RATING WITH A NOMINAL 6" DIAMETER OPENING.
2. STEEL PIPE SLEEVE (OPTIONAL) NOMINAL 6" DIAMETER SCHEDULE 40 OR HEAVIER STEEL PIPE SLEEVE. (2 TRADE SIZES LARGER THAN CONDUIT).
3. STEEL OR EMT CONDUIT NOMINAL 4" DIAMETER CENTERED THROUGH THE OPENING.
4. FORMING MATERIAL MINERAL WOOL, MINIMUM DENSITY OF 4.4 PCF FIRMLY PACKED WITHIN THE OPENING TO A NOMINAL THICKNESS OF 3" FOR FLOORS. FOR WALLS, THE MINERAL WOOL SHALL BE CENTERED IN THE OPENING.
5. FILL, VOID OR CAVITY MATERIAL* - FILL MATERIAL THAT IS TROWELED INTO THE OPENING TO A MINIMUM THICKNESS OF 1/2" IN ACCORDANCE WITH THE ACCOMPANYING INSTALLATION INSTRUCTIONS. IN WALLS, THE FILL MATERIAL SHALL BE INSTALLED ON BOTH SURFACES OF THE OPENING.

* BEARING THE "UL" CLASSIFICATION MARKING

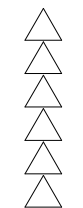
4 FIRE STOP DETAIL
E-501 NOT TO SCALE

Building Renovation
for
Big Tom's Barbershop
2178 Centre Avenue, Pittsburgh, PA 15219

Seal:

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Date:
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Owner / Client:
TomTom24 Development, LLC

Drawing Title:
Electrical Details

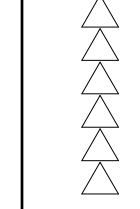
Scale: **As indicated**
Drawing Number:

E-501

Seal:

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50% CD

Revisions:



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TomTom24 Development, LLC

Drawing Title:
Electrical Riser Diagram

Scale: **As indicated**
Drawing Number:

E-601

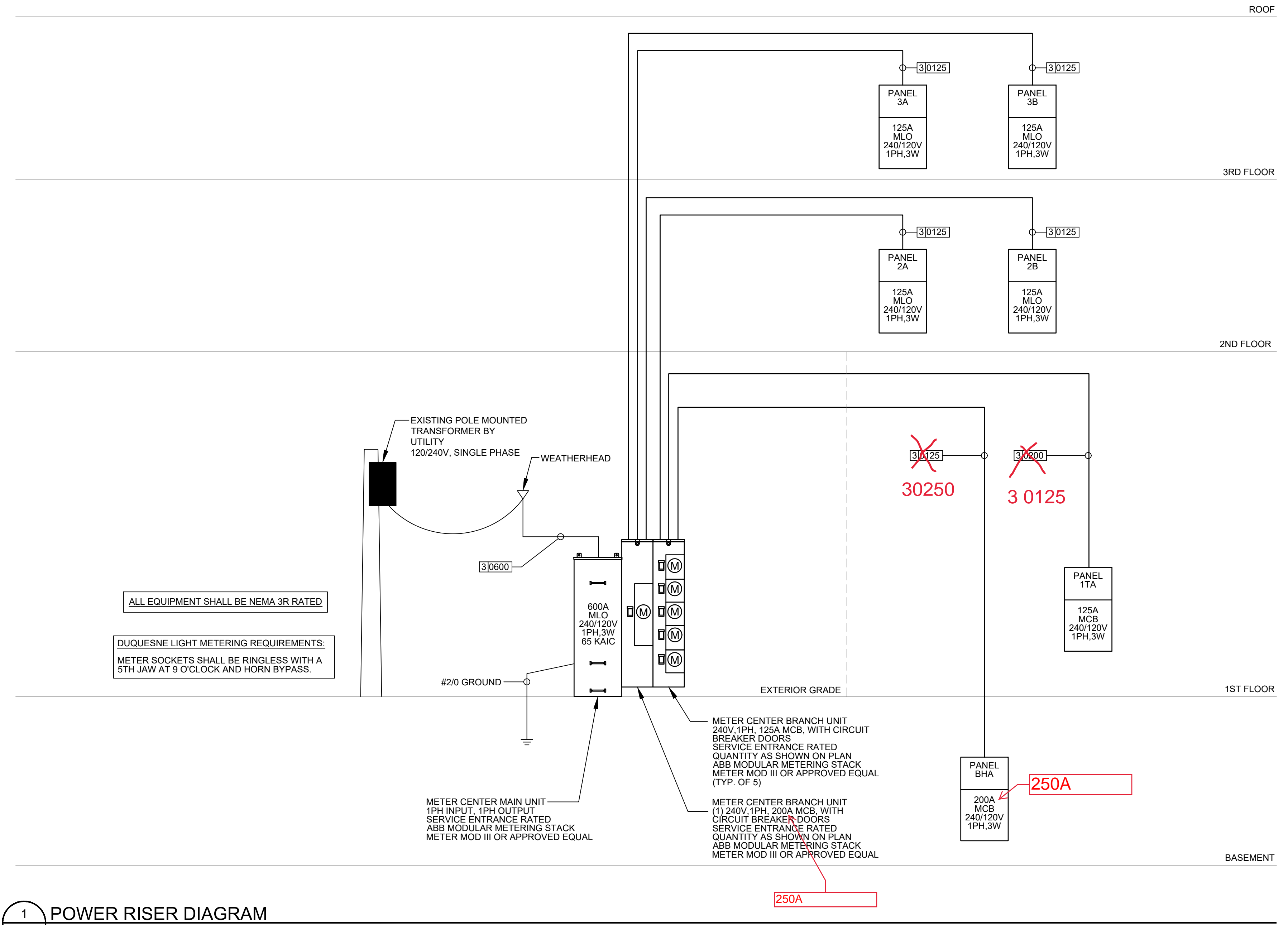
GENERAL NOTES:

- THE RISER DIAGRAM IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO SHOW SYSTEM CONNECTIVITY AND FEEDER SIZES. REFER TO POWER PLANS FOR EQUIPMENT LAYOUTS AND LOCATIONS. ELECTRICAL CONTRACTOR SHALL VERIFY THAT THE SUBMITTED EQUIPMENT DIMENSIONS FIT WITHIN THE CORRESPONDING ELECTRICAL SPACE(S). ALL EQUIPMENT CLEARANCES AND MOUNTING HEIGHTS REQUIRED BY THE NEC SHALL BE MAINTAINED.
- ELECTRICAL CONTRACTOR SHALL COORDINATE SITE WORK WITH CIVIL SITE PLANS, WHERE APPLICABLE, AND EXISTING SITE CONDITIONS PRIOR TO THE COMMENCEMENT OF WORK.
- THE ELECTRICAL SERVICE INSTALLATION AND METERING STRATEGY SHALL BE APPROVED BY THE UTILITY COMPANY PRIOR TO THE COMMENCEMENT OF WORK. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH UTILITY RULES AND REGULATIONS.
- ELECTRICAL CONTRACTOR SHALL COORDINATE THE PROCUREMENT AND INSTALLATION OF ALL METERING EQUIPMENT WITH THE UTILITY, INCLUDING METERS, METER SOCKETS, METER TRANSOCKETS, INSTRUMENT CABINETS, CURRENT TRANSFORMERS (CT'S), AND VOLTAGE TRANSFORMERS (VT'S). THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL EQUIPMENT THAT IS THE RESPONSIBILITY OF THE "CUSTOMER" PER THE UTILITY'S SERVICE GUIDELINES.
- ELECTRICAL CONTRACTOR SHALL PROVIDE BUILDING MOUNTED WEATHERHEADS FOR THE OVERHEAD SERVICE. WEATHERHEADS SHALL BE LOCATED TO MINIMIZE THE DISTANCE TO THE SERVICE ENTRANCE EQUIPMENT OR METERING INSTALLATION. VERIFY EXACT LOCATION WITH UTILITY PRIOR TO INSTALLATION.
- ELECTRICAL CONTRACTOR SHALL PROVIDE SECONDARY SERVICE CONDUCTORS AND CONDUIT FROM THE WEATHERHEADS TO THE SERVICE ENTRANCE EQUIPMENT OR METERING INSTALLATION.
- UNDERGROUND CONDUIT SHALL BE RMC WITH RMC ELBOWS. WHERE APPROVED BY THE OWNER, SCHEDULE 80 PVC WITH RMC OR FIBERGLASS ELBOWS MAY BE SUBMITTED AS A VALUE ENGINEERING OPTION. UNDERGROUND FEEDER(S) SHALL BE CONCRETE ENCASED WHERE ROUTED UNDER PARKING LOTS OR DRIVE LANES. ELECTRICAL CONTRACTOR SHALL TRENCH AND BACKFILL FOR ALL UNDERGROUND PATHWAYS. UNDERGROUND CONDUIT SHALL BE A MINIMUM OF 36" BFG.
- EXPOSED EXTERIOR CONDUIT SHALL BE RMC. WHERE APPROVED BY THE OWNER, SCHEDULE 80 PVC MAY BE SUBMITTED AS A VALUE ENGINEERING OPTION. ALL EXTERIOR BUILDING MOUNTED CONDUIT SHALL BE PAINTED PER THE ARCHITECT'S SPECIFICATIONS.
- PROVIDE PULL BOXES WHERE REQUIRED PER NEC FOR CONDUIT BENDS.
- THE BASIS OF DESIGN MATERIAL FOR ALL EQUIPMENT BUSES IS COPPER.
- REFER TO THE GROUNDING RISER DIAGRAM E-2/501 FOR MORE INFORMATION ON THE BUILDING GROUNDING SYSTEM.

KEY NOTES: #

- COORDINATE WITH UTILITY THE PROCUREMENT AND INSTALLATION OF UTILITY METERS WITHIN RESIDENTIAL METER CENTER.

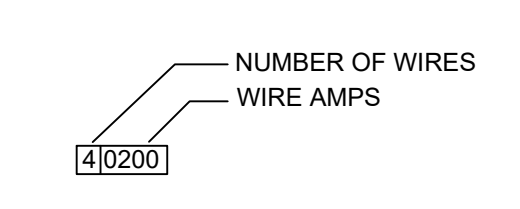
1 POWER RISER DIAGRAM
E601 NOT TO SCALE



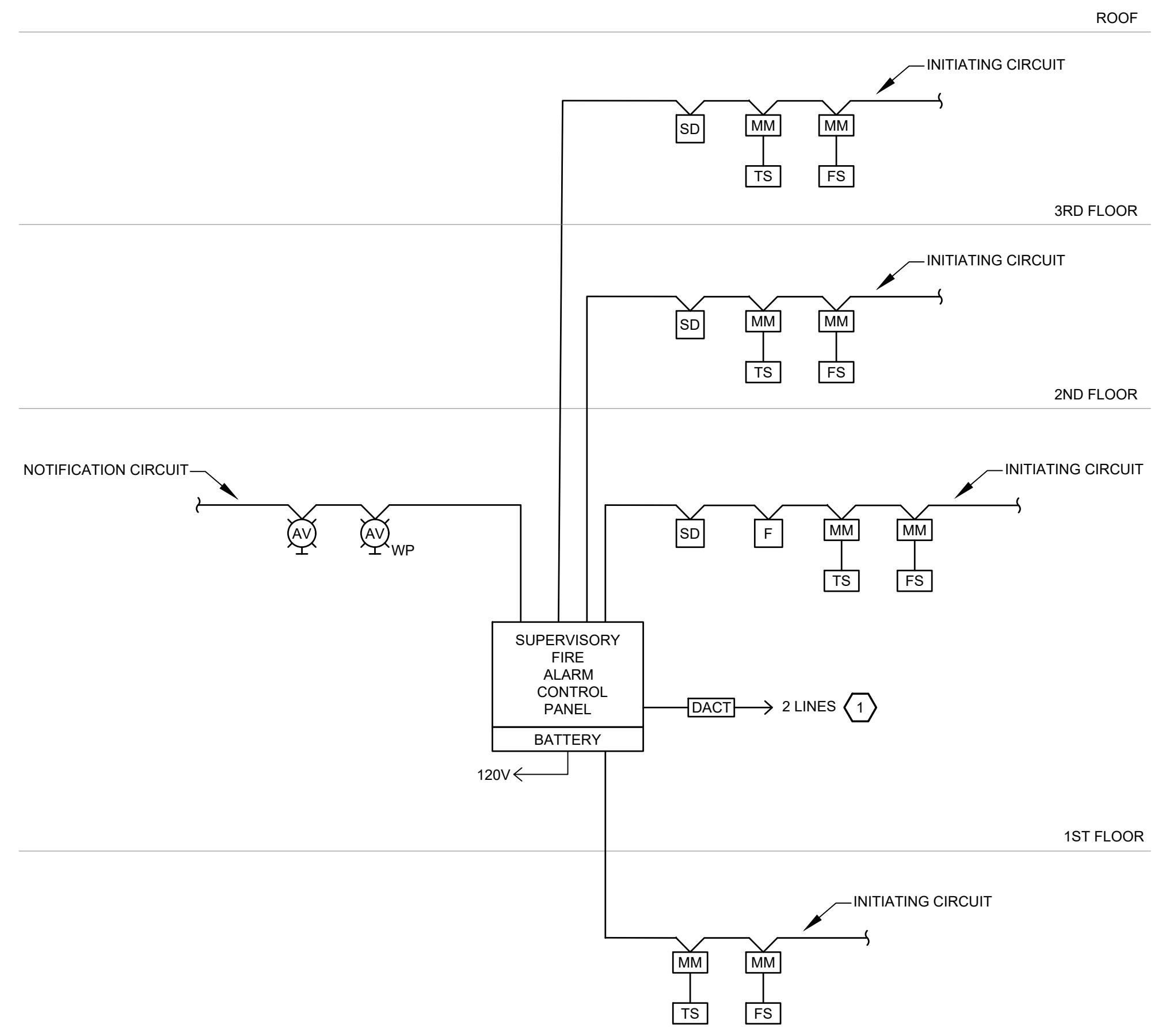
COPPER FEEDER SCHEDULE:

FEEDER TAG	FEEDER AMPS	FEEDER
30125	125	3#1, 1#6 GND - 1 1/2" C
30200	200	3#3/0, 1#6 GND - 2" C
30600	600	2 SETS EACH: 3-350 KCML - 3" C

FEEDER TAG KEY:



30250 250 3-250kcmil, 1#4G, 2-1/2" C



3 SUPERVISORY FIRE ALARM SYSTEM DIAGRAM
E003 NOT TO SCALE

- REFER TO FLOOR PLAN FOR QUANTITY AND LOCATION OF SYSTEM COMPONENTS. EXACT ARRANGEMENT AND QUANTITY OF DEVICES SHALL BE INDICATED ON THE SHOP DRAWINGS. PROVIDE COMPLETE RISER DIAGRAM AS PART OF SHOP DRAWINGS.
- VERIFY WIRING SIZES WITH THE FIRE ALARM SYSTEM MANUFACTURER AND INSTALL AS DIRECTED. DO NOT LOAD ANY CIRCUIT BEYOND 80% OF RATED CAPACITY. ADD CIRCUITS AS REQUIRED AND SUBMIT CALCULATIONS TO SUBSTANTIATE.
- FIRE ALARM WIRING SHALL BE ROUTED VIA A SEPARATE CONDUIT SYSTEM (3/4" MINIMUM). FIRE RATED MC CABLE IS ACCEPTABLE WHERE CONCEALED. MC CABLE SHALL BE COLORED RED. PROVIDE CONDUIT SLEEVES WITH ESCUTCHEON PLATES WHERE PASSING THROUGH WALLS, FLOOR, OR CEILINGS. WIRING SHALL BE INSTALLED IN THE APPROPRIATE RACEWAY TO MEET THE SURVIVABILITY REQUIREMENTS OF THE CITY OF PITTSBURGH.
- FIRE ALARM CIRCUITS SHALL BE CLEARLY IDENTIFIED AT TERMINAL AND JUNCTION LOCATIONS IN COMPLIANCE WITH 2014 NEC SECTION 760.30.
- PROVIDE ADDITIONAL POWER SUPPLIES, BATTERIES, EXTENDER PANELS, ETC. AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. PROVIDE BATTERY CALCULATIONS, WIRING DIAGRAMS, EQUIPMENT CUTS, ETC. AS PART OF THE SHOP DRAWING SUBMITTAL.
- CANDELA RATING SHALL BE PER 2013 NFPA-72 CHAPTER 18 REQUIREMENTS. ALL VISUAL AND AUDIO DEVICES SHALL BE SYNCHRONIZED.
- AUDIBLE ALARM SYSTEM SOUND PRESSURE LEVELS SHALL COMPLY WITH 2015 IBC SECTION 907.5.2.1.
- COORDINATE WITH DIVISION 23 TO PROVIDE DUCT DETECTORS WHERE REQUIRED FOR HVAC EQUIPMENT. COORDINATE LOCATION OF REMOTE TEST SWITCHES WITH OWNER PRIOR TO INSTALLATION. THESE SHALL BE LOCATED IN UTILITY OR BACK OF HOUSE SPACES.
- COORDINATE THE EXACT QUANTITY OF TAMPER, FLOW, AND PRESSURE SWITCH CONNECTIONS, AS APPLICABLE, WITH DIVISION 21 PRIOR TO PROCUREMENT.
- PROVIDE 120V CONNECTION, DUCT DETECTOR(S), ADDRESSABLE CONTROL MODULE, AND REMOTE TEST SWITCH FOR EACH FIRE SMOKE AND SMOKE DAMPER. COORDINATE QUANTITY AND LOCATION WITH DIVISION 23. COORDINATE LOCATION OF REMOTE TEST SWITCHES WITH OWNER PRIOR TO INSTALLATION. THESE SHALL BE LOCATED IN UTILITY OR BACK OF HOUSE SPACES.
- PROVIDE ADDRESSABLE CONTROL MODULES TO INTERFACE WITH ALL ACCESS CONTROLLED DOORS AS REQUIRED BY CODE. CONTROL MODULES SHALL FUNCTION TO SIGNAL DOORS TO FAIL SAFE UPON ACTIVATION OF FIRE ALARM.
- THE COMPLETED FIRE ALARM SYSTEM SHALL BE FULLY TESTED IN ACCORDANCE WITH NFPA-72 AND LOCAL FIRE DEPARTMENT REQUIREMENTS BY THE INSTALLER, IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE AND THE LOCAL FIRE MARSHALL. UPON COMPLETE ON A SUCCESSFUL TEST, THE INSTALLER SHALL SO CERTIFY, IN WRITING, TO THE OWNER AND GENERAL CONTRACTOR.
- REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS, PRODUCTS, EXECUTION, AND INSTALLATION OF THE FIRE ALARM SYSTEM.
- THE COMPLETE EXTENT OF THE EXISTING FIRE ALARM SYSTEM HAS NOT BEEN REPRESENTED ON THIS RISER DIAGRAM. EXISTING FIRE ALARM CONNECTIONS TO OTHER SYSTEMS, INCLUDING DUCT DETECTORS, FIRE SMOKE AND SMOKE DAMPERS, FIRE PROTECTION SYSTEM INTERFACES, ELEVATOR CONNECTIONS, AND RELATED EQUIPMENT (NOT SHOWN) SHALL REMAIN IN PLACE AND IN SERVICE DURING THIS RENOVATION. WHERE REQUIRED, EC SHALL RELOCATE ALL TEST SWITCHES ASSOCIATED WITH EXISTING EQUIPMENT TO MAINTAIN ACCESSIBILITY IN NEW CEILINGS. EXTEND FIRE ALARM CIRCUIT(S) AS REQUIRED.

KEY NOTES: #

- IN ORDER TO PROVIDE DIAL OUT CAPABILITIES TO THE FIRE DEPARTMENT, TWO TRANSMISSION CHANNELS SHALL BE PROVIDED TO THE DACT WITHIN THE FIRE ALARM SYSTEM PER 2013 NFPA-72 SECTION 26.6.3.2.1.4. THE SYSTEM SHALL EMPLOY ONE PHONE LINE AND AN ADDITIONAL, APPROVED TRANSMISSION MEANS AS OUTLINED UNDER THAT CODE SECTION AND DEEMED AVAILABLE AT THE SITE. WHERE ONE OF THE ALTERNATE TRANSMISSION CHANNELS IS NOT AVAILABLE AT THE SITE AND WHERE THE AHJ APPROVES, A SECOND TELEPHONE LINE MAY BE USED IN LIEU OF THE ALTERNATE TECHNOLOGY. COORDINATE WITH OWNER TO DETERMINE IF THE DACT DIALS DIRECTLY TO FIRE DEPARTMENT OR TO THIRD PARTY 24/7 MONITORING SERVICE CONTRACTED BY OWNER.

FIRE ALARM PERMIT NOTE (CITY OF PITTSBURGH):

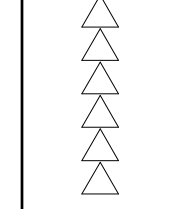
THE E.C. BID SHALL INCLUDE THE COST FOR AN INDEPENDENT THIRD PARTY PROFESSIONAL ENGINEER TO SIGN, DATE, AND SEAL ALL FIRE ALARM DOCUMENTS REQUIRED FOR BUILDING PERMIT. THE FIRE ALARM DOCUMENTS INCLUDED WITH THE E-SERIES DRAWINGS ARE PROVIDED FOR FIRE ALARM DESIGN INTENT WITHIN THE CITY OF PITTSBURGH. THE CITY OF PITTSBURGH WILL REQUIRE SIGNED/SEALED MANUFACTURER SHOP DRAWINGS (BY THE INDEPENDENT THIRD PARTY) FOR PERMIT APPROVAL BEYOND THE DOCUMENTS CONTAINED IN THE E-SERIES DRAWINGS.

THE FIRE ALARM SHOP DRAWINGS SHALL INCLUDE AT A MINIMUM FIRE ALARM FLOOR PLANS AND A RISER DIAGRAM. EACH PLAN OR RISER SHALL INDICATE THE NUMBER AND TYPES OF FIRE ALARM DEVICES INSTALLED ON EACH CIRCUIT, DEVICE ADDRESSES, CONDUCTOR TYPES AND SIZES, FIRE ALARM ZONES, PRIMARY AND SECONDARY POWER SUPPLIES (AS NECESSARY), AND ALL NEW FIRE ALARM DEVICES AS ADDED TO EXISTING CIRCUITS. DOCUMENTS SHALL ALSO CONTAIN BATTERY AND VOLTAGE DROP CALCULATIONS.

Seal:

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50% CD

Revisions:



Date:
April 16, 2021

Project Number:
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:
Fire Alarm Riser Diagram

Scale: **As indicated**
Drawing Number:

E-602

LIGHTING FIXTURE SCHEDULE										
TYPE	FIXTURE DESCRIPTION	MANUFACTURER	MODEL	LAMP(S)		DRIVER/ BALLAST	INPUT WATTS	VOLTS	MOUNTING	NOTES
				LAMP #	LAMP TYPE					
DL1	6" LED DOWNLIGHT, SHOWER RATED, NON- CONDUCTIVE	GOTHAM	EVO6	--	LED	0-10V, DIM TO 10%		120V	RECESSED	
DL2	6" LED DOWNLIGHT	LITHONIA	LDN6	--	LED	0-10V, DIM TO 10%		120V	RECESSED	
DP1	DECORATIVE PENDANT	TECH LIGHTING	PROVIDE A \$500 ALLOWANCE	--	LED	0-10V, DIM TO 10%		120V	PENDANT	
TH1	TRACK HEAD	JUNO	R606L	--	LED	0-10V, DIM TO 10%		120V	TRACK	
TR1	120V TRACK	JUNO	TRAC-MASTER	--	LED	0-10V, DIM TO 10%		120V	TRACK	
SM1	9" SURFACE MOUNTED DECORATIVE FIXTURE	MAXIM	57694-WTEK	--	LED	0-10V, DIM TO 10%		120V	SURFACE, CEILING	
SP1	4' STRIP FIXTURE	LITHONIA	ZL1D	--	LED	0-10V, DIM TO 10%		120V	SURFACE, PENDANT	
SP1E	4' STRIP FIXTURE WITH BATTERY BACKUP	LITHONIA	ZL1D	--	LED	0-10V, DIM TO 10%		120V	SURFACE, PENDANT	
VM1	WALL MOUNTED VANITY FIXTURE	LITHONIA	FMCSLS	--	LED	0-10V, DIM TO 10%		120V	SURFACE, WALL	
VM2	2' WALL MOUNTED CLOSET FIXTURE	LITHONIA	ZL1D	--	LED	0-10V, DIM TO 10%		120V	SURFACE, WALL	
VM3	4' WALL MOUNTED STARWELL FIXTURE WITH BATTERY BACKUP	LITHONIA	WL4	--	LED	0-10V, DIM TO 10%		120V	SURFACE, WALL	
XE1	EXIT SIGN WITH EMERGENCY HEADS, BATTERY BACKUP	LITHONIA	LHQM	--	LED	0-10V, DIM TO 10%		120V	UNIVERSAL	PROVIDE NUMBER OF FACES AND CHEVRONS AS SHOWN ON PLANS.

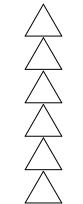
NOTES:
 1. ARCHITECT SHALL SPECIFY / VERIFY ALL FINISH SELECTIONS.
 2. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
 3. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL MOUNTING ACCESSORIES.
 4. LIGHTING FIXTURE SUBSTITUTIONS THAT ARE CONSIDERED EQUAL TO THE SPECIFIED PRODUCTS MAY BE SUBMITTED AND WILL BE REVIEWED BY ARCHITECT AND ELECTRICAL ENGINEER. ACCEPTANCE WILL BE EVALUATED BASED ON AESTHETICS, PERFORMANCE, AND QUALITY. DO NOT PROVIDE VALUE ENGINEERING OPTIONS UNLESS SPECIFICALLY DIRECTED BY THE OWNER, ARCHITECT, OR ENGINEER.
 5. THE STANDARD DRIVER OPTION FOR MOST FIXTURES IS 0-10V DIM. THE CONTRACTOR IS ONLY REQUIRED TO PROVIDE 0-10V WIRING WHERE DIMMING CONTROLS ARE SHOWN ON THE LIGHTING PLAN.

Minimal mid tier cost exterior lighting fixtures will be added

Seal:

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Revisions:



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April 16, 2021

Project Number:
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:
**Electrical
Schedules**

Scale: As indicated
Drawing Number:

E-701

PLUMBING LEGEND					
SYMBOL	ABRV.	DESCRIPTION	SYMBOL	ABRV.	DESCRIPTION
	SAN	SANITARY PIPING		BV	BALANCING VALVE
	ST	STORM PIPING (PRIMARY)		PRV	PRESSURE REDUCING VALVE
	V	VENT PIPING		PRV	PRESSURE REGULATING VALVE
	CW	COLD WATER PIPING		CV	CHECK VALVE
	HW	HOT WATER PIPING			STRAINER
	HWR	HOT WATER RETURN PIPING		T&P	TEMPERATURE AND PRESSURE RELIEF VALVE
	TP	TRAP PRIMER PIPING		BFP	BACK FLOW PREVENTER
	G	GAS PIPING (NATURAL OR PROPANE)		PG	PRESSURE GAUGE
	CD	CONDENSATE DRAIN PIPING			THERMOMETER
		PIPING ROUTED BELOW GRADE / SLAB (LINE TYPE INDICATES SERVICE TYPE UNO)			AQUASTAT
		PIPE UP			HOT WATER RECIRC. PUMP
		PIPE DOWN			INTERIOR HOSE BIBB OR HOSE END DRAIN VALVE
		PIPE TEE DOWN			EXTERNAL WALL HYDRANT
		PIPE UNION			DOMESTIC SHOCK ABSORBER/WATER HAMMER ARRESTER; TEXT DENOTES SIZE (PDI: A - F)
		PIPE CAP		FCO	CLEAN OUT, FLOOR
		PIPE TRAP		CO	CLEAN OUT, EXPOSED
		BALL VALVE		FD	FLOOR DRAIN
		BALL VALVE OR SHUTOFF VALVE IN RISE			FLOOR DRAIN WITH TRAP PRIMER
		GATE VALVE		OS&Y	OS&Y VALVE
		GAS COCK			INVERT ELEVATION B.F.F. (IN FEET)
	MV	MIXING VALVE			UTILITY METER
		VACUUM RELIEF VALVE			FLEXIBLE PIPE CONNECTION
	VB	VACUUM BREAKER			

SHOCK ARRESTOR SCHEDULE

MARK	SFU's	CONN. SIZE	MODEL NO.
SA - A	1 TO 11	1/2"	652-A
SA - B	12 TO 32	3/4"	653-B
SA - C	33 TO 60	1"	654-C
SA - D	61 TO 113	1"	655-D
SA - E	114 TO 154	1"	656-E
SA - F	155 TO 330	1"	657-F

MODEL NUMBERS BASED ON SIOUX CHIEF PISTON TYPE ARRESTORS



907 EAST END AVENUE
PITTSBURGH, PA 15221
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www.winstonarchitecture.com



Building Renovation
for
Big Tom's Barbershop
 2178 Centre Avenue, Pittsburgh, PA 15219

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Revisions:

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- △

Date:
April 16, 2021

Project Number:
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:
Plumbing Data Sheet

Scale: **As indicated**
Drawing Number:

P-001

PLUMBING SPECIFICATION

GENERAL INFORMATION

A. GENERAL

- 1. CONFORM TO GENERAL AND SPECIAL CONDITIONS OF CONTRACT.
2. SPECIFICATIONS ARE APPLICABLE TO CONTRACTORS AND/OR SUBCONTRACTORS.
3. THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING AND EQUIPMENT DRAWINGS AND SPECIFICATIONS ARE INCORPORATED INTO, AND BECOME A PART OF THIS DIVISION.
4. VISIT SITE, CHECK FACILITIES AND CONDITIONS.
5. SYSTEMS SHALL BE COMPLETE AND WORKABLE IN ALL RESPECTS AND PLACED IN OPERATION.
6. EACH CONTRACTOR SHALL PROVIDE FOR HIS OWN CLEAN-UP, REMOVAL AND LEGAL DISPOSAL OF ALL RUBBISH DAILY.
7. CONTRACTORS SHALL CONFIRM AND COMPLY WITH ALL UTILITY COMPANY REQUIREMENTS, COORDINATE CONNECTION POINTS IN FIELD.
8. ARRANGE FOR AND OBTAIN OWNER'S AND INSURANCE REPRESENTATIVE'S PERMISSION FOR ANY SERVICE SHUTDOWNS.
9. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, SEQUENCES OF CONSTRUCTION AND THE SAFETY OF WORKMEN.
10. PIPING, CONTROLS, ETC., SHALL NOT BE INSTALLED, OR ROUTED ABOVE, ELECTRICAL PANELS AND EQUIPMENT OR THROUGH ELEVATOR MACHINE ROOMS.
11. THE CONTRACTOR SHALL COORDINATE AND PROVIDE A WRITTEN LISTING OF ELECTRICAL CHARACTERISTICS OF ALL MECHANICAL EQUIPMENT TO ELECTRICAL CONTRACTOR PRIOR TO ORDERING OF EQUIPMENT.
12. DURING THE BUILDING CONSTRUCTION SOME EXISTING INSTALLATION MAY BE EXPOSED THAT WILL HAVE TO BE CHANGED, ALTERED, REROUTED AND/OR ABANDONED.
13. WORK RELATED TO THE EXISTING BUILDING SHALL BE COORDINATED TO MINIMIZE INTERFERENCE OR INTERRUPTION OF NORMAL BUILDING USE BY OWNER.
14. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS.

B. CODES, PERMITS, STANDARDS AND REGULATIONS

- 1. CONFORM TO APPLICABLE CODES (LOCAL, STATE, NATIONAL CODES, NFPA, OSHA, ETC.), GOVERNMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS, AND APPLICABLE STANDARDS.
2. OBTAIN PERMITS AND PAY FEES. ARRANGE FOR REQUIRED TESTS, INSPECTIONS AND APPROVALS. PROVIDE COPIES OF INSPECTIONS, AND APPROVALS TO THE ARCHITECT-ENGINEER.

C. RELATED WORK SPECIFIED ELSEWHERE

- 1. OPENINGS AND CHASES, WHEN SHOWN ON ARCHITECTURAL DRAWINGS.
2. TEMPORARY WATER SERVICE, SANITARY FACILITIES, FIRE PROTECTION AND HEATING DURING CONSTRUCTION.
3. POURED-IN-PLACE CONCRETE.
4. FINISH PAINTING.
5. ELECTRIC POWER WIRING.

D. DRAWINGS

- 1. THE SYSTEMS SHOWN THE DRAWINGS ARE DIAGRAMMATIC. CONFIRM DIMENSIONS BY FIELD MEASUREMENT.
2. THE EXACT LOCATIONS FOR APPARATUS, FIXTURES, EQUIPMENT AND PIPING WHICH IS NOT COVERED BY DRAWINGS, SHALL BE OBTAINED FROM THE ARCHITECT OR HIS REPRESENTATIVE IN THE FIELD, AND THE WORK SHALL BE LAID OUT ACCORDINGLY.
3. DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT ONE ANOTHER. ANY MATERIALS OR LABOR CALLED FOR IN ONE BUT NOT THE OTHER SHALL BE PROVIDED.

E. DEMOLITION AND REMOVAL

- 1. DISCONNECT, DISASSEMBLE, CAP, PLUG AND REMOVE ALL PIPING, DUCTS AND EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR THE PROJECT.
2. ANY EQUIPMENT DESIGNATED BY OWNER TO BE SALVAGED SHALL BE PROTECTED AND DELIVERED TO THE OWNER'S ON SITE.
3. DEMOLITION TO BE DONE IN A MANNER NOT TO DAMAGE ADJACENT WORK AND NOT AFFECT THE OPERATION OF SYSTEMS TO REMAIN IN USE.
4. OPENINGS ON PIPING AND DUCTS THAT REMAIN SHALL BE CAPPED AND PROPERLY SECURED.
5. ASBESTOS REMOVAL WILL BE HANDLED BY THE OWNER AND IS NOT A PART OF THIS WORK.
6. EXAMINE AREAS AND CONDITIONS UNDER WHICH DEMOLITION WORK SHALL BE PERFORMED. CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES PERFORMING DEMOLITION WORK.
7. REMOVE SUPPORTS, HANGERS, AND ACCESSORIES FROM EQUIPMENT AND MATERIAL INDICATED TO BE REMOVED.

F. BASE EQUIPMENT, MATERIALS AND SUBSTITUTIONS

- 1. EQUIPMENT AND MATERIALS SHALL BE NEW, FREE OF DEFECTS AND U.L. LABELED.
2. BASE BID MANUFACTURERS ARE INCLUDED IN SPECIFICATIONS OR LISTED IN SCHEDULE ON DRAWINGS. OTHER MANUFACTURERS ARE CONSIDERED A SUBSTITUTION.
3. THE NAME OR MAKE OF ANY ARTICLE, DEVICE, MATERIAL, FORM OF CONSTRUCTION, FIXTURE, ETC., STATED IN THIS SPECIFICATION, SHALL BE KNOWN AS A "STANDARD".
4. PROPOSALS SHALL BE BASED ON "STANDARDS" SPECIFIED.

- 5. THE EQUIPMENT SCHEDULES ON DRAWINGS INDICATE MANUFACTURERS EQUIPMENT MODEL NUMBERS UPON WHICH DESIGN HAS BEEN BASED.
6. SUBSTITUTIONS ARE SUBJECT TO THE APPROVAL OF THE OWNER.
7. IF SUBSTITUTIONS ARE APPROVED, NOTIFY ALL OTHER CONTRACTORS, SUBCONTRACTORS OR TRADES AFFECTED BY SUBSTITUTION AND FULLY COORDINATE.
8. ALL EQUIPMENT SHALL BE INSTALLED IN FULL ACCORDANCE WITH THE MANUFACTURER'S DATA AND INSTALLATION INSTRUCTIONS.

G. CHECK, TEST, START, ADJUST, BALANCE AND INSTRUCTIONS

- 1. AFTER INSTALLATION, CHECK ALL EQUIPMENT, AND PERFORM START UP IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
2. PIPING SHALL BE TESTED AND FREE OF LEAKS.
3. CONCEALED OR INSULATED WORK SHALL REMAIN UNCOVERED UNTIL REQUIRED INSPECTIONS.
4. INSTRUCT OWNER IN OPERATION OF SYSTEMS AND SUBMIT OPERATING AND MAINTENANCE MANUAL ON ALL EQUIPMENT AND SYSTEMS AS REQUIRED BY THE SPECIFICATION.
5. CUTTING, PATCHING AND DRILLING

H. CUTTING, PATCHING AND DRILLING

- 1. CUTTING AND PATCHING OF THE BUILDING CONSTRUCTION REQUIRED FOR THIS WORK SHALL BE BY THIS CONTRACTOR.
2. NEATLY SAW CUT RECTANGULAR OPENINGS, SET SLEEVE THROUGH OPENING, AND FINISH PATCH OR PROVIDE TRIM FLANGE AROUND OPENINGS.
3. NEATLY SAW CUT FLOORS FOR SEWER INSTALLATION AND PATCH FLOOR TO MATCH EXISTING.
4. CORE DRILL AND SLEEVE ROUND OPENINGS.
5. DO NOT CUT ANY STRUCTURAL COMPONENTS WITHOUT ARCHITECT'S/ENGINEER'S APPROVAL.
6. PATCH AND FINISH TO MATCH ADJACENT AREAS THAT HAVE BEEN CUT, DAMAGED OR MODIFIED AS A RESULT OF THE INSTALLATION.
7. CONTRACTORS SHALL CONFIRM WITH OWNER, PRIOR TO BID, TIMES AVAILABLE FOR NOISE PRODUCING WORK.
8. INFORMATION REGARDING REQUIRED PIPE OPENINGS IN WALLS, FLOORS, CHASES, ETC., AND CONCRETE EQUIPMENT PADS OR FOUNDATIONS SHALL BE GIVEN TO THE GENERAL CONTRACTOR.
9. CONTRACTOR SHALL REVIEW AND INDICATE HIS APPROVAL OF EACH SHOP DRAWING PRIOR TO SUBMITTAL FOR REVIEW.

I. WARRANTY

- 1. FULLY WARRANT MATERIALS, EQUIPMENT AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE.
2. PROVIDE MANUFACTURER'S WARRANTIES TO OWNER, INCLUDING ALL AVAILABLE EXTENDED WARRANTIES.
3. REPAIR OR REPLACE WITHOUT CHARGE TO THE OWNER ITEMS FOUND DEFECTIVE DURING THE WARRANTY PERIOD.
4. SUBMITTALS SHALL BE REVIEWED ONLY FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND NOT FOR DIMENSIONS OR QUANTITIES.

J. SHOP DRAWING SUBMITTALS

- 1. SUBMIT SHOP DRAWINGS WITH ADEQUATE DETAILS AND SCALES TO CLEARLY SHOW CONSTRUCTION.
2. PLUMBING DRAWINGS SHALL BE FULLY DIMENSIONED BASED ON FIELD VERIFIED BUILDING CLEARANCES AND ARCHITECTURAL CEILING LAYOUTS.
3. CONTRACTOR SHALL REVIEW AND INDICATE HIS APPROVAL OF EACH SHOP DRAWING PRIOR TO SUBMITTAL FOR REVIEW.
4. SUBMITTALS SHALL BE REVIEWED ONLY FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND NOT FOR DIMENSIONS OR QUANTITIES.
5. WHERE SUBMITTALS VARY FROM THE CONTRACT REQUIREMENTS, THE CONTRACTOR SHALL CLEARLY INDICATE ON SUBMITTAL OR ACCOMPANYING DOCUMENTS THE NATURE AND REASON FOR VARIATIONS.
6. REFER TO VARIOUS SECTIONS FOR LISTING OF SHOP DRAWINGS REQUIRED ON THIS PROJECT.
7. EACH MANUFACTURER OR HIS REPRESENTATIVE SHALL CHECK THE APPLICATION OF HIS EQUIPMENT AND CERTIFY AT TIME OF SHOP DRAWING SUBMITTAL THAT EQUIPMENT HAS BEEN PROPERLY SELECTED AND CAN BE INSTALLED, SERVICED AND MAINTAINED WHERE INDICATED ON DRAWINGS.
8. THESE DRAWINGS SHALL RECORD THE LOCATION OF ALL CONCEALED EQUIPMENT, PIPING, ELECTRIC SERVICE, SEWERS, WASTES, VENTS, DUCTS, CONDUIT AND OTHER PIPING.

K. RECORD DRAWINGS

- 1. EACH CONTRACTOR OR SUBCONTRACTOR SHALL KEEP ONE (1) COMPLETE SET OF THE CONTRACT WORKING DRAWINGS ON THE JOB SITE.
2. THESE DRAWINGS SHALL RECORD THE LOCATION OF ALL CONCEALED EQUIPMENT, PIPING, ELECTRIC SERVICE, SEWERS, WASTES, VENTS, DUCTS, CONDUIT AND OTHER PIPING.

CORNERS OF THE BUILDING. PLANS ALSO SHALL SHOW INVERT ELEVATION OF SANITARY AND/OR STORM SEWERS AND TOP ELEVATION OF OTHER BELOW-GRADE LINES.

3. RECORD DRAWINGS SHALL BE KEPT CLEAN AND UNDAMAGED AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN RECORDING DEVIATIONS FROM WORKING DRAWINGS AND EXACT LOCATIONS OF CONCEALED WORK.

4. AFTER THE PROJECT IS COMPLETED, THESE SETS OF DRAWINGS SHALL BE DELIVERED TO THE ARCHITECT IN GOOD CONDITION, AS A PERMANENT RECORD OF THE INSTALLATION.

PLUMBING SYSTEMS

A. SCOPE

- 1. PROVIDE PLUMBING FIXTURES, EQUIPMENT AND MATERIAL INDICATED AND SHOWN ON DRAWINGS AND PLACE IN PROPER OPERATION.
2. PLUMBING SYSTEMS TO ESSENTIALLY CONSIST OF BUT NOT LIMITED TO THE FOLLOWING:
a. ROOF DRAINS, RAIN CONDUCTORS, HUBS FOR DOWN SPOUTS, CATCH BASINS, CLEANOUTS, MANHOLES AND STORM SEWERS TO FIVE (5) FEET OUTSIDE BUILDING.
b. SANITARY WASTE AND VENT PIPING AND SANITARY SEWER EXTENDED TO FIVE (5) FEET OUTSIDE BUILDING.
c. SANITARY WASTE AND VENT PIPING AND SANITARY SEWER EXTENDED TO EXISTING BUILDING FACILITIES.
d. DOMESTIC WATER EXTENDED FROM CITY MAIN AND DISTRIBUTION SYSTEM.
e. PROVIDE DOMESTIC WATER FROM CITY MAIN INTO BUILDING AS INDICATED ON DRAWINGS.
f. EXTEND DOMESTIC WATER FROM FIVE (5) FEET OUTSIDE BUILDING INTO BUILDING AS INDICATED ON DRAWINGS.
g. EXTEND DOMESTIC WATER FROM EXISTING BUILDING FACILITIES AS INDICATED ON DRAWINGS.
h. DOMESTIC WATER EXTENDED FROM FIVE (5) FEET OUTSIDE BUILDING AND DISTRIBUTION SYSTEM.
i. DOMESTIC WATER EXTENDED FROM EXISTING BUILDING FACILITIES AND DISTRIBUTION SYSTEM TO NEW FIXTURES.
j. GAS SERVICE EXTENDED FROM FIVE (5) FEET OUTSIDE THE BUILDING TO ALL GAS USING EQUIPMENT.
k. GAS SERVICE EXTENDED FROM EXISTING BUILDING FACILITIES TO ALL GAS USING EQUIPMENT.
l. PLUMBING FIXTURES, DRAINS AND EQUIPMENT WITH REQUIRED TRIM, CONTROLS AND ACCESSORIES.
m. INSULATION OF PLUMBING PIPING.
n. NEW GREASE INTERCEPTOR TANK WITH REQUIRED ACCESSORIES, AND PIPING.
o. A COMPLETE SYSTEM OF COMPRESSED AIR DISTRIBUTION AS SHOWN ON DRAWINGS.
p. OTHER ITEMS INDICATED ON DRAWINGS OR REQUIRED FOR COMPLETE INSTALLATION.

B. EXCAVATION AND BACKFILL

- 1. PERFORM EXCAVATION AND BACKFILL REQUIRED FOR INSTALLATION OF PIPING.
2. EXCAVATE TO DEPTH REQUIRED TO INSTALL PIPING AT REQUIRED LEVEL AND PITCH.
3. BACKFILL WITH BEDDING MATERIAL TO A MINIMUM OF TWELVE (12) INCHES ABOVE TOP OF PIPES AND COMPACT.
4. OTHER EXCAVATIONS SHALL BE BACKFILLED WITH CLEAN EARTH.
5. PATCH FLOOR TO MATCH EXISTING.
C. CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS
1. PROVIDE VALVED WATER AND/OR GAS CONNECTION FOR EQUIPMENT FURNISHED BY OTHER CONTRACTORS OR OWNER.
2. INCLUDE ACCESSORIES REQUIRED BY CODE, DRAWINGS, OR MANUFACTURER'S INSTRUCTIONS.
3. FULLY COORDINATE WITH KITCHEN EQUIPMENT SUPPLIER AND CONFIRM ALL ROUGH-IN REQUIREMENTS PRIOR TO STARTING WORK.
D. SANITARY AND STORM SEWERS
1. PROVIDE SANITARY AND STORM SEWERS, RAIN CONDUCTORS, STACKS, VENTS, FLOOR DRAINS, HUBS FOR DOWN SPOUTS AND CLEANOUTS FOR PROJECT AND EXTEND TO EXISTING BUILDING FACILITIES AS INDICATED ON THE DRAWINGS.
2. SEWERS SHALL BE PITCHED A MINIMUM OF 1/4" PER FOOT FOR SIZES 3" AND UNDER, AND 1/8" PER FOOT FOR SIZES 4" AND LARGER OR TO GRADES INDICATED ON DRAWINGS.
3. CHANGES IN DIRECTION AND BRANCH CONNECTIONS SHALL BE MADE WITH CODE APPROVED DRAINAGE FITTINGS COMPATIBLE WITH THE PIPING SYSTEM MATERIAL.
4. FIXTURES AND SANITARY DRAINS SHALL BE VENTED AS INDICATED ON DRAWINGS AND IN ACCORDANCE WITH CODE.

5. PVC PIPING

a. THIS PROJECT HAS A RETURN AIR PLENUM AND PVC SHALL NOT BE INSTALLED IN RETURN AIR PLENUMS, USE NO-HUB CAST IRON, DWV COPPER ASTM B306 PIPING, OR PRESS FIT STAINLESS STEEL.

b. WHERE PVC PIPING IS USED, PROVIDE CODE APPROVED FIRE STOPPING MATERIAL AT FIRE RATED WALL PENETRATIONS.

6. SEWER AND VENT MATERIAL SHALL BE AS FOLLOWS:

- a. BELOW GRADE STORM AND SANITARY INSIDE BUILDING
- SERVICE WEIGHT - CAST IRON PIPE ASTM A 74-82 WITH ASTM C-664-70 NEOPRENE COMPRESSION JOINTS.
- NO-HUB CAST IRON PIPE CISPI 1-301-78.
- HEAVY-DUTY, 6 BAND, SHIELDED FOR 4" AND SMALLER.
- PVC-DWV PLASTIC ASTM D-1785 WITH ASTM D-2665 DWV SOLVENT WELD SOCKET FITTINGS.
b. ABOVE GRADE RAIN CONDUCTORS, VENTS AND SANITARY
- NO-HUB CAST IRON PIPE CISPI 1-301-78.
- HEAVY-DUTY, 4 BAND, SHIELDED FOR 4" AND SMALLER.
- HEAVY-DUTY, 6 BAND, SHIELDED FOR 5" AND LARGER.
- PVC-DWV PLASTIC ASTM D-1785 WITH ASTM D-2665 DWV SOLVENT WELD SOCKET FITTINGS.
c. SITE STORM AND SANITARY SEWERS
- UP TO 15" - PVC PLASTIC ASTM D-3034 SDR 35 WITH ASTM D-3212 GASKET JOINTS.
- 18" AND OVER - REINFORCED CONCRETE PIPE (RCP) ASTM C 76-83 WITH ASTM C 443-79 RUBBER GASKET JOINTS.

E. WATER PIPING

- 1. INCLUDE UNIONS, OR OTHER DISCONNECT MEANS, STOPS OR VALVES FOR ISOLATION OF FIXTURES AND EQUIPMENT.
2. INSTALL SHOCK ABSORBERS AT EACH FIXTURE OR WHERE REQUIRED TO PREVENT WATER HAMMER.
3. HANGERS ON INSULATED PIPE SHALL BE OUTSIDE OF INSULATION.
4. WATER PIPING ABOVE GRADE SHALL BE
a. TYPE "L" HARD COPPER ASTM B 88-832 WITH WROUGHT COPPER FITTINGS ASTM B 16.22 1980 AND NON-LEAD OR ANTIMONY SOLDER JOINTS.
b. TYPE "L" HARD COPPER ASTM B 88-832 WITH WROUGHT COPPER FITTINGS ASTM B 16.22 1980 AND PRESS-FIT JOINTS.
c. PEX TUBING TYPE "A" (CROSS-LINKED POLYETHYLENE) MEETING SECTION 6.6 OF ASTM F876 AND USING "PROPEX" FITTINGS MEETING ASTM F1980, CSA B137.5, NSF/ANSI 14, AND NSF/ANSI 61.
5. WATER PIPING BELOW GRADE SHALL BE TYPE "K" SOFT COPPER WITHOUT JOINTS.
6. FLUSH, VENT AND SANITIZE ALL WATER PIPING WITH EQUIVALENT SOLUTION OF 50 PPM OF AVAILABLE CHLORINE UPON COMPLETION.
7. DOMESTIC HOT AND COLD WATER PIPING UNDER CONCRETE FLOOR TO BE COVERED WITH SAND SO THAT PIPING WILL NOT BECOME EMBEDDED IN THE CONCRETE.
8. ALL PIPING UNDER CONCRETE FLOOR SHALL BE TYPE "K" SOFT COPPER OR PEX - TYPE A TUBING AND SHALL BE CONTINUOUS.
9. EXTREME CAUTION MUST BE TAKEN SO THAT COPPER LINES AND INSULATION UNDER CONCRETE ARE NOT CRUSHED, CUT, SPLIT, RUPTURED OR DEFORMED DURING THE POURING OF THE FLOOR SLAB.

F. GAS PIPING

- 1. EXTEND GAS PIPING FROM EXISTING MAIN, INCLUDING TAP TO MAIN, METER AND REGULATOR, AS INDICATED ON DRAWINGS AND CONNECT TO ALL GAS USING EQUIPMENT.
2. EQUIPMENT CONNECTIONS AT EACH UNIT SHALL INCLUDE GAS COCK, PRESSURE REGULATOR, UNION AND DIRT LEG.
3. CONSTRUCT CONCRETE BASE TO BELOW FROST LINE FOR METER INSTALLATION.
4. GAS PIPING SHALL CONFORM TO RECOMMENDED PRACTICE AND REGULATIONS OF THE LOCAL GAS CO. AND STATE CODE.
5. GAS PIPING SHALL BE AS FOLLOWS:
a. ABOVE-GRADE INSIDE OR OUTSIDE BUILDING, LOW PRESSURE - SCHEDULE 40 SEAMLESS BLACK STEEL PIPE, BEVELED ENDS.
b. INSIDE BUILDING, REGULATED PRESSURE - SCHEDULE 40 BLACK STEEL WITH WELDED BLACK STEEL FITTINGS.
c. BELOW GRADE, LOW AND MEDIUM PRESSURE GAS SERVICE - POLYETHYLENE PLASTIC ASTM D-2513 WITH STAB COUPLINGS OR FUSION WELD JOINTS.
d. BELOW GRADE, HIGH PRESSURE SERVICE 60 PSI AND OVER - SCHEDULE 40 BLACK STEEL COATED AND WRAPPED WITH WELDED BLACK STEEL FITTINGS.
e. VALVES SHALL NOT BE LOCATED ABOVE ACCESSIBLE CEILING SPACES.
f. EXTERIOR EXPOSED BARE STEEL PIPE SHALL BE PAINTED WITH TWO (2) COATS RUST INHIBITIVE PAINT.
g. WELDING SHALL BE PERFORMED BY STATE CERTIFIED WELDERS.
h. MOUNT GAS PIPING ON ADJUSTABLE ROOF PIPE SUPPORTS ADHERED TO THE ROOF MEMBRANE.



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ASE JOB #: 2041078

Building Renovation for Big Tom's Barbershop
2178 Centre Avenue, Pittsburgh, PA 15219

Seal:

FOR PRICING ONLY 50% CD

Revisions:

- 1
2
4
6

Date: April 16, 2021

Project Number: 2020-06

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Scale: As indicated
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P-002

H. FIXTURES AND EQUIPMENT

- FURNISH FIXTURES AND EQUIPMENT INDICATED AND SCHEDULED ON DRAWINGS, COMPLETE WITH ACCESSORIES, CONTROLS AND INSTALLATION ITEMS REQUIRED.
- INSTALL IN FULL ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND PLACE IN SATISFACTORY OPERATION.
- FIXTURES AND EQUIPMENT SHALL BE AS INDICATED ON THE PLUMBING FIXTURE SCHEDULE.

H. CLEANOUTS

- CLEANOUTS SHALL BE INSTALLED FLUSH WITH FINISHED FLOOR OR WALLS WITH PLATED COVERS.
- CLEANOUTS SHALL BE AS SCHEDULED ON DRAWINGS.

I. FLOOR, CEILING AND WALL PLATES:

- FIT PIPE PASSING THROUGH WALLS, FLOORS OR CEILINGS IN FINISHED ROOMS WITH STEEL OR BRASS ESCUTCHEONS. WHERE SURFACE IS TO RECEIVE A PAINT FINISH ESCUTCHEONS SHALL BE PRIME PAINTED; OTHERWISE MAKE ESCUTCHEONS NICKEL OR CHROME PLATED. WHERE PIPING IS INSULATED, FIT ESCUTCHEONS OUTSIDE INSULATION.

J. INSULATION

- INSULATE ABOVE-GRADE HOT AND COLD WATER PIPING, RAIN CONDUCTORS AND ROOF DRAIN SUMPS WITH ONE (1") INCH THICK MOLDED FIBERGLASS HAVING TYPE ASJ JACKET AND MANUFACTURED BY OWENS-CORNING FIBERGLASS COMPANY.
- INSULATE ALL HOT WATER PIPING WITHIN TEN (10) FEET OF HEATER WITH ONE (1") INCH THICK MOLDED FIBERGLASS HAVING TYPE ASJ JACKET AND MANUFACTURED BY OWENS-CORNING FIBERGLASS COMPANY.
- INCLUDE INSULATION OF FITTINGS AND VALVES. KEEP VAPOR BARRIERS INTACT. APPLY TO MANUFACTURER'S RECOMMENDATIONS.
- AT PIPE HANGERS, PROVIDE SOLID INSULATION COUPLING SYSTEM TO PREVENT INSULATION DAMAGE OR COMPRESSION. INSULATION COUPLINGS SHALL BE THE KLO-SHURE INSULATION COUPLING SYSTEM AS MANUFACTURED BY ANVIL-STRUT.
- INSULATE BELOW-GRADE PIPING INSIDE BUILDING WITH 3/8" FOAMED PLASTIC INSULATION.
- INSULATE EXPOSED WASTE AND SUPPLY PIPING UNDER LAVATORIES WITH THE LAV-SHIELD SAFETY COVERS AS PER "PLUMBEREX SPECIALTY PRODUCTS, INC." OR EQUAL.
- REPAIR DAMAGED SECTIONS OF EXISTING PIPING INSULATION, BOTH PREVIOUSLY DAMAGED OR DAMAGED DURING THIS CONSTRUCTION PERIOD. USE INSULATION OF SAME THICKNESS AS SPECIFIED, INSTALL NEW JACKET LAPPING AND SEALED OVER EXISTING.
- EXISTING PVC PIPING IN PLENUM CEILINGS SHALL BE INSULATED TO MEET PLENUM RATINGS, WITH PRODUCT TYPICAL TO FYR-WRAP. INSTALL AS REQUIRED BY MANUFACTURER.

K. HANGERS AND SUPPORTS

- HANGERS FOR BLACK OR GALVANIZED STEEL PIPE SHALL BE MANUFACTURED BY MICHIGAN HANGER CO., MODEL NO. 100, OR APPROVED EQUAL.
- HANGERS FOR CAST IRON PIPE SHALL BE MANUFACTURED BY MICHIGAN HANGER CO., MODEL NO. 400, OR APPROVED EQUAL.
- HANGERS FOR COPPER TUBING SHALL BE MANUFACTURED BY MICHIGAN HANGER CO., MODEL NO. 102-A, OR APPROVED EQUAL.
- TRAPEZE HANGERS OF A TYPE APPROVED BY THE ENGINEER. MAINTAIN PIPE INSULATION AT PIPE ANCHORS. PROVIDE INSULATION COUPLERS AS SPECIFIED ABOVE.
- CONTRACTOR SHALL PROVIDE INSULATION HANGER WITH PROTECTIVE SHIELDS, SUCH AS MICHIGAN HANGER CO., MODEL NO. 103, OR APPROVED EQUAL. 5 INCH LONG SECTION OF 1/2 INCH THICK CALCIUM SILICATE SECTIONAL PIPE INSULATION WITH FACTORY LONGITUDINAL LAP SHALL BE PROVIDED AT HANGER POINTS. BUTT JOINTS SHALL BE SEALED WITH INSULATING CEMENT.
- STRAP HANGERS SHALL NOT BE PERMITTED.
- CONTRACTOR SHALL PROVIDE RISER CLAMPS FOR VERTICAL PIPING AT EACH LEVEL. RISER CLAPS SHALL BE MICHIGAN HANGER CO., MODEL NO. 510 FOR STEEL PIPING AND MODEL NO. 511 FOR COPPER TUBING OR APPROVED EQUAL. USE "SHORT-END" RISER CLAMPS WHERE SPACE IS LIMITED.
- IN CONCRETE, MICHIGAN HANGER CO., MODEL NO. 355 INSERTS, OR APPROVED EQUAL. INSERTS SHALL PERMIT ADJUSTMENT FROM 3/4 INCH THROUGH 1-1/4 INCH. IN METAL DECKS, CONTRACTOR SHALL PROVIDE REDHEAD SOI INSERTS, OR APPROVED EQUAL. POWDER PROPELLED INSERTS WILL BE PERMITTED IN NEW CONSTRUCTION WHERE TYPE AND LOCATION ARE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
- CONTRACTOR SHALL PROVIDE SIDE BEAM CLAMPS FOR SUPPORTING PIPING FROM STRUCTURAL STEEL MEMBERS. BEAM CLAMPS SHALL BE MANUFACTURED BY MICHIGAN HANGER CO., MODEL 300 OR APPROVED EQUAL.
- WHERE OTHER MEANS OF SUPPORT PIPING ARE REQUIRED OR DESIRED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ENGINEER'S APPROVAL PRIOR TO INSTALLING THOSE SUPPORTS.
- HANGER SHALL BE PROVIDED AT EACH CHANGE OF DIRECTION.
- HANGERS AND SUPPORTS SHALL BE SPACED AT INTERVALS WHICH WILL PREVENT SAGGING AND REDUCE STRAIN ON VALVES AND SPECIALTIES. HANGER SPACING SHALL BE NO GREATER AND ROD SIZE SHALL BE NO SMALLER THAN THAT SHOWN IN THE FOLLOWING TABLE. HANGERS SHALL ALLOW FOR EXPANSION AND CONTRACTION.

FERROUS PIPING AND COPPER TUBING:

DIAMETER OF PIPE	MAXIMUM SPACING	ROD SIZE
1/2" THRU 1-1/2"	6 FT.	3/8"
2" THRU 3"	10 FT	1/2"
4" THRU 5"	12 FT	5/8"
6" AND LARGER	16 FT	3/4

CAST IRON PIPING:

DIAMETER OF PIPE	MAXIMUM SPACING	ROD SIZE
1 1/2" THRU 3"	EACH JOINT	3/8"
4" AND 5"	EACH JOINT	1/2"
6" AND 8"	EACH JOINT	3/4"
10" THRU 15" (TWO HANGERS)	EACH JOINT	3/4"

- RISER CLAMPS SHALL BE INSTALLED ABOVE THE FLOOR AT EACH LEVEL. RISER CLAMPS MAY BE SUSPENDED BELOW FLOOR LEVEL, WITH HANGER RODS AND INSERTS, WHERE THE INSTALLATION OF ESCUTCHEON PLATES IS REQUIRED.

L. PIPE WALL SEALS

- WALL PIPE SEALS WITH RUBBER LINKS SHALL BE THUNDERLINE LINK SEAL, OR APPROVED EQUAL. WALL PIPE SEALS WITH INORGANIC MATERIAL LINKS THE PENETRATIONS OF FIRE RATED WALLS SHALL BE THUNDERLINE PYRO-PAC, OR APPROVED EQUAL.

- SEALS SHALL BE MODULAR MECHANICAL TYPE CONSISTING OF INTERLOCKING SYNTHETIC RUBBER OR INORGANIC MATERIAL LINKS SHAPED TO CONTINUOUSLY FILL THE ANNULAR SPACE BETWEEN THE PIPE AND WALL OPENING.
- LINKS SHALL BE LOOSELY ASSEMBLED WITH BOLTS TO FORM A CONTINUOUS BELT AROUND THE PIPE. A PRESSURE PLATE SHALL BE PROVIDED UNDER THE BOLT HEAD AND NUT OF EACH LINK.
- AFTER THE SEAL ASSEMBLY IS POSITIONED IN THE SLEEVE, THE TIGHTENING OF THE BOLTS SHALL CAUSE THE SEALING ELEMENTS TO EXPAND AND PROVIDE AN ABSOLUTELY WATER-TIGHT SEAL BETWEEN THE PIPE AND SLEEVE.
- SEALS SHALL BE CONSTRUCTED TO PROVIDE ELECTRICAL INSULATION BETWEEN THE PIPE AND SLEEVE, THUS REDUCING CHANCES OF CATHODIC REACTION BETWEEN THESE TWO MEMBERS.
- SLEEVES SHALL BE MANUFACTURED FROM HEAVY-WALL, WELDED OR SEAMLESS STEEL PIPE. A FULL CIRCLE CONTINUOUSLY WELDED WATER STOP PLATE SHALL BE PROVIDED TO ASSURE POSITIVE WATER SEALING OF THE SLEEVE. SLEEVE SHALL BE PROTECTED BY A COATING OF ENRICHED RED PRIMER.

M. VALVES

- BALL VALVES 2-INCHES AND SMALLER SHALL BE 150 PSI SWP, 600 PSI WOG, BRONZE, 2-PIECE DESIGN, WITH PTFE TEFLON SEATS AND SEALS, AND BLOW-OUT PROOF STEMS MADE OF LEAD FREE BRONZE. VALVES SHALL HAVE THREADED ENDS FOR USE IN STEEL PIPING AND SOLDER OR PRESS-FIT ENDS FOR USE IN COPPER TUBING. BALL VALVES SHALL BE APOLLO 70LF-11/70LF-200-11, OR APPROVED EQUAL. PROVIDE THERMA-SEAL INSULATING TEE HANDLES FOR VALVES USED IN LINES WHICH ARE TO BE INSULATED.
- BUTTERFLY VALVES SHALL BE LUG WAFER TYPE, SUITABLE FOR 150 PSI WOG AT TEMPERATURE RANGING FROM 25 DEGREES F THROUGH 230 DEGREES F.
- BUTTERFLY VALVES SHALL HAVE FULLY REPLACEABLE SEATS MADE OF EPDM ELASTOMER. BUTTERFLY VALVES CLOSURE SHALL BE BUBBLE TIGHT.
- BUTTERFLY VALVES SHALL HAVE CAST IRON OR SEMI-STEEL BODIES, ONE PIECE TYPE 416 STAINLESS STEEL STEMS, AND BRONZE DISCS. DISCS SHALL BE ANCHORED TO STEM WITH BRONZE DRIVE PINS. SEMI-STEEL DISCS WITH WELDED NICKEL EDGE MAY BE USED IN LIEU OF BRONZE DISCS.
- PROVIDE 2 INCH EXTENSION NECKS ON ALL VALVES INSTALLED IN INSULATED LINES.
- LEVER TYPE HANDLE OPERATORS SHALL BE PROVIDED ON VALVES UP TO 4 INCHES IN SIZE. GEAR OPERATORS SHALL BE PROVIDED ON VALVES OVER 4 INCHES IN SIZE, AND ON VALVES REQUIRING CHAIN OPERATION. VALVES USED FOR BALANCING SHALL HAVE INFINITE POSITION LEVER OR GEAR OPERATORS WITH ADJUSTABLE, OPEN POSITION "MEMORY" STOP.
- BUTTERFLY VALVES SHALL BE NIBCO LD-2000, ITT GRINNELL 8000 SERIES, OR APPROVED EQUAL.
- GLOBE VALVES (3 INCH AND SMALLER) SHALL BE 150#, TEFLON DISC, UNION BONNET TYPE VALVES WITH THREADED OR SOLDER JOINT ENDS, GLOBE VALVES WITH THREADED ENDS SHALL BE HAMMOND, MODEL 1B413T, OR APPROVED EQUAL. GLOBE VALVES FOR INSTALLATION IN COPPER TUBING SHALL BE HAMMOND, MODEL 1B423, OR APPROVED EQUAL.
- CHECK VALVES (3 INCH AND SMALLER) SHALL BE 125# WITH REMOVABLE, REGRINDABLE DISCS AND THREADED OR SOLDER JOINT ENDS. CHECK VALVES TO BE INSTALLED IN HORIZONTAL LINES SHALL BE HAMMOND, MODEL 1B940, OR APPROVED EQUAL, (SCREWED JOINTS) OR HAMMOND, MODEL 1B941, OR APPROVED EQUAL (SOLDER JOINTS). CHECK VALVES TO BE INSTALLED IN VERTICAL PIPING SHALL BE HAMMOND, MODEL, 1B939, OR APPROVED EQUAL. CONTRACTOR SHALL PROVIDE SWEAT-TO-THREAD ADAPTERS FOR SOLDER JOINT CONNECTIONS.
- GATE VALVES FOR UNDERGROUND WATER SERVICE SHALL BE UL LISTED AND FM APPROVED, 175#, WWP, WITH CAST IRON BODIES BRONZE MOUNTED, NON-RISING STEMS, SOLID WEDGE DISCS, AND INDICATOR POST FLANGES. VALVES SHALL BE STOCKHAM VALVE MODEL, G-635, WITH CONVENTIONAL PACKING AND MECHANICAL JOINT ENDS.
- PROVIDE VALVE TAGS AND VALVE CHART PER ASME A13.1 SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS

N. STRAINERS

- Y-TYPE STRAINERS - BRONZE 3" AND SMALLER
 - STRAINER BODY TO BE ASTM B584 OR B62 BRONZE WITH THREADED OR SOLDER END CONNECTIONS AND .033 INCH PERFORATED TYPE 304 STAINLESS STEEL SCREEN OR 20 MESH TYPE 304 STAINLESS STEEL SCREEN ACCESSIBLE WITHOUT REMOVING THE STRAINER FROM THE LINE.
- Y-TYPE STRAINERS - IRON 3" AND SMALLER
 - STRAINER BODY TO BE CLASS 250 THREADED, TAPPED SCREW-IN BONNET WITH PLUG AND STAINLESS STEEL SCREEN, BODY AND BONNET TO BE ASTM A126. SCREEN MUST BE ACCESSIBLE WITHOUT REMOVING THE STRAINER FROM THE LINE.
- Y-TYPE STRAINERS - IRON 2 1/2" AND LARGER
 - STRAINER BODY TO BE CLASS 125 FLANGED, TAPPED BOLTED BONNET WITH PLUG AND STAINLESS STEEL SCREEN, BODY AND BONNET TO BE ASTM A126. SCREEN MUST BE ACCESSIBLE WITHOUT REMOVING THE STRAINER FROM THE LINE.
- ACCEPTABLE MANUFACTURERS -
 - NIBCO
 - APOLLO
 - WATTS

O. PIPE IDENTIFICATION

- CONTRACTOR SHALL PROVIDE IDENTIFICATION LABELS, TAGS, ETC., FOR PLUMBING AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
- THE IDENTIFICATION OF PLUMBING PIPING SHALL BE IN ACCORDANCE WITH ANSI STANDARD A13.1, EXCEPT AS HEREINAFTER SPECIFIED.
- PRESSURE SENSITIVE PIPE MARKERS SHALL BE MANUFACTURED BY THE BRADY CO., OR APPROVED EQUAL. PIPE MARKERS SHALL BE MANUFACTURER'S STANDARD PRODUCT.

P. VACUUM BREAKERS

- VACUUM BREAKERS SHALL CONFORM TO THE REQUIREMENTS OF THE LOCAL CODE AND SHALL BE PROVIDED FOR HOSE BIBBS, WALL HYDRANTS, FLUSHOMETERS AND ANY FIXTURE OR EQUIPMENT HAVING DOMESTIC WATER SUPPLY.

Q. ACCESS DOORS

- ACCESS DOORS SHALL BE PROVIDED IN WALLS AND CEILINGS WHERE REQUIRED TO PERMIT PROPER ACCESS TO VALVES AND ANY OTHER SUCH DEVICES WHICH REQUIRE MAINTENANCE OR SERVICE. DOORS PLACED IN WALLS, PARTITIONS OR OTHER FIRE-RATED CONSTRUCTION SHALL HAVE A LABEL SIGNIFYING THAT THE DOOR HAS THE SAME FIRE RATING AS THE FIRE-RATED CONSTRUCTION.
- THIS CONTRACTOR SHALL FURNISH ACCESS PANELS TO THE GENERAL CONTRACTOR FOR INSTALLATION.
- ACCESS PANELS SHALL BE CONSTRUCTED OF 14 GAUGE STEEL, WITH 16 GAUGE STEEL FRAMES.

DOORS SHALL FINISH FLUSH WITH THE SURROUNDING SURFACE. FRAMES SHALL HAVE 3 INCH WIDE EXPANDED METAL FOR PLASTERED SURFACES AND PLAIN FLANGED TYPE FRAME FOR TILE, MASONRY OR GYPSUM BOARD SURFACES. DOORS AND FRAMES SHALL BE FURNISHED PRIME COATED. DOORS INSTALLED IN CERAMIC TILE OR OTHER NON-PAINTED SURFACES SHALL BE STAINLESS STEEL.

- HINGES SHALL BE CONCEALED SPRING TYPE, TO ALLOW DOORS TO BE OPENED 175 DEGREES. LOCKS SHALL BE FLUSH SCREWDRIVER TYPE WITH STEEL CAMS.
- ACCESS PANELS SHALL BE 16 INCHES BY 16 INCHES OR LARGER AS MAY BE REQUIRED FOR PROPER ACCESS TO THE DEVICE BEING SERVED.
- ACCESS PANELS ARE NOT REQUIRED IN COMPLETELY ACCESSIBLE LIFT OUT TILE CEILINGS. PRIOR TO BIDDING CONTRACTOR SHALL REVIEW THE ROOM FINISH SCHEDULE ON THE ARCHITECTURAL DRAWINGS IN ORDER TO VERIFY THE NEED FOR ACCESS PANELS.

R. CONCRETE HOUSEKEEPING PADS

- ALL EQUIPMENT SHALL BE INSTALLED ON CONCRETE HOUSEKEEPING PADS. MINIMUM PAD THICKNESS SHALL BE 6 INCHES. PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 4 INCHES ON EACH SIDE.
- CONCRETE PADS SHALL BE PROVIDED BY THIS CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE THE SIZE AND LOCATION OF THE CONCRETE HOUSEKEEPING PADS WITH THE GENERAL CONTRACTOR.

T. DISCONNECT SWITCHES

- THIS CONTRACTOR SHALL FURNISH SAFETY DISCONNECT SWITCHES (FUSED AND NON-FUSED) REQUIRED FOR EQUIPMENT FURNISHED UNDER THIS CONTRACT. IN ADDITION, THIS CONTRACTOR SHALL FURNISH A SAFETY DISCONNECT SWITCH FOR MOTORS AND EQUIPMENT WHICH DO NOT HAVE COMBINATION STARTERS OR INTEGRAL DISCONNECTING MEANS. FUSIBLE DISCONNECT SWITCHES SHALL BE PROVIDED FOR EQUIPMENT RATED FOR USE ONLY WITH FUSES (SUCH AS CONDENSING UNITS, COMPRESSORS, ETC.). SUCH SWITCHES SHALL BE ONE, TWO OR THREE POLE TYPE, WITH SOLID NEUTRAL FOR 4 WIRE SERVICE, AND SHALL HAVE THE PROPER CURRENT AND VOLTAGE RATING AS REQUIRED. INSTALLATION OF ALL DISCONNECT SWITCHES SHALL BE BY THE ELECTRICAL CONTRACTOR.
- SAFETY SWITCHES SHALL BE NEMA HEAVY DUTY TYPE AND SHALL CARRY THE UNDERWRITERS' LABORATORIES LABEL. FUSIBLE SWITCHES SHALL INCORPORATE CLASS "R" FUSE REJECTION FEATURE AND SHALL BE BRACED TO WITHSTAND 200,000 AMPERE RMS SYMMETRICAL FAULT CURRENT. SAFETY SWITCHES SHALL CONFORM TO FEDERAL SPECIFICATION W-8-865.
- PROVIDE HEAVY-DUTY TYPE, SHEET ENCLOSED, SAFETY SWITCHES. THE TYPE, SIZE, AND RATING SHALL BE AS INDICATED ON THE DRAWINGS OR AS REQUIRED BY THE MOTOR OR EQUIPMENT SERVED. THE ENCLOSURE FOR DISCONNECT SWITCHES SHALL BE NEMA TYPE 1 FOR INDOOR USE, NEMA TYPE 4X FOR OUTDOOR USE AND NEMA TYPE 7 FOR EXPLOSION PROOF USE. DISCONNECTS SHALL BE MANUFACTURED BY ALLEN-BRADLEY, GENERAL ELECTRIC, CUTLER-HAMMER APPROVED EQUAL.
- SWITCHES SHALL INCORPORATE QUICK-MAKE, QUICK-BREAK OPERATING HANDLES. THE MECHANISM SHALL BE AN INTEGRAL PART OF THE BOX, NOT THE COVER, AND SWITCHES SHALL HAVE A COVER INTERLOCK TO PREVENT UNAUTHORIZED OPENING OF THE SWITCH DOOR IN THE ON POSITION OR CLOSING OF THE SWITCH MECHANISM WITH THE DOOR OPEN. CURRENT CARRYING PARTS SHALL BE CONSTRUCTED OF HIGH-CONDUCTIVITY COPPER WITH SILVER-TUNGSTEN TYPE SWITCH CONTACT.
- FUSE CLIPS SHALL BE POSITIVE PRESSURE TYPE REINFORCED FUSE CLIPS.

U. VIBRATION ISOLATION

- EQUIPMENT SHALL BE MOUNTED ON VIBRATION ISOLATORS TO PREVENT THE TRANSMISSION OF VIBRATION AND MECHANICALLY TRANSMITTED SOUND TO THE BUILDING STRUCTURE.
- ISOLATION EQUIPMENT SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER, AND SHALL BE DESIGNED SPECIFICALLY FOR THE APPLICATION REQUIRED. THIS INCLUDES, BUT IS NOT LIMITED TO, PIPING DUCTWORK, PUMPS, COMPRESSORS. VIBRATION ISOLATORS SHALL BE RATED FOR THE WEIGHT AND SPACING REQUIRED FOR THE EQUIPMENT REQUIRING ISOLATION.

V. FIRESTOPPING

- SERVICES THAT PASS THRU FIRE OR SMOKE RATED PARTITIONS, WALLS, FLOORS, SHALL BE FIRESTOPPED. FIRE STOPPING SYSTEM RATING SHALL MATCH PARTITION RATING. FIRE STOPPING SYSTEM SHALL MEET THE REQUIREMENTS OF ASTM E 814, UL 1479, AND BE FACTORY MUTUAL APPROVED.
- FIRESTOPPING AND/OR SMOKE STOPPING MATERIAL AND INSTALLATION SHALL BE AS MANUFACTURED BY HILTI OR APPROVED EQUAL.

W. WATER HEATERS

- DOMESTIC WATER HEATERS MARKED WH ON THE DRAWINGS SHALL BE MANUFACTURED BY "LOCHINVAR", "STATTE" OR "BRADFORD-WHITE". WATER HEATERS SHALL BE AS SPECIFIED ON THE WATER HEATER SCHEDULE OF THE DRAWINGS AND SHALL HAVE MINIMUM STORAGE CAPACITIES AND RECOVERY RATES NOTED. HEATERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
- PROPERLY SUPPORT HEATER AND WATER. THE BASE SHALL BE COMPRISED OF A STEEL CHANNEL SYSTEM AS MANUFACTURED BY "UNISTRUT", OR ARCHITECT/ENGINEER APPROVED EQUIVALENT. THE SYSTEM SHALL BE FACTORY FABRICATED FOR FIELD INSTALLATION. BASE SHALL BE EQUIPPED WITH A STEEL PLATE PLATFORM AND SHALL BE ANCHORED TO THE BUILDING CONSTRUCTION WITH POWDER ACTIVATED OR MECHANICAL TYPE FASTENERS ("HILTI" OR ARCHITECT APPROVED EQUIVALENT) WITH THREADED HANGER RODS. ANCHORING SYSTEM SHALL BE COMPATIBLE WITH TYPE OF BUILDING CONSTRUCTION. ANCHOR FASTENERS TO BUILDING CONSTRUCTION WITH PULL-OUT AND SHEAR CAPACITIES APPROPRIATE FOR THE SUSPENDED CEILING.
- WATER HEATERS SHALL BE EQUIPPED WITH TEMPERATURE AND PRESSURE RELIEF VALVES AND STAINLESS STEEL DRIP PANS WITH MINIMUM 4" RAISED EDGES. CONTRACTOR SHALL PIPE THE DRAIN PANS AND THE T&P VALVES TO INDIRECT WASTE ASSEMBLIES AS INDICATED ON THE PLANS OR AS REQUIRED BY CODE.

END OF PLUMBING SPECIFICATIONS



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Drawing Title:
**Plumbing
Specifications**

Scale: **As indicated**
Drawing Number:

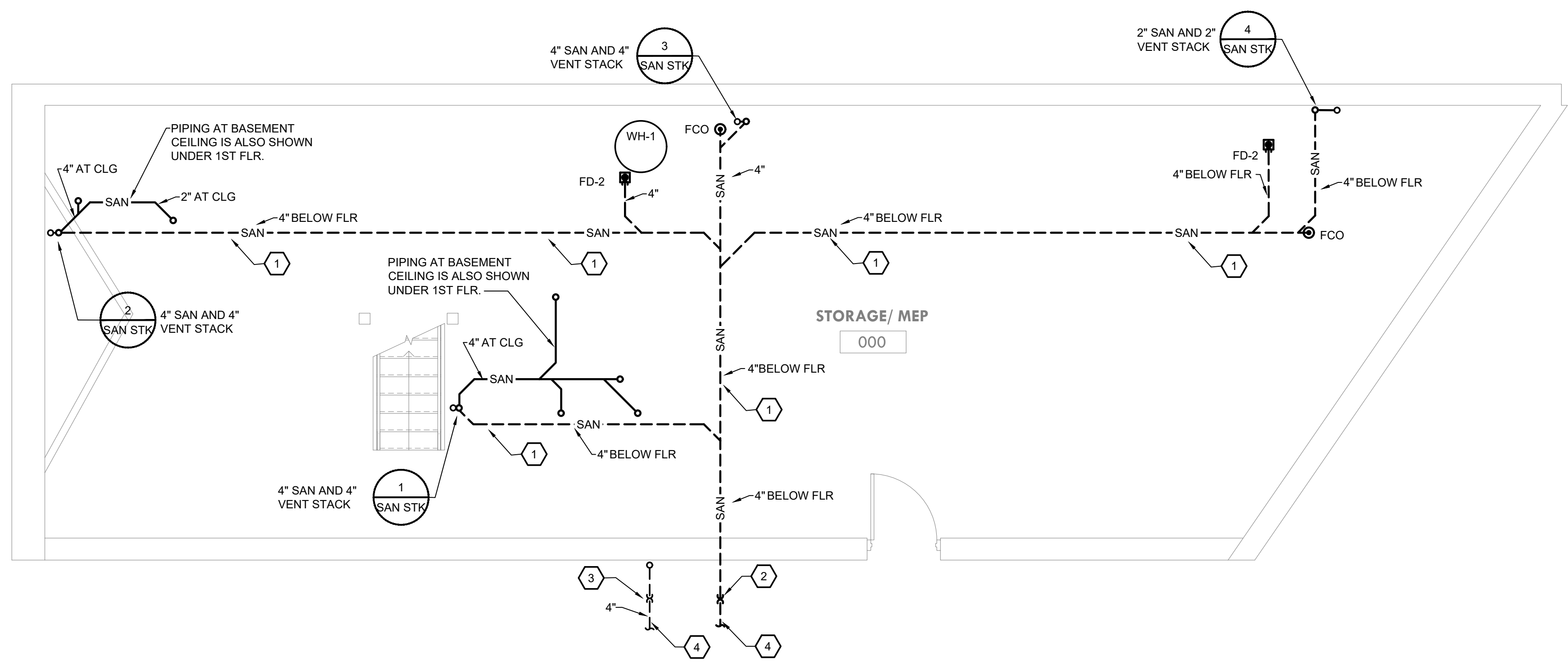
P-003

PLUMBING DRAINAGE GENERAL NOTES:

- XXXXXXXXXXXXXXXXXXXX

PLUMBING DRAINAGE KEY NOTES: (#)

- SAW-CUT EXISTING CONCRETE FLOOR TO INSTALL NEW 4 INCH PVC SANITARY PIPING BELOW SLAB. PATCH AND REPAIR CONCRETE TO MATCH EXISTING.
- PROVIDE NEW SANITARY HOUSE TRAP COMPLETE WITH CLEAN OUT AND FRESH AIR INLET IN COMPLIANCE WITH PWSA REQUIREMENTS.
- PROVIDE NEW STORM HOUSE TRAP COMPLETE WITH CLEAN OUT AND FRESH AIR INLET IN COMPLIANCE WITH PWSA REQUIREMENTS.
- COORDINATE WITH SITE CIVIL DRAWINGS AND CONNECT TO NEW SERVICE LINE.



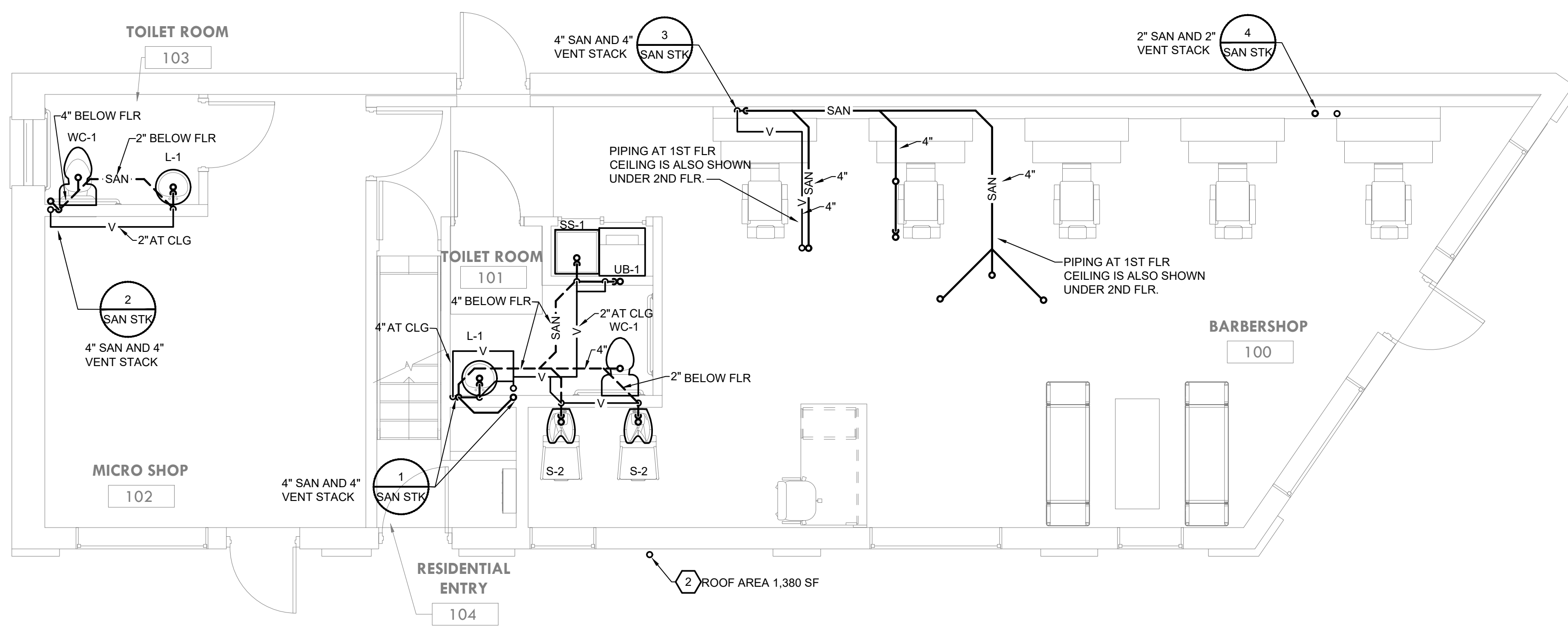
1 BASEMENT PLUMBING DRAINAGE PLAN
P-201 1/4" = 1'-0"

PLUMBING DRAINAGE GENERAL NOTES:

- A. PLUMBING CONTRACTOR SHALL INSTALL PLUMBING FIXTURES IN ACCORDANCE WITH MANUFACTURER PRINTED INSTRUCTIONS AND IN COMPLIANCE WITH ACHD PLUMBING CODE.

PLUMBING DRAINAGE KEY NOTES: (#)

- EXTEND DISHWASHER DRAIN HOSE UP TO UNDERSIDE OF COUNTERTOP AND ANCHOR. CONTINUE AND CONNECT TO SINK TAIL PIECE WITH SIDE INLET.
- NEW SHEET METAL DOWNSPOUT BY GC, SHOWN HERE FOR REFERENCE. PROVIDE 4 INCH DOWNSPOUT BOOT WITH CLEAN OUT.

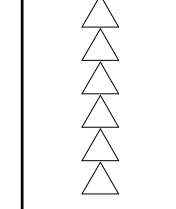


2 FIRST FLOOR PLUMBING DRAINAGE PLAN
P-201 1/4" = 1'-0"

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Revisions:



Date:
April 16, 2021

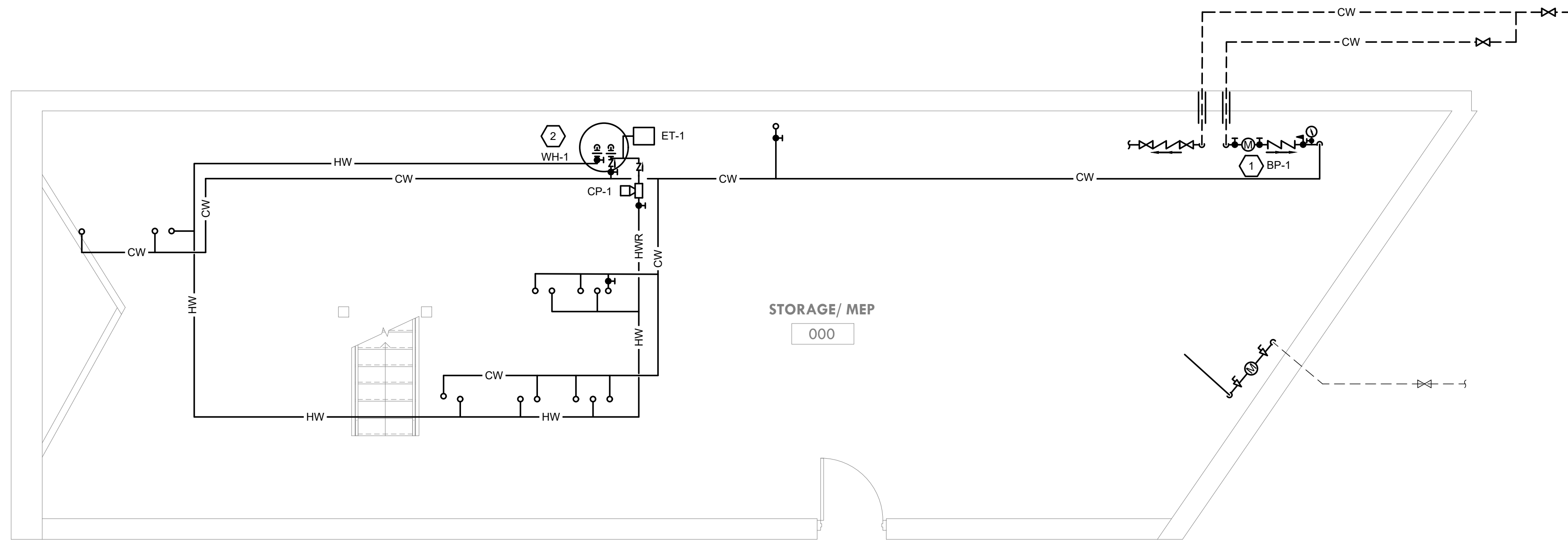
Project Number:
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Owner / Client:
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Drawing Title:
Basment & First Floor Plumbing Drainage Plans
Scale: **As indicated**

Drawing Number:

P-201



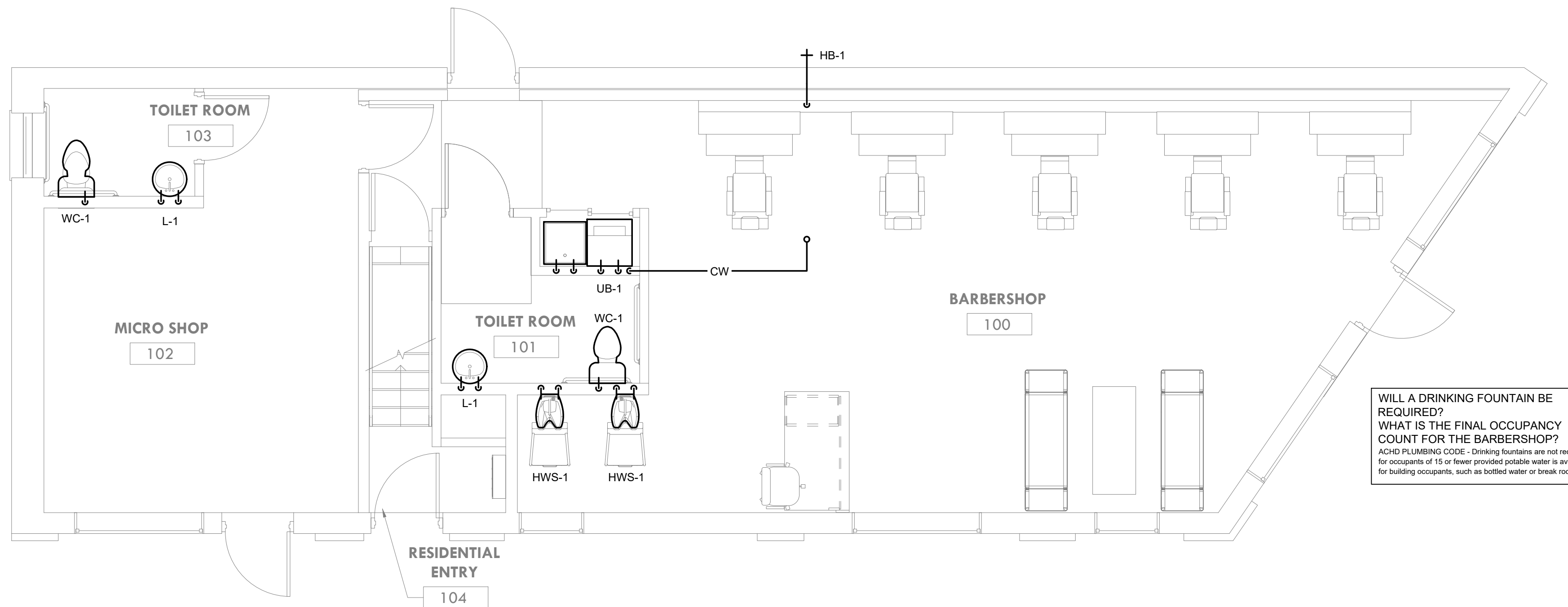
PLUMBING SUPPLY GENERAL NOTES:

1. XXXXXXXXXXXXXXXXXXXX

PLUMBING SUPPLY KEY NOTES: (#)

1. XXXXXXXXXXXXXXXXXXXX

1 BASEMENT PLUMBING SUPPLY PLAN
P-201 1/4" = 1'-0"



PLUMBING SUPPLY GENERAL NOTES:

1. XXXXXXXXXXXXXXXXXXXX

PLUMBING SUPPLY KEY NOTES: (#)

1. XXXXXXXXXXXXXXXXXXXX

2 FIRST FLOOR PLUMBING SUPPLY PLAN
P-201 1/4" = 1'-0"

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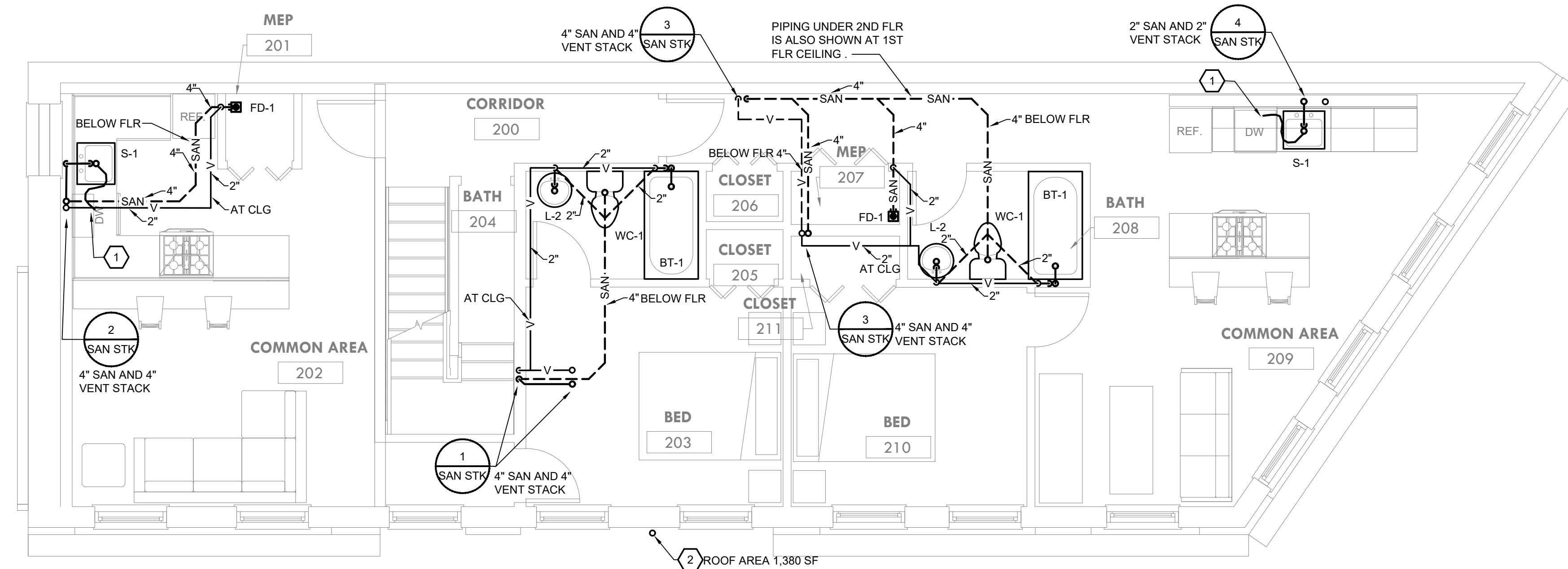
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Project Number:
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Drawing Title:
**Basment &
First Floor Plumbing
Supply Plans**
Scale: **As indicated**
Drawing Number:

P-201



1 SECOND FLOOR PLUMBING DRAINAGE PLAN
P-202 1/4" = 1'-0"

PLUMBING DRAINAGE GENERAL NOTES:

A. PLUMBING CONTRACTOR SHALL INSTALL PLUMBING FIXTURES IN ACCORDANCE WITH MANUFACTURER PRINTED INSTRUCTIONS AND IN COMPLIANCE WITH ACHD PLUMBING CODE.

PLUMBING DRAINAGE KEY NOTES: (#)

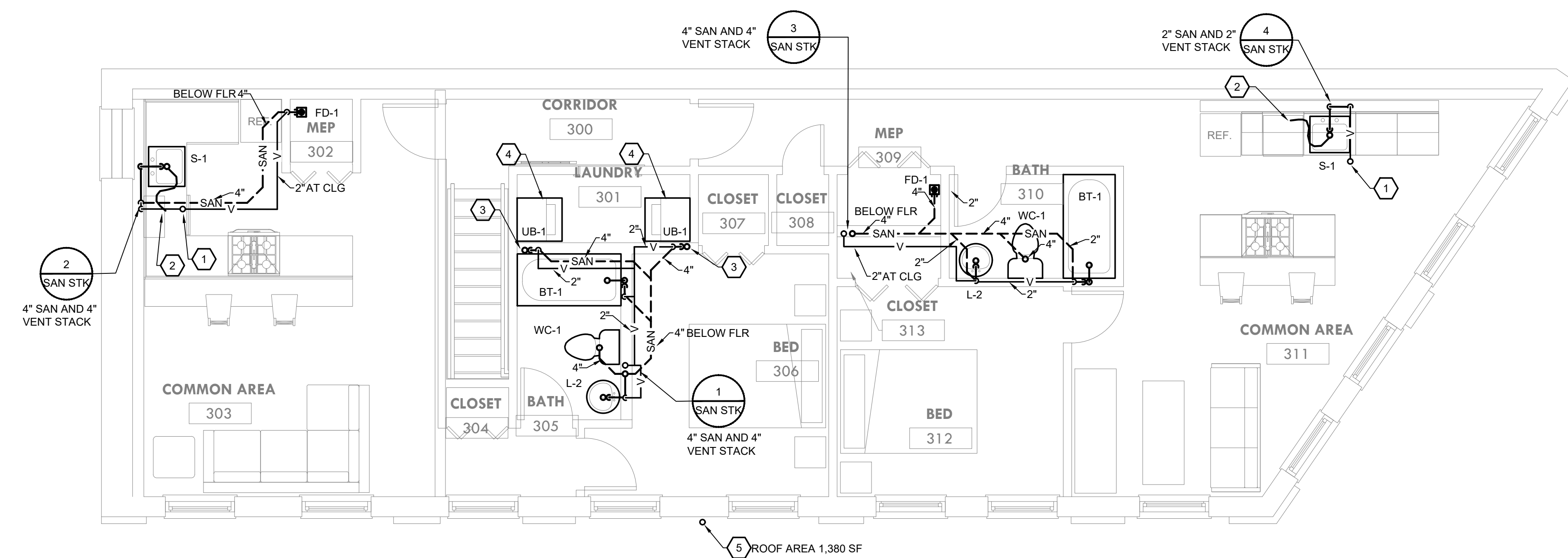
1. EXTEND DISHWASHER DRAIN HOSE UP TO UNDERSIDE OF COUNTERTOP AND ANCHOR. CONTINUE AND CONNECT TO SINK TAIL PIECE WITH SIDE INLET.
2. NEW SHEET METAL DOWNSPOUT BY GC, SHOWN HERE FOR REFERENCE.

PLUMBING DRAINAGE GENERAL NOTES:

A. PLUMBING CONTRACTOR SHALL INSTALL PLUMBING FIXTURES IN ACCORDANCE WITH MANUFACTURER PRINTED INSTRUCTIONS AND IN COMPLIANCE WITH ACHD PLUMBING CODE.

PLUMBING DRAINAGE KEY NOTES: (#)

1. OFFSET VENT PIPING AWAY FROM EXTERIOR WALLS TO CLEAR PARAPET CANT STRIP AND FLASHING.
2. EXTEND DISHWASHER DRAIN HOSE UP TO UNDERSIDE OF COUNTERTOP AND ANCHOR. CONTINUE AND CONNECT TO SINK TAIL PIECE WITH SIDE INLET.
3. PROVIDE DUAL UTILITY BOX FOR WASHING MACHINE DRAINAGE AND SUPPLY. AT DRAIN BOX PROVIDE 2 INCH BY 24 INCH TALL DRAIN STANDPIPE WITH TRAP TO ACCEPT WASHING MACHINE DISCHARGE.
4. PROVIDE SOLID DRAIN PAN BELOW WASHING MACHINE.
5. NEW SHEET METAL DOWNSPOUT BY GC, SHOWN HERE FOR REFERENCE.



2 THIRD FLOOR PLUMBING DRAINAGE PLAN
P-202 1/4" = 1'-0"

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▲
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Date:
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Project Number:
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Owner / Client:
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Drawing Title:
**Second & Third
Floor Plumbing
Drainage Plans**
Scale: As indicated
Drawing Number:

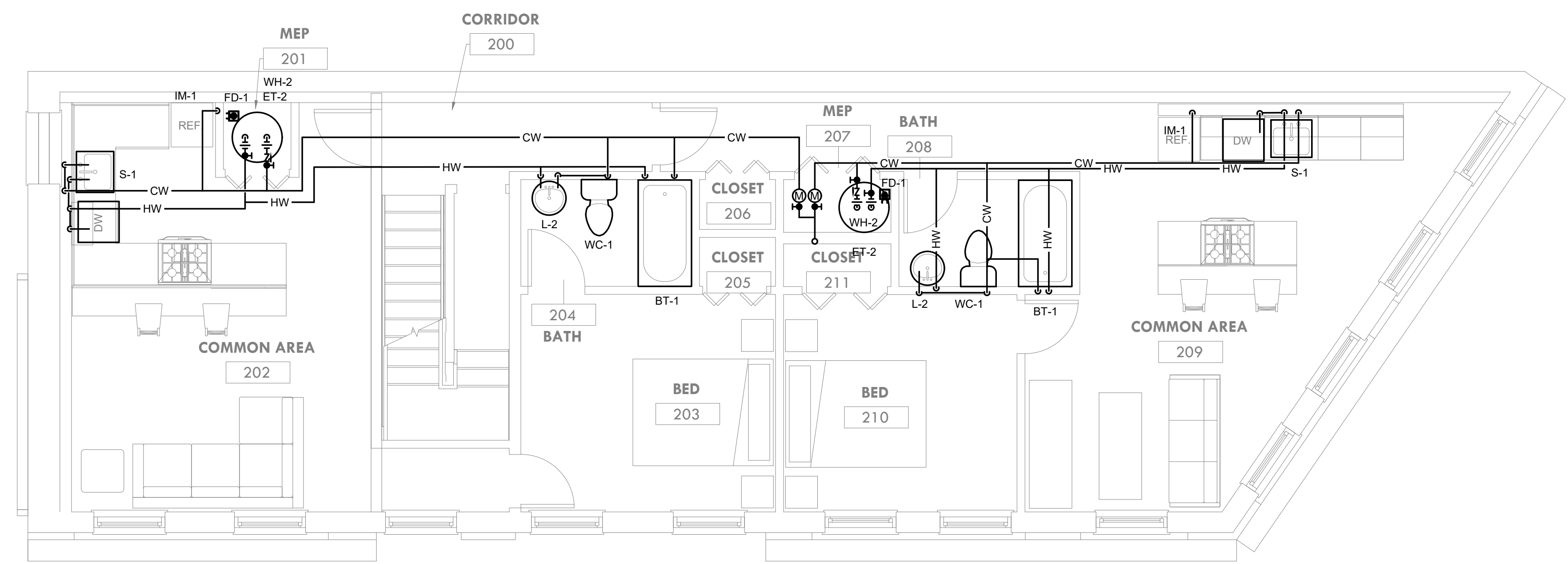
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PLUMBING SUPPLY GENERAL NOTES:

1. XXXXXXXXXXXXXXXXXXXX

PLUMBING SUPPLY KEY NOTES: (#)

1. XXXXXXXXXXXXXXXXXXXX



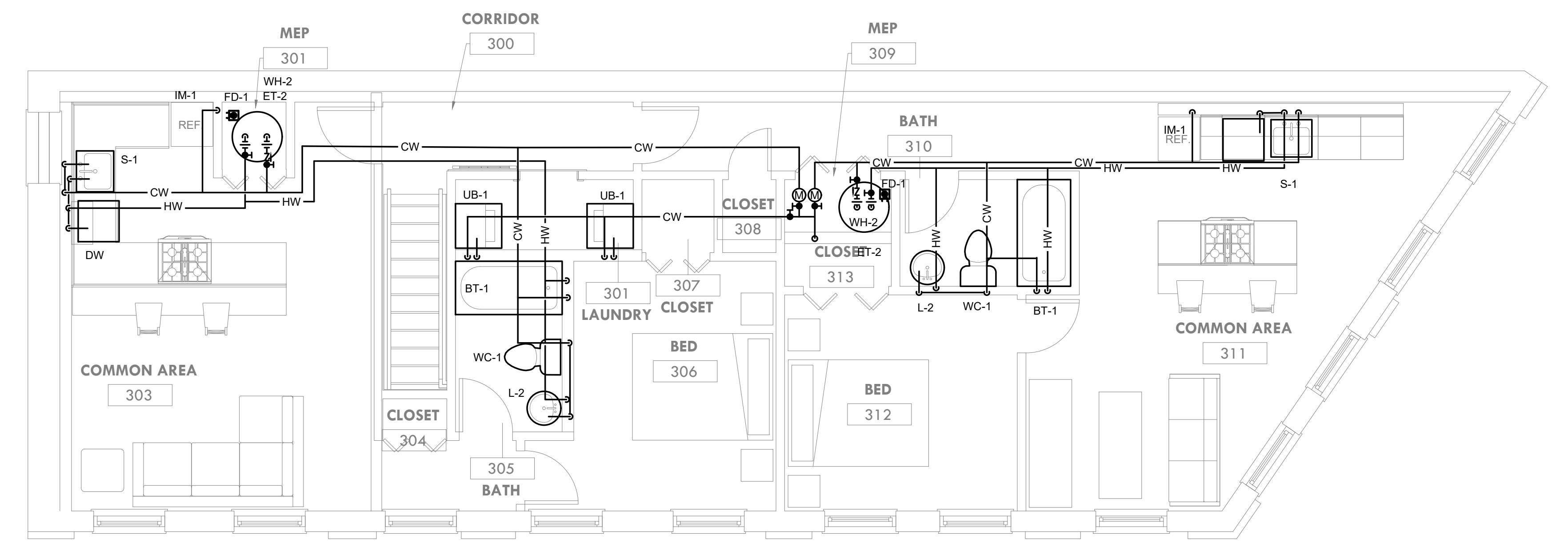
1 SECOND FLOOR PLUMBING SUPPLY PLAN
P-202 1/4" = 1'-0"

PLUMBING SUPPLY GENERAL NOTES:

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PLUMBING SUPPLY KEY NOTES: (#)

1. XXXXXXXXXXXXXXXXXXXX

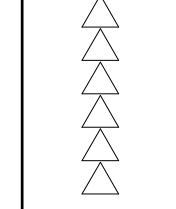


2 THIRD FLOOR PLUMBING SUPPLY PLAN
P-202 1/4" = 1'-0"

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Date:
April 16, 2021

Project Number:
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Drawing Title:
Second & Third Floor Plumbing Supply Plans
Scale: **As indicated**

Drawing Number:

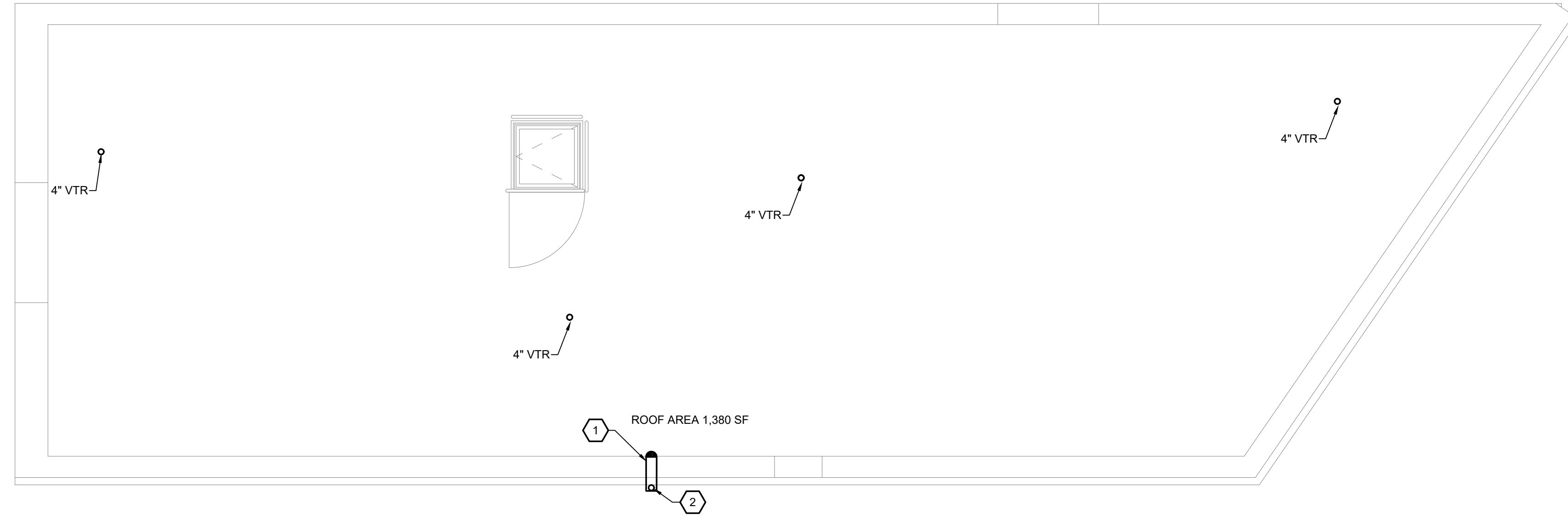
P-202

PLUMBING DRAINAGE GENERAL NOTES:

1. XXXXXXXXXXXXXXXXXXXX

PLUMBING DRAINAGE KEY NOTES: (1) (2)

1. ROOF DRAINAGE SCUPPER TO BE RENOVATED BY GC AS PART OF NEW ROOF INSTALLATION. DOWNSPOUT DRAIN BOX AND OVERFLOW TO BE PROVIDED BY GC AND SHOWN HERE FOR REFERENCE AND DRAIN SIZING.
2. NEW DOWNSPOUT TO BE PROVIDED BY GC AT THIS APPROXIMATE LOCATION AND SHOWN HERE FOR REFERENCE.



1 ROOF PLUMBING DRAINAGE PLAN
P-203 1/4" = 1'-0"

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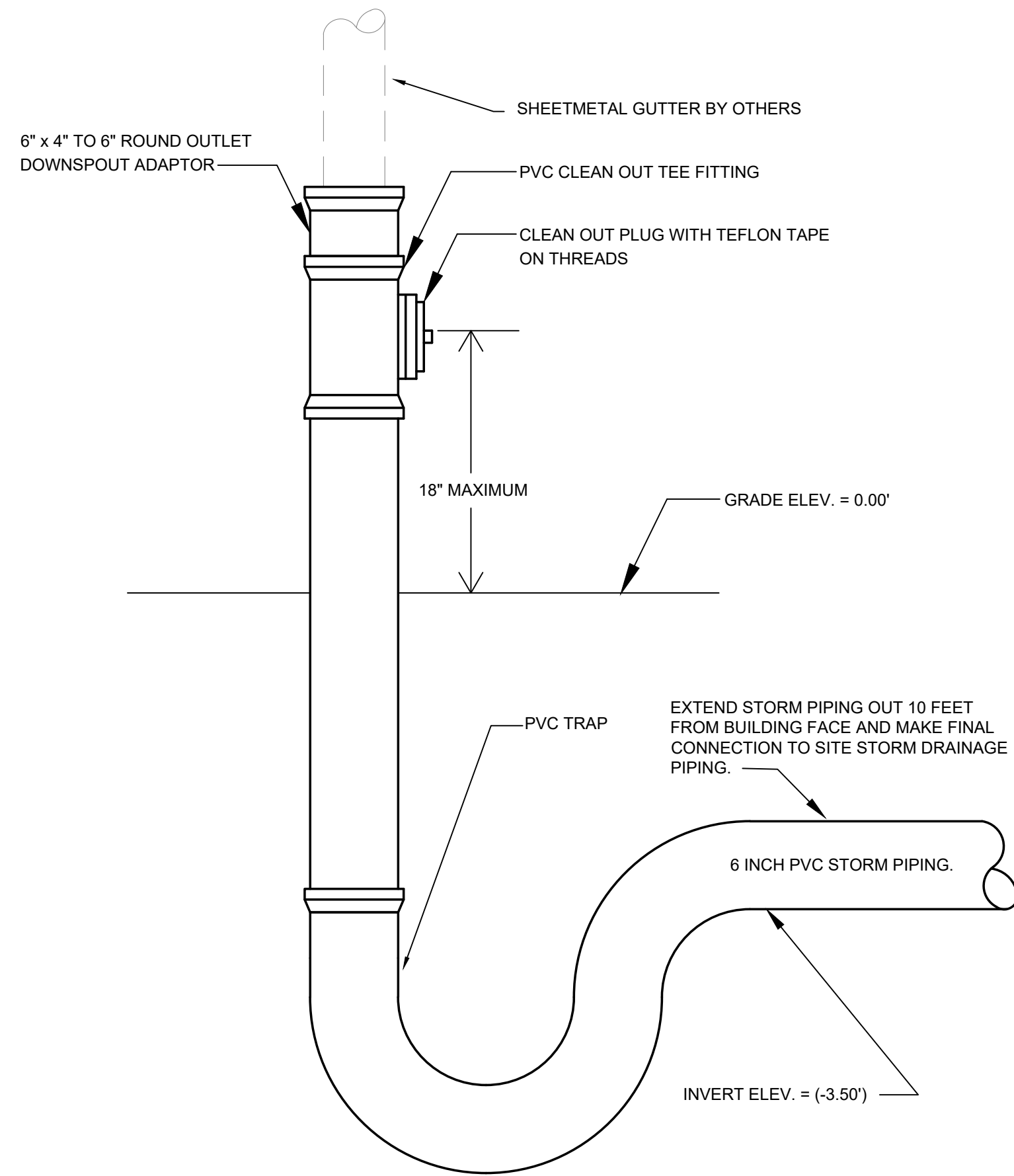
Project Number:
2020-06

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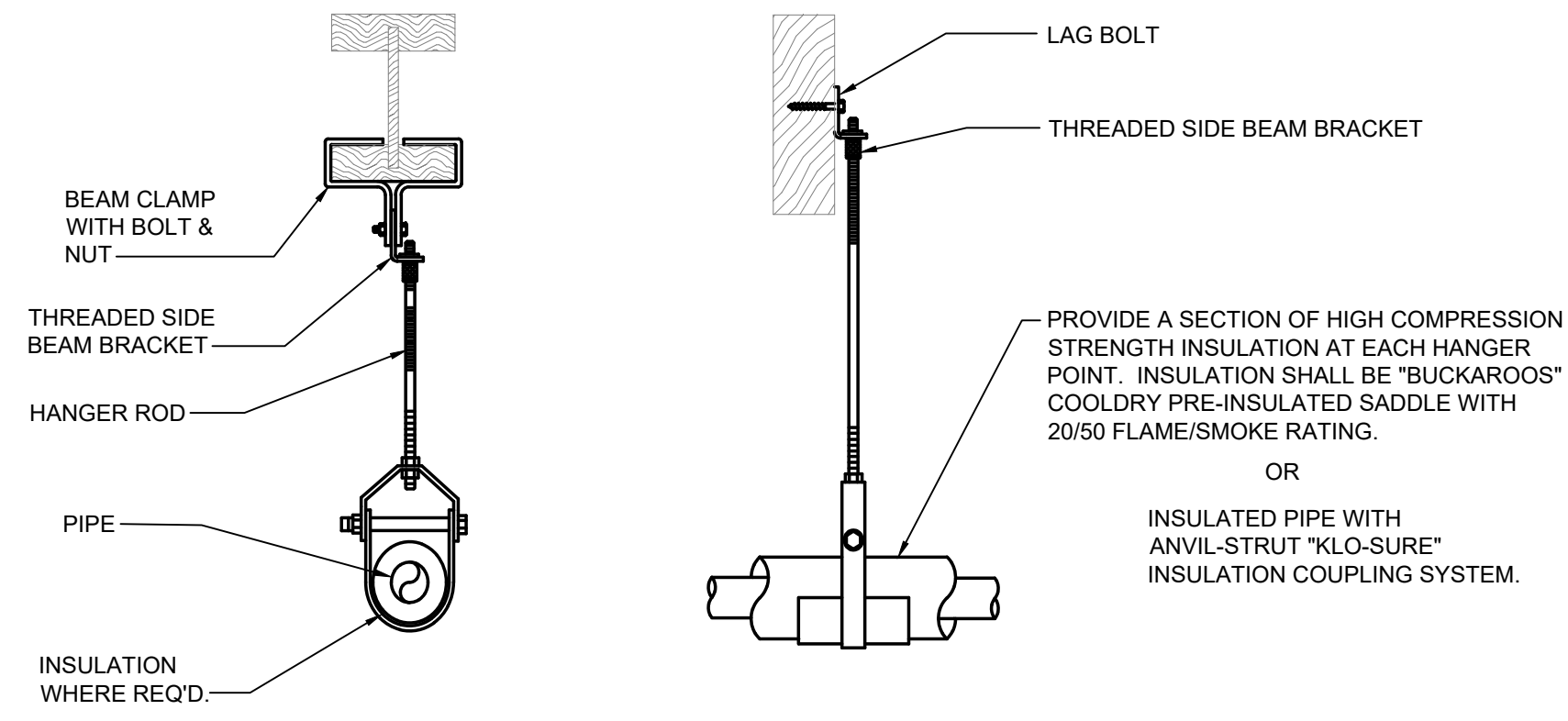
Drawing Title:
**Roof Plumbing
Drainage Plan**

Scale: **As indicated**
Drawing Number:

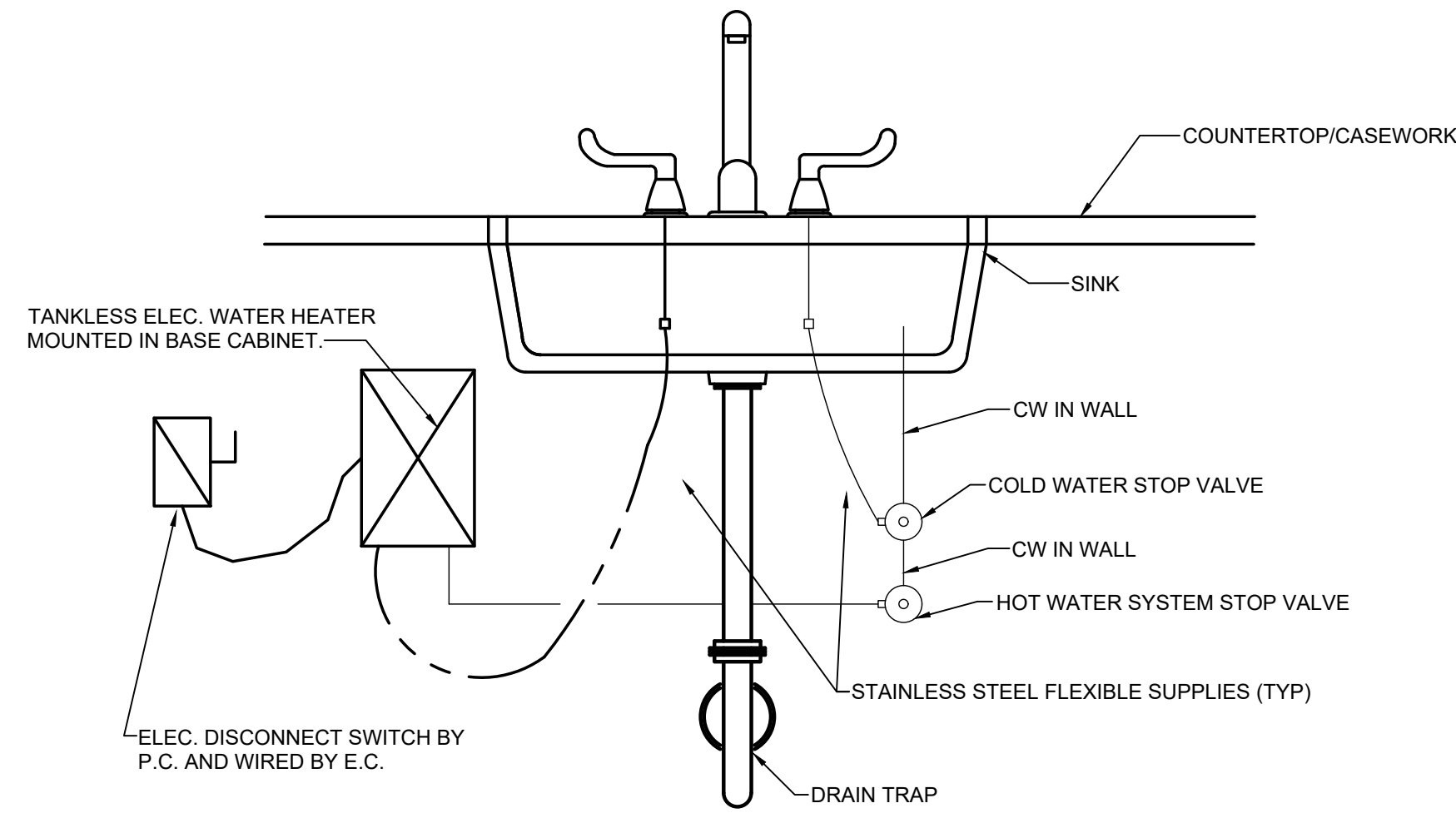
P-203



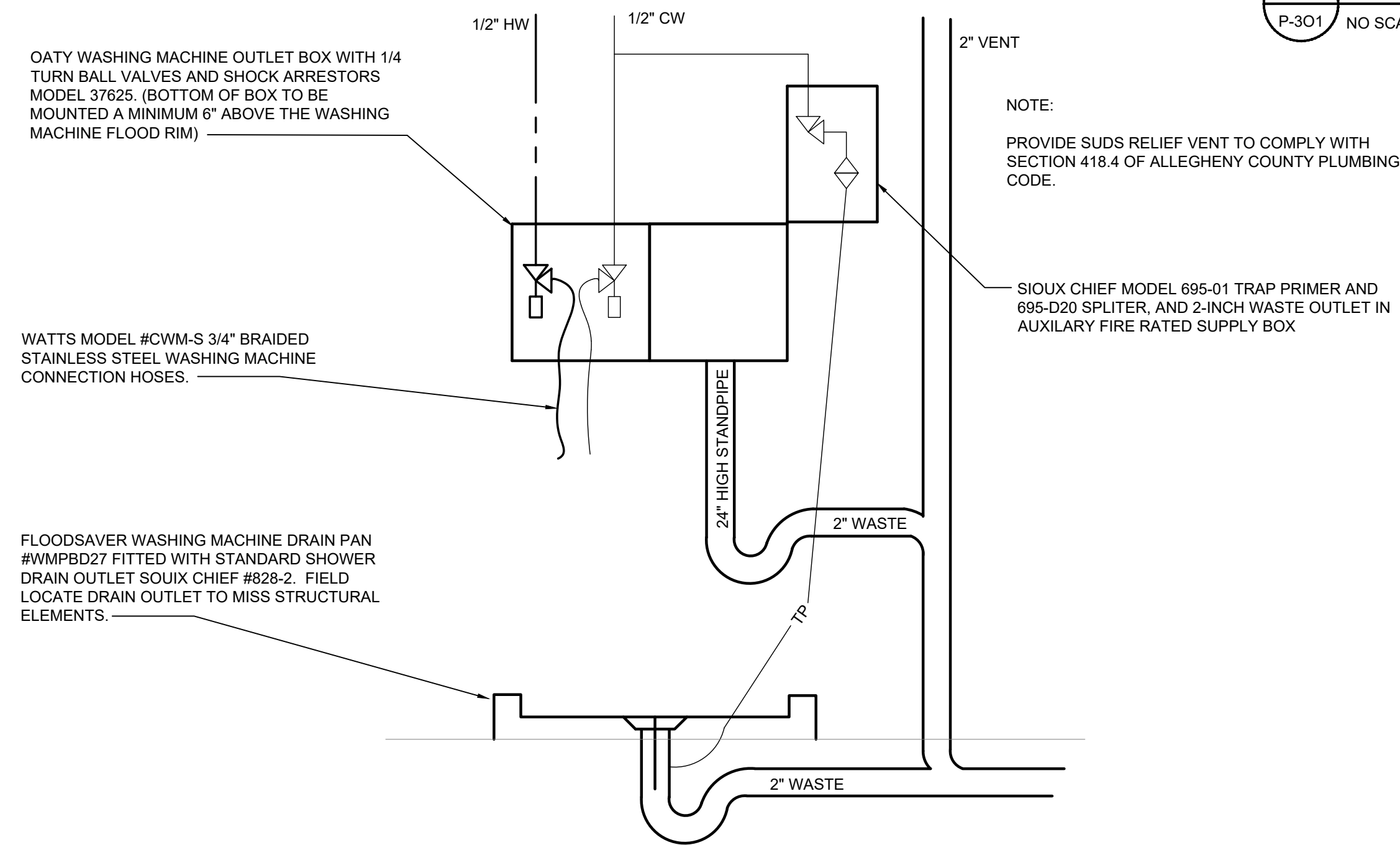
1 PVC DOWNSPOUT CLEANOUT DETAIL
P301 NOT TO SCALE



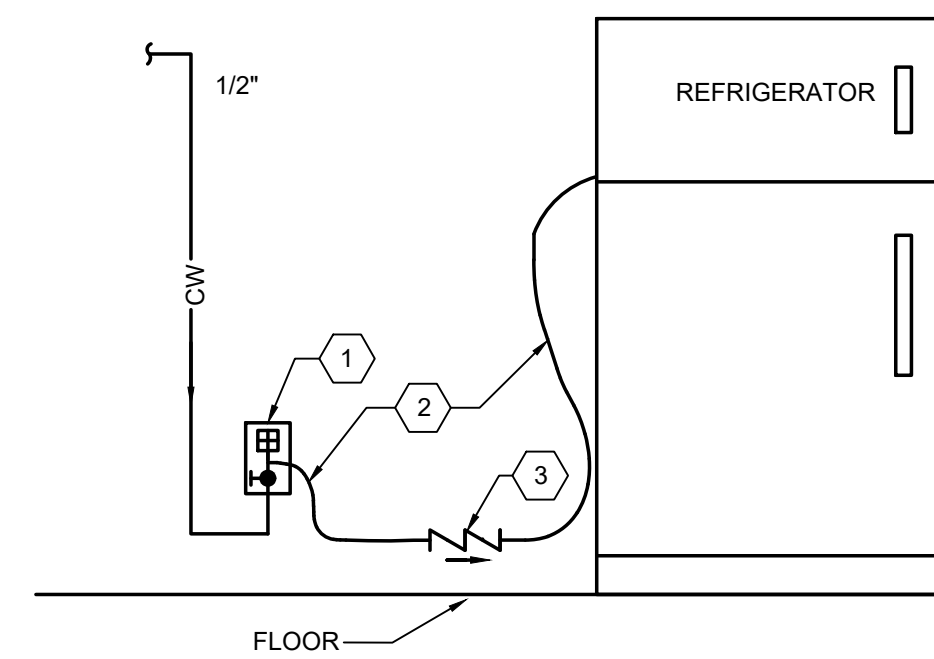
2 CLEVIS PIPE HANGER - WOOD CONSTRUCTION
P301 NOT TO SCALE



6 TANKLESS ELECTRIC WATER HEATER SCHEMATIC
P-301 NO SCALE

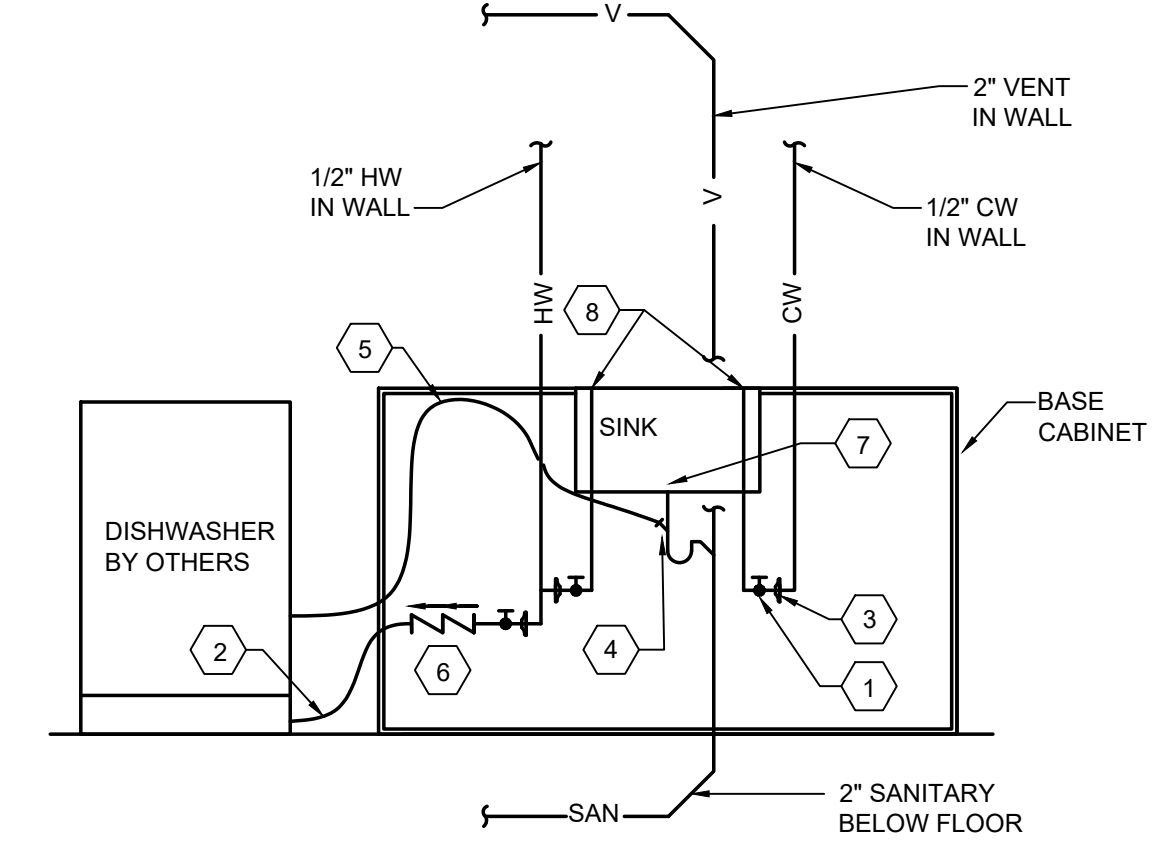


5 WASHING MACHINE CONNECTIONS DETAIL
P301 NOT TO SCALE



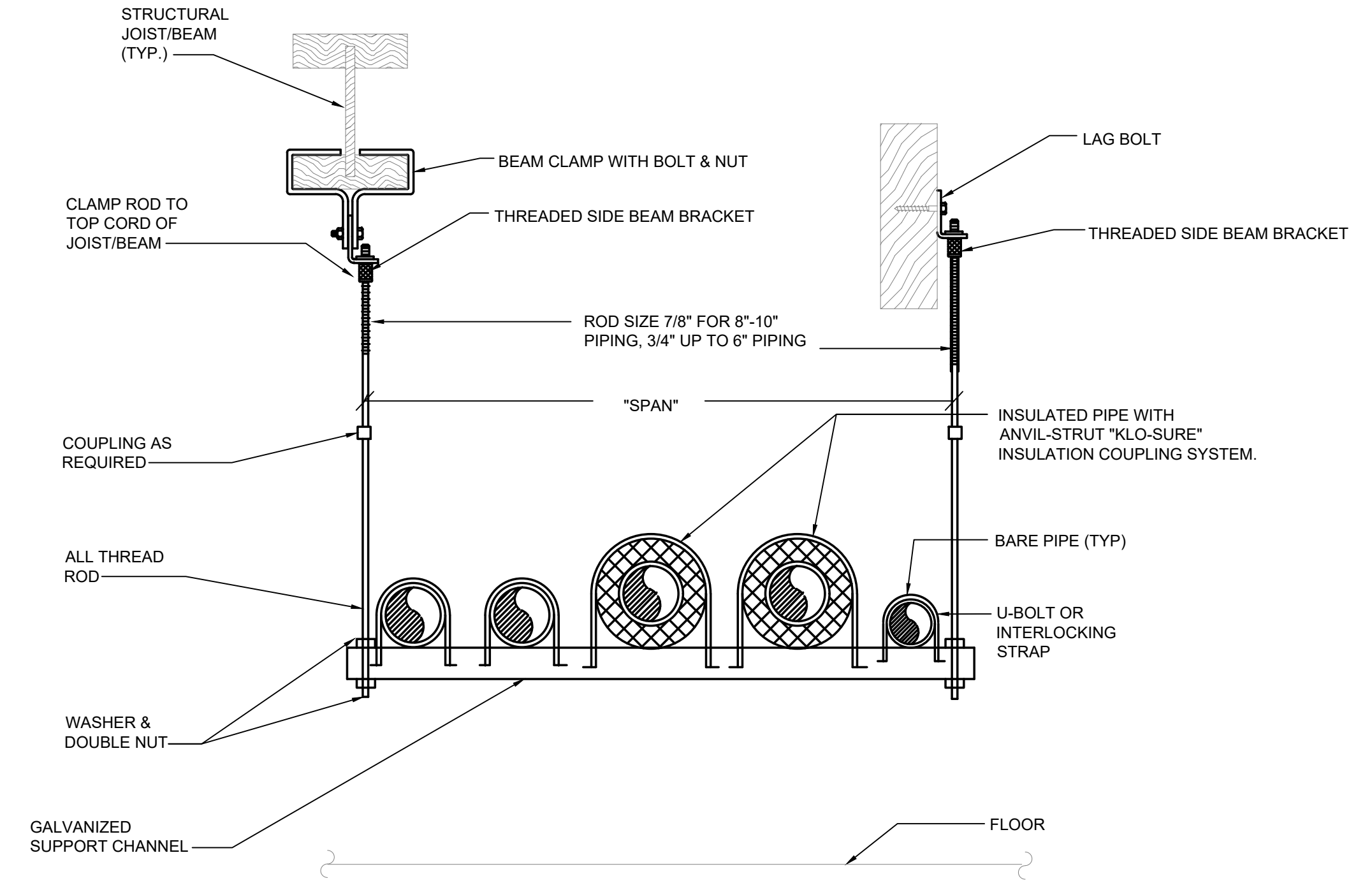
1. OUTLET BOX WITH SHUT OFF VALVE AND SHOCK ARRESTOR MOUNTED IN BASE CABINET OR IN WALL BEHIND COFFEE STATION (SIOUX CHIEF # 696-1010MF).
2. 3/8" FLEXIBLE HOSE WITH BRAIDED STAINLESS STEEL JACKET (WATTS # 4548DWSS)
3. DUAL CHECK BACKFLOW PREVENTER (WATTS # LF-7C)

3 ICE MAKER WITHOUT FILTER CONNECTION SCHEMATIC
P301 NOT TO SCALE

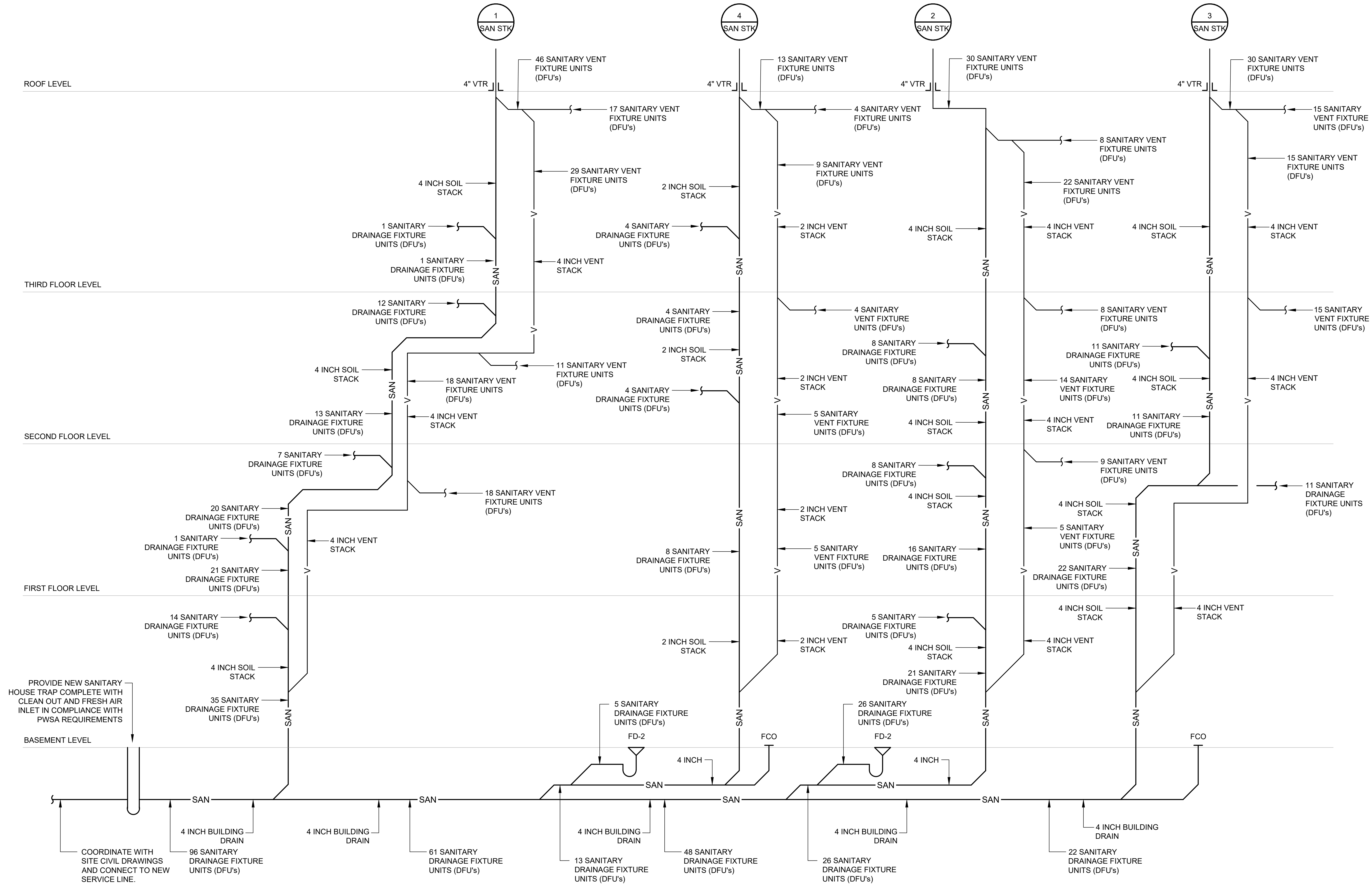


1. WATTS KWIKSTOP OR McGUIRE QUARTER TURN SUPPLY STOP (TYPICAL)
2. 3/8" FLEXIBLE HOSE WITH BRAIDED JACKET (WATTS # FS-4560DWSS)
3. CHROME PLATED PVC ESCUTCHEON (TYPICAL)
4. SINK TAIL PIECE WITH DISHWASHER DRAIN CONNECTION (SIOUX CHIEF # 216-086)
5. DISHWASHER DRAIN LINE - EXTEND TO UNDERSIDE OF COUNTER TOP AND ANCHOR TO COUNTER TOP.
6. PROVIDE AN IN-LINE DUAL CHECK VALVE BACKFLOW PREVENTER (ASSE 1024) WATTS MODEL #LF-7C ON THE HOT WATER SUPPLY TO DISHWASHER.
7. 1-1/2" SINK TAILPIECE WITH BASKET STRAINER.
8. PROVIDE CONNECTION TO FAUCET.

4 SINK WITH DISHWASHER CONNECTIONS SCHEMATIC
P301 NOT TO SCALE



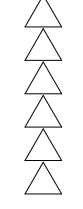
7 TRAPEZE PIPE SUPPORT DETAIL
P301 NOT TO SCALE



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TomTom24 Development, LLC

Drawing Title:
**Plumbing Riser
Diagrams**

Scale: As indicated
Drawing Number:

P-401

DRAIN AND SPECIALITIES SCHEDULE			
MARK	DESCRIPTION	MANUFACTURER & MODEL NUMBER	NOTES
FD-1	FINISHED AREA FLOOR DRAIN	ZURN ZN-415-6B-P. WITH Z-1000 DEEP SEAL TRAP, Z-1035 STABILIZER	6" ROUND NICKLE BRONZE TOP, TRAP PRIMER CONNECTION, CLAMPING COLLAR
FD-2	MECHANICAL ROOM FLOOR DRAIN - MEDIUM DUTY	ZURN Z-525-C-P. WITH Z-1036 STABILIZER	ADJUSTABLE MEDIUM DUTY CAST IRON GRATE, CLAMP COLLAR, TRAP PRIMER CONNECTION
FD-3	MECHANICAL ROOM FLOOR DRAIN - LARGE SUMP	ZURN Z568-GT-KC	LARGE VOLUME SUMP, C.I. TOP GRATE, CLAMPING COLLAR, TRAP PRIMER CONNECTION
HB-1	EXTERIOR HOSE BIBB - NON FREEZE - SELF DRAINING	ZURN Z1310-34UN	STAINLESS STEEL PLATE, 3/4" 90 DEGREE INLET WITH UNION, LOOSE KEY HANDLE, COMPRESSION WASHER
UB-1	UTILITY BOX AT WASHING MACHINE	OATEY MODA BOX #37625	2 BOX SYSTEM WITH 1/4 TURN STOP VALVES, SHOCK ARRESTORS, AND 2ND BOX WITH 2" DRAIN OUTLET
WM-1	WASHING MACHINE DRAIN PAN	E L MUSTEE DURAPAN MODEL #99	WITH 2 INCH DRAIN OUTLET AND REMOVABLE THRESHOLD
TP-1	TRAP PRIMER - PRESSURE DIFFERENTIAL TYPE	ZURN Z1022-DU2-DU4	PROVIDE MULTIPLE OUTLET DISTRIBUTION AS REQUIRED
TP-2	TRAP PRIMER - ELECTRONIC TYPE	ZURN Z1020-DU4-10	PROVIDE MULTIPLE OUTLET DISTRIBUTION AS REQUIRED
ALL DRAINS	---	---	PC SHALL VERIFY ALL FLOOR DRAINS TRAPS ARE COMPLETELY FILLED WITH WATER AT PROJECT END.

ELECTRIC INSTANTANEOUS WATER HEATER SCHEDULE

MARK	DESCRIPTION	MANUFACTURER & MODEL NUMBER (BASIS OF DESIGN)	LOCATION	TEMP RISE AT .5 GPM	POWER	VOLTAGE	EFFICIENCY	NOTES
IWH-1	ELECTRIC INSTANTANEOUS WATER HEATER	CHRONOMITE - CM-30L240	BELOW ROOF LOUNGE SINK	90°+	7.2 KW	240 VOLT, 1 PHASE	99%	1, 2, 3

- NOTES -
- ELECTRIC INSTANTANEOUS WATER HEATER SHALL HAVE INTEGRAL ASSE 1070 MIXING VALVE.
 - DISCONNECTS BY PLUMBING CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR.
 - REFER TO "ELECTRIC INSTANTANEOUS WATER HEATER DETAIL" ON DETAIL SHEET P-401 FOR ADDITIONAL PLUMBING REQUIREMENTS.

MIXING VALVE SCHEDULE

MARK	DESCRIPTION	LOCATION	MANUFACTURER & MODEL NUMBER	OPTIONS/NOTES	LOAD RANGE
MV-1	120 DEG TO 105 DEG FOR PUBLIC LAVATORIES	AT PUBLIC LAVATORIES AND HAIR WASHING STATION	"BRADLEY VERNATHERM MODEL # S59-4008"	ADJUSTABLE SET POINT, INTEGRAL STRAINERS ON SUPPLY INLET, BRONZE FINISH, MOUNTING BRACKET, PROVIDED IN ACCESS PANEL	2.5 GPM AT 5 PSI DROP

BACKFLOW PREVENTER SCHEDULE

MARK	DESCRIPTION	MANUFACTURER & MODEL NUMBER	LOCATION	NOTES
BP-1	REDUCED PRESSURE BACKFLOW PREVENTER ASSE-1013	WATTS LF009-QT	DOMESTIC WATER SERVICE ENTRANCE (1 1/2")	1
BP-2	DUAL CHECK VALVE ASSE-1024	WATTS LF7	COFFEE MAKERS, REFRIGERATORS	---

- NOTES -
- PROVIDE AIR GAP FITTING. ROUTE DRAIN TO AN APPROVED WASTE RECEPTOR.

PLUMBING FIXTURE CONNECTION SCHEDULE

MARK	FIXTURE TYPE	CW	CW SFU's	HW	HW SFU's	WASTE	WASTE DFUS	VENT	MANUFACTURER	MODEL NUMBER	FAUCET/FLUSH VALVE	ACCESSORIES	REMARKS
WC-1	FLOOR MOUNTED FLUSH TANK WATER CLOSET - 1.6 GPF - RIGHT HEIGHT FOR STANDARD AND ADA ACCESS	1"	5	---	---	4"	3	2"	TOTO - ELONGATED	E-MAX ENTRADA UNIVERSAL HEIGHT ELONGATED #CST244E(R) - PUT HANDLE ON WIDE SIDE OF ROOM; #01 COTTON COLOR	QUARTER TURN SUPPLY VALVE AND SS FLEX SUPPLY HOSE	TOTO ELONGATED CLOSED FRONT SEAT #SS114 WITH SLOW CLOSE COVER	1, 6
L-1	WALL MOUNTED LAVATORY - ADA ACCESSIBLE - WHITE COLOR	1/2"	0.5	1/2"	0.5	1 1/2"	1	1 1/2"	TOTO - COMMERCIAL WALL HUNG	#LT307.4	DELTA FAUCET 520-MPU-DST - SINGLE LEVER; 1.5 GPM AERATOR	GRID DRAIN, 17 GA TRAP, SUPPLIES, TRAP/SUPPLY INSULATION, INTEGRAL ASSE #1070 MIXING VALVE	1, 2, 4, 5, 6, 7
L-2	COUNTERTOP MOUNTED - DROP IN LAVATORY - ADA ACCESSIBLE - WHITE COLOR	1/2"	0.5	1/2"	0.5	1 1/2"	1	1 1/2"	TOTO - SELF RIMMING	#LT501 - #01 COTTON COLOR	DELTA FAUCET 520-MPU-DST - SINGLE LEVER; 1.5 GPM AERATOR	METAL POP-UP DRAIN, 17 GA TRAP, SUPPLIES, TRAP/SUPPLY INSULATION,	1, 2, 4, 5, 6, 7
S-1	STAINLESS STEEL SINGLE BOWL DROP-IN SINK	1/2"	1.0	1/2"	1.0	1 1/2"	2	1 1/2"	ELKAY	LUSTERTONE SINK #LR2521PD	DELTA FAUCET #4140DST SINGLE HOLE KITCHEN FAUCET PULL-OUT SPRAY SPOUT AND LEVER HANDLE	PERFECT DRAIN ASSEMBLY #LKPdvr18B, CHROME PLATED BRASS TAILPIECE WITH SIDE INLET, McGUIRE 17 GA TRAP, QUARTER TURN SUPPLY VALVES, TRAP INSULATION	1, 2, 3, 4
S-2	HAIR WASH SINK - WALL MOUNTED SINK	1/2"	1.0	1/2"	1.0	1 1/2"	2	1 1/2"	JEFFCO	BLACK PORCELAIN SHAMPOO BOWL SINK #8100-570-VB WITH GELL NECK REST #6600NR	CENTRAL BRASS SHAMPOO FAUCET #1130 2-HOLE FAUCET PULL-OUT SPRAY AND LEVER HANDLE	GRID DRAIN ASSEMBLY, CHROME PLATED BRASS TAILPIECE, CHROME PLATED HAIR INTERCEPTOR TRAP ZURN #ZAB-1175-CP, QUARTER TURN SUPPLY VALVES,	1, 2, 3, 4
BT-1	BATH TUB - 4-SECTION FIBERGLASS TUB WITH SHOWER WALL SURROUND	1/2"	1.5	1/2"	1.5	2"	2	1 1/2"	CLARION - FIBERGLASS	MODEL# 4T40LT OR 4T40RT - CONTROLS ON RIGHT OR LEFT TO MATCH PLANS	DELTA MODEL #T13420 - SINGLE LEVER PRESSURE BALANCING VALVE #R10000-LN, LEVER VOLUME CONTROL, DIVERTER TUB SPOUT #RP1999S, SOFT RUBBER SPRAY SHOWER HEAD #RP38357	MOLDED IN SOAP DISH TRAY; PROVIDE ADJUSTABLE CURTAIN ROD; WHITE SHOWER CURTAIN	1, 2, 5, 6
DW-1	DISHWASHER CONNECTION	1/2"	0.5	---	---	1"	2		DAHL CHROME PLATED SHUT OFF VALVE WITH SHOCK ARRESTOR	MODEL #211-QG3-30-14WHA	---	MOUNT UNDER SINK NEXT TO DISHWASHER	1, 5
LT-1	FLOOR MOUNTED LAUNDRY SINK ON STEEL LEGS	3/4"	1.0	3/4"	1.0	3"	2	1 1/2"	LDR INDUSTRIES	1#040-JS6000BLK - 23" x 24" x 34" HIGH - BLACK COLOR	LDR PULL OUT FAUCET #012-52445CP WITH FLEXIBLE HOSE	PROVIDE FAUCET HOSE, AND BLACK STEEL LEGS	1, 5, 6
MB-1	FLOOR MOUNTED MOP BASIN	3/4"	2.25	3/4"	2.25	3"	2	1 1/2"	MUSTEE	63M - 24" x 24" x 10"	CHICAGO FAUCET 897-RCF WITH VACUUM BREAKER	PROVIDE FAUCET HOSE, HOSE HOLDER, MOP HANGER, STAINLESS STEEL WALL PROTECT PANELS	1, 5, 6

- REMARKS:
- PROVIDE ALL REQUIRED COMPONENTS FOR COMPLETE FIXTURE ROUGH-IN, I.E., QUARTER TURN CONVERTIBLE SUPPLIES & STOPS - MCGUIRE #LFBV02-SS WITH BRAIDED STAINLESS STEEL SUPPLIES, TRAPS - MCGUIRE #9812C15DF, GRID DRAINS & TAILPIECES - MCGUIRE #152MN, CARRIERS - ZURN 1200 SERIES, NOT ALL REQUIRED COMPONENTS ARE SPECIFIED ABOVE.
 - FIXTURES SHALL BE ADA COMPLIANT AND PROVIDED WITH ADA COMPLIANT ACCESSORIES. MOUNT AT ADA COMPLIANT ELEVATIONS. SEE ARCHITECTURAL PLAN FOR ELEVATIONS.
 - COORDINATE FLUSH HANDLE WITH ADA TOILET STALL. HANDLE SHALL BE LOCATED SO THAT IT IS ON THE WIDE SIDE OF THE STALL FOR ADA APPROACH ACCESSIBILITY.
 - PROVIDE MCGUIRE PRO-WRAP WHITE ANTI-MICROBIAL INSULATING WRAP ON EXPOSED UNDER LAVATORY OR SINK SUPPLY AND WASTE PLUMBING.
 - PROVIDE 12" WIDE MINIMUM 3/4" PLYWOOD BACKING ATTACHED TO STUDS TO SUPPORT FIXTURE, FAUCET, OR ACCESSORIES.
 - REFER TO ARCHITECTURAL DRAWINGS FOR FIXTURE PLAN LOCATION DIMENSION REQUIREMENTS AND COORDINATE PLUMBING ROUGH-IN ACCORDINGLY.
 - PROVIDE PVC SHROUD UNDER LAVATORY SINK TO CONCEAL SUPPLY AND DRAINAGE PIPING; TRU-BRO "LAV-SHIELD" MODEL #2018-AS-L

ELECTRIC WATER HEATER SCHEDULE

MARK	DESCRIPTION	MANUFACTURER & MODEL NUMBER (BASIS OF DESIGN)	LOCATION	STORAGE VOLUME	GPH RECOVERY @ 100 DEG F RISE	POWER	VOLTAGE	EFFICIENCY	NOTES
EW-1	ELECTRIC WATER HEATER	LOCHINVAR - KSA050KDB	BASEMENT MECH ROOM	50 GALLONS	42 GALLONS	(2) 5KW SIMULTANEOUS = 10.0 KW	240 VOLT, 1 PHASE	93%	1, 3, 5
EW-2	ELECTRIC WATER HEATER	LOCHINVAR - KSA020KDB	EACH APARTMENT MECH ROOM	40 GALLONS	25 GALLONS	6.0 KW	240 VOLT, 1 PHASE	93%	1, 3, 5

- NOTES -
- PROVIDE EXPANSION TANK. REFER TO EXPANSION TANK SCHEDULE ON DRAWING #
 - PROVIDE CIRCULATION PUMP. REFER TO CIRCULATION PUMP SCHEDULE ON DRAWING #.
 - PROVIDE HEAT TRAPS ON WATER HEATER.
 - REFER TO DETAIL #X ON PXXX FOR ADDITIONAL INFORMATION.
 - DISCONNECTS BY PLUMBING CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR.
 - ACCEPTABLE MANUFACTURERS - LOCHINVAR, A.O.SMITH.

EXPANSION TANK SCHEDULE

MARK	DESCRIPTION	MANUFACTURER & MODEL NUMBER (BASIS OF DESIGN)	LOCATION	TANK SIZE	ACCEPTANCE VOLUME	NOTES
ET-1	DOMESTIC WATER EXPANSION TANK	AMTROL ST-12	AT WATER HEATER WH-1 IN BASEMENT	4.5 GALLONS	3.2 GALLONS	1, 2
ET-2	DOMESTIC WATER EXPANSION TANK	AMTROL ST-5	AT WATER HEATER WH-2 IN EACH APARTMENT	2 GALLONS	0.9 GALLONS	1, 2

- NOTES -
- WORKING PRESSURE - 150 PSIG.
 - MAXIMUM SYSTEM TEMPERATURE - 140 DEG F.
 - ACCEPTABLE MANUFACTURERS - WESSELS, WATTS



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Building Renovation for

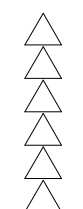
Big Tom's Barbershop

2178 Centre Avenue, Pittsburgh, PA 15219

Seal:

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Revisions:



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April 16, 2021

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2020-06

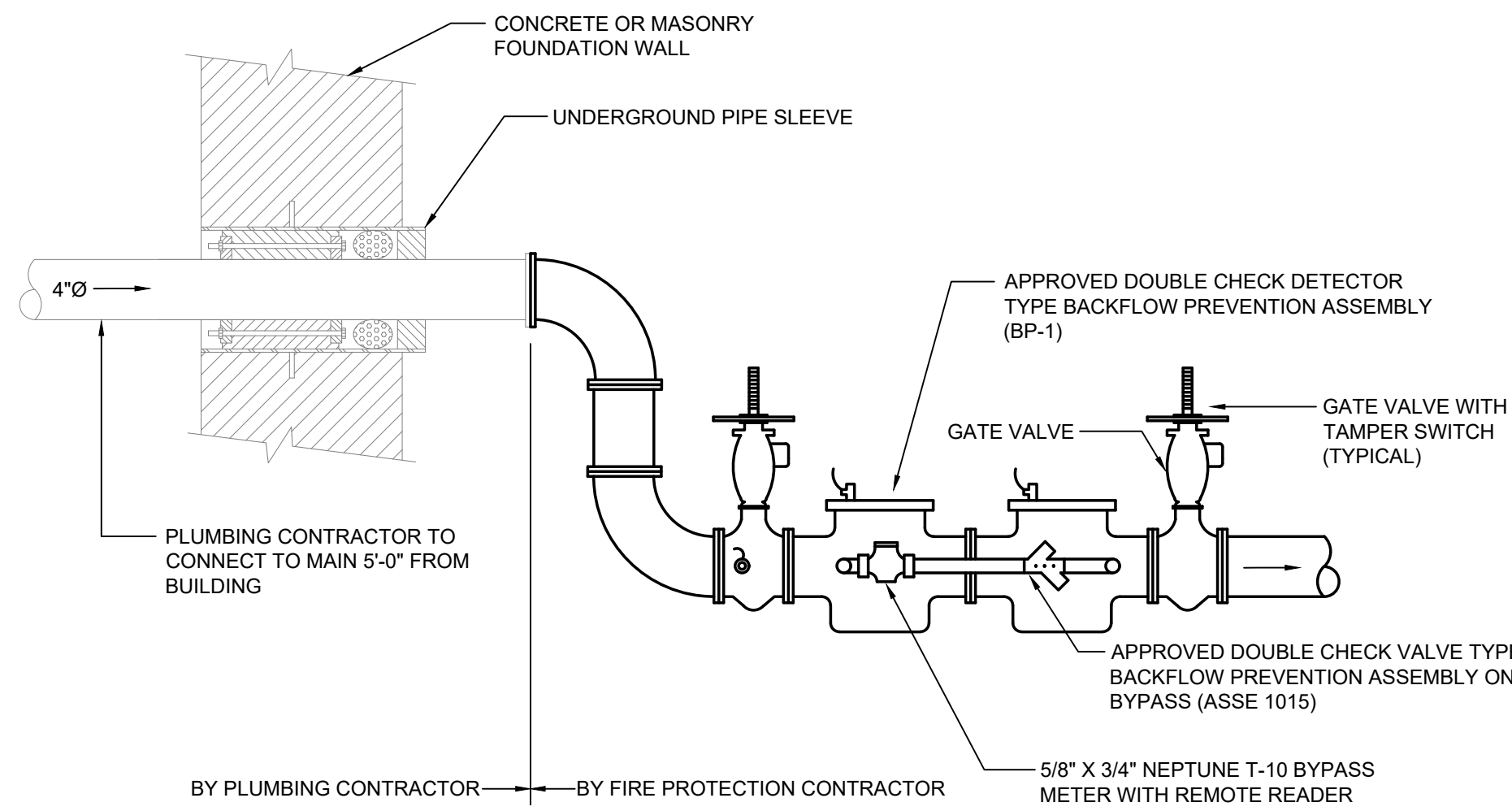
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TomTom24 Development, LLC

Drawing Title:
Plumbing
Schedules

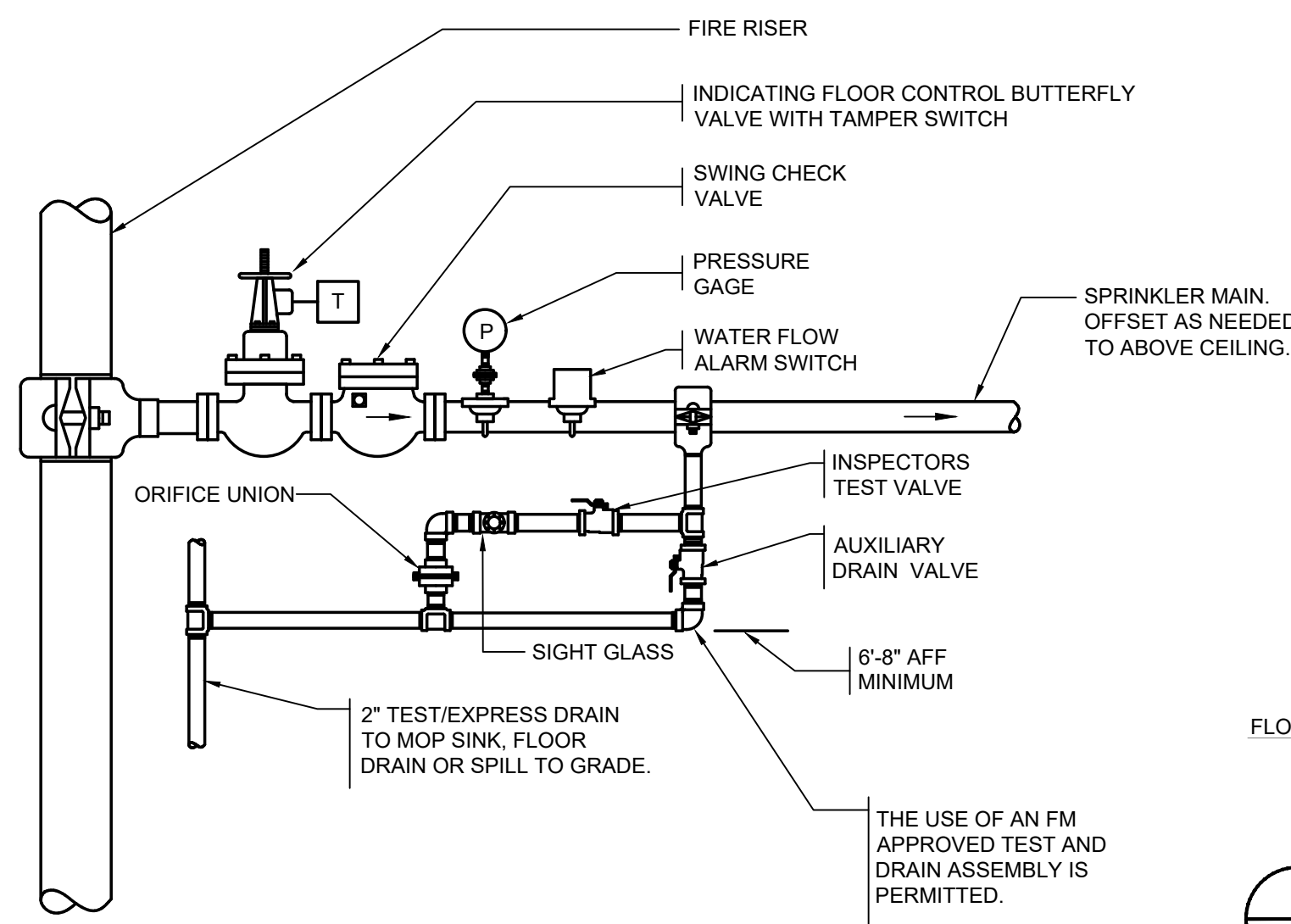
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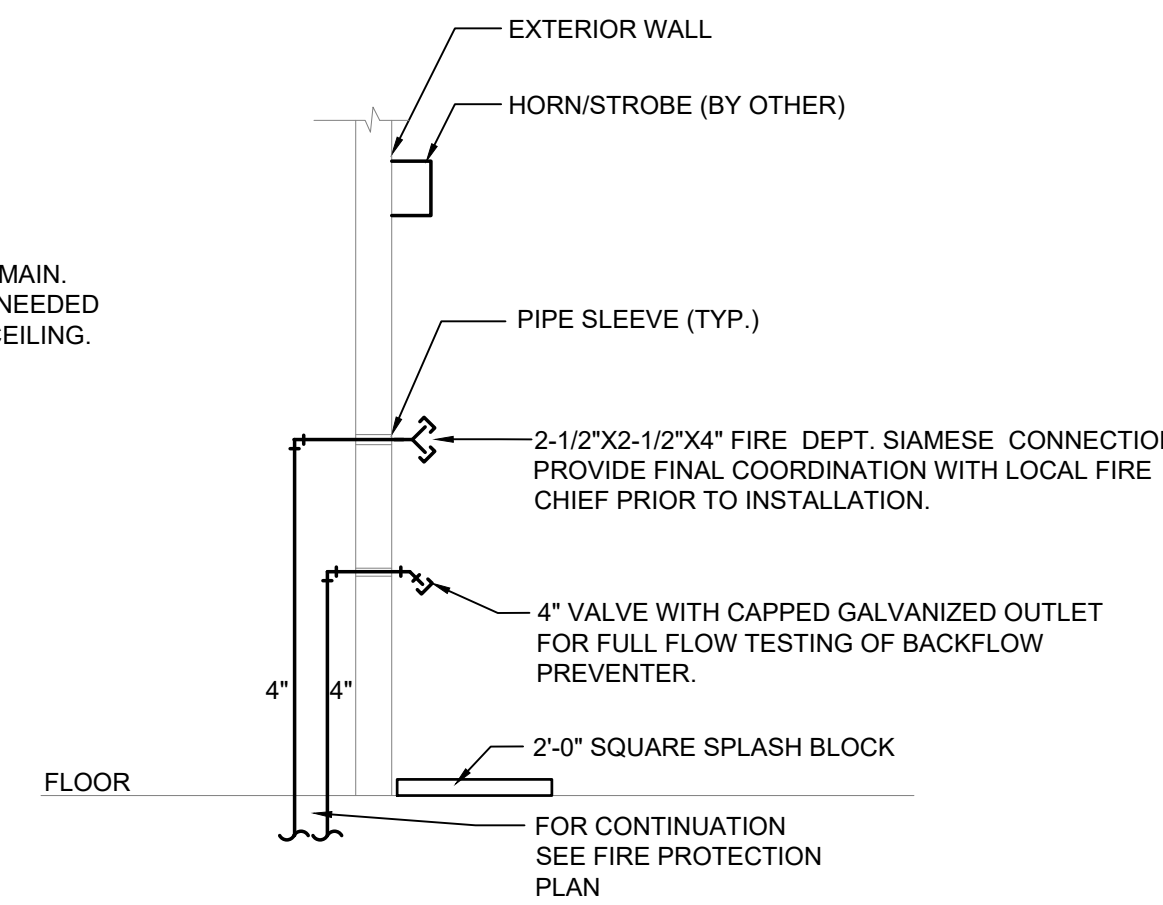
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1 FIRE PROTECTION SERVICE ENTRANCE - THROUGH WALL
FP-001 NOT TO SCALE



2 CONTROL VALVE ASSEMBLY DETAIL
FP-001 NOT TO SCALE



3 FIRE DEPT. CONNECTION DETAIL
FP-001 NOT TO SCALE

FIRE PROTECTION SCHEDULE AND LEGEND		
SYMBOL	ABRV.	DESCRIPTION
		PIPE TURNED UP
		PIPE TURNED DOWN
		PIPE TEE UP
		PIPE TEE DOWN
		CAPPED PIPE
		PIPE BREAK
		CONCEALED PENDENT SPRINKLER
		UPRIGHT SPRINKLER
		HORIZONTAL SIDEWALL SPRINKLER
		CHECK VALVE
		FLOW SWITCH
		TAMPER SWITCH
	PG	PRESSURE GAUGE
		OS&Y VALVE
		OS&Y VALVE WITH TAMPER SWITCH
		FIRE DEPARTMENT SIAMESE CONNECTION
	F	FIRE PROTECTION PIPING
	D	FIRE PROTECTION DRAIN PIPING
	SP	SPRINKLER PIPING

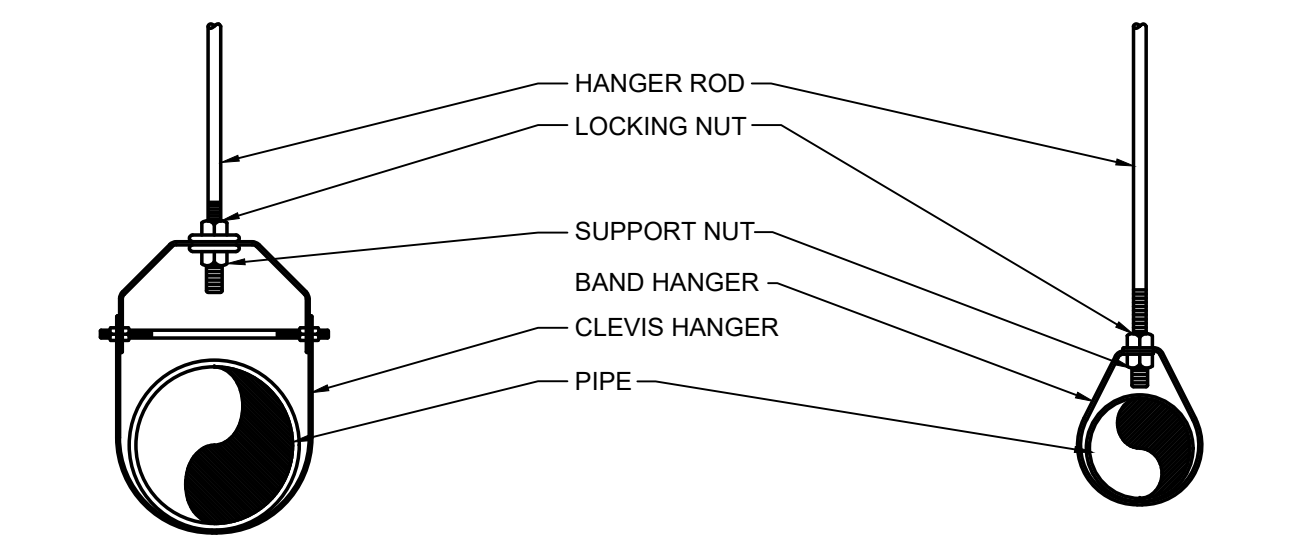
NOTE: SOME SYMBOLS MAY NOT BE USED ON DRAWINGS.

FIRE PROTECTION NOTES AND DESIGN PARAMETERS:

- THESE DRAWINGS ARE DIAGRAMMATICAL AND SHOW THE GENERAL INTENT OF THE FIRE SUPPRESSION SYSTEM. THE CONTRACTOR SHALL PROVIDE FULL SPRINKLER COVERAGE IN THE PROJECT AREAS. MAKE ADJUSTMENTS TO PIPE RUNS AND SPRINKLER LOCATIONS SHOWN ON THESE DRAWINGS AS NECESSARY TO COORDINATE WITH OTHER TRADES.
- CONTRACTOR SHALL PERFORM A NEW WATER FLOW TEST OR OBTAIN WATER FLOW INFORMATION FROM BUILDING MANAGEMENT STAFF. FLOW TEST INFORMATION MUST BE NOT MORE THAN 1 YEAR OLD TO BE VALID FOR USE.
- PROJECT SCOPE INCLUDES: INSTALLATION OF A WET SPRINKLER SYSTEM IN THE OCCUPIED SPACES COMPLETE WITH NEW BRANCH LINES NEW CROSS MAINS, NEW ARM-OVERS, NEW SPRINKLERS, AND SYSTEM TESTING.
- THE CONTRACTOR SHALL HYDRAULICALLY CALCULATE AND DESIGN THE SUPPRESSION SYSTEMS BASED ON THE RESULTS OF THE NEW WATER FLOW TEST. A 10 PERCENT PRESSURE FACTOR SHALL BE USED BETWEEN THE FLOW TEST RESULTS AND THE DESIGN PRESSURE. DO NOT USE THE QUICK RESPONSE DERATING FACTOR FOR COVERAGE AREA.
- DESIGN STANDARDS SHALL INCLUDE: INTERNATIONAL BUILDING CODE - CURRENTLY ENFORCED EDITION; NFPA -13 STANDARD FOR AUTOMATIC SPRINKLERS - CURRENTLY ENFORCED EDITION.
- GENERAL BUILDING CLASSIFICATION: LIGHT HAZARD IN PUBLIC SPACES AND APARTMENTS, AND ORDINARY HAZARD IN MECHANICAL OR ELECTRICAL ROOMS.
- DESIGN DENSITY: LIGHT HAZARD = 0.10 GPM/SQ. FT. OVER 1,500 SQ. FT. 225 SQ. FT. MAXIMUM PER SPRINKLER, EXCEPT FOR USE OF EXTENDED COVERAGE SPRINKLERS - THEN USE THE MANUFACTURERS PRINTED INFORMATION ON EXTENDED COVERAGE FOR REQUIRED FLOW AND PRESSURE BASED ON COVERAGE AREA. ORDINARY HAZARD - 0.15 GPM/SQ. FT. OVER 1,500 SQ. FT. WITH 130 SQ. FT. MAX PER SPRINKLER.
- LOCATE SPRINKLERS AS NECESSARY TO MEET NFPA-13 SPACING RULES AS THEY APPLY TO NEW BUILDING CONSTRUCTION OF NON-COMBUSTIBLE CONSTRUCTION.
- PROVIDE A COMPLETE SET OF LAYOUT DRAWINGS SHOWING ALL PIPING, SPRINKLERS AND HANGERS, AND HYDRAULIC CALCULATIONS. SUBMIT (3) COPIES OF DRAWINGS AND CALCULATIONS TO THE CITY AND OWNERS INSURANCE COMPANY FOR REVIEW AND APPROVAL PRIOR TO START OF CONSTRUCTION.
- SYSTEM COMPONENTS SHALL BE UL LISTED AND FM/GLOBAL APPROVED.
- PROVIDE INSPECTORS TEST VALVE AT MOST REMOTE AREA AS REQUIRED BY THE CITY, AND AUXILIARY DRAINS AS NECESSITATED BY THE SYSTEM LAYOUT.
- PROVIDE A STANDPIPE FOR USE DURING CONSTRUCTION IN COMPLIANCE WITH SECTION 9 OF THE BUILDING CODE. WHEN EXISTING SYSTEMS ARE SHUT DOWN FOR CONSTRUCTION, PROVIDE FIRE WATCH SERVICES UNTIL THE SUPPRESSION SYSTEM IS REACTIVATED.
- COORDINATE FINAL LOCATION OF SPRINKLERS WITH FINAL LOCATION OF LIGHTS, DUCTWORK, DIFFUSERS, STRUCTURAL ELEMENTS AND CEILING ELEVATIONS. CONTRACTOR SHALL PROVIDE AN END PRODUCT OF A FULLY CODE COMPLIANT SPRINKLERED PROJECT SITE WITH THE ENTIRE WORK AREA SPACE COVERED UNDER THE CONTRACT. SOME AREAS MAY REQUIRE MORE THAN CODE MINIMUM NUMBER OF SPRINKLERS TO COINCIDE WITH ARCHITECTURAL LAYOUTS AND CENTER OF TILE REQUIREMENTS.
- CONTRACTOR SHALL OBTAIN NECESSARY FIRE PROTECTION SYSTEMS PERMITS, TESTS, APPROVALS, AND INSPECTIONS AS PART OF THE SCOPE OF THIS PROJECT.

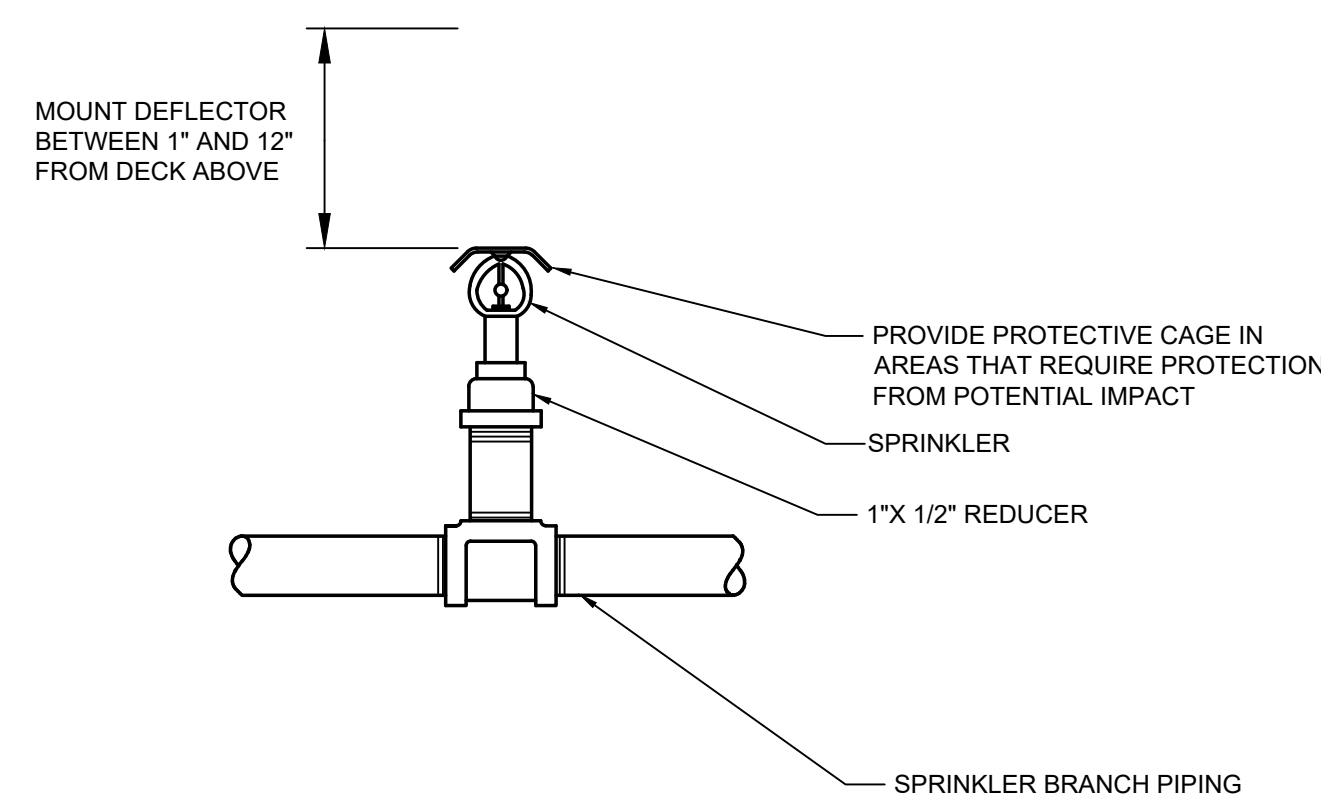
FIRE PROTECTION SPECIALTIES SCHEDULE				
MARK	DESCRIPTION	MANUFACTURER & MODEL NUMBER	SIZE	NOTES
FDC-1	FIRE DEPARTMENT CONNECTION	POTTER-ROEMER MODEL # 5022-D	4" x 2-1/2" x 2-1/2"	1
BP-1	BACKFLOW PREVENTER - ASSE 1048	WATTS SERIES MODEL # 757DCDAOSY	4"	2, 3

- NOTES -
- POLISHED CHROME FINISH AND CITY OF PITTSBURGH THREADS, LETTERING - "AUTO SPKR."
 - PROVIDED WITH STRAINER, BY-PASS METER AND OS&Y VALVES.
 - ROUTE DRAIN TO A FLOOR DRAIN OR MOP BASIN.

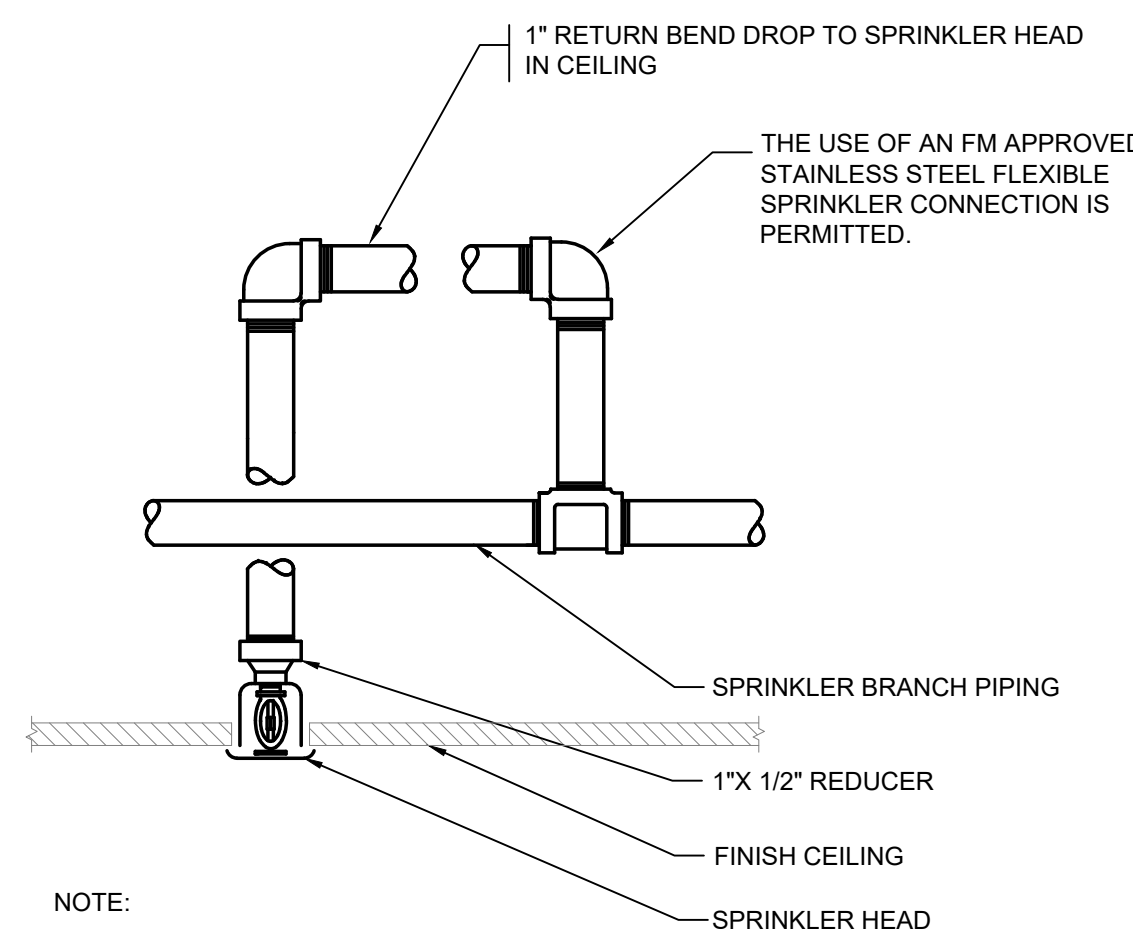


3 INCH AND LARGER		2 1/2" AND SMALLER	
PIPE SIZE	ROD SIZE	PIPE SIZE	MAX. ALLOWABLE SPACING
UP TO 3"	3/8" DIA.	1"	8'
4" THRU 5"	1/2" DIA.	1 1/4"	10'
		1 1/2"	10'
		2" THRU 3"	12'
		4" THRU 10"	15'

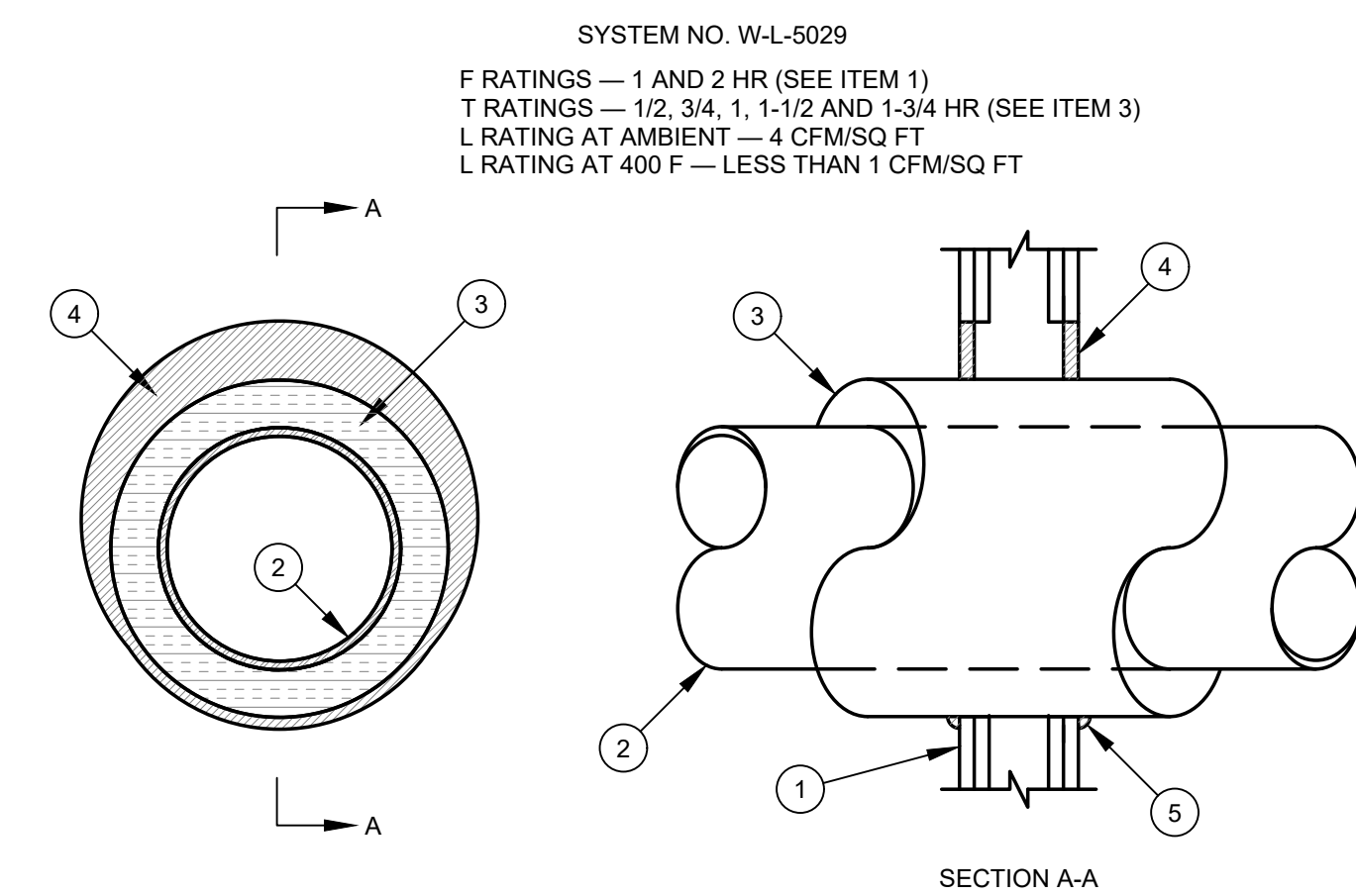
4 SPRINKLER PIPE HANGER INSTALLATION DETAIL
FP-001 NOT TO SCALE



5 TYPICAL UPRIGHT SPRINKLER HEAD
FP-001 NOT TO SCALE



6 TYPICAL CONCEALED SPRINKLER HEAD RETURN BEND DROP
FP-001 NOT TO SCALE



- WALL ASSEMBLY — THE 1 OR 2 HR FIRE-RATED GYPSUM BOARD/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. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC.
B. GYPSUM BOARD — 5/8 IN. THICK, 4 FT 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 WALL AND PARTITION DESIGN. MAX DIAM OF OPENING IS 18-5/8 IN. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.
- THROUGH PENETRANTS — ONE METALLIC PIPE OR TUBING TO BE CENTERED 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. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
B. IRON PIPE — NOM 12 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
C. COPPER TUBING — NOM 8 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
D. COPPER PIPE — NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
- PIPE COVERING* — NOM 1, 1-1/2 OR 2 IN. THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF) 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.
- PIPE COVERING* — (NOT SHOWN) — AS AN ALTERNATE TO ITEM 3, MAX 2 IN. 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 8 AWG STAINLESS STEEL WIRE SPACED MAX 12 IN. OC. WHEN THE ALTERNATE PIPE COVERING IS USED, THE T RATING SHALL BE DETERMINED FROM THE TABLE ABOVE.
- FILL, VOID OR CAVITY MATERIAL* — SEALANT (HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE SEALANT) — MIN 5/8 IN. 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. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE PIPE COVERING/GYPSUM BOARD INTERFACE ON BOTH SURFACES OF WALL.
- 1/2" BEAD OF SEALANT WHERE PIPING IS TIGHT TO WALL.

*BEARING THE UL CLASSIFICATION MARK

7 PIPE PENETRATION DETAIL - DRYWALL
FP-001 NOT TO SCALE

WALL ASSEMBLY RATING HR	THROUGH PENETRANT TYPE +	MAX DIAM IN.	PIPE COVERING THKNS IN.	ANNULAR SPACE		T RATING HR
				MIN IN.	MAX IN.	
1	A	4	1	0	1-1/2	1/2
1	B or C	2	1 or 1-1/2	0	1-1/2	1/2
1	A	4	1-1/2	0	1-1/2	1
1	A	12	2	0	1-7/8	3/4
1	B or C	6	2	0	1-7/8	1
2	A	4	1	0	1-1/2	1
2	B or C	4	1 or 1-1/2	0	1-1/2	1
2	B or C	6	2	0	1-7/8	1
2	A	4	1-1/2	0	1-1/2	1-3/4
2	A	12	2	0	1-7/8	1-1/2
2	B or C	6	2	0	1-7/8	1

+INDICATES PENETRANT TYPE AS ITEMIZED IN ITEM 2.

SPRINKLER SCHEDULE										
SYMBOL	TYPE	SPRINKLER MODEL #	SIN	K FACTOR	ORIFICE	TEMP RATING	PRESSURE RATING	BULB OR LINK	SPRINKLER FINISH	ESCUTCHEON TYPE AND FINISH
	UPRIGHT	VIKING MICROFAST	VK300	5.6	1/2"	155°F	175	QUICK RESPONSE BULB	BRASS	---
	CONCEALED	VIKING	VK462	5.6	1/2"	165°F	175	QUICK RESPONSE BULB	BRASS	COORDINATE COLOR WITH ARCHITECT



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Building Renovation for
Big Tom's Barbershop
2178 Centre Avenue, Pittsburgh, PA 15219

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Revisions:

Date:
April 16, 2021

Project Number:
2020-06

Owner / Client:
TomTom24 Development, LLC

Drawing Title:

Fire Protection
Data Sheet

Scale: As indicated

Drawing Number:

FP-001

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GENERAL INFORMATION

A. GENERAL

- CONFORM TO GENERAL AND SPECIAL CONDITIONS OF CONTRACT.
- CHECK OTHER PLANS AND SPECIFICATIONS AND FULLY COORDINATE WITH OTHER TRADES, OWNER AND ARCHITECT REQUIREMENTS.
- VISIT SITE, CHECK FACILITIES AND CONDITIONS MAKE NECESSARY OBSERVATIONS, MEASUREMENTS, NOTE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED, AND TAKE ITEMS INTO CONSIDERATION IN BID.
- SYSTEMS SHALL BE COMPLETE AND WORKABLE IN RESPECTS, AND PLACED IN OPERATION.
- CONTRACTOR SHALL PROVIDE FOR HIS OWN CLEAN-UP, REMOVAL AND LEGAL DISPOSAL OF RUBBISH DAILY. CONTRACTOR SHALL PROTECT THEIR WORK AND EXISTING OR ADJACENT PROPERTY AGAINST WEATHER, TO MAINTAIN THEIR WORK, MATERIALS, APPARATUS AND FIXTURES FREE FROM INJURY OR DAMAGE. ANY WORK DAMAGED BY FAILURE TO PROVIDE PROTECTION REQUIRED, SHALL BE REMOVED AND REPLACED WITH NEW WORK AT THE CONTRACTOR'S EXPENSE.
- CONTRACTORS SHALL CONFIRM TO UTILITY COMPANY REQUIREMENTS. COORDINATE CONNECTION POINTS IN FIELD.
- ARRANGE FOR AND OBTAIN OWNER'S AND INSURANCE REPRESENTATIVE'S PERMISSION FOR ANY SERVICE SHUTDOWNS.
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, SEQUENCES OF CONSTRUCTION AND THE SAFETY OF WORKMEN.
- PIPING, CONTROLS, ETC., SHALL NOT BE INSTALLED, OR ROUTED ABOVE, ELECTRICAL PANELS AND EQUIPMENT OR THROUGH ELEVATOR MACHINE ROOMS.
- THE CONTRACTOR SHALL COORDINATE AND PROVIDE A WRITTEN LISTING OF ELECTRICAL CHARACTERISTICS OF MECHANICAL EQUIPMENT TO THE ELECTRICAL CONTRACTOR PRIOR TO ORDERING OF EQUIPMENT. ADDITIONAL COMPENSATION WILL NOT BE MADE FOR LACK OF CONTRACTOR COORDINATION OF EQUIPMENT ELECTRICAL CHARACTERISTICS.
- DURING THE BUILDING CONSTRUCTION SOME EXISTING INSTALLATION MAY BE EXPOSED THAT WILL HAVE TO BE CHANGED, ALTERED, REROUTED AND/OR ABANDONED. ANY SUCH WORK WHICH COMES UNDER THE JURISDICTION OF THIS CONTRACTOR SHALL BE DONE BY THIS CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER.
- WORK RELATED TO THE EXISTING BUILDING SHALL BE COORDINATED TO MINIMIZE INTERFERENCE OR INTERRUPTION OF NORMAL BUILDING USE BY OWNER. REFER TO ARCHITECTURAL PLANS AND SPECIFICATIONS FOR PHASING REQUIREMENTS.
- THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING CONDITIONS THAT MAY AFFECT THE BID. ADDITIONAL COMPENSATION WILL NOT BE PROVIDED FOR FAILURE TO REVIEW EXISTING CONDITIONS PRIOR TO BIDDING.

B. CODES, PERMITS, STANDARDS AND REGULATIONS

- CONFORM TO APPLICABLE CODES (LOCAL, STATE, NATIONAL CODES, NFPA, OSHA, ETC.), GOVERNMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS, AND APPLICABLE STANDARDS.
- OBTAIN PERMITS AND PAY FEES. ARRANGE FOR ALL REQUIRED TESTS, INSPECTIONS AND APPROVALS. PROVIDE COPIES OF INSPECTIONS AND APPROVALS TO THE A/E.

C. RELATED WORK SPECIFIED ELSEWHERE

- OPENINGS AND CHASES, WHEN SHOWN ON ARCHITECTURAL DRAWINGS.
- TEMPORARY FIRE PROTECTION.
- POURED-IN-PLACE CONCRETE.
- FINISH PAINTING.
- ELECTRIC POWER WIRING.

D. DRAWINGS

- THE SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR WILL BE RESPONSIBLE TO PROVIDE COMPLETE FINAL LAYOUT DRAWINGS IN COMPLIANCE WITH REQUIREMENTS OF NFPA-13. CONFIRM DIMENSIONS BY FIELD MEASUREMENT.
- THE EXACT LOCATIONS FOR APPARATUS, FIXTURES, EQUIPMENT AND PIPING WHICH IS NOT COVERED BY DRAWINGS, SHALL BE OBTAINED FROM THE ARCHITECT OR HIS REPRESENTATIVE IN THE FIELD, AND THE WORK SHALL BE LAID OUT ACCORDINGLY.
- DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT ONE ANOTHER. ANY MATERIALS OR LABOR CALLED FOR IN ONE BUT NOT THE OTHER SHALL BE PROVIDED.

E. DEMOLITION AND REMOVAL

- DISCONNECT, DISASSEMBLE, CAP, PLUG AND REMOVE PIPING, DUCTS AND EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR THE PROJECT.
- ANY EQUIPMENT DESIGNATED BY OWNER TO BE SALVAGED SHALL BE PROTECTED AND DELIVERED TO THE OWNER'S STORAGE.
- DEMOLITION TO BE DONE IN A MANNER NOT TO DAMAGE ADJACENT WORK AND NOT AFFECT THE OPERATION OF SYSTEMS TO REMAIN IN USE. ANY ITEM TO REMAIN THAT IS DAMAGED BY THE CONTRACTOR OR THAT REQUIRES DAMAGE DUE TO THE ABSOLUTE NECESSITY FOR DEMOLITION REQUIREMENTS SHALL BE REPLACED AND/OR REPAIRED AT HIS EXPENSE.
- OPENINGS ON PIPING AND DUCTS THAT REMAIN SHALL BE CAPPED AND PROPERLY SECURED.
- ASBESTOS REMOVAL WILL BE HANDLED BY THE OWNER AND IS NOT A PART OF THIS WORK.
- EXAMINE AREAS AND CONDITIONS UNDER WHICH DEMOLITION WORK SHALL BE PERFORMED. CONTRACTOR SHALL COORDINATE WORK WITH OTHER DEMOLITION WORK.
- REMOVE SUPPORTS, HANGERS, AND ACCESSORIES FROM EQUIPMENT AND MATERIAL INDICATED TO BE REMOVED.

F. BASE EQUIPMENT, MATERIALS AND SUBSTITUTIONS

- EQUIPMENT AND MATERIALS SHALL BE NEW, FREE OF DEFECTS AND U.L. LISTED AND F.M. APPROVED IF APPROPRIATE.
- BASE BID MANUFACTURERS ARE INCLUDED IN SPECIFICATIONS OR LISTED IN SCHEDULE ON DRAWINGS. ANY OTHER MANUFACTURER'S ARE CONSIDERED A SUBSTITUTION.
- THE NAME, OR MAKE OF ANY ARTICLE, DEVICE, MATERIAL, FORM OF CONSTRUCTION, FIXTURE, ETC., STATED IN THIS SPECIFICATION, SHALL BE KNOWN AS A "STANDARD".
- PROPOSALS SHALL BE BASED ON "STANDARDS" SPECIFIED.
- THE EQUIPMENT SCHEDULES ON DRAWINGS INDICATE MANUFACTURERS EQUIPMENT MODEL NUMBERS UPON WHICH DESIGN HAS BEEN BASED. THE USE OF OTHER MANUFACTURERS EQUIPMENT THAT IS LISTED AS ACCEPTABLE ALTERNATES THAT REQUIRES STRUCTURAL CHANGES, CHANGES IN ROOF OPENINGS, CHANGE OF PIPE SIZES & BUILDING CONFIGURATION, ARCHITECTURAL CHANGES, ETC., SHALL BE THE CONTRACTOR'S RESPONSIBILITY. ADDITIONAL COSTS OF SUCH CHANGES SHALL BE PAID BY THE CONTRACTOR SUBMITTING THE ALTERNATES.
- SUBSTITUTIONS ARE SUBJECT TO THE APPROVAL OF THE OWNER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO EVALUATE AND CERTIFY WITH DOCUMENTATION THAT THE SUBSTITUTION IS EQUIVALENT IN ALL RESPECTS TO THE BASE SPECIFICATIONS.
- IF SUBSTITUTIONS ARE APPROVED, NOTIFY ALL OTHER CONTRACTORS. SUBCONTRACTORS OR TRADES AFFECTED BY SUBSTITUTION AND FULLY COORDINATE. ANY COSTS RESULTING FROM SUBSTITUTION, WHETHER BY CONTRACTOR OR OTHERS, SHALL BE RESPONSIBILITY OF, AND PAID FOR BY SUBSTITUTING CONTRACTOR. APPROVED SHOP DRAWINGS DOES NOT ABSOLVE THIS CONTRACTOR FROM THIS RESPONSIBILITY.
- EQUIPMENT SHALL BE INSTALLED IN FULL ACCORDANCE WITH THE MANUFACTURER'S DATA AND INSTALLATION INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CHECK AND CONFORM TO THESE REQUIREMENTS.

G. CHECK, TEST, START, ADJUST, BALANCE AND INSTRUCTIONS

- AFTER INSTALLATION, CHECK ALL EQUIPMENT, AND PERFORM START UP IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, AND REQUIREMENTS OF THE SPECIFICATIONS.
 - PIPING SHALL BE TESTED AND FREE OF LEAKS. MAKE REPAIRS NEEDED FOR A LEAK FREE SYSTEM.
 - CONCEALED OR INSULATED WORK SHALL REMAIN UNCOVERED UNTIL REQUIRED INSPECTIONS, AND TESTS HAVE BEEN COMPLETED. IF CONSTRUCTION SCHEDULE REQUIRES IT, ARRANGE FOR TESTS ON PARTS OF SYSTEM AS REQUIRED.
 - INSTRUCT OWNER IN OPERATION OF SYSTEMS AND SUBMIT OPERATING AND MAINTENANCE MANUAL ON EQUIPMENT AND SYSTEMS AS REQUIRED BY THE SPECIFICATIONS. PROVIDE A MINIMUM OF 4 HOURS OF INSTRUCTION TO OWNER'S REPRESENTATIVE.
- ### H. CUTTING, PATCHING AND DRILLING
- CUTTING AND PATCHING OF THE BUILDING CONSTRUCTION REQUIRED FOR THIS WORK SHALL BE BY THIS CONTRACTOR. CUTTING SHALL BE IN A NEAT AND WORKMANLIKE MANNER.
 - NEATLY SAW CUT RECTANGULAR OPENINGS, SET SLEEVE THROUGH OPENING, AND FINISH PATCH OR PROVIDE TRIM FLANGE AROUND OPENING.
 - CORE DRILL AND SLEEVE ROUND OPENINGS.
 - DO NOT CUT ANY STRUCTURAL COMPONENTS WITHOUT ARCHITECT'S/ENGINEER'S APPROVAL.
 - PATCH AND FINISH TO MATCH ADJACENT AREAS THAT HAVE BEEN CUT, DAMAGED OR MODIFIED AS A RESULT OF THE INSTALLATION OF THE MECHANICAL OR ELECTRICAL EQUIPMENT. FIRE STOP PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER, AND MAINTAIN FIRE RATING OF ASSEMBLY.
 - CONTRACTORS SHALL CONFIRM WITH OWNER/ARCHITECT, PRIOR TO BID, TIMES AVAILABLE FOR NOISE PRODUCING WORK SUCH AS CUTTING AND CORE DRILLING OF FLOORS, WALLS, ETC., AS WELL AS TIMES FOR WORK WHICH REQUIRE ACCESS INTO ADJOINING TENANT SPACES. INCLUDE PREMIUM TIME IN BID.
 - INFORMATION REGARDING REQUIRED PIPE OPENINGS IN WALLS, FLOORS, CHASES, ETC., AND CONCRETE EQUIPMENT PADS OR FOUNDATIONS SHALL BE GIVEN TO THE GENERAL CONTRACTOR BY THIS CONTRACTOR PRIOR TO THE CONSTRUCTION PERIOD. IF THIS CONTRACTOR FAILS TO COMPLY WITH THIS REQUEST, OR IF INCORRECT INFORMATION IS GIVEN, THE NECESSARY CUTTING AND PATCHING WILL BE PERFORMED BY THE GENERAL CONTRACTOR, AT THIS CONTRACTOR'S EXPENSE.

I. WARRANTY

- FULLY WARRANT MATERIALS, EQUIPMENT AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE.
- PROVIDE MANUFACTURER'S WARRANTIES TO OWNER, INCLUDING EXTENDED WARRANTIES.
- REPAIR OR REPLACE WITHOUT CHARGE TO THE OWNER ITEMS FOUND DEFECTIVE DURING THE WARRANTY PERIOD. IN THE CASE OF REPLACEMENT OR REPAIR DUE TO FAILURE WITHIN THE WARRANTY PERIOD, THE WARRANTY ON THAT PORTION OF THE WORK SHALL BE EXTENDED FOR A MINIMUM PERIOD OF ONE (1) YEAR FROM THE DATE OF SUCH REPLACEMENT OR REPAIR.

J. SHOP DRAWING SUBMITTALS

- SUBMIT SHOP DRAWINGS FOR FIRE PROTECTION SYSTEMS AND EQUIPMENT WITH ADEQUATE DETAILS AND SCALES TO CLEARLY SHOW CONSTRUCTION. INDICATE THE OPERATING CHARACTERISTICS FOR EACH REQUIRED ITEM. CLEARLY IDENTIFY EACH ITEM ON THE SUBMITTAL AS TO MARK, LOCATION AND USE, USING SAME IDENTIFICATION AS PROVIDED ON DESIGN DRAWINGS. SUBMITTAL PAGES WITH MULTIPLE ITEMS MUST BE MARKED FOR THE PROPOSED ITEM OR SUBMITTAL WILL BE REJECTED.
 - FIRE PROTECTION DRAWINGS SHALL BE FULLY DIMENSIONED BASED ON FIELD VERIFIED BUILDING CLEARANCES AND ARCHITECTURAL CEILING LAYOUTS. INDICATE STRUCTURAL, LIGHTING, DUCTWORK AND PIPING AT ALL CRITICAL LOCATIONS.
 - CONTRACTOR SHALL REVIEW AND INDICATE HIS APPROVAL OF EACH SHOP DRAWING PRIOR TO SUBMITTAL FOR REVIEW. DO NOT START WORK OR FABRICATION UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED BY THE ENGINEER AND RETURNED TO THE CONTRACTOR.
 - SUBMITTALS SHALL BE REVIEWED ONLY FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND NOT FOR DIMENSIONS OR QUANTITIES. THE SUBMITTAL REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR PURCHASE OF ANY ITEM IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS OR ITS COMPLETE AND PROPER INSTALLATION.
 - WHERE SUBMITTALS VARY FROM THE CONTRACT REQUIREMENTS, THE CONTRACTOR SHALL CLEARLY INDICATE ON SUBMITTAL OR ACCOMPANYING DOCUMENTS THE NATURE AND REASON FOR VARIATIONS.
 - REFER TO VARIOUS SECTIONS FOR LISTING OF SHOP DRAWINGS REQUIRED ON THIS PROJECT.
 - EACH MANUFACTURER OR HIS REPRESENTATIVE SHALL CHECK THE APPLICATION OF HIS EQUIPMENT AND CERTIFY AT TIME OF SHOP DRAWING SUBMITTAL THAT EQUIPMENT HAS BEEN PROPERLY SELECTED AND CAN BE INSTALLED, SERVICED AND MAINTAINED WHERE INDICATED ON DRAWINGS. ADVISE ENGINEER IN WRITING WITH SUBMITTAL DRAWINGS OF ANY POTENTIAL PROBLEMS. THE MANUFACTURER SHALL BE RESPONSIBLE FOR ANY CHANGES THAT MIGHT BE NECESSARY BECAUSE OF PHYSICAL CHARACTERISTICS OF EQUIPMENT THAT HAVE NOT BEEN CALLED TO THE ENGINEER'S ATTENTION AT THE TIME OF SUBMITTAL.
 - FIRE PROTECTION SUBMITTAL SHALL BE SUBMITTED AS A COMPLETE PACKAGE CONSISTING OF PRODUCT DATA SHEETS, DRAWINGS AND CALCULATIONS. INCOMPLETE PACKAGE WILL BE REJECTED.
- ### K. RECORD DRAWINGS
- EACH CONTRACTOR OR SUBCONTRACTOR SHALL KEEP ONE (1) COMPLETE SET OF THE CONTRACT WORKING DRAWINGS ON THE JOB SITE. THE CONTRACTOR SHALL REGULARLY RECORD ANY DEVIATIONS, AND/OR CHANGES FROM CONTRACT DRAWINGS MADE DURING CONSTRUCTION.
 - THESE DRAWINGS SHALL RECORD THE LOCATION OF EQUIPMENT, PIPING, ELECTRIC SERVICE, SEWERS, WASTES, VENTS, DUCTS, CONDUIT AND OTHER PIPING, BY MEASURED DIMENSIONS TO EACH SUCH ITEM FROM READILY IDENTIFIABLE AND ACCESSIBLE WALLS OR CORNERS OF THE BUILDING. PLANS ALSO SHALL SHOW INVERT ELEVATION OF SANITARY, AND/OR STORM SEWERS AND TOP ELEVATION OF OTHER BELOW-GRADE LINES.
 - RECORD DRAWINGS SHALL BE KEPT CLEAN AND UNDAMAGED AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN RECORDING DEVIATIONS FROM WORKING DRAWINGS AND EXACT LOCATIONS OF CONCEALED WORK.
 - AFTER THE PROJECT IS COMPLETED, THESE SETS OF DRAWINGS SHALL BE DELIVERED TO THE ARCHITECT IN GOOD CONDITION, AS A PERMANENT RECORD OF THE INSTALLATION.

FIRE PROTECTION SPRINKLER SYSTEM

A. SCOPE

- FURNISH LABOR, MATERIALS AND EQUIPMENT AS REQUIRED TO INSTALL COMPLETE FIRE PROTECTION SYSTEMS FOR PROJECT. SPRINKLER SYSTEM DESIGN AND HYDRAULIC CALCULATIONS SHALL BE PROVIDED WITH THIRD PARTY PROFESSIONAL ENGINEERS STAMP.
- SPRINKLER WORK FOR PROJECT ESSENTIALLY CONSISTS OF, BUT NOT LIMITED TO, THE FOLLOWING:
 - FIRE PROTECTION SERVICE MAIN EXTENDED FROM 5'-0" OUTSIDE THE BUILDING, INCLUDING BACKFLOW PREVENTER WITH PASS METER AND BACKFLOW, VALVES AND FIRE DEPARTMENT CONNECTION.
 - PREPARE SUBMITTAL DRAWINGS AND HYDRAULIC CALCULATIONS AS REQUIRED FOR APPROVAL BY OWNER'S INSURANCE COMPANY, BUILDING DEPARTMENT, LOCAL AUTHORITY HAVING JURISDICTION AND NFPA REQUIREMENTS. COMPLY WITH NFPA-13 REQUIREMENTS FOR PREPARATION OF DRAWINGS AND CALCULATIONS.
 - FLUSH AND CONDUCT PRESSURE TEST OF COMPLETED SYSTEM IN ACCORDANCE WITH NFPA AND AUTHORITIES HAVING JURISDICTION. DELIVER ALL CERTIFICATES TO OWNER. FIRE PROTECTION CONTRACTOR SHALL FLUSH THE NEW SERVICE LINE INSTALLED BY PLUMBING CONTRACTOR FROM CITY MAIN TO THE BUILDING IN COMPLIANCE WITH NFPA REQUIREMENTS.

d. OTHER ITEMS INDICATED ON DRAWINGS OR REQUIRED FOR COMPLETE INSTALLATION AND TO SATISFY ALL CODE REQUIREMENTS.

g. PIPING SHALL NOT BE INSTALLED AT LOCATIONS SUBJECT TO FREEZING, UNLESS PROVIDED AS DRY PIPE SYSTEM, OR ANTI-FREEZE SYSTEM. PROVIDE FIRE WATCH.

B. DESIGN BASIS

- DESIGN BASIS FOR SYSTEM SHALL BE PER NFPA 13, LIFE SAFETY CODE 101 IN ACCORDANCE WITH CODE AND LOCAL AUTHORITY HAVING JURISDICTION. SYSTEM SHALL BE A HYDRAULICALLY DESIGNED.
- PIPE SIZES INDICATED ON DRAWING ARE APPROXIMATE AND SHALL BE VERIFIED BY CONTRACTORS HYDRAULIC DESIGN.
- STANDARD-PRESSURE PIPING SYSTEM COMPONENT: LISTED FOR 175-PSIG MAXIMUM WORKING PRESSURE.
- SPRINKLER SYSTEM DESIGN SHALL BE APPROVED BY AUTHORITIES HAVING JURISDICTION, AND OWNER'S INSURANCE UNDERWRITER. PRIOR TO START OF CONSTRUCTION.
- PROVIDE MARGIN OF SAFETY FOR AVAILABLE WATER FLOW AND PRESSURE AND 10 PERCENT.
- SPRINKLER OCCUPANCY HAZARD CLASSIFICATIONS:
 - BUILDING SERVICE AREAS: ORDINARY HAZARD, GROUP 1.
 - ELECTRICAL EQUIPMENT ROOMS: ORDINARY HAZARD, GROUP 1.
 - GENERAL STORAGE AREAS: ORDINARY HAZARD, GROUP 1.
 - MECHANICAL EQUIPMENT ROOMS: ORDINARY HAZARD, GROUP 1.
 - OFFICE AND PUBLIC AREAS: LIGHT HAZARD.
 - RESIDENTIAL LIVING AREAS: LIGHT HAZARD.
- MINIMUM DENSITY FOR AUTOMATIC-SPRINKLER PIPING DESIGN:
 - LIGHT-HAZARD OCCUPANCY: 0.10 GPM OVER 1500-SQ. FT. AREA.
 - ORDINARY-HAZARD, GROUP 1 OCCUPANCY: 0.15 GPM OVER 1500-SQ. FT. AREA.
 - SPECIAL OCCUPANCY HAZARD: AS DETERMINED BY AUTHORITIES HAVING JURISDICTION.
- MAXIMUM PROTECTION AREA PER SPRINKLER:
 - RESIDENTIAL AREAS: 225 SQ. FT. (37 SQ. M)
 - OFFICE AND PUBLIC SPACES: 225 SQ. FT. (20.9 SQ. M)
 - STORAGE AREAS: 130 SQ. FT.
 - MECHANICAL EQUIPMENT ROOMS: 130 SQ. FT.
 - ELECTRICAL EQUIPMENT ROOMS: 130 SQ. FT.
 - OTHER AREAS: ACCORDING TO NFPA 13 RECOMMENDATIONS UNLESS OTHERWISE INDICATED.
- TOTAL COMBINED HOSE-STREAM DEMAND REQUIREMENT: ACCORDING TO NFPA 13 UNLESS OTHERWISE INDICATED:
 - LIGHT-HAZARD OCCUPANCIES: 100 GPM (6.3 L/S) FOR 30 MINUTES.
 - ORDINARY-HAZARD OCCUPANCIES: 250 GPM (15.75 L/S) FOR 60 TO 90 MINUTES.
 - EXTRA-HAZARD OCCUPANCIES: 500 GPM (31.5 L/S) FOR 90 TO 120 MINUTES.

C. DRAWINGS AND CALCULATIONS

- CONTRACTOR SHALL PREPARE SUBMITTAL DRAWING AND HYDRAULIC CALCULATIONS FOR SPACE IN ACCORDANCE WITH OWNER'S INSURANCE COMPANY AND BUILDING DEPARTMENT REQUIREMENTS. DRAWINGS AND CALCULATIONS SHALL BE PERFORMED BY A REGISTERED PROFESSIONAL ENGINEER. PROVIDE PROFESSIONAL ENGINEERS STAMP AND SIGNATURE ON DRAWINGS AND HYDRAULIC CALCULATIONS.
- CONTRACTOR SHALL OBTAIN FLOW TEST DATA ON CITY WATER MAIN AND SUBMIT DATA WITH CALCULATIONS. PERFORM FLOW TEST IF DATA IS OLDER THAN ONE YEAR.
- CONTRACTOR AND DESIGNER SHALL BE STATE AND LOCAL CERTIFIED. DESIGNER SHALL BE MINIMUM LEVEL 3 NICET CERTIFIED. CONTRACTOR DRAWINGS AND CALCULATIONS SHALL BE REVIEWED AND STAMPED BY REGISTERED ENGINEER.
- DRAWINGS SHALL SHOW ALL PIPING, HANGERS, VALVES, SPRINKLERS AND APPURTENANCES REQUIRED FOR A FULLY OPERATIONAL SYSTEM AND IN COMPLIANCE WITH NFPA-13 REQUIREMENTS FOR PREPARATION OF DRAWINGS AND CALCULATIONS.

D. EXCAVATION AND BACKFILL

- PERFORM EXCAVATION AND BACKFILL REQUIRED FOR INSTALLATION OF PIPING. EXCAVATION SHALL BE ON AN UNCLASSIFIED BASIS.
- EXCAVATE TO DEPTH REQUIRED TO INSTALL PIPING AT REQUIRED LEVEL AND PITCH. PIPE SHALL BE INSTALLED ON SAND BEDDING TO GIVE UNIFORM BEARING ALONG LENGTH OF PIPE (SAND INSIDE BUILDING AND INTERLOCKING AGGREGATE OUTSIDE BUILDING).
- BACKFILL WITH BEDDING MATERIAL TO A MINIMUM OF TWELVE (12) INCHES ABOVE TOP OF PIPES AND COMPACT. BALANCE OF BACKFILL IN GRASS AREAS SHALL BE CLEAN EARTH UP TO SIX (6) INCHES ABOVE SURROUNDING GRADES, UNDER FLOORS SAND, AND UNDER PAVING INTERLOCKING AGGREGATE. BACKFILL SHALL BE COMPACTED IN MAXIMUM SIX (6) INCH LAYERS.
- EXCAVATIONS SHALL BE BACKFILLED WITH CLEAN EARTH, EXCLUDING RUBBISH AND BOULDERS AND THE DIRT SHALL BE PROPERLY COMPACTED.
- PATCH FLOOR TO MATCH EXISTING.

E. PIPING

- PIPING SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 13 AND 24 REQUIREMENTS.
- FIRE PROTECTION PIPING SHALL BE AS FOLLOWS:
 - UNDERGROUND SERVICE-ENTRANCE PIPING:
 - DUCTILE-IRON, MECHANICAL JOINT PIPE AND FITTINGS AND RESTRAINED JOINTS. INCLUDE CORROSION-PROTECTIVE POLYETHYLENE ENCASMENT.
 - INSIDE BUILDING:
 - 2 INCH AND SMALLER: THREADED-END, SCHEDULE 40 STEEL PIPE; CAST- OR MALLEABLE-IRON THREADED FITTINGS; AND THREADED JOINTS.
 - 2 1/2 INCH AND LARGER: GROOVED-END, SCHEDULE 10 STEEL PIPE; GROOVED-END FITTINGS; GROOVED-END-PIPE COUPLINGS; AND GROOVED JOINTS.
 - CONTRACTOR SHALL ARRANGE FOR SHUTDOWN OF EXISTING SYSTEM WITH LANDLORD, OWNER MAINTENANCE AND FIRE ALARM PERSONNEL, AND INSURANCE UNDERWRITER. PROVIDE FIRE WATCH WHILE SYSTEM IS SHUT DOWN.
 - FLUSH PIPING UPON COMPLETION OF PROJECT AND TEST PER NFPA 13.
 - INSTALL INSPECTOR'S TEST CONNECTION WITH DRAIN VALVE AND TERMINATE DRAIN THROUGH EXTERIOR WALL WITH GALVANIZED PIPE. TEST FITTING AND SPLASH BLOCK.

F. SPRINKLERS

- SPRINKLERS SHALL BE AS SCHEDULED ON DRAWINGS.
- BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE PRODUCT INDICATED IN SPECIFICATION OR A COMPARABLE PRODUCT BY ONE OF THE FOLLOWING MANUFACTURERS:
 - VIKING CORPORATION
 - VICTAULIC CO.
 - TYCO
- INSTALL HIGHER TEMPERATURE SPRINKLER HEADS AS REQUIRED BY CODE OR APPLICATION.
- SUBMIT SAMPLES OF SPRINKLERS TO ARCHITECT PRIOR TO FABRICATION OF ANY PIPING.

G. FIRE PROTECTION SPECIALTIES

- BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE PRODUCT INDICATED IN FIRE PROTECTION SPECIALTIES SCHEDULE OR A COMPARABLE PRODUCT BY ONE OF THE FOLLOWING MANUFACTURERS:
 - POTTER ROEMER



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- b. FIRE END AND CROKER CORP
- c. ELKHART BRASS
- d. GUARDIAN FIRE EQUIPMENT, INC.

2. PROVIDE VALVES AND TRIM AS REQUIRED BY NFPA 13 AND 24. "UL" VALUES SHALL BE LISTED, AND "FM" APPROVED.

4. PROVIDE CHROME PLATED WALL SIAMENSE FIRE DEPARTMENT CONNECTION INCLUDING NAMEPLATE, CAPS AND CHAINS AND CHECK VALVE WITH 3/4" AUTOMATIC BALL DRIP PIPED TO FLOOR DRAIN.

5. PROVIDE "UL" LISTED, FM APPROVED ALARM CHECK VALVE WITH ALL REQUIRED TRIM, INCLUDING WATER MOTOR ALARM BELL AND DRAINS.

6. PROVIDE DOUBLE DETECTOR CHECK VALVE BACKFLOW PREVENTER WITH BYPASS WATER METER, AS REQUIRED BY LOCAL WATER COMPANY.

7. PROVIDE SPRINKLER CABINET: FINISHED, WALL-MOUNTING, STEEL CABINET WITH HINGED COVER, WITH SPACE FOR MINIMUM OF SIX SPARE SPRINKLERS PLUS SPRINKLER WRENCH. INCLUDE NUMBER OF SPRINKLERS REQUIRED BY NFPA 13 AND SPRINKLER WRENCH. INCLUDE SEPARATE CABINET WITH SPRINKLERS AND WRENCH FOR EACH TYPE OF SPRINKLER ON PROJECT.

H. PRESSURE GAUGES

1. PRESSURE GAUGES SHALL BE UL LISTED, 3-1/2- TO 4-1/2-INCH DIAMETER, DIAL PRESSURE GAGE WITH RANGE OF 0 TO 250 PSIG MINIMUM.

- a. WATER SYSTEM PIPING: INCLUDE CAPTION "WATER" OR "AIR/WATER" ON DIAL FACE.

I. HANGERS AND SUPPORTS

1. HANGERS FOR BLACK OR GALVANIZED STEEL PIPE SHALL BE MANUFACTURED BY MICHIGAN HANGER CO., MODEL NO. 100, OR APPROVED EQUAL.

2. HANGERS FOR COPPER TUBING SHALL BE MANUFACTURED BY MICHIGAN HANGER CO., MODEL NO. 102-A, OR APPROVED EQUAL.

3. TRAPEZE HANGERS OF A TYPE APPROVED BY THE ENGINEER MAY BE USED WHERE PIPES ARE DESIGNED TO RUN PARALLEL AND AT THE SAME ELEVATION.

4. STRAP HANGERS SHALL NOT BE PERMITTED.

5. IN CONCRETE, MICHIGAN HANGER CO., MODEL NO. 355 INSERTS, OR APPROVED EQUAL. INSERTS SHALL PERMIT ADJUSTMENT FROM 3/4 INCH THROUGH 1-1/4 INCH. IN METAL DECKS, CONTRACTOR SHALL PROVIDE REDHEAD SDI INSERTS, OR APPROVED EQUAL. POWDER PROPELLED INSERTS WILL BE PERMITTED IN NEW CONSTRUCTION WHERE TYPE AND LOCATION ARE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

6. CONTRACTOR SHALL PROVIDE SIDE BEAM CLAMPS FOR SUPPORTING PIPING FROM STRUCTURAL STEEL MEMBERS. BEAM CLAMPS SHALL BE MANUFACTURED BY MICHIGAN HANGER CO., MODEL 300 OR APPROVED EQUAL.

7. WHERE OTHER MEANS OF SUPPORT PIPING ARE REQUIRED OR DESIRED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE ENGINEER'S APPROVAL PRIOR TO INSTALLING THOSE SUPPORTS.

8. HANGER SHALL BE PROVIDED AT EACH CHANGE OF DIRECTION.

9. HANGERS AND SUPPORTS SHALL BE SPACED AT INTERVALS WHICH WILL PREVENT SAGGING AND REDUCE STRAIN ON VALVES AND SPECIALTIES. HANGER SPACING SHALL BE NO GREATER AND ROD SIZE SHALL BE NO SMALLER THAN THAT SHOWN IN THE FOLLOWING TABLE. HANGERS SHALL ALLOW FOR EXPANSION AND CONTRACTION. HANGERS AND SUPPORTS MUST COMPLY WITH NFPA-13 REQUIREMENTS.

FERROUS PIPING AND COPPER TUBING:

DIAMETER OF PIPE	MAXIMUM SPACING	ROD SIZE
UP TO 1"	8 FT.	3/8"
1-1/4" TO 1-1/2"	10 FT	3/8"
2" THRU 3"	12 FT	3/8"
4" AND 5"	15 FT	1/2"

J. PIPE WALL SEALS

1. WALL PIPE SEALS WITH RUBBER LINKS SHALL BE THUNDERLINE LINK SEAL, OR APPROVED EQUAL. WALL PIPE SEALS WITH INORGANIC MATERIAL LINKS THE PENETRATIONS OF FIRE RATED WALLS SHALL BE THUNDERLINE PYRO-PAC, OR APPROVED EQUAL.

2. SEALS SHALL BE MODULAR MECHANICAL TYPE CONSISTING OF INTERLOCKING SYNTHETIC RUBBER OR INORGANIC MATERIAL LINKS SHAPED TO CONTINUOUSLY FILL THE ANNULAR SPACE BETWEEN THE PIPE AND WALL OPENING.

3. LINKS SHALL BE LOOSELY ASSEMBLED WITH BOLTS TO FORM A CONTINUOUS BELT AROUND THE PIPE. A PRESSURE PLATE SHALL BE PROVIDED UNDER THE BOLT HEAD AND NUT OF EACH LINK.

4. AFTER THE SEAL ASSEMBLY IS POSITIONED IN THE SLEEVE, THE TIGHTENING OF THE BOLTS SHALL CAUSE THE SEALING ELEMENTS TO EXPAND AND PROVIDE AN ABSOLUTELY WATER-TIGHT SEAL BETWEEN THE PIPE AND SLEEVE.

5. SEALS SHALL BE CONSTRUCTED TO PROVIDE ELECTRICAL INSULATION BETWEEN THE PIPE AND SLEEVE, THUS REDUCING CHANCES OF CATHODIC REACTION BETWEEN THESE TWO MEMBERS.

6. SLEEVES SHALL BE MANUFACTURED FROM HEAVY-WALL, WELDED OR SEAMLESS STEEL PIPE. A FULL CIRCLE CONTINUOUSLY WELDED WATER STOP PLATE SHALL BE PROVIDED TO ASSURE POSITIVE WATER SEALING OF THE SLEEVE. SLEEVE SHALL BE PROTECTED BY A COATING OF ENRICHED RED PRIMER.

K. VALVES

1. BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE PRODUCT INDICATED IN SPECIFICATION OR A COMPARABLE PRODUCT BY ONE OF THE FOLLOWING MANUFACTURERS:

- a. VIKING CORPORATION
- b. VICTAULIC CO.
- c. NIBCO
- d. APOLLO

2. INSTALL VALVES AND TRIM AS REQUIRED BY NFPA 13 AND 24, "UL" LISTED AND "FM" APPROVED.

3. SHUT-OFF VALVES SHALL BE FITTED WITH TAMPER SWITCHES BY FIRE PROTECTION CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR. COORDINATE LOCATIONS WITH ELECTRICAL CONTRACTOR.

4. PROVIDE FLOW SWITCH IN RISER COORDINATE WITH ELECTRICAL CONTRACTOR.

5. BALL VALVES:

- a. 2-INCHES AND SMALLER: SHALL BE RATED FOR A MINIMUM OF 400 PSI WOG, VALVE BODY CONSTRUCTED OF BRONZE, 2-PIECE BODY, STANDARD PORT, WITH TEFLON SEATS AND SEALS, AND BLOW-OUT PROOF STEMS. VALVES SHALL HAVE LOCKABLE HANDLES AND SHALL BE UL LISTED AND FM APPROVED. THEY SHALL HAVE THREADED ENDS FOR USE IN STEEL PIPING. BALL VALVES SHALL BE VICTAULIC SERIES 722. VALVES SHALL BE PROVIDED WITH TAMPERPROOF SWITCHES.

6. OS&Y GATE VALVES WITH TAMPER SWITCH:

- a. 2 1/2-INCHES TO 12-INCHES: SHALL BE RATED FOR A MINIMUM OF 250 PSI FIRE PROTECTION SERVICE, FACTORY COATED DUCTILE IRON BODY WITH GROOVED ENDS AND EPDM COATED CAST IRON DISC. VALVES SHALL SEAL IN OPEN POSITION. VALVES SHALL BE UL LISTED AND FM APPROVED. PROVIDE VALVE WITH STEM MOUNTED SUPERVISORY SWITCH FROM POTTER ROMER MODEL 6220. VALVES SHALL BE VICTAULIC SERIES 771H.

7. CHECK VALVES:

- a. 2-INCHES AND LARGER: SHALL BE RATED FOR A MINIMUM OF 250 PSI FIRE PROTECTION SERVICE, FACTORY COATED DUCTILE IRON BODY WITH GROOVED ENDS AND ELASTOMER-COATED DUCTILE IRON DISC. VALVES SHALL BE INSTALLED HORIZONTAL AND VERTICAL POSITIONS. VALVES SHALL BE UL LISTED AND FM APPROVED. VALVES SHALL BE VICTAULIC VALVE SERIES 717.

8. PROVIDE VALVE TAGS AND VALVE CHART PER ASME A13.1 SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS. PROVIDE BUILDING PLAN SHOWING LOCATIONS OF VALVES.

L. PIPE IDENTIFICATION

1. CONTRACTOR SHALL PROVIDE IDENTIFICATION LABELS, TAGS, ETC., FOR FIRE PROTECTION PIPING AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN.

2. THE IDENTIFICATION OF PLUMBING PIPING SHALL BE IN ACCORDANCE WITH ANSI STANDARD A13.1.

3. PRESSURE SENSITIVE PIPE MARKERS SHALL BE MANUFACTURED BY THE BRADY CO., OR APPROVED EQUAL. PIPE MARKERS SHALL BE MANUFACTURER'S STANDARD PRODUCT.

M. ACCESS DOORS

1. ACCESS DOORS SHALL BE PROVIDED IN WALLS AND CEILINGS WHERE REQUIRED TO PERMIT PROPER ACCESS TO VALVES AND ANY OTHER SUCH DEVICES WHICH REQUIRE MAINTENANCE OR SERVICE. DOORS PLACED IN WALLS, PARTITIONS OR OTHER FIRE-RATED CONSTRUCTION SHALL HAVE A LABEL SIGNIFYING THAT THE DOOR HAS THE SAME FIRE RATING AS THE FIRE-RATED CONSTRUCTION.

2. THIS CONTRACTOR SHALL FURNISH ACCESS PANELS TO THE GENERAL CONTRACTOR FOR INSTALLATION.

3. ACCESS PANELS SHALL BE CONSTRUCTED OF 14 GAUGE STEEL, WITH 16 GAUGE STEEL FRAMES. DOORS SHALL FINISH FLUSH WITH THE SURROUNDING SURFACE. FRAMES SHALL HAVE 3 INCH WIDE EXPANDED METAL FOR PLASTERED SURFACES AND PLAIN FLANGED TYPE FRAME FOR TILE, MASONRY OR GYPSUM BOARD SURFACES. DOORS AND FRAMES SHALL BE FURNISHED PRIME COATED. DOORS INSTALLED IN CERAMIC TILE OR OTHER NON-PAINTED SURFACES SHALL BE STAINLESS STEEL.

4. HINGES SHALL BE CONCEALED SPRING TYPE, TO ALLOW DOORS TO BE OPENED 175 DEGREES. LOCKS SHALL BE FLUSH SCREWDRIVER TYPE WITH STEEL CAMS.

5. ACCESS PANELS SHALL BE 16 INCHES BY 16 INCHES OR LARGER AS MAY BE REQUIRED FOR PROPER ACCESS TO THE DEVICE BEING SERVED.

6. ACCESS PANELS ARE NOT REQUIRED IN COMPLETELY ACCESSIBLE LIFT OUT TILE CEILINGS. CONTRACTOR SHALL REVIEW THE ROOM FINISH SCHEDULE ON THE ARCHITECTURAL DRAWINGS TO VERIFY THE NEED FOR ACCESS PANELS.

N. FIRESTOPPING

1. SERVICES THAT PASS THRU FIRE OR SMOKE RATED PARTITIONS, WALLS, FLOORS, SHALL BE FIRESTOPPED. FIRE STOPPING SYSTEM RATING SHALL MATCH PARTITION RATING. FIRE STOPPING SYSTEM SHALL MEET THE REQUIREMENTS OF BUILDING CODE.

2. FIRESTOPPING AND/OR SMOKE STOPPING MATERIAL AND INSTALLATION SHALL BE AS MANUFACTURED BY HILTI OR APPROVED EQUAL.

END OF FIRE PROTECTION SPECIFICATIONS



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Building Renovation
for
Big Tom's Barbershop
2178 Centre Avenue, Pittsburgh, PA 15219

Seal:

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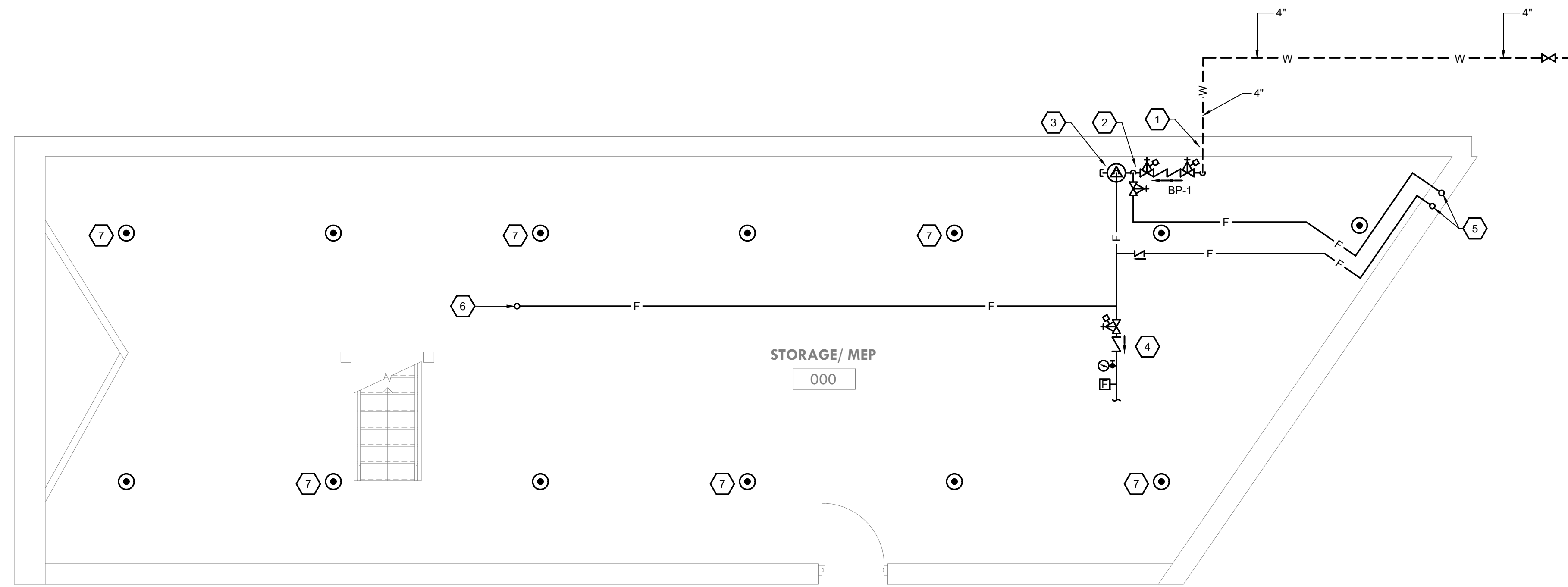
Drawing Title:

Fire Protection Specifications

Scale: **As indicated**

Drawing Number:

FP-003



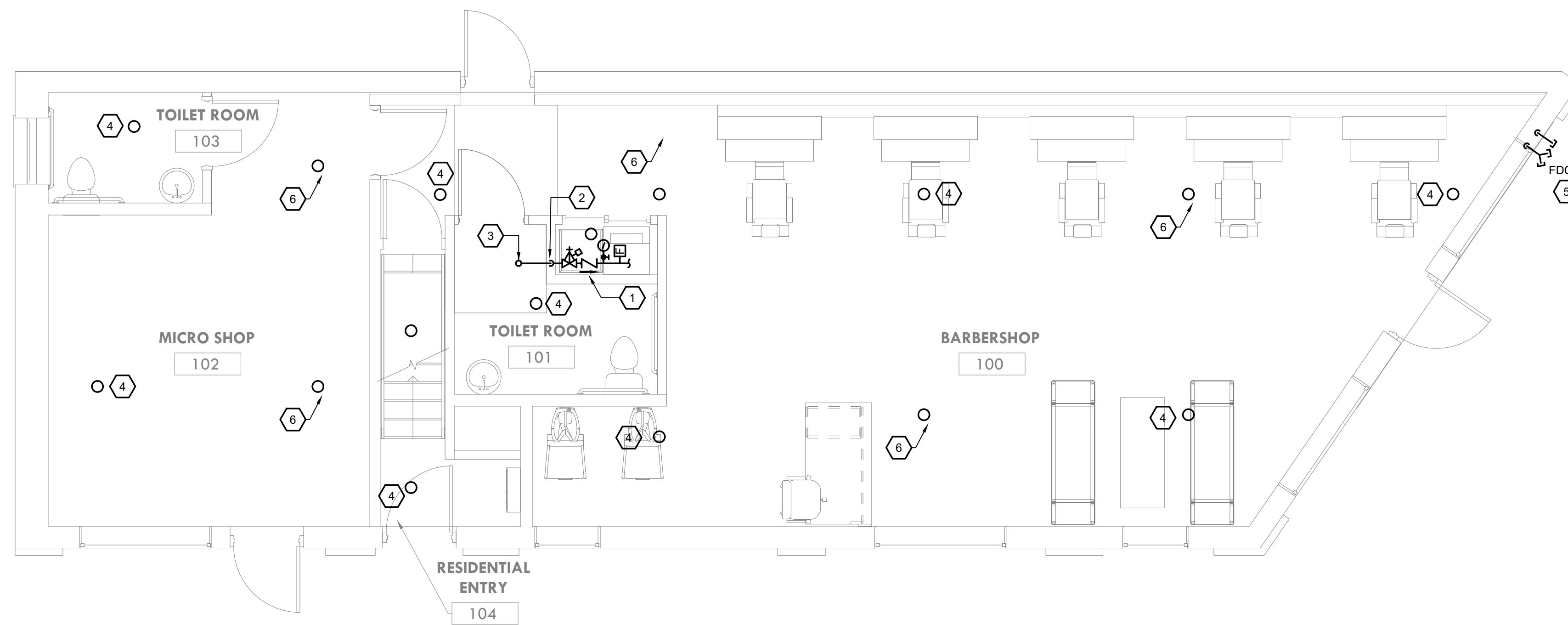
FIRE PROTECTION GENERAL NOTES:

- A. INSTALL SPRINKLER INSPECTORS TEST AT THE MOST REMOTE AREA.
- B. FIRESTOPPING IS REQUIRED AT ALL SLAB PENETRATIONS.

FIRE PROTECTION KEY NOTES: (#)

1. REFER TO FIRE PROTECTION SERVICE ENTRANCE - THROUGH WALL DETAIL #1 ON SHEET FP-001 FOR ADDITIONAL INFORMATION. REFER TO SITE/CIVIL DRAWINGS FOR CONTINUATION OF 4" FIRE MAIN. INSTALL 4" FIRE MAIN AT -3'-6" BELOW GRADE.
2. PROVIDE DETECTOR DOUBLE CHECK BACKFLOW PREVENTER IN COMPLIANCE WITH PWSA WATER AUTHORITY REQUIREMENTS. PROVIDE WITH TAMPER SWITCHES ON SHUT OFF VALVES. INCLUDE 4 INCH TAP AND VALVE TO CONDUCT FULL FLOW TESTING OF BACKFLOW PREVENTER.
3. PROVIDE ALARM VALVE COMPLETE WITH SHUT OFF VALVE, TAMPER SWITCH, CHECK VALVE, SYSTEM DRAIN VALVE, FLOW SWITCH AND PRESSURE GAUGE.
4. PROVIDE FLOOR CONTROL ASSEMBLY AND APPURTENANCES. REFER TO CONTROL VALVE ASSEMBLY DETAIL #2 ON SHEET FP-001 FOR ADDITIONAL INFORMATION. ROUTE DRAIN PIPING TO NEAREST FLOOR DRAIN.
5. 4" FIRE PIPING TO FLOOR ABOVE.
6. FIRE PIPING TO FLOOR ABOVE.
7. PROVIDE SPRINKLER COVERAGE MEETING NFPA 13 REQUIREMENTS FOR ORDINARY HAZARD OCCUPANCY, 0.15 GPM OVER 1500 SF IN THIS AREA.

1 BASEMENT FIRE PROTECTION PLAN
FP-201 1/4" = 1'-0"



FIRE PROTECTION GENERAL NOTES:

- A. INSTALL SPRINKLER INSPECTORS TEST AT THE MOST REMOTE AREA.
- B. FIRESTOPPING IS REQUIRED AT ALL SLAB PENETRATIONS.

FIRE PROTECTION KEY NOTES: (#)

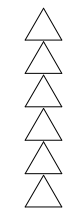
1. PROVIDE FLOOR CONTROL ASSEMBLY AND APPURTENANCES. REFER TO CONTROL VALVE ASSEMBLY DETAIL #2 ON SHEET FP-001 FOR ADDITIONAL INFORMATION. ROUTE DRAIN PIPING TO MOP BASIN.
2. FIRE PIPING FROM FLOOR BELOW.
3. FIRE PIPING TO FLOOR ABOVE.
4. PROVIDE SPRINKLER COVERAGE MEETING NFPA 13 REQUIREMENTS FOR LIGHT HAZARD OCCUPANCY, 0.10 GPM OVER 1500 SF IN THIS AREA.
5. FIRE DEPARTMENT CONNECTION, FDC-1. COORDINATE FINAL LOCATION WITH LOCAL AUTHORITIES HAVING JURISDICTION. ELECTRICAL CONTRACTOR TO PROVIDE STROBE ABOVE FDC.
6. PROVIDE CONCEALED SPRINKLERS WITH WHITE COVER PLATES. (TYPICAL) COORDINATE FINAL LOCATIONS WITH OTHER DISCIPLINES.

2 FIRST FLOOR FIRE PROTECTION PLAN
FP-201 1/4" = 1'-0"

Seal:

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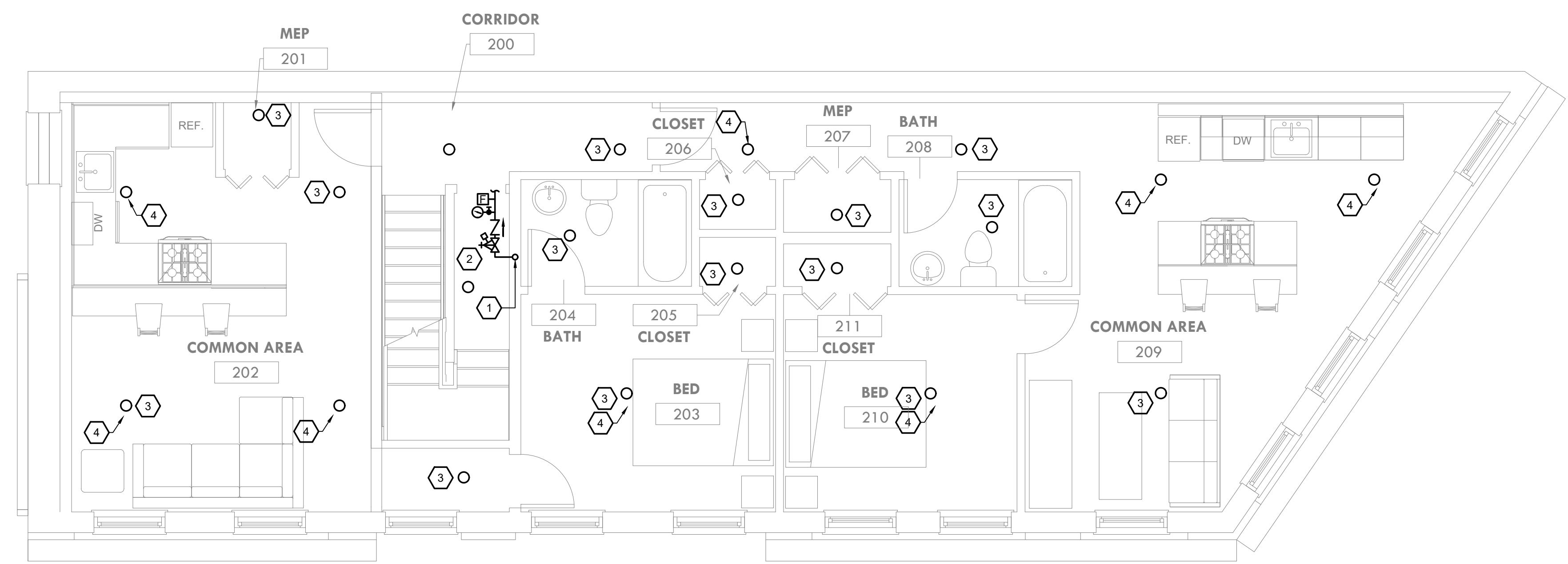
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**Basment &
First Floor
Fire Protection Plans**
Scale: As indicated
Drawing Number:

FP-201

FIRE PROTECTION GENERAL NOTES:
A. INSTALL SPRINKLER INSPECTORS TEST AT THE MOST REMOTE AREA.
B. FIRESTOPPING IS REQUIRED AT ALL SLAB PENETRATIONS.

FIRE PROTECTION KEY NOTES: #

1. PROVIDE FLOOR CONTROL ASSEMBLY AND APPURTENANCES. REFER TO CONTROL VALVE ASSEMBLY DETAIL #2 ON SHEET FP-001 FOR ADDITIONAL INFORMATION. ROUTE DRAIN PIPING TO FLOOR BELOW.
2. FIRE PIPING FROM FLOOR BELOW TO FLOOR ABOVE.
3. PROVIDE SPRINKLER COVERAGE MEETING NFPA 13 REQUIREMENTS FOR LIGHT HAZARD OCCUPANCY, 0.10 GPM OVER 1500 SF IN THIS AREA.
4. PROVIDE CONCEALED SPRINKLERS WITH WHITE COVER PLATES. (TYPICAL) COORDINATE FINAL LOCATIONS WITH OTHER DISCIPLINES.

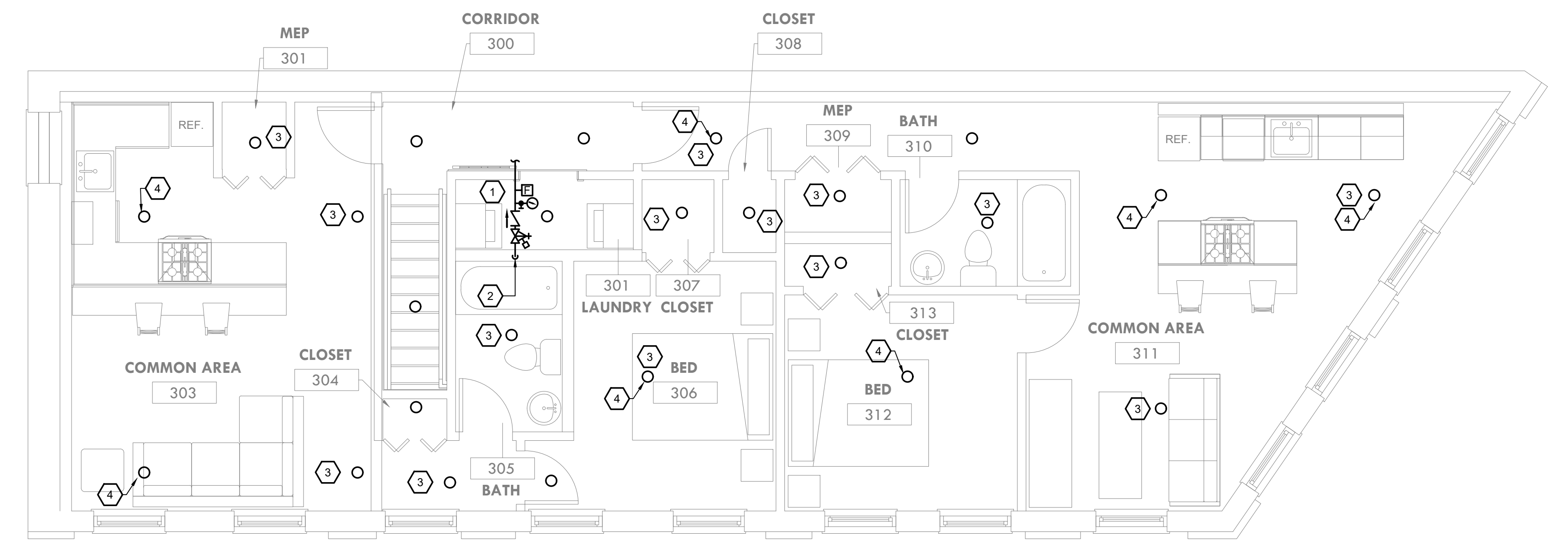


1 SECOND FLOOR FIRE PROTECTION PLAN
FP-202 1/4" = 1'-0"

FIRE PROTECTION GENERAL NOTES:
A. INSTALL SPRINKLER INSPECTORS TEST AT THE MOST REMOTE AREA.
B. FIRESTOPPING IS REQUIRED AT ALL SLAB PENETRATIONS.

FIRE PROTECTION KEY NOTES: #

1. PROVIDE FLOOR CONTROL ASSEMBLY AND APPURTENANCES. REFER TO CONTROL VALVE ASSEMBLY DETAIL #2 ON SHEET FP-001 FOR ADDITIONAL INFORMATION. ROUTE DRAIN PIPING TO FLOOR BELOW.
2. FIRE PIPING FROM FLOOR BELOW.
3. PROVIDE SPRINKLER COVERAGE MEETING NFPA 13 REQUIREMENTS FOR LIGHT HAZARD OCCUPANCY, 0.10 GPM OVER 1500 SF IN THIS AREA.
4. PROVIDE CONCEALED SPRINKLERS WITH WHITE COVER PLATES. (TYPICAL) COORDINATE FINAL LOCATIONS WITH OTHER DISCIPLINES.



2 THIRD FLOOR FIRE PROTECTION PLAN
FP-202 1/4" = 1'-0"

Seal:

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50% CD

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Floor Fire Protection
Plans**
Scale: As indicated
Drawing Number:

FP-202