ALTERATION

JOHNSTOWN, PENNSYLVANIA

GENERAL BUILDING DESCRIPTION:

- BUILDING TYPE: COMMERCIAL MIXED-USE

SCOPE OF WORK:

1. ELECTRICAL
2. PLUMBING
3. MECHANICAL
4. FIRE ALARM

PROJECT: COMMERCIAL MIXED-USE ALTERATION
ADDRESS: 508 MAIN STREET, JOHNSTOWN, PA 15901

APPLICABLE CODES

1. 2021 INTERNATIONAL BUILDING CODE, AS ADOPTED/AMENDED BY PA UCC.
2. 2021 INTERNATIONAL EXISTING BUILDING CODE, AS ADOPTED/AMENDED BY PA UCC.
3. 2021 INTERNATIONAL PLUMBING CODE, AS ADOPTED/AMENDED BY PA UCC.
4. 2021 INTERNATIONAL MECHANICAL CODE, AS ADOPTED/AMENDED BY PA UCC.
5. 2021 INTERNATIONAL FUEL GAS CODE, AS ADOPTED/AMENDED BY PA UCC.
6. 2021 INTERNATIONAL FIRE CODE, AS REFERENCED/ADOPTED BY PA UCC.
7. 2021 INTERNATIONAL ENERGY CONSERVATION CODE, AS ADOPTED/AMENDED BY PA UCC.
8. 2020 NATIONAL ELECTRICAL CODE, NFPA 70, AS REFERENCED BY THE ADOPTED PA UCC CODE CYCLE.
9. 2018 IBC CHAPTER 11 / 2009 ICC A117.1 ACCESSIBILITY PROVISIONS, WHERE APPLICABLE UNDER PA UCC ACCESSIBILITY ENFORCEMENT.
10. CITY OF JOHNSTOWN FLOODPLAIN ORDINANCE AND LOCAL AMENDMENTS.

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OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
00			
01			
02			
03			
04			

CLIENT/CONSULTANT APPROVAL STATUS

APPROVED	(A)
APPROVED WITH NOTES	(B)
RESUBMIT	(C)
DISAPPROVED	(D)

OWNER:

ADDRESS:

508 MAIN STREET, JOHNSTOWN, PA 15901

DESIGN CONSULTANT:
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DRAWING STATUS: DESIGN DRAWING

DISCIPLINE: ELECTRICAL

PROJECT TITLE: COMMERCIAL MIXED-USE

DRAWING TITLE: COVER SHEET

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-EL-00	SCALE: NTS @A1

BASIC ELECTRICAL REQUIREMENTS:

1. GENERAL: ALL ELECTRICAL WORK SHALL CONFIRM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AND NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA) STANDARDS UNLESS MORE STRINGENT REQUIREMENTS ARE INDICATED. ALL ELECTRICAL WORK SHALL COMPLY WITH ADA RECOMMENDATIONS. ALL ELECTRICAL WORK SHALL BE PERFORMED IN A NEAT AND WORKMAN LINK MANNER BY A LICENSED ELECTRICIAN, OR A CERTIFIED APPRENTICE WORKING UNDER THE DIRECT SUPERVISION OF A LICENSED ELECTRICIAN, USING THE BEST METHODS KNOWN TO THE TRADE AND SHALL PRESENT A NEAT AND PROFESSIONAL APPEARANCE WHEN COMPLETED. THE OWNER RESERVES THE RIGHT TO CHANGE, WITHOUT ADDITIONAL COST, THE LOCATION OF ANY APPARATUS OR OUTLET, PROVIDED SUCH CHANGE DOES NOT ADD MORE THAN 10 FT TO THE FEEDER ADN IS ORDERED BEFORE INSTALLATION OF THE AFFECTED PORTION OF THE WORK IS COMMENCED. CONTRACTOR SHALL BRING ALL CONFLICTS ON THE DRAWINGS TO THE OWNERS ATTENTION FOR HIS RESOLUTION PRIOR TO PERFORMING THAT WORK.

2. THE CONTRACTOR SHALL SURVEY THE PROJECT SITE PRIOR TO THE BID TO ASSESS ACTUAL FIELD CONDITIONS. FAILURE TO PERFORM THIS INSPECTION BINDS THE CONTRACTOR TO PERFORM THE WORK WITHOUT EXTRA CHARGES DESPITE THE IGNORANCE OF REASONABLY ANTICIPATED CONDITIONS.

3. ROUGH-INS: THE CONTRACTOR SHALL VERIFY AND COORDINATE THE ROUGH-IN REQUIREMENTS OF EACH ITEM OF EQUIPMENT WITH THE CONTRACTOR SUPPLYING THE EQUIPMENT.

4. INSTALLATION: THE ELECTRICAL DRAWINGS INDICATE THE EXTENT AND GENERAL LOCATION AND ARRANGEMENT OF EQUIPMENT AND MATERIALS. THE CONTRACTOR SHALL BECOME FAMILIAR WITH ALL DETAILS OF THE WORK AND VERIFY ALL DIMENSIONS IN THE FIELD SO THAT EQUIPMENTS AND MATERIALS WILL BE PROPERLY LOCATED AND READILY ACCESSIBLE. THE CONTRACTOR SHALL SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF ELECTRICAL SYSTEMS, EQUIPMENT, AND MATERIALS. COMPLY WITH THE FOLLOWING REQUIREMENTS:

   A. VERIFY ALL DIMENSIONS BY FIELD MEASUREMENTS.

   B. COORDINATE ELECTRICAL SYSTEMS, EQUIPMENT, AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS AND TRADES.

   C. ARRANGE FOR CHASES, SLOTS, AND OPENINGS IN OTHER BUILDING COMPONENTS DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR INSTALLATION OF ELECTRICAL SYSTEMS, EQUIPMENT, AND MATERIALS.

   D. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLATION OF ELECTRICAL SYSTEMS, EQUIPMENT, AND MATERIALS FOR EFFICIENT FLOW OF THE WORK.

   E. WHERE MOUNTING HEIGHTS ARE NOT INDICATED, INSTALL ELECTRICAL SYSTEMS, EQUIPMENT, AND MATERIALS TO PROVIDE MAXIMUM HEADROOM POSSIBLE.

   F. INSTALL ELECTRICAL SYSTEMS, EQUIPMENT, AND MATERIALS TO CONFORM WITH APPROVED SUBMITTAL DATA TO THE GREATEST EXTENT POSSIBLE. CONFORM TO THE ARRANGEMENTS INDICATED ON THE ELECTRICAL DRAWINGS, RECOGNIZING THAT PORTIONS OF THE WORK ARE SHOWN ONLY IN DIAGRAMMATIC FORM. WHERE COORDINATION REQUIREMENTS CONFLICT WITH INDIVIDUAL SYSTEM REQUIREMENTS, REFER CONFLICT TO THE ARCHITECT/ENGINEER OR OWNER'S REPRESENTATIVE FOR RESOLUTION.

   G. IN GENERAL, INSTALL ELECTRICAL SYSTEMS, EQUIPMENT, AND MATERIALS LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO BUILDING LINES AND/OR FEATURES AND/OR OTHER BUILDING SYSTEMS.

   H. INSTALL ELECTRICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE, AND REPAIR OR REPLACEMENT OF EQUIPMENT AND COMPONENT PARTS. AS MUCH AS PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH MINIMUM OF INTERFERENCE WITH OTHER INSTALLATIONS.

   I. INSTALL ELECTRICAL SYSTEMS, EQUIPMENT, AND MATERIALS GIVING RIGHT-OF-WAY PRIORITY TO SYSTEMS REQUIRED TO BE INSTALLED AT A SPECIFIC SLOPE (INCL. SPRINKLER SYSTEMS).

5. CUTTING AND PATCHING: ALL ELECTRICAL WORK SHALL BE CAREFULLY LAID OUT IN ADVANCE, AND WHERE CUTTING, CHANNELING, CHASING, OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS, OR OTHER SURFACES IS NECESSARY FOR THE PROPER INSTALLATION, SUPPORT, OR ANCHORAGE OF CONDUIT OR OTHER ELECTRICAL WORK, THIS WORK SHALL BE CAREFULLY DONE. ANY RESULTING DAMAGE TO THE BUILDING OR OTHER SYSTEMS, EQUIPMENT, OR MATERIALS SHALL BE REQUIRED BY SKILLED MECHANICS OF THE TRADES INVOLVED, AT NO ADDITIONAL COST TO THE OWNER.

6. PRODUCTS: SYSTEMS, EQUIPMENT, AND MATERIALS DESCRIBED ON THE ELECTRICAL DRAWINGS ESTABLISH THE MINIMUM STANDARDS FOR QUALITY AND STYLE AND SHALL BE THE BASIS OF THE BID. ALL SYSTEMS, EQUIPMENT, AND MATERIALS SHALL BE NEW AND SHALL BEAR THE UL LABEL OR BE UL LISTED, WHERE APPLICABLE, AND SHALL BE INSTALLED IN ACCORDANCE WITH THE NEC AND NEMA STANDARDS.

7. SUBSTITUTIONS: WHERE SYSTEMS, EQUIPMENT, OR MATERIALS ARE SPECIFIED BY MANUFACTURER OR BRAND NAME AND CATALOG NUMBER, SUCH SPECIFICATION SHALL ESTABLISH THE MINIMUM STANDARDS FOR QUALITY AND STYLE AND SHALL BE THE BASIS OF THE BID. SYSTEMS, EQUIPMENT, AND MATERIALS SO SPECIFIED SHALL BE FURNISHED UNDER THE CONTRACT UNLESS CHANGED BY WRITTEN AGREEMENT. SHOULD THE CONTRACTOR PROPOSE TO FURNISH PRODUCTS OTHER THAN THOSE SPECIFIED, AS PERMITTED BY "OR APPROVED EQUAL" CLAUSES, HE SHALL SUBMIT A WRITTEN REQUEST FOR SAID SUBSTITUTIONS THROUGH APPROPRIATE CHANNELS TO THE ARCHITECT ENGINEER FOR HIS REVIEW.SUCH REQUEST SHALL BE ACCOMPANIED WITH COMPLETE DESCRIPTIVE LITERATURE INCLUDING, BUT NOT LIMITED TO, CATALOG CUT SHEETS, BROCHURES, CIRCULARS, SPECIFICATIONS, PERFORMANCE DATA, INSTALLATION INSTRUCTIONS, SHOP DRAWINGS, AND OTHER PRINTED INFORMATION IN SUFFICIENT DETAIL AND SCOPE TO VERIFY COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT. DESCRIPTIVE LITERATURE ON PROPOSED SUBSTITUTIONS SHALL BE CLEAR, CONCISE, AND LOGICALLY ARRANGED. ALL DATA WHICH IS, AND IS NOT, APPLICABLE SHALL BE CLEARLY IDENTIFIED AS SUCH. IF REQUESTED, THE CONTRACTOR SHALL SUBMIT SAMPLES OF BOTH SPECIFIED AND PROPOSED ITEMS FOR INSPECTION. DESCRIPTIVE LITERATURE ON PROPOSED SUBSTITUTIONS SHALL BE RETURNED WITHOUT REVIEW IF NOT PROPERLY PREPARED. ACCEPTANCE OR REJECTION OF PROPOSED SUBSTITUTIONS SHALL BE UP TO THE DESCRIPTION OF THE ARCHITECT/ENGINEER AND/OR THE OWNER.

8. SUBMITTALS: THE CONTRACTOR SHALL FOLLOW THE GENERAL PROVISIONS OF THE CONTRACT AND ESTABLISHED PROCEDURES. SUBMITTALS SHALL CONSIST OF COMPLETE DESCRIPTIVE LITERATURE INCLUDING, BUT NOT LIMITED TO, CATALOG CUT SHEETS, BROCHURES, CIRCULARS, SPECIFICATIONS, PERFORMANCE DATA, INSTALLATION INSTRUCTIONS, SHOP DRAWINGS, AND OTHER PRINTED INFORMATION IN SUFFICIENT DETAIL AND SCOPE TO VERIFY COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT. DESCRIPTIVE LITERATURE SHALL BE CLEAR, CONCISE, AND LOGICALLY ARRANGED. ALL DATA WHICH IS, AND IS NOT, APPLICABLE SHALL BE CLEARLY IDENTIFIED AS SUCH. IF REQUESTED, THE CONTRACTOR SHALL SUBMIT SAMPLES OF SPECIFIED ITEMS FOR INSPECTION. DESCRIPTIVE LITERATURE SHALL BE RETURNED WITHOUT REVIEW IF NOT PROPERLY PREPARED. THE FOLLOWING SYSTEMS, EQUIPMENT, AND MATERIALS, AS A MINIMUM, REQUIRE SUBMITTALS:

   A. ANY PROPOSED SUBSTITUTIONS:
   B. WIRING DEVICES.
   C. PANELBOARDS.
   D. DISCONNECT SWITCHES.
   E. CIRCUIT BREAKERS.
   F. LIGHTING FIXTURES INCLUDING BALLASTS.

9. RECORD DRAWINGS: THE CONTRACTOR SHALL MAINTAIN AT THE SITE A CLEAN, UNDAMAGED SET OF BLUE- OR BLACK-LINE WHITE PRINTS OF CONTRACT DRAWINGS. THIS RECORD SET OF CONTRACT DRAWINGS SHALL BE MARKED TO SHOW THE ACTUAL INSTALLATION AND WHERE THE ACTUAL INSTALLATION VARIES SUBSTANTIALLY FROM THE ELECTRICAL WORK AS ORIGINALLY SHOWN. MARK WHICHEVER DRAWINGS ARE MOST CAPABLE OF SHOWING CONDITIONS FULLY AND ACCURATELY. GIVE PARTICULAR ATTENTION TO CONCEALED ELEMENTS THAT WOULD BE DIFFICULT TO MEASURE AND RECORD AT A LATER DATE. MARK RECORD DRAWINGS WITH A RED ERASABLE PENCIL; USE OTHER COLORS TO DISTINGUISH BETWEEN VARIATIONS IN SEPARATE CATEGORIES OF THE ELECTRICAL WORK. NOTE CONTRACT MODIFICATIONS AND APPROVED SUBSTITUTIONS WHERE APPLICABLE.

10. PROTECTION OF INSTALLED SYSTEMS, EQUIPMENT, AND MATERIALS: PROTECT INSTALLED SYSTEMS, EQUIPMENT, AND MATERIALS FROM DAMAGE UNTIL FINAL ACCEPTANCE BY THE OWNER. REPAIR OR REPLACE, AT NO ADDITIONAL COST TO THE OWNER, DAMAGED SYSTEMS, EQUIPMENT, AND MATERIALS TO THE SATISFACTION OF THE ARCHITECT/ ENGINEER AND/ OR OWNER.

11. CLEANING: UPON COMPLETION OF INSTALLATION, INSPECT INTERIOR AND EXTERIOR OF ALL ELECTRICAL EQUIPMENT. REMOVE PAINT SPLATTERS AND OTHER SPOTS, DIRT, AND DEBRIS. TOUCH-UP SCRATCHES AND MARKS OF FINISH TO MATCH ORIGINAL FINISH.

12. CERTIFICATIONS: THE FOLLOWING SHALL BE OBTAINED AND SUBMITTED TO THE OWNER PRIOR TO FINAL PAYMENT:

   A. ELECTRICAL SYSTEMS: A CERTIFICATE OF FINAL INSPECTION AND APPROVAL BY THE AUTHORITIES HAVING JURISDICTION

13. GUARANTEE: THE CONTRACTOR SHALL SUBMIT A WRITTEN GUARANTEE TO THE OWNER, PRIOR TO FINAL PAYMENT, THAT WARRANTS THE INSTALLATION SHALL REMAIN FREE OF DEFECTS FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE BY THE OWNER. THE GUARANTEE SHALL STATE THAT THE OWNER IS NOT LIABLE FOR PARTS AND LABOR COSTS INCURRED BY THE CONTRACTOR IN THE REPAIR OF ACTUAL PRODUCT OR INSTALLATION DEFECTS. THE GUARANTEE SHALL STATE THAT THE ON-SITE RESPONSE TIME TO REQUESTS FOR ASSISTANCE WILL BE 24 HOURS FOR NON-EMERGENCY CONDITIONS AND 2 HOURS FOR EMERGENCY CONDITIONS.

ELECTRICAL MATERIALS:

1. RACEWAYS:
   - A. RIGID GALVANIZED STEEL (RGS) CONDUIT: ANSI C80.1.
   - B. ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS: ANSI C80.3 WITH COMPRESSION TYPE FITTINGS.
   - C. LIQUIDTIGHT FLEXIBLE METAL CONDUIT: UL 360. FLEXIBLE STEEL CONDUIT WITH PVC JACKET.
   - D. NONMETALLIC CONDUIT AND TUBING (ENT): NEMA TC 13
2. BOXES:
   - A. SHEET METAL: NEMA OS 1.
   - B. CAST METAL: NEMA FB 1, TYPE FD, CAST FRAILLY BOX WITH CASKETED COVER.
   - C. HINGED COVER ENCLOSURES: NEMA 250, GALVANIZED STEEL ENCLOSURE WITH CONTINUOUS HINGE COVER, QUICK RELEASE TYPE LATCHES, REMOVABLE INTERIOR PANEL, AND MANUFACTURER'S STANDARD GRAY ENAMEL INSIDE AND OUT.
3. WIRES AND CABLES:
   - A. CONDUCTOR MATERIAL: ANNEALED COPPER.
   - B. INSULATION: THHN/THWN CONFORMING TO WC 5.
   - C. CONDUCTORS #16 AWG AND SMALLER SHALL BE SOLID; CONDUCTORS #14 AWG AND LARGER SHALL BE STRANDED. MC CABLE IS PERMITTED FOR BRANCH CIRCUITRY, AND SHALL UTILIZE SOLID CONDUCTORS.
   - D. GROUND CONDUCTORS #10 AWG AND SMALLER SHALL HAVE GREEN THHN/THWN INSULATION.
4. WIRING DEVICES:
   - A. GENERAL: COMPLY WITH NEMA WD 1, " GENERAL PURPOSE WIRING DEVICES."
   - B. COLOR: WHITE, BLACK, GRAY, IVORY, OR BROWN TO BE AS SELECTED BY THE ARCHITECT/ENGINEER AND/OR THE OWNER.
   - C. RECEPTACLES: COMPLY WITH UL 498, "ELECTRICAL ATTACHMENT PLUGS AND RECEPTACLES, "HEAVY DUTY SPECIFICATION GRADE EXCEPT AS OTHERWISE INDICATED. GROUND FAULT CIRCUIT INTERRUPTER (GFCI) TYPE RECEPTACLES SHALL COMPLY WITH UL 943, "GROUND FAULT CIRCUIT INTERRUPTERS," WITH INTEGRAL NEMA 5-20R DUPLEX RECEPTACLE DESIGNED FOR INSTALLATION IN A 2-3/4" DEEQ DEVICE BOX WITHOUT ADAPTER.
   - D. TOGGLE SWITCHES: 20A, 120-277V AC, QUIET TYPE, SPECIFICATION GRADE AND SHALL COMPLY WITH UL 20, "GENERAL USE SNAP SWITCHES." SINGLE-POLE, TWO-POLE, THREE-WAY, AND FOUR-WAY AS INDICATED AND/OR REQUIRED.
   - E. DEVICE PLATES: SINGLE AND COMBINATION TYPES WHICH MATE AND MATCH WITH CORRESPONDING WIRING DEVICES.
   - F. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS AS MANUFACTURED BY HUBBEL INC. OR APPROVED EQUAL BY LEVITON.
5. GROUNDING:
   - A. GROUNDING AND BONDING PRODUCTS: OF TYPES INDICATED AND/OR OF SIZES AND RATINGS TO COMPLY WITH THE NEC. WHERE TYPES, SIZES, RATINGS, AND QUANTITIES ARE IN EXCESS OF NEC REQUIREMENTS, THE MORE STRINGENT REQUIREMENTS AND THE GREATER SIZE, RATING, AND QUANTITY INDICATIONS SHALL GOVERSMOOTH MATCHING NYLON IN ALL AREAS.
   - B. CONDUCTOR MATERIAL: COPPER.
   - C. WIRE AND CABLE CONDUCTORS: CONFIRM TO NEC TABLE 8, EXCEPT AS OTHERWISE INDICATED, FOR CONDUCTOR PROPERTIES, INCLUDING STRANDING.
   - D. CONNECTOR PRODUCTS: UL LISTED AND LABELED AS GROUNDING CONNECTORS FOR THE MATERIALS USED.
6. PANELBOARDS:
   - A. CIRCUIT BREAKERS: PROVIDE TYPE, RATING, AND FEATURES INDICATED. BOLT-ON EXCEPT WHERE PLUG-IN FOR USE ON EXISTING PANELBOARDS (NOT BEING UPGRADED) TANDEM CIRCUIT BREAKERS SHALL NOT BE USED. MULTIPLE CIRCUIT BREAKERS SHALL HAVE AN INTERNAL COMMON TRIP AND A SINGLE HANDLE.
   - B. ENCLOSURES: NEMA TYPE 1, UNLESS OTHERWISE INDICATED.
   - C. FRONT: SECURED TO BOX WITH CONCEALED TRIM CLAMPS EXCEPT AS INDICATED. FRONT FOR SURFACE MOUNTED PANELBOARDS SHALL BE SAME DIMENSIONS AS BOX.
   - D.. DIRECTORY FRAME: METAL WITH CLEAR PLASTIC COVER MOUNTED ON INSIDE OF PANELBOARD DOOR.
   - E. BUS WORK: HARD DRAWN COPPER OF 98% CONDUCTIVITY.
   - F. MAIN AND NEUTRAL PLUGS: COMPRESSION TYPE.
   - G. EQUIPMENT GROUND BUS: ADEQUATE FOR FEEDER AND BRANCH CIRCUIT EQUIPMENT GROUND CONDUCTORS. BONDED TO BOX.
   - H. PROVISIONS FOR FUTURE DEVICES: EQUIP WITH MOUNTING BREAKETS, BUS CONNECTION, AND NECESSARY APPURTENANCES, FOR THE CIRCUIT BREAKER AMPERE RATING INDICATED FOR FUTURE INSTALLATION OF DEVICES.
   - I. MAIN AND SUFFERED LUGS: PROVIDE WHERE INDICATED.
   - J. NAMEPLATE: CUSTOM ENGRAVED PLASTIC LAMINATE, WHITE LETTERS ON BLACK FIELD, FOR EACH PANELBOARD MOUNTED WITH EPOXY OR INDUSTRIAL CEMENT OR ADHESIVE.
   - K. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS AS MANUFACTURED BY SQUARE-D, SIEMENS OR CUTLER HAMMER CO.
7. DISCONNECTS AND CIRCUIT BREAKERS:
   - A. FUSIBLE SWITCH, 800A AND SMALLER: NEMA KS 1, TYPE HD, CLIPS TO ACCOMMODATE SPECIFIED FUSES, ENCLOSURE SUITABLE FOR THE ENVIRONMENT WHERE INSTALLED, HANDLE LOCKABLE WITH TWO (2) PAD LOCKS, AND INTERLOCKED WITH COVER IN "CLOSED" POSITION. ENCLOSURES SHALL COMPLY WITH NEMA KS 1; TYPE 1 INDOOR DRY LOCATIONS;
   - B. MOLDED CASE CIRCUIT BREAKER: NEWMAN AB 1, HANDLE LOCKABLE WITH TWO (2) PADLOCKS. FRAME SIZE, TRIP RATING NUMBER OF POLES, AND AUXILIARY DEVICES AS INDICATED. ENCLOSURES SHALL COMPLY WITH NEWMAN AB 1; TYPE 1. INDOOR DRY LOCATIONS. CIRCUIT BREAKERS SHALL HAVE A MINIMUM INTERRUPTING CAPACITY AS FOLLOWS:
   - C. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS AS SUITABLE FOR INSTALLATION IN EXISTING PANELS. DISCONNECTS SHALL BE BY SQUARE-D.

STANDARD MOUNTING HEIGHTS (UNLESS OTHERWISE NOTED)

9" below finish ceiling	wall-mounted clocks, program bells, (or as shown on architcctural details)
6" above fire hose cabinet	blue signal light
10'-0"	battery lighting units and remote wall mounted light heads (or 1'-0" below finished ceiling of top of unit).
8'-6"	pendant-hung industrial and strip lighting fixtures.
centered above door or window opening	warning and signal fixtures/signs.
6'-8"-to bottom of device	or 6" below finished ceiling whichever is lower. fire alarm signal devices and illuminated fire signals
6'-6"	top of flush and surface mounted electrical lighting or power panelboards and telephone cabinets.
6'-3"	top of back-mounted wall exit fixtures not mounted above doors).
6'-0"	top of highest electrical safety disconnect switches, magnetic starters, contactors.
3'-8"	wall mounted electrical device, lighting switches, manual motor starters, thermostats, wall-mounted wiremold and g.f.i. receptacles in toilet rooms or for separate sinks (maximum side reach height ADA)
3'-6"	fire alarm pull stations, ADA compliant device rough in
18"	electrical recEQtacles, telEQhone & data outlets
00"	finished floor

MOUNTING HEIGHT NOTES:

1. STANDARD MOUNTING HEIGHTS: (COORDINATE WITH ARCH DRAWINGS) ALL MOUNTING HEIGHTS SHALL BE AS INDICATED BY ARCHITECT. IF NOT INDICATED BY ARCHITECT THEN PROVIDE AS NOTED ABOVE.

2. MOUNTING HEIGHTS TO CENTER OF OUTLETS UNLESS OTHERWISE NOTED. IN MASONRY CONSTRUCTION THE ABOVE MOUNTING HEIGHTS SHALL BE USED FOR REFERENCE TO NEAREST BLOCK OR BRICK COURSING.

3. THE ABOVE MOUNTING HEIGHT SHALL BE ADHERED TO UNLESS SPECIFICALLY NOTED OR DETAILED OTHERWISE ON THE DRAWING OR SPECIFICATIONS.

4. INDICATION (+) NEXT TO A DEVICE INDICATES THAT DEVICE IS MOUNTED ABOVE A COUNTER OR CASEWORK. COORDINATE WITH ARCHITECTURAL DETAIL AND CASEWORK CONTRACTOR.

5. 3'-6" FOR ADA COMPLIANT DEVICES VERIFY EXACT HEIGHT PRIOR TO ROUGH IN.

ELECTRICAL NOTES:

1. WIRING METHODS: WIRING SHALL CONSIST NO ROME (NON-METALLIC) OR CABLES AND WIRES INSTALLED IN RGS CONDUIT, EMT, LIQUIDATING FLEXIBLE METAL CONDUIT AND MC CABLES. RACEWAYS SHALL BE CONCEALED WITHIN FINISHED WALLS AND CEILINGS UNLESS OTHERWISE INDICATED. OTHER THAN ROOF PENETRATIONS REQUIRED TO FEED ROOF MOUNTED EQUIPMENT, RACEWAYS WILL NOT BE ROUTED EXPOSED OUTSIDE OF THE BUILDING.

2. RACEWAYS: RACEWAYS SHALL BE PROVIDED WHERE INDICATED AND REQUIRED AND SHALL BE INSTALLED AS SPECIFIED BELOW, UNLESS OTHERWISE INDICATED. MINIMUM RACEWAY SIZE SHALL BE 3/4 IN. RGS CONDUIT SHALL BE USED FOR ALL OUTDOOR INSTALLATIONS. EMT SHALL BE USED FOR ALL INDOOR INSTALLATIONS. LIQUIDATING FLEXIBLE METAL CONDUIT, 6 FT MAXIMUM LENGTH,SHALL BE USED FOR ALL CONDUIT TERMINATIONS AT EQUIPMENT SUBJECT TO VIBRATION. BUSHINGS, MANUFACTURED FITTINGS, OR BOXES PROVIDING EQUIVALENT MEANS OF PROTECTION SHALL BE INSTALLED ON THE ENDS OF ALL CONDUITS AND SHALL BE OF THE INSULATING TYPE WHERE REQUIRED BY THE N.E.C. ONLY LISTED ADAPTERS SHALL BE USED TO CONNECT EMT TO RGS CONDUIT AND CAST METAL BOXES AND CONDUIT BODIES. PENETRATIONS OF SLABS AND FIRE RATED WALLS SHALL BE FIRESTONE.

   KEEP RACEWAYS AT LEAST 6 IN. AWAY FROM PARALLEL RUNS OF FLUES AND STEAM OR HOT WATER PIPING. INSTALL HORIZONTAL RACEWAY RUNS HIGHER THAN WATER AND STEAM PIPING. RACEWAYS CROSSING STRUCTURAL EXPANSION JOINT SHALL BE PROVIDED WITH SUITABLE EXPANSION FITTINGS OR OTHER SUITABLE MEANS TO COMPENSATE FOR THE BUILDING EXPANSION AND CONTRACTION. RACEWAYS SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO WALLS, STRUCTURAL MEMBERS AND FEATURES, MECHANICAL DUCT AND PIPING SYSTEMS, OR INTERSECTIONS OF VERTICAL PLANES AND CEILINGS. CHANGES IN DIRECTION OF RUNS SHALL BE ACCOMPLISHED WITH SYMMETRICAL BENDS OR CAST METAL FITTINGS. FILED-MADE ELBOWS AND OFFSETS SHALL BE MADE WITH AN APPROVED HICKEY OR CONDUIT BENDING MACHINE. CRUSHED OR DEFORMED RACEWAY SHALL NOT BE INSTALLED. CARE SHALL BE TAKEN TO PREVENT THE LODGMENT OF DIRT, AND CONSTRUCTION MATERIALS AND DEBRIS IN RACEWAYS DURING THE COURSE OF CONSTRUCTION. CLOGGED RACEWAYS SHALL BE ENTIRELY FREED OF OBSTRUCTIONS OR SHALL BE REPLACED.

   RGS CONDUIT AND EMT SHALL BE SECURELY AND RIGIDLY FASTENED IN PLACE AT INTERVALS OF NOT MORE THAN 10 FT AND WITHIN 3 FT OF FITTINGS AND BOXES WITH APPROVED PIPE STRAPS, WALL BRACKETS, CONDUIT CLAMPS, CONDUIT HANGERS, THREADED C-CLAMPS, OR CEILING TRAPEZE. C-CLAMPS OR BEAM CLAMPS SHALL HAVE STRAP OR ROD TYPE RETAINERS. LOADS AN SUPPORTS SHALL BE COORDINATED WITH SUPPORTING STRUCTURES TO PREVENT DEFORMATION OR DAMAGE TO STRUCTURES, BUT NO LOAD SHALL BE APPLIED TO JOIST BRIDGING. FASTENINGS SHALL BE BY WOOD SCREWS OR SCREW TYPE NAILS TO WOOD; BY TOGGLE BOLTS ON HOLLOW CMU; BY EXPANSION BOLTS ON CONCRETE OR BRICK; AND BY MACHINE SCREWS, WELDED THREADED STUDS, HEAT TREATED OR SPRING STEEL TENSION CLAMPS ON STEEL WORK. NAIL TYPE NYLON ANCHORS OR THREADED STUDS DRIVEN INBY A POWDER CHARGE AND PROVIDED WITH LOCK WASHERS AND NUTS MAY BE USED IN LIEU OF EXPANSION BOLTS OR MACHINE SCREWS. RACEWAYS OR PIPE STRAPS SHALL NOT BE WELDED TO STEEL STRUCTURES. IN PARTITIONS OF LIGHT STEEL CONSTRUCTION, SHEET METAL SCREWS MAY BE USED. CONDUIT SHALL NOT BE SUPPORTED USING WIRE OR NYLON TIES. RACEWAYS SHALL BE INSTALLED AS A COMPLETE SYSTEM AND BE INDEPENDENTLY SUPPORTED FROM THE STRUCTURE. UPPER RACEWAYS SHALL NOT BE THE SUPPORT OF LOWER RACEWAYS. SUPPORTING MAINS WILL NOT BE SHARED BETWEEN ELECTRICAL RACEWAYS AND MECHANICAL DUCTS OR PIPING. MOUNTING HARDWARE SHALL NOT PRESENT SHARP EDGES WHERE PERSONNEL CONTACT IS POSSIBLE. IN MECHANICAL SPACES, "MINERALS" SUPPORTS SHALL NOT BE USED BELOW 10' A.F.F.

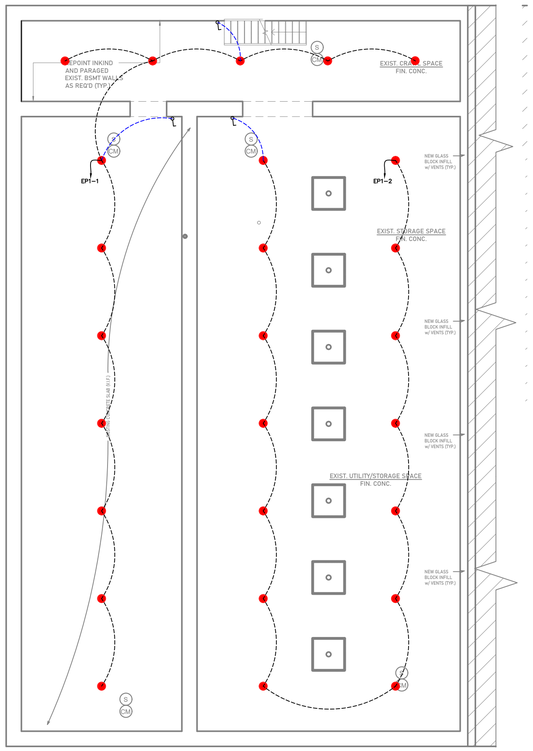
3. BOXES: BOXES SHALL BE PROVIDE IN RACEWAY SYSTEMS WHEREVER REQUIRED FOR PULLING OF WIRES, MAKING CONNECTIONS, AND MOUNTING OF DEVICES OR LIGHTING FIXTURES. IN GENERAL, BOXES SHALL BE CONSTRUCTED OF HOT-DIPPED GALVANIZED FINISHED SHEET STEEL. BOXES FOR METALLIC RACEWAYS, 4 IN. BY 4 IN. NOMINAL SIZE AND SMALLER, SHALL BE OF THE CAST METAL HUB TYPE AND CASKETED WHEN LOCATED OUTSIDE OF THE BUILDING. BOXES SHALL BE LISTED AS SUITABLE FOR THE ENVIRONMENTAL CONDITIONS OF THE LOCATION THEY ARE INSTALLED. BOXES FOR MOUNTING OF LIGHTING FIXTURES SHALL BE NOT LESS THAN 4 IN. SQUARE EXCEPT SMALLER BOXES SHALL BE INSTALLED WHERE REQUIRED BY FIXTURE CONFIGURATION. UNLESS OTHERWISE INDICATED, DEVICE BOXES FOR RECEPTACLES SHALL BE MOUNTED WITH THE CENTER OF THE DEVICE BOX APPROXIMATELY 18 IN. AFF. INDICATED, DEVICE BOXES FOR TOGGLE SWITCHES SHALL BE MOUNTED WITH THE CENTER OF THE DEVICE BOX APPROXIMATELY 48 IN. AFF. BOXES AND BOX SUPPORTS SHALL BE FASTENED TO WOOD WITH WOOD SCREWS OR SCREW TYPE NAILS OF EQUAL HOLDING STRENGTH, WITH BOLTS AND METAL EXPANSION SHIELDS ON CONCRETE AND BRICK, WITH TOGGLE BOLTS ON HOLLOW CMU, AND WITH MACHINE SCREWS OR WELDED STUDS ON STEEL WORK. THREADED STUDS DRIVEN IN BY POWDER CHARGE AND PROVIDED WITH LOCKWASHERS AND NUTS, OR NAIL TYPE NYLON ANCHORS MAY BE USED IN LIEU OF EXPANSION SHIELDS OR MACHINE SCREWS. HANGERS SHALL NOT BE FASTENED OR SUPPORTED FROM JOIST BRIDGING.

4. WIRES AND CABLES: EXAMINE RACEWAYS AND BUILDING FINISHES TO RECEIVE WIRES AND CABLES FOR COMPLIANCE WITH INSTALLATION TOLERANCES AND OTHER CONDITIONS. DO NOT PROCEED WITH INSTALLATION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. PULL WIRES AND CABLES INTO RACEWAY SIMULTANEOUSLY WHERE MORE THAN ONE IS BEING INSTALLED IN THE SAME RACEWAY. USE PULLING COMPOUND OR LUBRICANT WHERE NECESSARY; COMPOUND USED MUST NOT DETERIORATE CONDUCTORS OR INSULATION. USE PULLING MEANS, INCLUDING FISH TAPE, CABLE, ROPE, AND BASKET-WEAVE WIRE/CABLE GRIPS THAT WILL NOT DAMAGE WIRES/CABLES OR RACEWAY. INSTALL EXPOSED CABLE, PARALLEL AND PERPENDICULAR TO WALLS, STRUCTURAL MEMBERS AND FEATURES, MECHANICAL DUCT AND PIPING SYSTEMS, OR INTERSECTIONS OF VERTICAL PLANES AND CEILING. HORIZONTAL RUNS OF MC CABLE SHALL BE SUPPORTED ON 3 FT MAXIMUM CENTERS. VERTICAL RUNS OF MC CABLES SHALL BE SUPPORTED ON 6 FT MAXIMUM CENTERS EXPOSED PLENUM CABLE SHALL BE SUPPORTED ON 3 FT MAXIMUM CENTERS. THE NUMBER OF SPLICES SHALL BE KEPT TO AN ABSOLUTE MINIMUM. WIRING AT EACH OUTLET SHALL BE INSTALLED WITH AT LEAST 8 IN. SLACK.

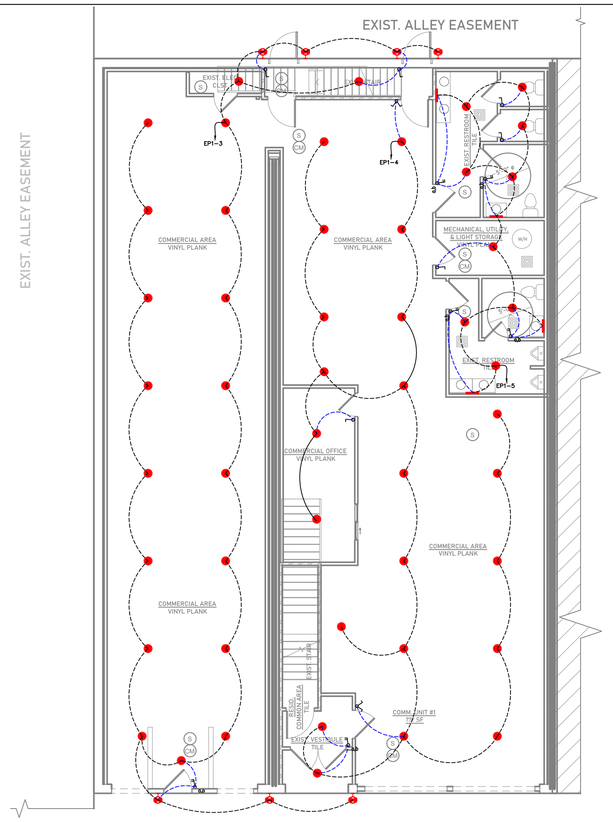
5. WIRING DEVICES: INSTALL WIRING DEVICES WHERE INDICATED IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED INSTALLATION, INSTRUCTION APPLICABLE REQUIREMENTS OF THE NEC, AND RECOGNIZED INDUSTRY PRACTICES. INSTALL WIRING DEVICES IN DEVICE BOXES WHICH ARE CLEAN AND FREE FROM DIRT AND CONSTRUCTION MATERIALS AND DEBRIS. INSTALL WIRING DEVICES AFTER WIRING WORK IS COMPLETE. INSTALL DEVICE PLATES AFTER PAINTING WORK IS COMPLETE. TIGHTEN CONNECTORS AND TERMINALS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. PRIOR TO ENERGIZING CIRCUITS, TEST WIRING FOR ELECTRICAL CONTINUITY AND SHORTS. ENSURE PROPER POLARITY OF CONNECTIONS IS MAINTAINED. SUBSEQUENT TO EMERGING, TEST WIRING DEVICES AND DEMONSTRATE COMPLIANCE WITH REQUIREMENTS.

6. GROUNDING: ELECTRICAL SYSTEMS AND EQUIPMENT, METALLIC RACEWAYS AND BOXES, CABLE SHIELDS, METALLIC CABLE SHEATHS AND ARMOR, AND OTHER NON-CURRENT CARRYING METALLIC PARTS OF EQUIPMENT SHALL BE GROUNDED IN CONFORMANCE WITH THE NEC. EQUIPMENT GROUND CONDUCTORS SHALL COMPLY WITH NEC ARTICLE 250 FOR SIZES AND QUANTITIES, EXCEPT WHERE LARGER SIZES AND/OR MORE CONDUCTORS ARE INDICATED. PROVIDE SEPARATE INSULATED GROUND CONDUCTOR IN ALL RACEWAYS, REGARDLESS OF RACEWAY TYPE. SEPARATELY DERIVED SYSTEMS AS DEFINED BY THE NEC SHALL BE GROUNDED IN CONFORMANCE WITH NEC ARTICLE 250 PARA. 26. TERMINATE EQUIPMENT GROUND WIRES FOR FEEDERS AND BRANCH CIRCUITS WITH PRESSURE TYPE GROUND LUGS. WHERE METALLIC CONDUITS TERMINATE AT METALLIC HOUSINGS WITHOUT MECHANICAL AND ELECTRICAL CONNECTION TO HOUSING, TERMINATE EACH CONDUIT WITH A GROUNDING BUSHING. CONNECT GROUNDING BUSHINGS WITH A GROUND WIRE TO THE GROUND BUS IN THE HOUSING. BOND ELECTRICALLY NONCONTIGUOUS CONDUITS AT BOTH ENTRANCES AND EXITS WITH GROUNDING BUSHINGS AND GROUND WIRES. TIGHTEN GROUNDING AND BONDING CONNECTIONS AND TERMINALS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES.

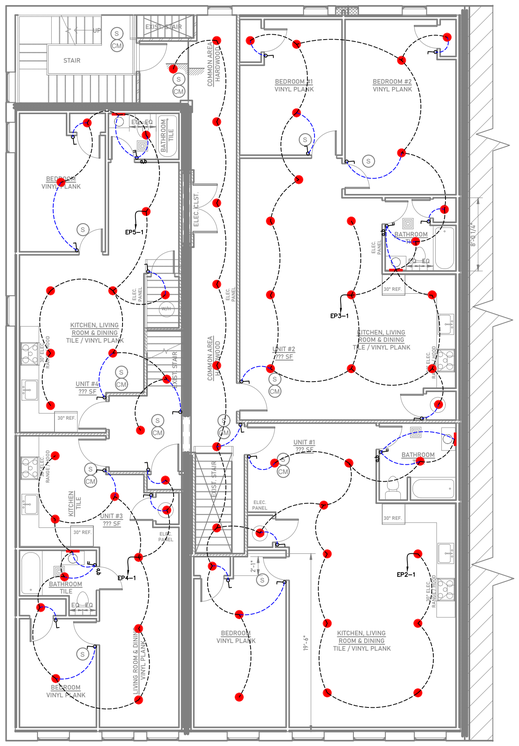
7. PANELBOARDS: INSTALL PANELBOARD



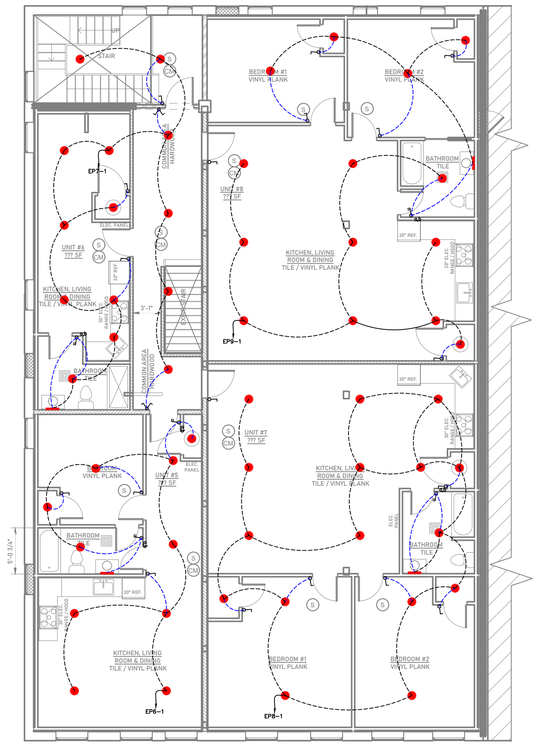
EL 02 BASEMENT FLOOR LIGHTING PLAN
SCALE 3" = 1'-0"



EL 02 FIRST FLOOR LIGHTING PLAN
SCALE 3" = 1'-0"



EL 02 SECOND FLOOR LIGHTING PLAN
SCALE 3" = 1'-0"



EL 02 THIRD FLOOR LIGHTING PLAN
SCALE 3" = 1'-0"

GENERAL ELECTRICAL NOTES
1- ELECTRICAL CONTRACTOR TO VERIFY ALL EXISTING SITE CONDITIONS & MAKE ANY NECESSARY ADJUSTMENTS.
2- SMALLEST WIRE & SIZE TO BE 14-2
3- ALL WORK SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE & ANY OTHER APPLICABLE REGULATIONS OR CODES. AT THE SITE.
4- CONTRACTOR TO LOCATE PHONE, CABLE, ETC. AS PER OWNER'S SPECIFICATIONS.

LEGEND NOTES:
VERIFY ALL MOUNTING HEIGHTS OF WALL MOUNTED LIGHT FIXTURES
TYPICAL MOUNTING HEIGHTS FOR OUTLETS - CENTERLINE 16" AFF (EXCEPT WHERE NOTED OTHERWISE)
$ MAXIMUM HEIGHT FOR ALL SWITCHES IS 48" AFF ROCKER STYLE SWITCHES ALL SWITCHES /OUTLETS /COVER PLATES- WHITE FINISH
VENT FANS SIZED FOR ROOM VOLUME FAN SOUND LEVEL NOT TO EXCEED 1.0 SONES

: LEGEND :

SYMBOL	DESCRIPTION
	MIRROR LIGHT 1X18W FLURESCENT LIGHT
	40W BEAM DIRECT/INDIRECT G2 SERIES (OFFICES)
	15W SURFACE MOUNTED LIGHT IN CORRIDOR
	20W WATERPROOF WALL MOUNTED EXTERIOR LIGHT
	20W WATERPROOF DOWN LIGHTS EXTERIOR LIGHT
	EMERGENCY LIGHT
	20W BATHROOM/OUTDOOR WALL MOUNTED EMERGENCY LIGHT
	12W 4" LED ROUND SPOT RECESSED
	15W SURFACE MOUNTED LIGHT 2X4 ON LEVELS/BALCONY
	20W PENDANT LIGHTS OVER DISHWASHER AND SINK
	ONE WAY ONE GANG SWITCH
	ONE WAY TWO GANG SWITCH
	ONE WAY THREE GANG SWITCH
	TWO WAY ONE GANG SWITCH
	TWO WAY TWO GANG SWITCH
	TWO WAY THREE GANG SWITCH
	SPAN ELECTRICAL PANEL, TYPE INDICATED.

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
00			
01			
02			
03			
04			

CLIENT/CONSULTANT APPROVAL STATUS

APPROVED	(A)
APPROVED WITH NOTES	(B)
RESUBMIT	(C)
DISAPPROVED	(D)

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DRAWING STATUS:
DESIGN DRAWING

DISCIPLINE:
ELECTRICAL

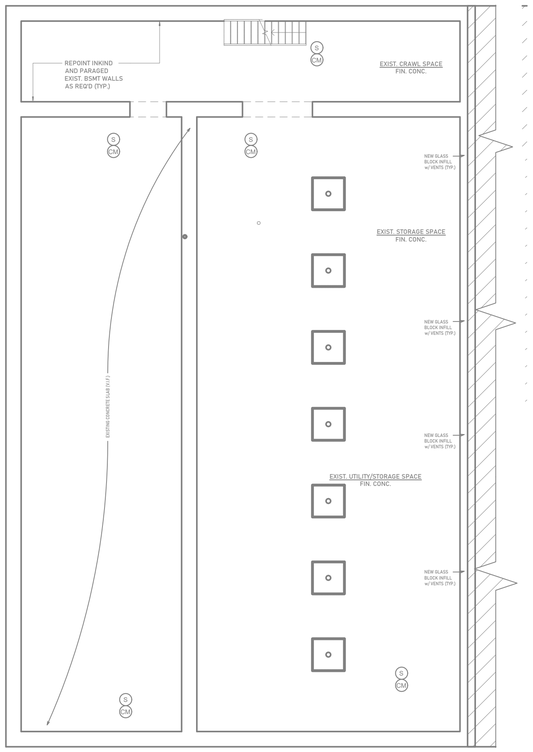
PROJECT TITLE:
COMMERCIAL MIXED-USE

DRAWING TITLE:
BASEMENT, FIRST, SECOND & THIRD FLOOR LIGHTING PLANS

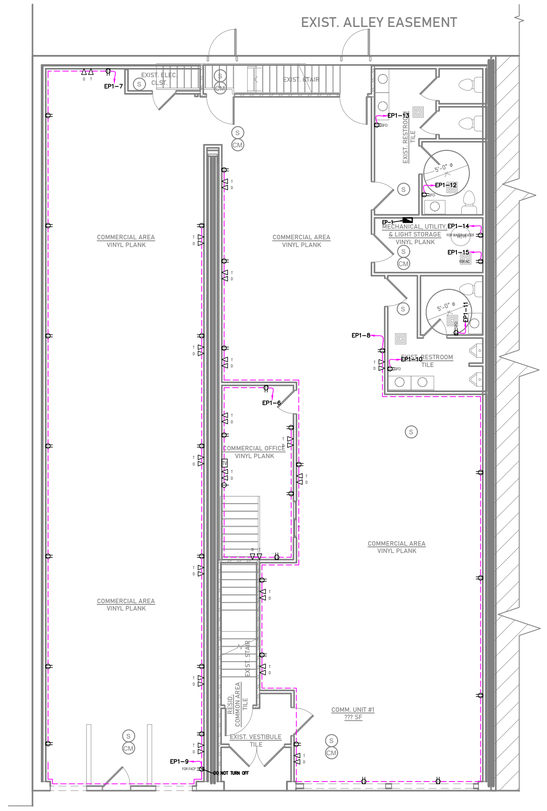
DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-EL-02	SCALE: AS SHOWN @A1

GENERAL ELECTRICAL NOTES
1- ELECTRICAL CONTRACTOR TO VERIFY ALL EXISTING SITE CONDITIONS & MAKE ANY NECESSARY ADJUSTMENTS.
2- SMALLEST WIRE & SIZE TO BE 14-2
3- ALL WORK SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE & ANY OTHER APPLICABLE REGULATIONS OR CODES. AT THE SITE.
4- CONTRACTOR TO LOCATE PHONE, CABLE, ETC. AS PER OWNER'S SPECIFICATIONS.

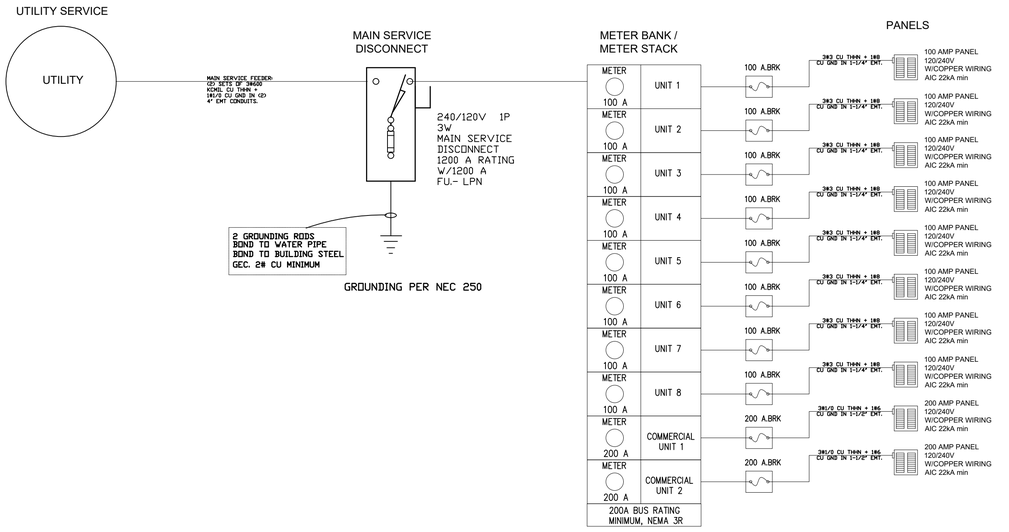
LEGEND NOTES:
VERIFY ALL MOUNTING HEIGHTS OF WALL MOUNTED LIGHT FIXTURES
TYPICAL MOUNTING HEIGHTS FOR OUTLETS -CENTERLINE 16" AFF (EXCEPT WHERE NOTED OTHERWISE)
MAXIMUM HEIGHT FOR ALL SWITCHES IS 48" AFF
$ ROCKER STYLE SWITCHES
ALL SWITCHES /OUTLETS /COVER PLATES- WHITE FINISH
VENT FANS SIZED FOR ROOM VOLUME
FAN SOUND LEVEL NOT TO EXCEED 1.0 SONES



EL 03 BASEMENT FLOOR POWER PLAN
SCALE 3" = 1'-0"



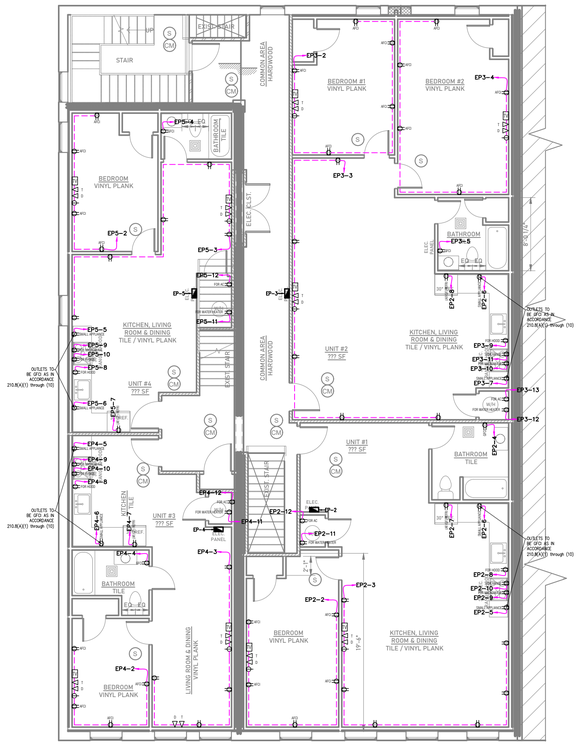
EL 03 FIRST FLOOR POWER PLAN
SCALE 3" = 1'-0"



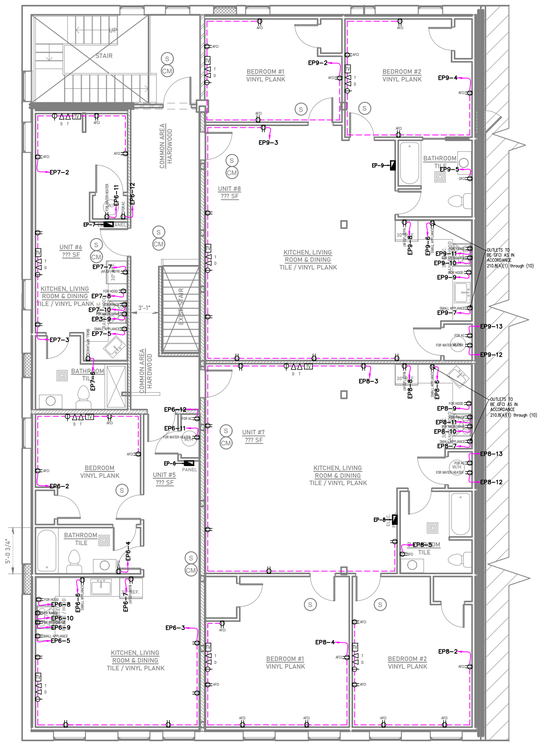
EL 03 SINGLE LINE DIAGRAM
SCALE NTS

: LEGEND :

SYMBOL	DESCRIPTION
	SINGLE SOCKET OUTLET, 13A, 230V, GROUNDING TYPE. MOUNT AT 42" A.F.F UNLESS NOTED OTHERWISE.
	DUPLEX SOCKET OUTLET, 13A, 230V, GROUNDING TYPE. MOUNT AT 18" A.F.F UNLESS NOTED OTHERWISE.
GFCI	GFCI DUPLEX SOCKET OUTLET, WEATHER PROOF, 13A, 230V, GROUNDING TYPE. MOUNT AT 42" A.F.F UNLESS NOTED OTHERWISE.
	POINT FOR KITCHEN HOT PLATE, 32A, GROUNDING TYPE. MOUNT AT 42" A.F.F UNLESS NOTED OTHERWISE.
TV	TV SOCKET HEIGHT AS PER LCD ON LOCATION
T	TELECOMMUNICATION OUTLET. PROVIDE SINGLE GANG JUNCTION BOX WITH PLASTER RING. STUB UP 1" E.C WITH PULL STRING INTO ACCESSIBLE CEILING SPACE. MOUNT AT 18" A.F.F UNLESS NOTED OTHERWISE.
D	DATA OUTLET. PROVIDE SINGLE GANG JUNCTION BOX WITH PLASTER RING. STUB UP 1" E.C WITH PULL STRING INTO ACCESSIBLE CEILING SPACE. MOUNT AT 18" A.F.F UNLESS NOTED OTHERWISE.
EP	ELECTRICAL PANEL



EL 03 SECOND FLOOR POWER PLAN
SCALE 3" = 1'-0"



EL 03 THIRD FLOOR POWER PLAN
SCALE 3" = 1'-0"

NOTES:

FE-1: LOWER-LEVEL CIRCUITS SHALL BE ROUTED FROM PANELS ABOVE BFE/DFE/RFE AND DROPPED FROM ABOVE. USE RMC, IMC, OR SCH. 80 PVC WITH WET-LOCATION FITTINGS BELOW FLOOD ELEVATION. PROVIDE THWN-2/XHHW-2 COPPER CONDUCTORS.

FE-2: DEVICES BELOW BFE/DFE/RFE SHALL BE MINIMIZED. WHERE REQUIRED, PROVIDE WEATHER-RESISTANT GFCI RECEPTACLES, EXTRA-DUTY IN-USE COVERS, CORROSION-RESISTANT BOXES, AND WET-LOCATION-RATED FITTINGS.

FE-3: PANELBOARDS, SERVICE DISCONNECTS, METER BANKS, FIRE ALARM POWER SUPPLIES, AND CONTROL EQUIPMENT SHALL BE INSTALLED ABOVE BFE/DFE/RFE. DO NOT LOCATE ELECTRICAL DISTRIBUTION EQUIPMENT BELOW FLOOD ELEVATION UNLESS INSTALLED IN AHJ-APPROVED WATERPROOFED ENCLOSURE.

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
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02			
03			
04			

CLIENT/CONSULTANT APPROVAL STATUS

APPROVED	(A)
APPROVED WITH NOTES	(B)
RESUBMIT	(C)
DISAPPROVED	(D)

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DRAWING STATUS:
DESIGN DRAWING

DISCIPLINE:
ELECTRICAL

PROJECT TITLE:
COMMERCIAL MIXED-USE

DRAWING TITLE:
BASEMENT, FIRST, SECOND, THIRD FLOOR POWER PLANS & SINGLE LINE DIAGRAM

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-EL-03	SCALE: AS SHOWN @A1

PANELBOARD SCHEDULE

PANEL TAG:	EP1	**MAINS:**	200AT/250AF,120/240V,1P,60HZ	NEUTRAL: YES
LOCATION:	BASEMENT & FIRST FLOOR PLANS	**MOUNTING:**	SURFACE MOUNTED	GROUND: YES
ENCLOSURE:	IP42	**VOLTAGE:**	120/240V,1P,3W	
FEEDER ENTRANCE:	TOP			

LOAD SERVED	Romex Wire Size (Inch)	LOAD (VA) ØA	ØB	ØC	CB	POLE	CKT NO.	R	Y	B	CKT NO.	POLE	CB	LOAD (VA) ØA	ØB	ØC	WIRE & CONDUIT SIZE (INCH)	LOAD SERVED
LIGHTING	2#12, 1#12(G), 3/4"C	800.00			20	1P	1				2	1P	20	800.00			2#12, 1#12(G), 3/4"C	LIGHTING
LIGHTING	2#12, 1#12(G), 3/4"C		800.00		20	1P	3				4	1P	20		800.00		2#12, 1#12(G), 3/4"C	LIGHTING
LIGHTING	2#12, 1#12(G), 3/4"C			800.00	20	1P	5				6	1P	15			1200.00	2#14, 1#14(G), 3/4"C	RECEPTACLE - OFFICE
RECEPTACLE - COMMERCIAL AREA	2#14, 1#14(G), 3/4"C		1200.00		15	1P	7				8	1P	15		1200.00		2#14, 1#14(G), 3/4"C	RECEPTACLE - COMMERCIAL AREA
FACP	2#14, 1#14(G), 3/4"C	600.00			15	1P	9				10	1P	15	1200.00			2#14, 1#14(G), 3/4"C	BATH - GFCI
BATH - GFCI	2#14, 1#14(G), 3/4"C		1200.00		15	1P	11				12	1P	15		1200.00		2#14, 1#14(G), 3/4"C	BATH - GFCI
BATH - GFCI	2#14, 1#14(G), 3/4"C			1200.00	15	1P	13				14	3P	60			5000.00	2#8, 1#8(G), 3/4"C	WATER HEATER
RECEPTACLE(AC)	2#6, 1#6(G), 3/4"C		1500.00		15	1P	15				16	1P	20					SPARE
SPARE					20	1P	17				18	1P	20					SPARE
		1400.00	4700.00	2000.00										2000.00	3200.00	6200.00		

ØA =	3400.00	TOTAL CONNECTED LOAD =	19500.00	I (AMP) =	46.29
ØB =	7900.00	DEMAND FACTOR =	1		
ØC =	8200.00	TOTAL CONNECTED LOAD +25% SPARE=	24375.00		

PANELBOARD SCHEDULE

PANEL TAG:	EP2	**MAINS:**	100AT/250AF,120/240V,1P,60HZ	NEUTRAL: YES
LOCATION:	UNIT 1 FIRST FLOOR PLAN	**MOUNTING:**	SURFACE MOUNTED	GROUND: YES
ENCLOSURE:	IP42	**VOLTAGE:**	120/240V,1P,3W	
FEEDER ENTRANCE:	TOP			

LOAD SERVED	Romex Wire Size (Inch)	LOAD (VA) ØA	ØB	ØC	CB	POL	CKT NO.	R	Y	B	CKT NO	POL	CB	LOAD (VA) ØA	ØB	ØC	CONDUIT SIZE (INCH)	LOAD SERVED
LIGHTING	2#12, 1#12(G), 3/4"C	800.00			20	1P	1				2	1P	15	1200.00			2#14, 1#14(G), 3/4"C	RECEPTACLE - BEDROOM 2 (AFCI)
RECEPTACLE - DINING/LIVING ROOM	2#14, 1#14(G), 3/4"C		1200.00		15	1P	3				4	1P	15		1200.00		2#14, 1#14(G), 3/4"C	BATH - GFCI
SMALL APPLIANCE	2#12, 1#12(G), 3/4"C			1500.00	15	1P	5				6	1P	15			1500.00	2#12, 1#12(G), 3/4"C	SMALL APPLIANCE
REFRIGERATOR (AF/GF)	2#12, 1#12(G), 3/4"C		1500.00		20	1P	7				8	1P	15		1500.00		2#14, 1#14(G), 3/4"C	HOOD
MICROWAVE (AF/GF)	2#12, 1#12(G), 3/4"C	2000.00			20	1P	9				10	2P	20	4500.00			2#10, 1#10(G), 3/4"C	RANGE
WATER HEATER	2#8, 1#8(G), 3/4"C		5000.00		60	3P	11				12	3P	60		5000.00		2#6, 1#6(G), 3/4"C	RECEPTACLE(AC)
SPARE					20	1P	13				14	1P	20					SPARE
SPARE					20	1P	15				16	1P	20					SPARE
		2800.00	7700.00	1500.00										5700.00	7700.00	1500.00		

ØA =	8500.00	TOTAL CONNECTED LOAD =	26900.00	I (AMP) =	63.86
ØB =	15400.00	DEMAND FACTOR =	1		
ØC =	3000.00	TOTAL CONNECTED LOAD +25% SPARE=	33625.00		

PANELBOARD SCHEDULE

PANEL TAG:	EP3	**MAINS:**	100AT/250AF,120/240V,1P,60HZ	NEUTRAL: YES
LOCATION:	UNIT 2 FIRST FLOOR PLAN	**MOUNTING:**	SURFACE MOUNTED	GROUND: YES
ENCLOSURE:	IP42	**VOLTAGE:**	120/240V,1P,3W	
FEEDER ENTRANCE:	TOP			

LOAD SERVED	Romex Wire Size (Inch)	LOAD (VA) ØA	ØB	ØC	CB	POL	CKT NO.	R	Y	B	CKT NO	POL	CB	LOAD (VA) ØA	ØB	ØC	CONDUIT SIZE (INCH)	LOAD SERVED
LIGHTING	2#12, 1#12(G), 3/4"C	800.00			20	1P	1				2	1P	15	1200.00			2#14, 1#14(G), 3/4"C	RECEPTACLE - BEDROOM 2 (AFCI)
RECEPTACLE - DINING/LIVING ROOM	2#14, 1#14(G), 3/4"C		1200.00		15	1P	3				4	1P	15		1200.00		2#14, 1#14(G), 3/4"C	RECEPTACLE - BEDROOM 2 (AFCI)
BATH - GFCI	2#14, 1#14(G), 3/4"C			1200.00	15	1P	5				6	1P	15			1500.00	2#12, 1#12(G), 3/4"C	SMALL APPLIANCE
SMALL APPLIANCE	2#12, 1#12(G), 3/4"C		1500.00		15	1P	7				8	1P	20		1500.00		2#12, 1#12(G), 3/4"C	REFRIGERATOR (AF/GF)
HOOD	2#14, 1#14(G), 3/4"C	1500.00			15	1P	9				10	1P	20	2000.00			2#12, 1#12(G), 3/4"C	MICROWAVE (AF/GF)
RANGE 1	2#10, 1#10(G), 3/4"C		4500.00		20	2P	11				12	3P	60		5000.00		2#8, 1#8(G), 3/4"C	WATER HEATER
RECEPTACLE(AC)	2#6, 1#6(G), 3/4"C			5000.00	60	1P	13				14	1P	20					SPARE
SPARE					20	1P	15				16	1P	20					SPARE
		2300.00	7200.00	6200.00										3200.00	7700.00	1500.00		

ØA =	5500.00	TOTAL CONNECTED LOAD =	28100.00	I (AMP) =	66.71
ØB =	14900.00	DEMAND FACTOR =	1		
ØC =	7700.00	TOTAL CONNECTED LOAD +25% SPARE=	35125.00		

OWNER SIGNATURE

REVISION STATUS

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CLIENT/CONSULTANT APPROVAL STATUS

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DRAWING STATUS: DESIGN DRAWING

DISCIPLINE: ELECTRICAL

PROJECT TITLE: COMMERCIAL MIXED-USE

DRAWING TITLE: PANEL SCHEDULES

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-EL-04	SCALE: AS SHOWN @A1

PANELBOARD SCHEDULE

PANEL TAG:	EP4	**MAINS:**	100AT/250AF,120/240V,1P,60HZ	NEUTRAL: YES
LOCATION:	UNIT 3 FIRST FLOOR PLAN	**MOUNTING:**	SURFACE MOUNTED	GROUND: YES
ENCLOSURE:	IP42	**VOLTAGE:**	120/240V,1P,3W	
FEEDER ENTRANCE:	TOP			

LOAD SERVED	Romex Wire Size (Inch)	LOAD (VA) ØA	LOAD (VA) ØB	LOAD (VA) ØC	CB	POL	CKT NO.	R	Y	B	CKT NO	POL	CB	LOAD (VA) ØA	LOAD (VA) ØB	LOAD (VA) ØC	CONDUIT SIZE (INCH)	LOAD SERVED
LIGHTING	2#12, 1#12(G), 3/4"C	800.00			20	1P	1				2	1P	15	1200.00			2#14, 1#14(G), 3/4"C	RECEPTACLE - BEDROOM 2 (AFCI)
RECEPTACLE - DINING/LIVING ROOM	2#14, 1#14(G), 3/4"C		1200.00		15	1P	3				4	1P	15		1200.00		2#14, 1#14(G), 3/4"C	BATH - GFCI
SMALL APPLIANCE	2#12, 1#12(G), 3/4"C			1500.00	15	1P	5				6	1P	15			1500.00	2#12, 1#12(G), 3/4"C	SMALL APPLIANCE
REFRIGERATOR (AF/GF)	2#12, 1#12(G), 3/4"C		1500.00		20	1P	7				8	1P	15		1500.00		2#14, 1#14(G), 3/4"C	HOOD
MICROWAVE (AF/GF)	2#12, 1#12(G), 3/4"C	2000.00			20	1P	9				10	2P	20	4500.00			2#10, 1#10(G), 3/4"C	RANGE
WATER HEATER	2#8, 1#8(G), 3/4"C		5000.00		60	3P	11				12	3P	60		5000.00		2#6, 1#6(G), 3/4"C	RECEPTACLE(AC)
SPARE					20	1P	13				14	1P	20					SPARE
SPARE					20	1P	15				16	1P	20					SPARE
		2800.00	7700.00	1500.00										5700.00	7700.00	1500.00		

ØA =	8500.00	TOTAL CONNECTED LOAD =	26900.00	I (AMP) =	63.86
ØB =	15400.00	DEMAND FACTOR =	1		
ØC =	3000.00	TOTAL CONNECTED LOAD +25% SPARE=	33625.00		

PANELBOARD SCHEDULE

PANEL TAG:	EP5	**MAINS:**	100AT/250AF,120/240V,1P,60HZ	NEUTRAL: YES
LOCATION:	UNIT 4 FIRST FLOOR PLAN	**MOUNTING:**	SURFACE MOUNTED	GROUND: YES
ENCLOSURE:	IP42	**VOLTAGE:**	120/240V,1P,3W	
FEEDER ENTRANCE:	TOP			

LOAD SERVED	Romex Wire Size (Inch)	LOAD (VA) ØA	LOAD (VA) ØB	LOAD (VA) ØC	CB	POL	CKT NO.	R	Y	B	CKT NO	POL	CB	LOAD (VA) ØA	LOAD (VA) ØB	LOAD (VA) ØC	CONDUIT SIZE (INCH)	LOAD SERVED
LIGHTING	2#12, 1#12(G), 3/4"C	800.00			20	1P	1				2	1P	15	1200.00			2#14, 1#14(G), 3/4"C	RECEPTACLE - BEDROOM 2 (AFCI)
RECEPTACLE - DINING/LIVING ROOM	2#14, 1#14(G), 3/4"C		1200.00		15	1P	3				4	1P	15		1200.00		2#14, 1#14(G), 3/4"C	BATH - GFCI
SMALL APPLIANCE	2#12, 1#12(G), 3/4"C			1500.00	15	1P	5				6	1P	15			1500.00	2#12, 1#12(G), 3/4"C	SMALL APPLIANCE
REFRIGERATOR (AF/GF)	2#12, 1#12(G), 3/4"C		1500.00		20	1P	7				8	1P	15		1500.00		2#14, 1#14(G), 3/4"C	HOOD
MICROWAVE (AF/GF)	2#12, 1#12(G), 3/4"C	2000.00			20	1P	9				10	2P	20	4500.00			2#10, 1#10(G), 3/4"C	RANGE
WATER HEATER	2#8, 1#8(G), 3/4"C		5000.00		60	3P	11				12	3P	60		5000.00		2#6, 1#6(G), 3/4"C	RECEPTACLE(AC)
SPARE					20	1P	13				14	1P	20					SPARE
SPARE					20	1P	15				16	1P	20					SPARE
		2800.00	7700.00	1500.00										5700.00	7700.00	1500.00		

ØA =	8500.00	TOTAL CONNECTED LOAD =	26900.00	I (AMP) =	63.86
ØB =	15400.00	DEMAND FACTOR =	1		
ØC =	3000.00	TOTAL CONNECTED LOAD +25% SPARE=	33625.00		
ØC =	0.00	TOTAL CONNECTED LOAD +25% SPARE=	1.25		

PANELBOARD SCHEDULE

PANEL TAG:	EP6	**MAINS:**	100AT/250AF,120/240V,1P,60HZ	NEUTRAL: YES
LOCATION:	UNIT 5 SECOND FLOOR PLAN	**MOUNTING:**	SURFACE MOUNTED	GROUND: YES
ENCLOSURE:	IP42	**VOLTAGE:**	120/240V,1P,3W	
FEEDER ENTRANCE:	TOP			

LOAD SERVED	Romex Wire Size (Inch)	LOAD (VA) ØA	LOAD (VA) ØB	LOAD (VA) ØC	CB	POL	CKT NO.	R	Y	B	CKT NO	POL	CB	LOAD (VA) ØA	LOAD (VA) ØB	LOAD (VA) ØC	CONDUIT SIZE (INCH)	LOAD SERVED
LIGHTING	2#12, 1#12(G), 3/4"C	800.00			20	1P	1				2	1P	15	1200.00			2#14, 1#14(G), 3/4"C	RECEPTACLE - BEDROOM 2 (AFCI)
RECEPTACLE - DINING/LIVING ROOM	2#14, 1#14(G), 3/4"C		1200.00		15	1P	3				4	1P	15		1200.00		2#14, 1#14(G), 3/4"C	BATH - GFCI
SMALL APPLIANCE	2#12, 1#12(G), 3/4"C			1500.00	15	1P	5				6	1P	15			1500.00	2#12, 1#12(G), 3/4"C	SMALL APPLIANCE
REFRIGERATOR (AF/GF)	2#12, 1#12(G), 3/4"C		1500.00		20	1P	7				8	1P	15		1500.00		2#14, 1#14(G), 3/4"C	HOOD
MICROWAVE (AF/GF)	2#12, 1#12(G), 3/4"C	2000.00			20	1P	9				10	2P	20	4500.00			2#10, 1#10(G), 3/4"C	RANGE
WATER HEATER	2#8, 1#8(G), 3/4"C		5000.00		60	3P	11				12	3P	60		5000.00		2#6, 1#6(G), 3/4"C	RECEPTACLE(AC)
SPARE					20	1P	13				14	1P	20					SPARE
SPARE					20	1P	15				16	1P	20					SPARE
		2800.00	7700.00	1500.00										5700.00	7700.00	1500.00		

ØA =	8500.00	TOTAL CONNECTED LOAD =	26900.00	I (AMP) =	63.86
ØB =	15400.00	DEMAND FACTOR =	1		
ØC =	3000.00	TOTAL CONNECTED LOAD +25% SPARE=	33625.00		

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JOB NO	SHT NO JS-EL-05	SCALE: AS SHOWN @A1

PANELBOARD SCHEDULE

PANEL TAG:	EP7	**MAINS:** 100AT/250AF,120/240V,1P,60HZ	NEUTRAL: YES
LOCATION:	UNIT 6 SECOND FLOOR PLAN	**MOUNTING:** SURFACE MOUNTED	GROUND: YES
ENCLOSURE:	IP42	**VOLTAGE:** 120/240V,1P,3W	
FEEDER ENTRANCE:	TOP		

LOAD SERVED	Romex Wire Size (Inch)	LOAD (VA) ØA	LOAD (VA) ØB	LOAD (VA) ØC	CB	POL	CKT NO.	R	Y	B	CKT NO	POL	CB	LOAD (VA) ØA	LOAD (VA) ØB	LOAD (VA) ØC	CONDUIT SIZE (INCH)	LOAD SERVED
LIGHTING	2#12, 1#12(G), 3/4"C	800.00			20	1P	1				2	1P	15	1200.00			2#14, 1#14(G), 3/4"C	RECEPTACLE - BEDROOM 2 (AFCI)
RECEPTACLE - DINING/LIVING ROOM	2#14, 1#14(G), 3/4"C		1200.00		15	1P	3				4	1P	15		1200.00		2#14, 1#14(G), 3/4"C	BATH - GFCI
SMALL APPLIANCE	2#12, 1#12(G), 3/4"C			1500.00	15	1P	5				6	1P	15			1500.00	2#12, 1#12(G), 3/4"C	SMALL APPLIANCE
REFRIGERATOR (AF/GF)	2#12, 1#12(G), 3/4"C		1500.00		20	1P	7				8	1P	15		1500.00		2#14, 1#14(G), 3/4"C	HOOD
MICROWAVE (AF/GF)	2#12, 1#12(G), 3/4"C	2000.00			20	1P	9				10	2P	20	4500.00			2#10, 1#10(G), 3/4"C	RANGE
WATER HEATER	2#8, 1#8(G), 3/4"C		5000.00		60	3P	11				12	3P	60		5000.00		2#6, 1#6(G), 3/4"C	RECEPTACLE(AC)
SPARE					20	1P	13				14	1P	20					SPARE
SPARE					20	1P	15				16	1P	20					SPARE
		2800.00	7700.00	1500.00										5700.00	7700.00	1500.00		

ØA =	8500.00	TOTAL CONNECTED LOAD =	26900.00	I (AMP) = 63.86
ØB =	15400.00	DEMAND FACTOR =	1	
ØC =	3000.00	TOTAL CONNECTED LOAD +25% SPARE=	33625.00	

PANELBOARD SCHEDULE

PANEL TAG:	EP8	**MAINS:** 100AT/250AF,120/240V,1P,60HZ	NEUTRAL: YES
LOCATION:	UNIT 7 SECOND FLOOR PLAN	**MOUNTING:** SURFACE MOUNTED	GROUND: YES
ENCLOSURE:	IP42	**VOLTAGE:** 120/240V,1P,3W	
FEEDER ENTRANCE:	TOP		

LOAD SERVED	Romex Wire Size (Inch)	LOAD (VA) ØA	LOAD (VA) ØB	LOAD (VA) ØC	CB	POL	CKT NO.	R	Y	B	CKT NO	POL	CB	LOAD (VA) ØA	LOAD (VA) ØB	LOAD (VA) ØC	CONDUIT SIZE (INCH)	LOAD SERVED
LIGHTING	2#12, 1#12(G), 3/4"C	800.00			20	1P	1				2	1P	15	1200.00			2#14, 1#14(G), 3/4"C	RECEPTACLE - BEDROOM 2 (AFCI)
RECEPTACLE - DINING/LIVING ROOM	2#14, 1#14(G), 3/4"C		1200.00		15	1P	3				4	1P	15		1200.00		2#14, 1#14(G), 3/4"C	RECEPTACLE - BEDROOM 2 (AFCI)
BATH - GFCI	2#14, 1#14(G), 3/4"C			1200.00	15	1P	5				6	1P	15			1500.00	2#12, 1#12(G), 3/4"C	SMALL APPLIANCE
SMALL APPLIANCE	2#12, 1#12(G), 3/4"C		1500.00		15	1P	7				8	1P	20		1500.00		2#12, 1#12(G), 3/4"C	REFRIGERATOR (AF/GF)
HOOD	2#14, 1#14(G), 3/4"C	1500.00			15	1P	9				10	1P	20	2000.00			2#12, 1#12(G), 3/4"C	MICROWAVE (AF/GF)
RANGE 1	2#10, 1#10(G), 3/4"C		4500.00		20	2P	11				12	3P	60		5000.00		2#8, 1#8(G), 3/4"C	WATER HEATER
RECEPTACLE(AC)	2#6, 1#6(G), 3/4"C			5000.00	60	1P	13				14	1P	20					SPARE
SPARE					20	1P	15				16	1P	20					SPARE
		2300.00	7200.00	6200.00										3200.00	7700.00	1500.00		

ØA =	5500.00	TOTAL CONNECTED LOAD =	28100.00	I (AMP) = 66.71
ØB =	14900.00	DEMAND FACTOR =	1	
ØC =	7700.00	TOTAL CONNECTED LOAD +25% SPARE=	35125.00	

PANELBOARD SCHEDULE

PANEL TAG:	EP9	**MAINS:** 100AT/250AF,120/240V,1P,60HZ	NEUTRAL: YES
LOCATION:	UNIT 8 SECOND FLOOR PLAN	**MOUNTING:** SURFACE MOUNTED	GROUND: YES
ENCLOSURE:	IP42	**VOLTAGE:** 120/240V,1P,3W	
FEEDER ENTRANCE:	TOP		

LOAD SERVED	Romex Wire Size (Inch)	LOAD (VA) ØA	LOAD (VA) ØB	LOAD (VA) ØC	CB	POL	CKT NO.	R	Y	B	CKT NO	POL	CB	LOAD (VA) ØA	LOAD (VA) ØB	LOAD (VA) ØC	CONDUIT SIZE (INCH)	LOAD SERVED
LIGHTING	2#12, 1#12(G), 3/4"C	800.00			20	1P	1				2	1P	15	1200.00			2#14, 1#14(G), 3/4"C	RECEPTACLE - BEDROOM 2 (AFCI)
RECEPTACLE - DINING/LIVING ROOM	2#14, 1#14(G), 3/4"C		1200.00		15	1P	3				4	1P	15		1200.00		2#14, 1#14(G), 3/4"C	RECEPTACLE - BEDROOM 2 (AFCI)
BATH - GFCI	2#14, 1#14(G), 3/4"C			1200.00	15	1P	5				6	1P	15			1500.00	2#12, 1#12(G), 3/4"C	SMALL APPLIANCE
SMALL APPLIANCE	2#12, 1#12(G), 3/4"C		1500.00		15	1P	7				8	1P	20		1500.00		2#12, 1#12(G), 3/4"C	REFRIGERATOR (AF/GF)
HOOD	2#14, 1#14(G), 3/4"C	1500.00			15	1P	9				10	1P	20	2000.00			2#12, 1#12(G), 3/4"C	MICROWAVE (AF/GF)
RANGE 1	2#10, 1#10(G), 3/4"C		4500.00		20	2P	11				12	3P	60		5000.00		2#8, 1#8(G), 3/4"C	WATER HEATER
RECEPTACLE(AC)	2#6, 1#6(G), 3/4"C			5000.00	60	1P	13				14	1P	20					SPARE
SPARE					20	1P	15				16	1P	20					SPARE
		2300.00	7200.00	6200.00										3200.00	7700.00	1500.00		

ØA =	5500.00	TOTAL CONNECTED LOAD =	28100.00	I (AMP) = 66.71
ØB =	14900.00	DEMAND FACTOR =	1	
ØC =	7700.00	TOTAL CONNECTED LOAD +25% SPARE=	35125.00	

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JOB NO	SHT NO JS-EL-06	SCALE: AS SHOWN @A1

CALC F — ELECTRICAL LOAD CALCULATION | 508 MAIN STREET — JOHNSTOWN, PA 15901 | Commercial Mixed-Use

Code: 2020 NEC Article 220 | Service: 120/240V 1Ø 3W | AHJ: City of Johnstown, PA | Date: May 24, 2026

SERVICE INFORMATION & BUILDING PARAMETERS — Edit yellow-highlighted values		
Service voltage (V):	240	120/240V 1Ø 3W — FirstEnergy / Penelec service lateral
Commercial unit area per unit (SF, estimated):	650	2 commercial units × 650 SF — verify with architectural drawings
Number of commercial units:	2	2 commercial retail units — 1st floor
Total commercial area (SF):	1,300.00	Calculated from inputs above
1-BR unit area (SF, estimated — 6 units):	380	Estimated — verify with architectural drawings
2-BR unit area (SF, estimated — 2 units):	420	Estimated — verify with architectural drawings
Number of 1-BR units:	6	Units 1–6 (2nd & 3rd floor)
Number of 2-BR units:	2	Units 7–8 (3rd floor)
Total residential units:	8	Calculated from inputs above
Total residential area (SF):	3,120.00	Calculated from inputs above

STEP 1 — COMMERCIAL LOADS | 2020 NEC §220.12 / §220.14 / §220.44 / §440.32

Load Description	Connected VA	Demand Factor	Demand VA	NEC Reference	Notes
Commercial lighting (NEC Tbl 220.12: 3 VA/SF × total commercial SF)	3,900	100%	3,900	NEC Table 220.12 — mercantile 3 VA/SF	
Commercial receptacles (est. 30 duplex × 180 VA per NEC 220.14(H))	10,800	100% (≤10 kVA — NEC 220.44)	10,800	NEC §220.14(H) / §220.44	
Commercial HVAC — CU-4T (MCA 30A × 208V × 1.25 — NEC 440.32)	6,240	125% — largest motor	7,800	NEC §440.32 — 125% of largest motor	
Commercial water heater — 1 unit (4,500 VA @ 100%)	4,500	100%	4,500	NEC §220.53	
FACP — dedicated supervised circuit	500	100%	500	NEC Art. 760 — NFPA 72	
SUBTOTAL — COMMERCIAL DEMAND VA			**27,500**		

STEP 2 — RESIDENTIAL GENERAL LOADS + DEMAND FACTOR | 2020 NEC §220.12 / §220.52 / §220.42

Load Description	Connected VA	Demand Factor	Demand VA	NEC Reference	Notes
General lighting (NEC Tbl 220.12: 3 VA/SF × total residential SF)	9,360	100% (before demand)			
Small appliance circuits (NEC 220.52(A): 2 ckts × 1,500 VA × total units)	24,000	100% (before demand)			
Laundry circuits (NEC 220.52(B): 1 ckt × 1,500 VA × total units)	12,000	100% (before demand)			
Total general connected load (before demand factor):	45,360				
↳ First 3,000 VA @ 100% (NEC §220.42)	3,000	100%	3,000	NEC §220.42	
↳ Remainder @ 35% (NEC §220.42)	42,360	35%	14,826	NEC §220.42	
Demanded general residential load (after NEC §220.42):			**17,826**		

STEP 3 — FIXED APPLIANCE DEMAND | 2020 NEC §220.53 (75% for 4+ appliances) / §220.55 (Ranges)

Load Description	Connected VA	Demand Factor	Demand VA	NEC Reference	Notes
Electric ranges (NEC 220.55, Table Col. C — 8 ranges ≤12 kW)	64000	NEC 220.55 — Col. C 8 units = 23 kW	23000	NEC §220.55 Table	30" range shown in each unit on power plans
Water heaters — residential (NEC 220.53: 75% for 4+)	36000	75% — NEC §220.53	27000	NEC §220.53	4,500 VA × 8 units = 36,000 VA connected
Microwaves (NEC 220.53: grouped — 75%)	12000	75% — NEC §220.53	9000	NEC §220.53	1,500 VA per unit
Refrigerators (NEC 220.53: grouped — 75%)	4800	75% — NEC §220.53	3600	NEC §220.53	600 VA per unit
Total fixed appliance demand:			**62,600**		

STEP 4 — HVAC LOADS | 2020 NEC §440.32 (125% largest motor) / §220.60 (non-coincident loads)

Load Description	Connected VA (MCA × V)	Demand Factor	Demand VA	NEC Reference	Notes
CU-4T — commercial (MCA 30A × 208V × 1.25)	6,240	125% — NEC §440.32 (largest motor)	7,800	NEC §440.32	Commercial 4-ton CU; 125% of MCA
CU-3T — 2nd floor residential (MCA 30A × 208V)	6,240	100%	6,240	NEC §440.32	2nd floor units 1–4
CU-2T — 3rd floor residential (MCA 30A × 208V)	6,240	100%	6,240	NEC §440.32	3rd floor units 5–8
CU-1T — basement / utility (MCA 30A × 208V)	6,240	100%	6,240	NEC §440.32	Basement / common areas
Total HVAC demand:			**26,520**		

STEP 5 — TOTAL SERVICE DEMAND & AMPACITY CHECK | 120/240V, 1-Phase, 3-Wire

Commercial demand (Step 1):	27,500	VA	
Residential general demand (Step 2):	17,826	VA	
Residential fixed appliance demand (Step 3):	62,600	VA	
HVAC demand (Step 4):	26,520	VA	
TOTAL CALCULATED DEMAND LOAD:	134,446	VA	
Service voltage:	240	V	
CALCULATED SERVICE AMPACITY:	560	A	
RECOMMENDED SERVICE RATING:	600	A — per NEC 230.79; next standard size above calculated	
SERVICE STATUS:	**COMPLIES — Calculated 560.2 A ≤ 600 A recommended service**		

NOTE: Load calculation per 2020 NEC Article 220. Building: 2 commercial retail units (1st floor) + 8 residential apartments (2nd & 3rd floors). Ranges confirmed visible in each unit on power plans. HVAC per mechanical schedule — 4 condensing units total (CU-1T through CU-4T). Water heaters per plumbing riser: 9 units total (1 per apt. + 1 commercial). Confirm available fault current with FirstEnergy / Penelec prior to final submittal. FLOOD ZONE: MDP, all subpanels, and meters at BFE + 2 ft minimum per IBC §1612. See Sheet K.

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
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01			
02			
03			
04			

CLIENT/CONSULTANT APPROVAL STATUS

APPROVED	(A)
APPROVED WITH NOTES	(B)
RESUBMIT	(C)
DISAPPROVED	(D)

OWNER:

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DRAWING STATUS: DESIGN DRAWING

DISCIPLINE: ELECTRICAL

PROJECT TITLE: COMMERCIAL MIXED-USE

DRAWING TITLE: LOAD CALCULATION

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-EL-07	SCALE: AS SHOWN @A1

GENERAL PLUMBING NOTES:

1. LOCATION AND SIZES OF ALL EXISTING SERVICES ARE APPROXIMATE. VERIFY ALL UTILITIES PRIOR TO COMMENCING WORK.

2. FOR EXACT LOCATION OF PLUMBING FIXTURES, DRAINS AND EQUIPMENT SEE ARCHITECTURAL DRAWINGS.

3. ALL DOMESTIC WATER AND VENT PIPING SHOWN TO BE RUN ABOVE CEILING UNLESS OTHERWISE NOTED.

4. ALL SANITARY PIPING SHOWN TO BE RUN BELOW FLOOR UNLESS OTHERWISE NOTED.

5. ENTIRE INSTALLATION INCLUDING MATERIALS, EQUIPMENT AND WORKMANSHIP SHALL CONFIRM WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS OF MUNICIPAL, STATE AND FEDERAL AUTHORITIES, ALSO THE PLUMBING CODE 2018 IPC, AND OTHER REGULATORY BODIES HAVING JURISDICTION OVER THE CLASS OF WORK.

6. THE CONTRACTOR SHALL MAKE TESTS FOR ACCEPTANCE AND APPROVAL AS REQUIRED BY THE CODE. REQUIRED TESTS SHALL BE PERFORMED IN THE PRESENCE OF OWNER'S REPRESENTATIVE UNLESS WAIVED IN WRITING.

7. THE CONTRACTOR SHALL FIELD COORDINATE THE WORK WITH THAT OF ALL OTHER TRADES.

8. ALL DOMESTIC WATER PIPING SHALL BE INSULATED AS REQUIRED.

9. DOMESTIC WATER PIPING MATERIAL: ASTM B88 TYPE L OR M COPPER TUBE WITH WROUGHT OR CAST COPPER FITTINGS AND LEAD-FREE SOLDERED JOINTS. INSTALL DOMESTIC WATER PIPING LEVEL WITHOUT PITCH AND PLUMB.

THE PEXA PIPING SHALL CONFORM TO THE REQUIREMENTS OF ASTM F876-XX FOR CROSSLINKED POLYETHYLENE (PEXA) TUBING, WITH A MINIMUM PRESSURE RATING OF 200 PSI AT 73.4°F (23°C).

DRAIN, WASTE, STORM, AND VENT PIPING MATERIAL: FOR BELOW GROUND SOIL, WASTE AND BENT PIPING SHOULD BE SERVICE WEIGHT HUB AND SPIGOT CAST IRON CONFORMING TO ASTM A74, WITH LEAD AND OAKUM JOINTS AS ALLOWED BY PLUMBING CODE;
FOR ABOVE GROUND SOIL, WASTE AND VENT PIPING SHOULD BE HUBLESS CAST-IRON.

PVC DMV PIPING MAY ALSO BE USED
FOR DRAINING APPLICATIONS.
PVC DWV PIPE SHALL BE MADE FROM TYPE 1, GRADE 1, PVC COMPOUND AS SPECIFIED IN ASTM D1784.
THE PVC DWV PIPE SHALL HAVE A NOMINAL INSIDE DIAMETER (ID) OF 4 INCHES (101.6 MM).
THE PIPE SHALL CONFORM TO THE STANDARD DIMENSIONS FOR 4-INCH PVC DWV PIPE AS SPECIFIED IN ASTM D2665. EACH LENGTH OF PVC DWV PIPE SHALL BE CLEARLY MARKED WITH THE MANUFACTURER'S NAME OR TRADEMARK, PIPE SIZE, MATERIAL DESIGNATION (E.G., PVC), AND THE ASTM STANDARD DESIGNATION (E.G., ASTM D2665).

10. ANY ITEM OF MATERIALS NOT INDICATED ON THE DRAWINGS OR NOT SPECIFIED AND WHICH ARE REQUIRED FOR THE COMPLETE INSTALLATION OF ANY PART OF THE WORK DESCRIBED, SHALL BE FURNISHED AS CODE REQUIRED.

11. INSTALL CLEANOUT AT OR NEAR THE BOTTOM OF SANITARY/WASTE STACK.

12. PROVIDE PROPER ACCESS PANELS AS SPECIFIED IN WALLS AND CEILINGS FOR ANY EQUIPMENT, DEVICES, VALVES, SHOCK ABSORBERS, TRAP PRIMERS, CLEANOUTS ETC. REQUIRING ACCESS.

		PLUMBING FIXTURE AND FAUCETS REFERENCED STANDARDS
MARK	DESCRIPTION	STANDARD
WC-1	WATER CLOSET	WATER CLOSETS SHALL CONFIRM TO THE WATER CONSUMPTION REQUIREMENTS OF SECTION 604.4 AND SHALL CONFIRM TO ANSI Z124.4. ASME A112.19.2M, CSA B45.1, CSA B45.4 OR CSA B45.5. WATER CLOSETS SHALL CONFIRM TO THE HYDRAULIC PERFORMANCE REQUIREMENTS OF ASME A112.19.19.9M, CSA B45.1, CSA B45.4 OR CSA B45.5. ELECTRO HYDRAULIC WATER CLOSETS SHALL COMPLY WITH ASME A112.19.13.
L-1	LAVATORY	LAVATORIES SHALL CONFIRM TO ANSI Z124.3. ASME A112.19.1M, ASME A112.19.2M, ASME A112.19.3M, ASME A112.19.4M, ASME A112.19.9M, CSA B45.2, CSA B45.3, CSA B45.4, ROUP WASH UP EQUIPMENT SHALL CONFIRM TO THE REQUIREMENTS OF SECTION 402. EVERY 20 INCHES (608MM) OF RIM SPACE SHALL BE CONSIDERED AS ONE LAVATORY.
KS-1	KITCHEN SINK	SINKS SHALL CONFIRM TO ANSI Z124.6, ASME A112.19.1M, ASME A112.19.2M, ASME A112.19.3M, ASME A112.19.4M, ASME A112.19.9M, CSA B45.1, CSA B45.2, CSA B45.3, OR CSA B45.4,
	FAUCETS AND FIXTURE FITTINGS	FAUCETS AND FIXTURE FITTINGS SHALL CONFORM TO ASME A112.18.1 OR CSA B125. FAUCETS AND FIXTURE FITTINGS THAT SUPPLY DRINKING WATER FOR HUMAN INGESTION SHALL CONFORM TO THE REQUIREMENTS OF NSF 61, SECTION 9. FLEXIBLE WATER CONNECTORS EXPOSED TO CONTINUOUS PRESSURE SHALL CONFORM TO THE REQUIREMENTS OF SECTION 605.6 HAND HELD SHOWERS SHALL CONFORM TO ASSE 1014 OR CSA B125. SHOWER AND TUB SHOWER COMBINATION VALVES SHALL BE BALANCED PRESSURE, THERMOSTATIC OR COMBINATION BALANCED PRESSURE/THERMOSTATIC VALVES THAT CONFORM TO THE REQUIREMENTS OF ASSE 1016 OR CSA B125, MULTIPLE (GANG) SHOWERS SUPPLIED WITH A SINGLE TEMPERED WATER SUPPLY PIPE SHALL HAVE THE WATER SUPPLY FOR SUCH SHOWERS CONTROLLED BY A MASTER THERMOSTATIC MIXING VALVE COMPLYING WITH ASSE 1017. SHOWER AND TUB SHOWER COMBINATION VALVES AND MASTER THERMOSTATIC MIXING VALVES REQUIRED BY THIS SECTION SHALL BE EQUIPPED WITH A MEANS TO LIMIT THE MAXIMUM SETTING OF THE VALVE TO 120°F (49°C), WHICH SHALL BE FIELD ADJUSTED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. FAUCETS AND FIXTURE FITTINGS WITH HOSE CONNECTED OUTLETS SHALL CONFORM TO ASME A112.18.3M. TEMPERATURE ACTUATED, FLOW REDUCTION DEVICES. WHERE INSTALLED FOR INDIVIDUAL FIXTURE FITTINGS, SHALL CONFORM TO ASSE 1062. SUCH VALVES SHALL NOT BE USED ALONE AS A SUBSTITUTE FOR THE BALANCED PRESSURE. THERMOSTATIC OR COMBINATION SHOWER VALVES REQUIRED IN SECTION 424.3 PEX PIPING MAY ALSO BE ALLOWED AND SHALL CONSIST OF CROSSLINKED POLYETHYLENE (PEXA) PIPE AND ASSOCIATED COMPONENTS, COMPLYING WITH THE SPECIFICATIONS DETAILED HEREIN.

PLUMBING NOTES:

1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.
2. ALL PLUMBING INSTALLATIONS SHALL CONFIRM WITH THE REQUIREMENTS OF MANUFACTURER
RECOMMENDATION AND OR 2018 InPC (2006 IPC W/AMENDMENTS).
3. ALL PLUMBING MATERIALS SHALL BE AS SPECIFIED IN THE CONTRACT SPECS AND BOQ.
4. ALL PIPE SIZES SHOWN ARE NOMINAL DIAMETER IN INCHES. UNLESS OTHERWISE MENTIONED.
5. INSTALLER SHOULD NOT SCALE THE DRAWING.
6. ALL PIPE PENETRATIONS IN WALL & SLABS SHALL BE THROUGH PIPE SLEEVES.
7. IF ANY ERROR OR OMISSION IS FOUND IN DRAWING THIS OFFICE MAY BE CONSULTED FOR RECTIFICATION.

TABLE 604.4
MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE R FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY b
LAVATORY, PRIVATE	1.5 gpm at 60 psi
SINK FAUCET	1.5 gpm at 60 psi
WATER CLOSET	1.28 GALLONS PER FLUSHING CYCLE

FOR SI: 1 GALLON = 3.785 L, 1 GALLON PER MINUTE = 3.785 L/M, 1 POUND PER SQUARE INCH = 6.895 KPA.

A. A HAND HELD SHOWER SPRAY IS A SHOWER HEAD.
B. CONSUMPTION TOLERANCES SHALL BE DETERMINED FROM REFERENCED STANDARDS.
C. WATER FACTOR IN GALLONS PER CYCLE CUBIC FOOT

ALL PLUMBING FIXTURES SHALL CONTRIBUTE TO A LEEDS SOLUTION AND SHALL MEET EPA CRITERIA AND BEEN CONSIDERED AS WATER EFFICIENT PRODUCTS AS STIPULATED BY THE LEEDS TA 2009 REFERENCE GUIDE (20% REDUCTION REQUIRED).

13. SANITARY: SCHEDULE 40 PVC OR CAST IRON.
SUPPLY: COPPER OR PEX (IF ALLOWED LOCALLY).
VENT: EXTEND MIN. 6" ABOVE ROOF.

OCCUPANT LOAD SHALL BE USED TO DETERMINE ALL FIXTURE COUNTS PER THE 2018 InPC (2006 IPC W/AMENDMENTS MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES ASSEMBLY – AUDITORIUMS WITHOUT PERMANENT SEATING, ART GALLERIES, EXHIBITION HALLS, MUSEUMS, LECTURE HALLS, LIBRARIES, ARCADES AND GYMNASIUMS (NOTE D)

607.2 HOT OR TEMPERED WATER SUPPLY TO FIXTURES. THE DEVELOPED LENGTH OF HOT OR TEMPERED WATER PIPING, FROM THE SOURCE OF HOT WATER TO THE FIXTURES THAT REQUIRE HOT OR TEMPERED WATER, SHALL NOT EXCEED 50 FEET (15 240 MM). RECIRCULATING SYSTEM PIPING AND HEAT-TRACED PIPING SHALL BE CONSIDERED TO BE SOURCES OF HOT OR TEMPERED WATER.

607.1.1 TEMPERATURE LIMITING MEANS. A THERMOSTAT CONTROL FOR A WATER HEATER SHALL NOT SERVE AS THE TEMPERATURE LIMITING MEANS FOR THE PURPOSES OF COMPLYING WITH THE REQUIREMENTS OF THIS CODE FOR MAXIMUM ALLOWABLE HOT OR TEMPERED WATER DELIVERY TEMPERATURE AT FIXTURES.

607.1.2 TEMPERED WATER TEMPERATURE CONTROL. TEMPERED WATER SHALL BE SUPPLIED THROUGH A WATER TEMPERATURE LIMITING DEVICE THAT CONFORMS TO ASSE 1070/ASME A112.1070/CSA B125.70 AND SHALL LIMIT THE TEMPERED WATER TO NOT GREATER THAN 110°F (43°C). THIS PROVISION SHALL NOT SUPERSEDE THE REQUIREMENT FOR PROTECTIVE SHOWER VALVES IN ACCORDANCE WITH SECTION 412.3.

607.3 THERMAL EXPANSION CONTROL. WHERE A STORAGE WATER HEATER IS SUPPLIED WITH COLD WATER THAT PASSES THROUGH A CHECK VALVE, PRESSURE REDUCING VALVE OR BACKFLOW PREVENTER, A THERMAL EXPANSION CONTROL DEVICE SHALL BE CONNECTED TO THE WATER HEATER COLD WATER SUPPLY PIPE AT A POINT THAT IS DOWNSTREAM OF ALL CHECK VALVES, PRESSURE REDUCING VALVES AND BACKFLOW PREVENTERS. THERMAL EXPANSION TANKS SHALL BE SIZED IN ACCORDANCE WITH THE TANK MANUFACTURER'S INSTRUCTIONS AND SHALL BE SIZED SUCH THAT THE PRESSURE IN THE WATER DISTRIBUTION SYSTEMSHALL NOT EXCEED THAT REQUIRED BY SECTION 604.8.

PLUMBING FIXTURES

MARK	ITEM	MAKE	NAME	MODEL	TRIM	TRAP	STOPS	CONNECTIONS SAN	VENT	HW	CW	REMARKS
WC	WATER CLOSET	AMERICAN STANDARD	CADET 3 1.6 GPF	2386.012	WITH UNIT	INTEGRAL	NOTE #4	4"	2"	-	1/2"	FLOOR MOUNTED, TANK TYPE WITH FLUSH RIGHT SYSTEM, FLUSH HANDLE ON WIDE SIDE OF STALL. SEAT: CHURCH NO. 9500C WHITE WITH CONCEALED CHECK
LAV	LAVATORY	AMERICAN STANDARD	LUCERNE	0355.012 4" CENTERS	2385.003 (0.5 GPM)	NOTE #3	NOTE #4	1 1/2"	1 1/2"	1/2"	1/2"	WITH FLOOR MOUNTED CONCEALED ARM WALL CARRIER, GRID DRAIN & SINGLE HANDLE FAUCET

OWNER SIGNATURE

REVISION STATUS

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CLIENT/CONSULTANT APPROVAL STATUS

APPROVED	(A)
APPROVED WITH NOTES	(B)
RESUBMIT	(C)
DISAPPROVED	(D)

OWNER:

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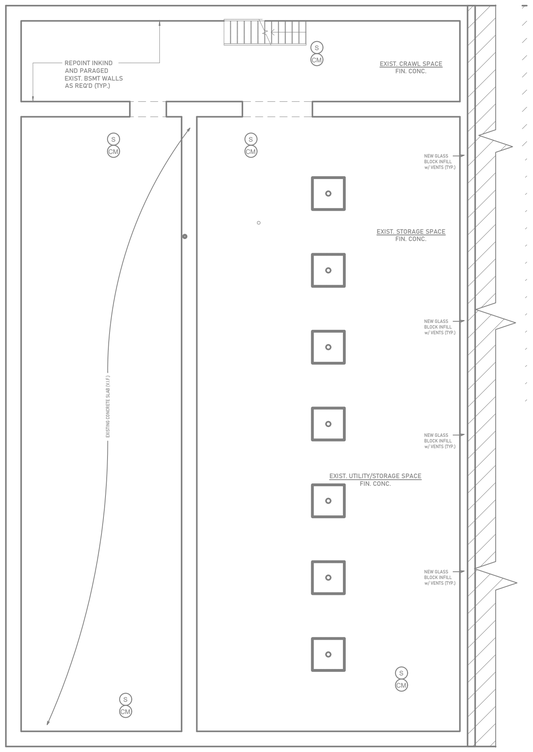
DRAWING STATUS: DESIGN DRAWING

DISCIPLINE: PLUMBING

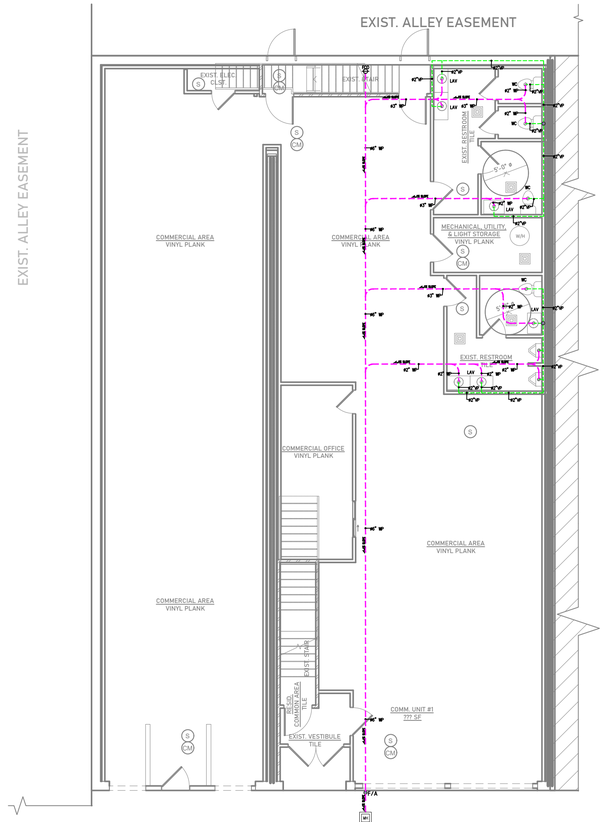
PROJECT TITLE: COMMERCIAL MIXED-USE

DRAWING TITLE: NOTES

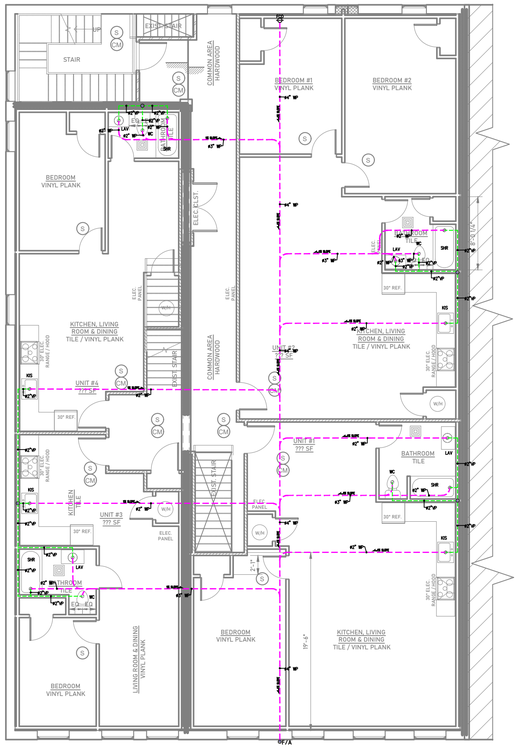
DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-PL-01	SCALE: NTS @A1



PL 02 BASEMENT FLOOR DRAINAGE PLAN
SCALE 3" = 1'-0"



PL 02 FIRST FLOOR DRAINAGE PLAN
SCALE 3" = 1'-0"



PL 02 SECOND FLOOR DRAINAGE PLAN
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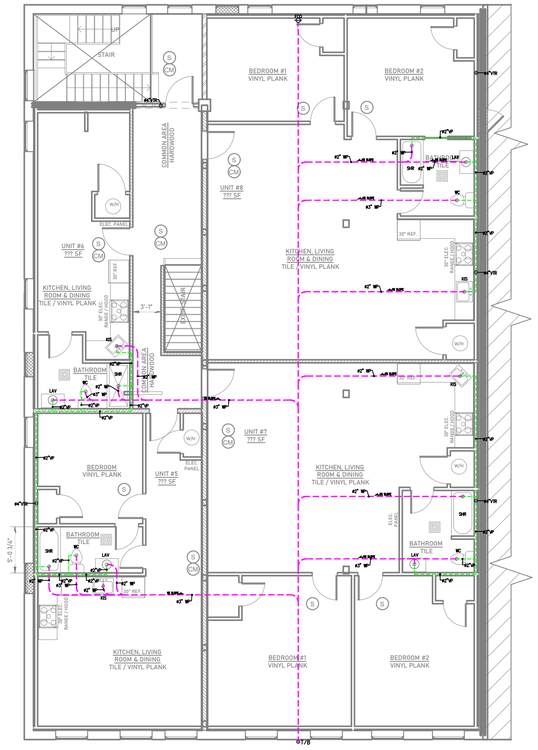

PL 02 THIRD FLOOR DRAINAGE PLAN
SCALE 3" = 1'-0"

PLUMBING LEGEND:

SYMBOL	DESCRIPTION
— — —	HWS - HOT WATER SUPPLY
- - - - -	CWS - COLD WATER SUPPLY
- - - - -	SP-SOIL PIPE
- - - - -	WP-WASTE PIPE
—⊠—	SHUT OFF VALVE
—⊳⊲—	GATE VALVE
WH	WATER HEATER
GT	GREASE TRAP
WC	WATER CLOSET
KS	KITCHEN SINK
AS	ABLUTION SPRAY
SHR	SHOWER
BT	BATH TUB
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
LAV	LAVATORY
FA	FROM ABOVE

OWNER SIGNATURE

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DRAWING STATUS:
DESIGN DRAWING

DISCIPLINE:
PLUMBING

PROJECT TITLE:
COMMERCIAL MIXED-USE

DRAWING TITLE:
BASEMENT, FIRST, SECOND & THIRD FLOOR DRAINAGE PLANS

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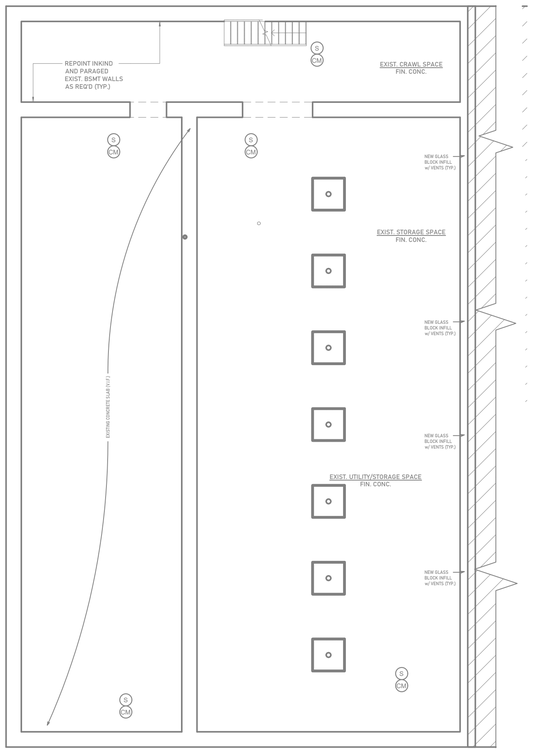
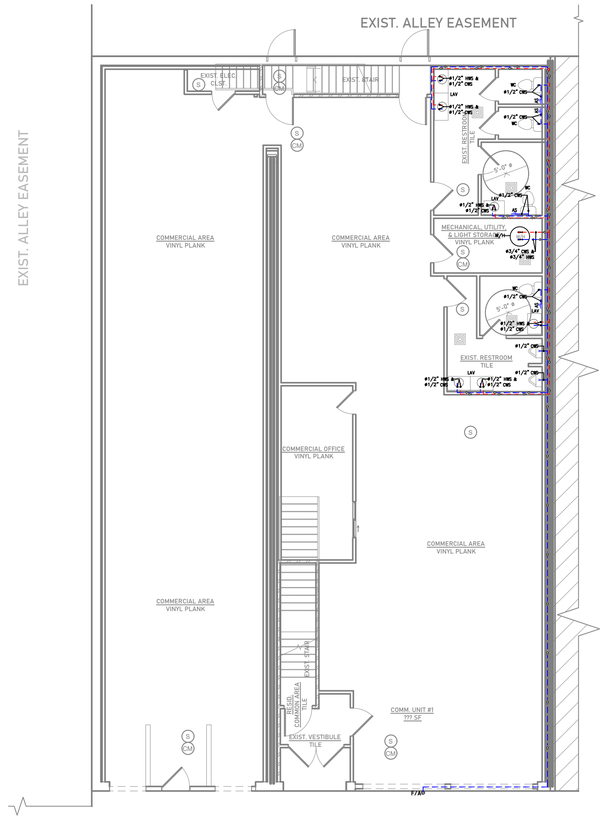
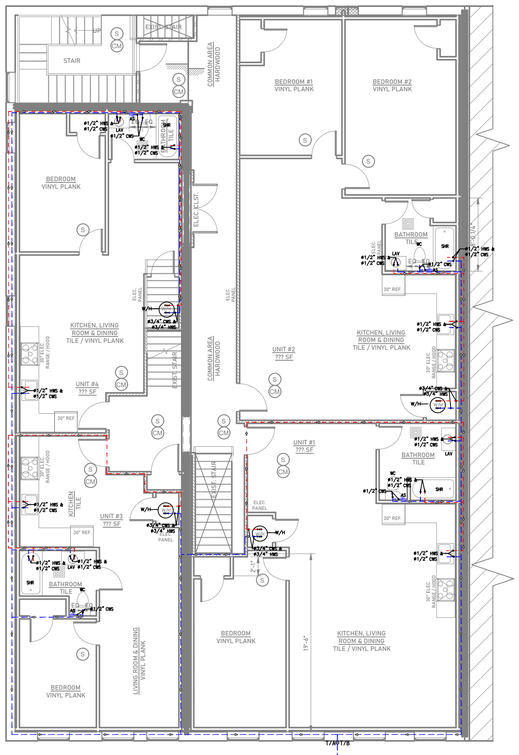


PL 03 SCALE BASEMENT FLOOR WATER SUPPLY PLAN 3" = 1'-0"



PL 03 SCALE FIRST FLOOR WATER SUPPLY PLAN 3" = 1'-0"



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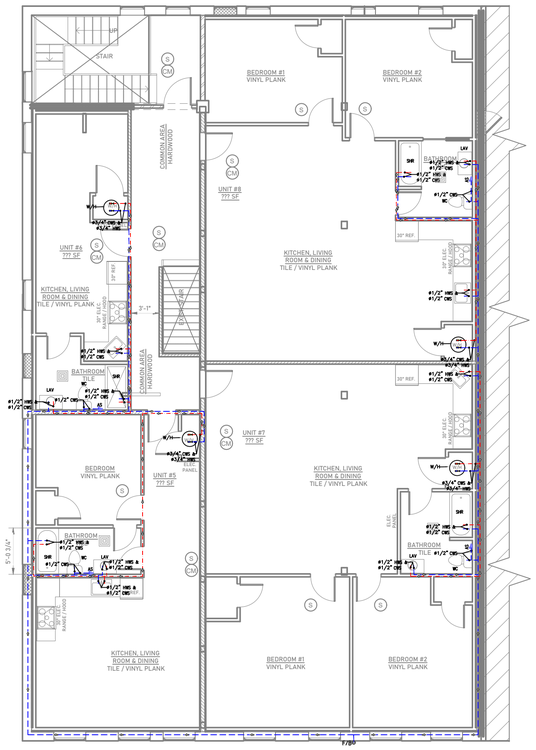

PL 03 SCALE THIRD FLOOR WATER SUPPLY PLAN 3" = 1'-0"

PLUMBING LEGEND:

SYMBOL	DESCRIPTION
— — —	HWS - HOT WATER SUPPLY
- - - - - -	CWS - COLD WATER SUPPLY
- - - - - -	SP-SOIL PIPE
- - - - - -	WP-WASTE PIPE
	SHUT OFF VALVE
	GATE VALVE
WH	WATER HEATER
GT	GREASE TRAP
WC	WATER CLOSET
KS	KITCHEN SINK
AS	ABLUTION SPRAY
SHR	SHOWER
BT	BATH TUB
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
LAV	LAVATORY
FA	FROM ABOVE

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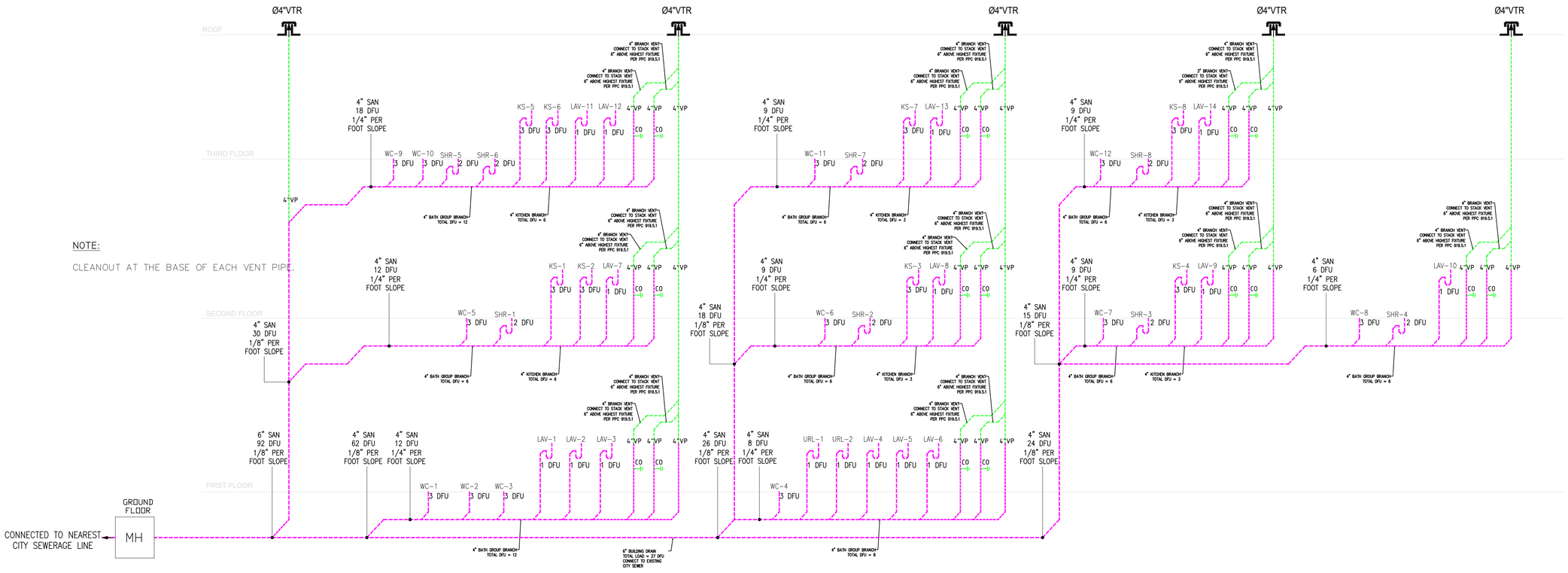
DRAWING STATUS:
DESIGN DRAWING

DISCIPLINE:
PLUMBING

PROJECT TITLE:
COMMERCIAL MIXED-USE

DRAWING TITLE:
BASEMENT, FIRST, SECOND & THIRD FLOOR WATER SUPPLY PLANS

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-PL-03	SCALE: AS SHOWN @A1



DRAINAGE SYSTEM RISER DIAGRAM
SCALE NTS

CALC B — DRAINAGE FIXTURE UNITS (DFU) | 508 MAIN STREET — JOHNSTOWN, PA 15901 | Commercial Mixed-Use

Code: 2018 IPC Table 709.1 (DFU Schedule) | Pipe Sizing: Table 710.1 | Date: May 24, 2026

BUILDING PARAMETERS				
Residential dwelling units:	8	—	—	2nd & 3rd floor — 4 units per floor
Lavatories per residential unit (lavatories):	2	—	—	Assumed 2 per unit (1 bathroom lav + 1 powder/additional)

DFU SCHEDULE — 2018 IPC Table 709.1 | All counts derived from building program (8 residential units + 2 commercial units)

Fixture Type	Qty	DFU Each — IPC Table 709.1	Total DFU	IPC 709.1 Reference	Location / Notes
Water closet, private (1.6 gpf) — residential	8	3	**24**	Table 709.1 — WC private 1.6 gpf: 3 DFU	1 per residential unit (2nd & 3rd floor)
Water closet, public (1.6 gpf) — commercial	2	4	**8**	Table 709.1 — WC public tank type: 4 DFU	1st floor commercial restrooms (1 per unit)
Lavatory, private — residential	16	1	**16**	Table 709.1 — Lavatory private: 1 DFU	Per residential unit
Lavatory, public — commercial	2	1	**2**	Table 709.1 — Lavatory public: 1 DFU	1st floor commercial restrooms (1 per unit)
Bathtub / shower combo, private — residential	8	2	**16**	Table 709.1 — Bathtub private: 2 DFU	1 per residential unit
Kitchen sink, private — residential	8	2	**16**	Table 709.1 — Kitchen sink: 2 DFU	1 per residential unit
Floor drain — basement / mechanical rooms	4	2	**8**	Table 709.1 — Floor drain 2" trap: 2 DFU	Basement + mechanical utility areas
Service / mop sink — utility room	1	3	**3**	Table 709.1 — Service sink: 3 DFU	1st floor utility / janitor room
Drinking fountain — commercial	1	1	**1**	Table 709.1 — Drinking fountain: 1 DFU	Commercial common area
TOTAL DRAINAGE FIXTURE UNITS (DFU) — BUILDING			**94**		

DRAINAGE PIPE SIZING — 2018 IPC Table 710.1(2) | Minimum 1/8"/ft slope on all horizontal drains

Pipe Segment	DFU Served	Min. Size — IPC Table 710.1(2)	Min. Slope	Specified Size	Code Compliance
Each residential unit branch (WC + Lav + Tub + KS)	7 per unit	3" min — WC branch	1/4"/ft	3" PVC/ABS	**COMPLIES**
1st floor commercial branch (2 WC + 2 Lav + SS)	~14	3" min	1/4"/ft	3" PVC/ABS	**COMPLIES**
Basement floor drains (4 × 2 DFU)	8	3" min	1/8"/ft	3" PVC/ABS	**COMPLIES — with backflow check valve (FLOOD ZONE)**
Horizontal building drain — all fixtures	**94**	4" REQUIRED — >42 DFU	1/8"/ft	4" PVC	**COMPLIES — 4" required per IPC Table 710.1(2)**
Building sewer to public main	**94**	4" REQUIRED	1/8"/ft	4" min	**COMPLIES — confirm invert elevation with City DPW**
Stack vent (VTR) — each drainage stack	—	4" through roof	—	4" Ø VTR	**COMPLIES — extends 24" above roof per IPC 919.5.1**

PIPING MATERIALS: PVC DWV ASTM D2665 Sch. 40 above slab. Cast iron soil pipe (ASTM A74) below grade. All fixtures separately trapped per IPC §1002.1. Max. horizontal trap arm 30" (IPC Table P2706.1). FLOOD ZONE (IBC §1612 / IPC §715): Backflow prevention check valves required on all below-grade sanitary drain lines. Sump pit with battery-backup pump required in basement. Confirm public sewer invert elevation with City of Johnstown DPW before connection.

PLUMBING LEGEND:	
SYMBOL	DESCRIPTION
— — —	HWS - HOT WATER SUPPLY
- - - - -	CWS - COLD WATER SUPPLY
	SP-SOIL PIPE
	WP-WASTE PIPE
	SHUT OFF VALVE
	GATE VALVE
WH	WATER HEATER
GT	GREASE TRAP
WC	WATER CLOSET
KS	KITCHEN SINK
AS	ABLUTION SPRAY
SHR	SHOWER
BT	BATH TUB
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
LAV	LAVATORY
FA	FROM ABOVE

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APPROVED	(A)
APPROVED WITH NOTES	(B)
RESUBMIT	(C)
DISAPPROVED	(D)

OWNER:

ADDRESS:
508 MAIN STREET, JOHNSTOWN, PA 15901

DESIGN CONSULTANT:
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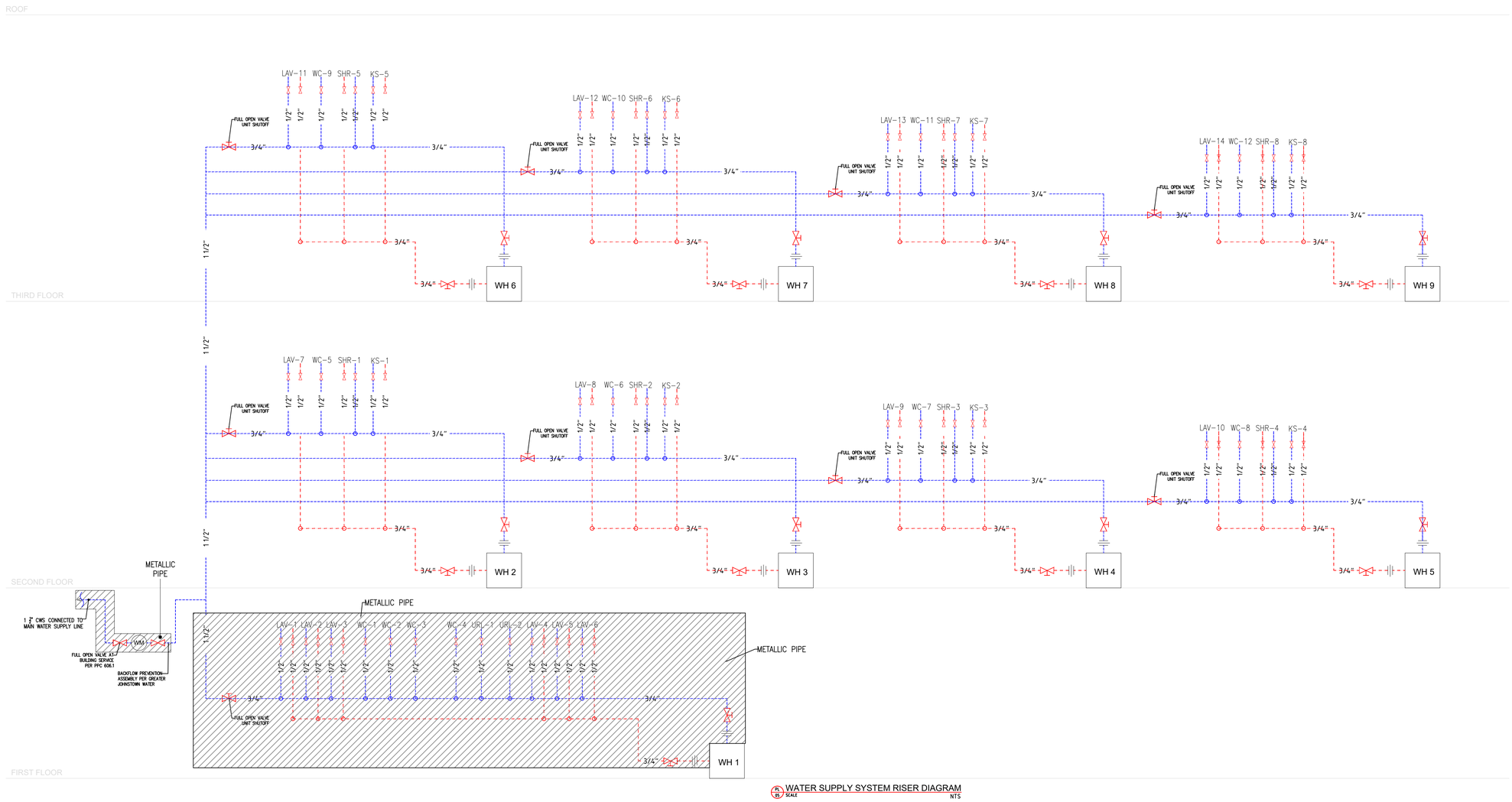
DRAWING STATUS: DESIGN DRAWING

DISCIPLINE: PLUMBING

PROJECT TITLE: COMMERCIAL MIXED-USE

DRAWING TITLE: DRAINAGE SYSTEM RISER DIAGRAM

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-PL-04	SCALE: AS SHOWN @A1



WATER SUPPLY SYSTEM RISER DIAGRAM
SCALE NTS

CALC C — WATER SUPPLY FIXTURE UNITS (WSFU) | 508 MAIN STREET — JOHNSTOWN, PA 15901 | Commercial Mixed-Use

Code: 2018 IPC Table 610.3 (WSFU) & Table 604.3 (Pipe Sizing @ 60 psi min.) | Date: May 24, 2026

BUILDING PARAMETERS		
Residential dwelling units:	8	8 apartments — 9 water heaters total (1 per unit + 1 commercial)
Lavatories per residential unit:	2	2 per unit assumed — verify with architectural drawings

WSFU SCHEDULE — 2018 IPC Table 610.3 | 9 Water Heaters Total (1 per residential unit + 1 commercial)

Fixture Type	Qty	WSFU Each (IPC 610.3)	Total WSFU	Hot?	Cold?	IPC 610.3 Reference
Water closet, private (1.6 gpf) — residential	8	2.50	20.00	No	Yes	Table 610.3 — WC private: 2.5 WSFU (cold only)
Water closet, public — commercial	2	2.50	5.00	No	Yes	Table 610.3 — WC public 1.6 gpf: 2.5 WSFU
Lavatory, private — residential	16	1.00	16.00	Yes	Yes	Table 610.3 — Lavatory private: 1.0 WSFU
Lavatory, public — commercial	2	1.50	3.00	Yes	Yes	Table 610.3 — Lavatory public: 1.5 WSFU
Bathtub / shower combo — residential	8	1.50	12.00	Yes	Yes	Table 610.3 — Tub/shower combo: 1.5 WSFU
Kitchen sink — residential	8	1.50	12.00	Yes	Yes	Table 610.3 — Kitchen sink: 1.5 WSFU
Service / mop sink — commercial	1	3.00	3.00	Yes	Yes	Table 610.3 — Service sink: 3.0 WSFU
Drinking fountain — commercial	1	0.75	0.75	No	Yes	Table 610.3 — Drinking fountain: 0.75 WSFU
Electric water heater 50-gal (per unit + comm.)	9	0.00	0.00	N/A	N/A	WH per unit — each independently fed per IPC §606.1
TOTAL WATER SUPPLY FIXTURE UNITS (WSFU) — BUILDING			**71.75**			

PIPE SIZING — 2018 IPC Table 604.3 @ 60 psi minimum service pressure

Supply Segment	WSFU	Min. Pipe Size — IPC 604.3 @60 psi	Max Dev. Length	Specified Size	Material	Notes
Building cold water service (from meter)	71.75	1½" min — >30 WSFU @60 psi	200 ft	1½" Cu Type L	Copper Type L	Confirm meter size with Johnstown Water Authority
Residential cold branch — per unit	~20	¾" min	80 ft	¾" Cu Type L	Copper Type L	Riser to unit water heater and fixtures
Residential hot branch — per unit (from WH)	~12	½"–¾" min	50 ft	¾" Cu Type L	Copper Type L	Individual WH to unit fixtures — IPC §503.3: 4ft copper at WH
Commercial branch (1st floor)	~10	¾" min	40 ft	¾" Cu Type L	Copper Type L	Restrooms, service sink, drinking fountain
PRV at service entry	—	Req'd if > 80 psi — §604.8	—	Bronze PRV	Bronze/brass	Verify Johnstown Water Authority pressure at meter
Thermal expansion tank	—	Required — IPC §607.3	—	Per mfr.	Bladder type	Required where backflow preventer is installed

PIPING MATERIALS: Above-slab supply — Copper Type L (ASTM B88) with lead-free solder, or PEX-A (ASTM F876/F877, SDR-9) with ASTM F1960 expansion fittings for residential. Commercial: metallic (copper) per IPC. Each water heater independently fed — shutoff of one unit does not affect others (IPC §606.1). T&P relief valve discharges to outside wall per IPC §504.6. FLOOD ZONE: All water heaters elevated to BFE + 2 ft min. (IBC §1612). Provide thermal expansion tank per IPC §607.3. Confirm available pressure with Johnstown Water Authority (814) 533-2800.

PLUMBING LEGEND:

SYMBOL	DESCRIPTION
— — —	HWS - HOT WATER SUPPLY
- - - - -	CWS - COLD WATER SUPPLY
	SP-SOIL PIPE
	WP-WASTE PIPE
	SHUT OFF VALVE
	GATE VALVE
WH	WATER HEATER
GT	GREASE TRAP
WC	WATER CLOSET
KS	KITCHEN SINK
AS	ABLUTION SPRAY
SHR	SHOWER
BT	BATH TUB
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
LAV	LAVATORY
FA	FROM ABOVE

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
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01			
02			
03			
04			

CLIENT/CONSULTANT APPROVAL STATUS

APPROVED	**(A)**
APPROVED WITH NOTES	**(B)**
RESUBMIT	**(C)**
DISAPPROVED	**(D)**

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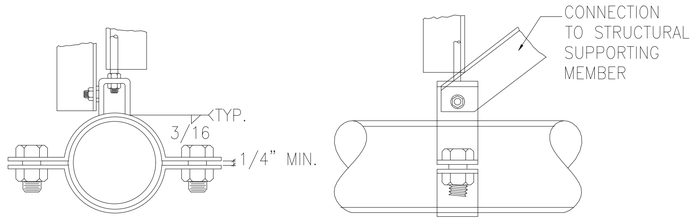
DRAWING STATUS:
DESIGN DRAWING

DISCIPLINE:
PLUMBING

PROJECT TITLE:
COMMERCIAL MIXED-USE

DRAWING TITLE:
WATER SUPPLY SYSTEM RISER DIAGRAM

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-PL-05	SCALE: AS SHOWN @A1

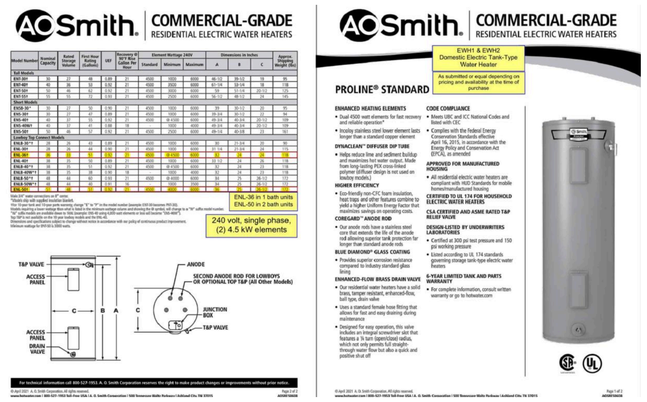


D 01 SCALE TYPICAL LONGITUDINAL PIPE BRACING NTS

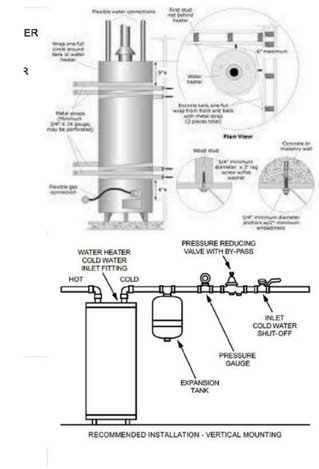
1. THIS BRACING DETAIL APPLIES ONLY FOR COLD WATER PIPE AND GAS PIPE WHERE MOVEMENT OF THE PIPE DUE TO TEMPERATURE DIFFERENTIAL IS NEGLIGIBLE

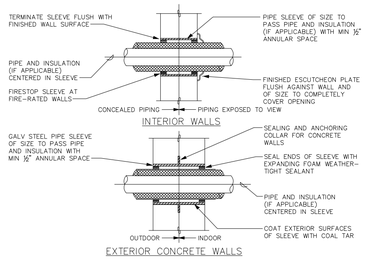
2. IT IS THE RESPONSIBILITY OF THE USER OF THIS GUIDELINE TO ASCERTAIN THAT AN ADEQUATE BRACING AND ANCHORAGE DEVICE BE DESIGNED FOR PIPE WHENEVER THE MOVEMENT DUE TO THERMAL DIFFERENTIAL EXISTS. PROVIDE ONE ANCHOR POINT IN ONE PIPE RUN. ALLOW FOR LONGITUDINAL PIPE MOVEMENT AT THE OPPOSITE END OF THE ANCHOR POINT.

D 01 SCALE LONGITUDINAL PIPE BRACING NTS

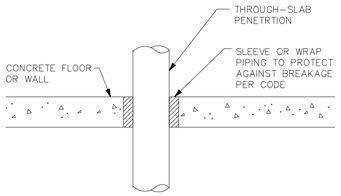


D 02 SCALE WATER HEATER INSTALLATION DETAILS NTS

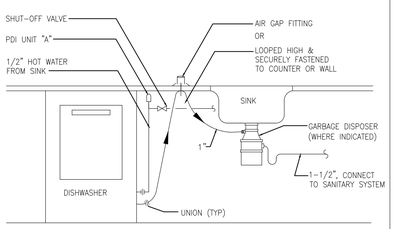




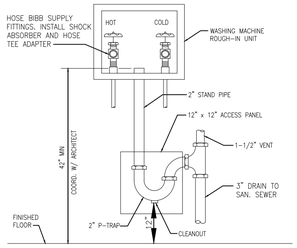
D 03 SCALE PIPE SLEEVES THROUGH WALLS NTS



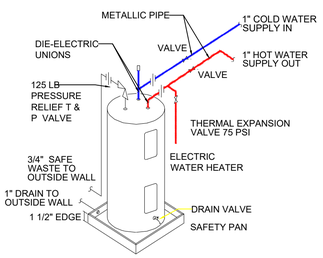
D 04 SCALE PIPE SLAB PENETRATION NTS



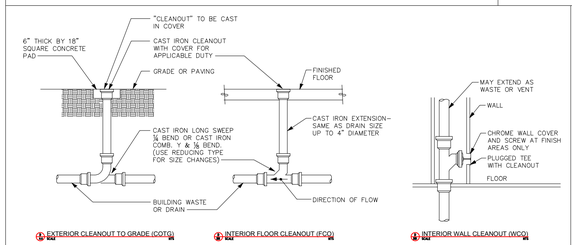
D 05 SCALE RESIDENTIAL DISHWASHER PIPING DETAIL NTS



D 06 SCALE RESIDENTIAL WASHING MACHINE CONNECTION DETAIL NTS

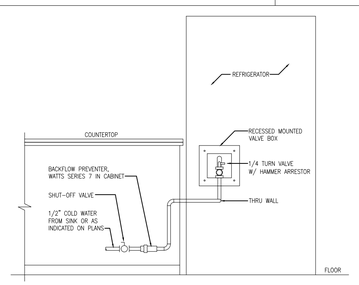


D 02 SCALE WATER HEATER INSTALLATION DETAILS NTS



D 07 SCALE EXTERIOR CLEANOUT TO GRADE (COTG) NTS
D 07 SCALE INTERIOR FLOOR CLEANOUT (FCO) NTS
D 07 SCALE INTERIOR WALL CLEANOUT (WCO) NTS

D 07 SCALE CLEANOUT DETAILS NTS



D 08 SCALE REFRIGERATOR WATER CONNECTION DETAIL NTS

MATERIAL	PIPE OR TUBE SIZE (inches)	MAXIMUM VELOCITY (feet per second)
All pipe and tube material	3/8 and smaller	5
Brass pipe	3/8 and larger	8
Copper or copper-alloy pipe and tubing (hot water systems)	3/8 and larger	5
Copper or copper-alloy pipe and tubing (cold water systems)	3/8 and larger	8
Chlorinated polyvinyl (CPVC) plastic pipe	3/8 - 1 1 1/4 and larger	8 10
Cross-linked polyethylene (PEX) plastic tubing	3/8 and larger	8
Cross-linked polyethylene/ aluminum/cross-linked polyethylene (PEX-AL-PEX) pipe	3/8 and larger	8
Galvanized steel pipe	3/8 - 1 2 - 4 4 and larger	8 10 12
PE-AL-PE	3/8 and larger	8

D 09 SCALE WATER DISTRIBUTION PIPE SIZING AND WATER SERVICE PIPE SIZING NTS

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
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CLIENT/CONSULTANT APPROVAL STATUS

APPROVED	(A)
APPROVED WITH NOTES	(B)
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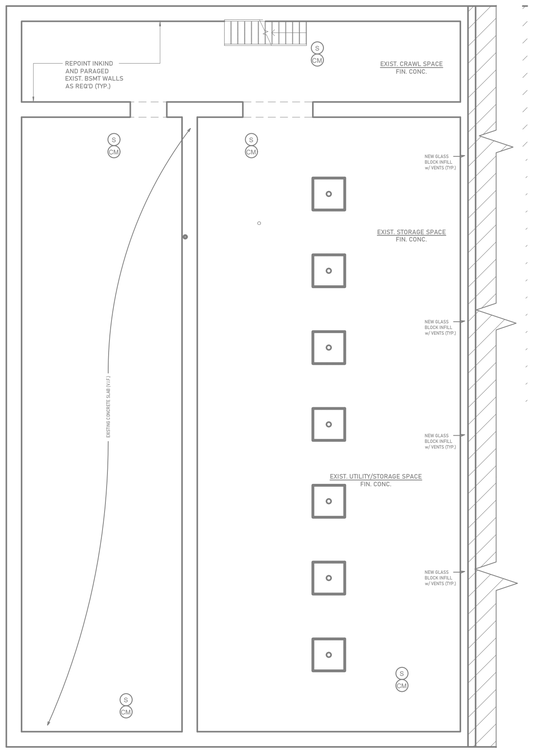
DRAWING STATUS:
DESIGN DRAWING

DISCIPLINE:
PLUMBING

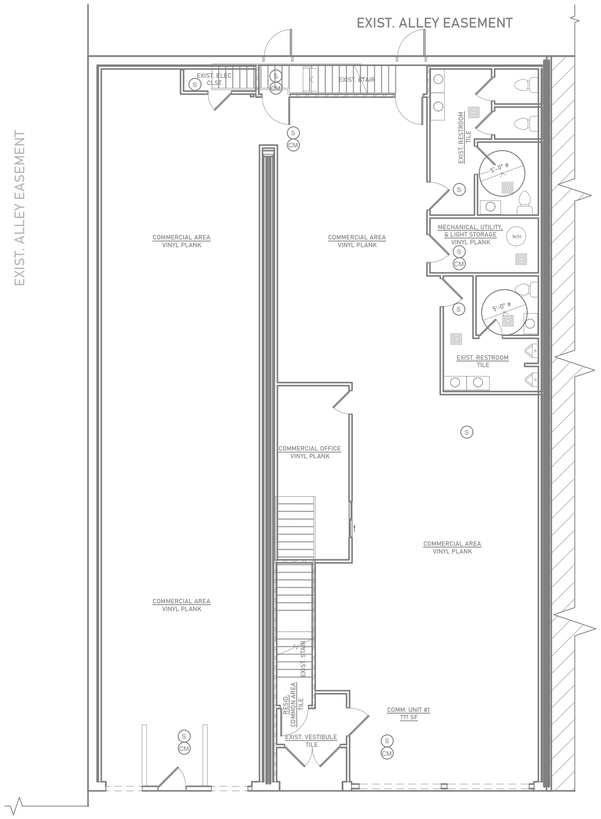
PROJECT TITLE:
COMMERCIAL MIXED-USE

DRAWING TITLE:
DETAILS

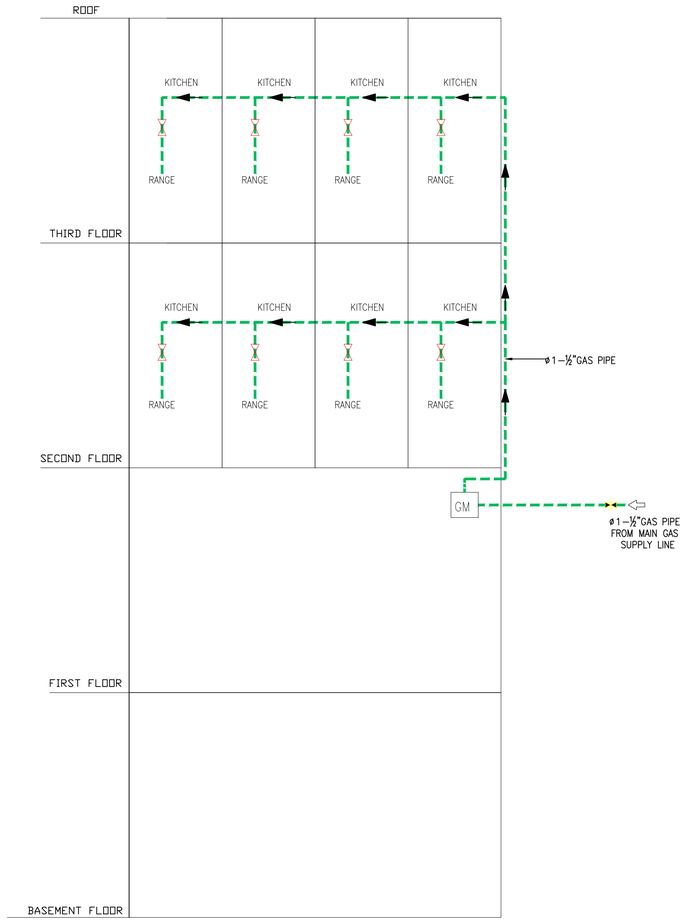
DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-PL-06	SCALE: NTS @A1



PL 07 BASEMENT FLOOR GAS SUPPLY PLAN
SCALE 3" = 1'-0"

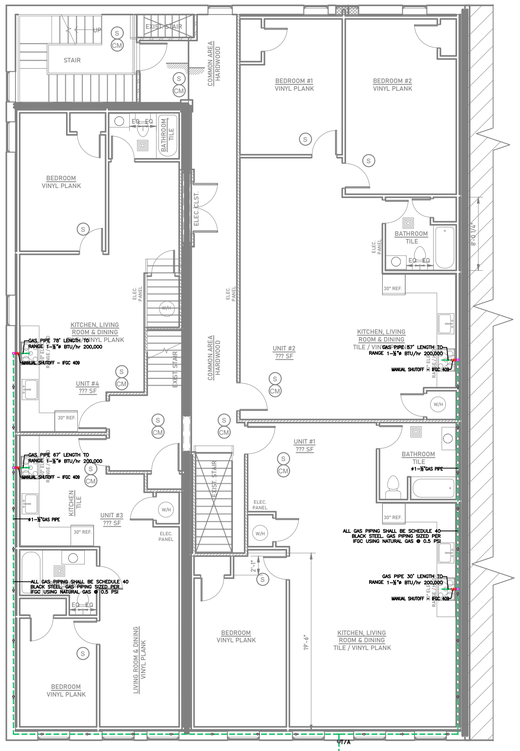


PL 07 FIRST FLOOR GAS SUPPLY PLAN
SCALE 3" = 1'-0"

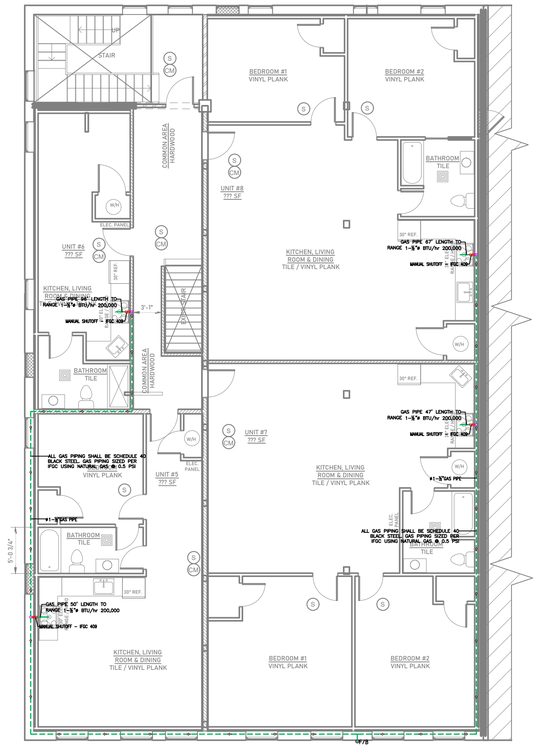


PL 07 GAS SUPPLY SYSTEM RISER DIAGRAM
SCALE NTS

GAS LEGEND:	
SYMBOL	DESCRIPTION
	GAS SUPPLY PIPE
	SHUT OFF VALVE
	GATE VALVE
	TEE WITH REDUCER
	GAS CAP



PL 07 SECOND FLOOR GAS SUPPLY PLAN
SCALE 3" = 1'-0"



PL 07 THIRD FLOOR GAS SUPPLY PLAN
SCALE 3" = 1'-0"

NOTES:

FFLOOD-GAS-01: GAS METER, PRESSURE REGULATOR, SHUTOFF VALVES, AND GAS-FIRED EQUIPMENT SHALL BE LOCATED AT OR ABOVE BFE/DFE/RFE WHERE PRACTICAL. GAS SYSTEM SHALL BE ANCHORED AND INSTALLED TO PREVENT FLOATATION, BREAKAWAY, FLOODWATER INFILTRATION, AND DISCHARGE OF GAS INTO FLOODWATERS.

FLOOD-GAS-02: GAS PIPING BELOW BFE/DFE/RFE SHALL BE CORROSION-RESISTANT, ADEQUATELY SUPPORTED, AND PROTECTED FROM HYDROSTATIC/HYDRODYNAMIC FLOOD LOADS. PROVIDE SHUTOFF VALVES ABOVE FLOOD ELEVATION WHERE PRACTICAL.

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
00			
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CLIENT/CONSULTANT APPROVAL STATUS

APPROVED	(A)
APPROVED WITH NOTES	(B)
RESUBMIT	(C)
DISAPPROVED	(D)

OWNER:

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DRAWING STATUS:
DESIGN DRAWING

DISCIPLINE:
PLUMBING

PROJECT TITLE:
COMMERCIAL MIXED-USE

DRAWING TITLE:
BASEMENT, FIRST, SECOND, THIRD FLOOR GAS SUPPLY PLANS, RISER DIAGRAM

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-PL-07	SCALE: AS SHOWN @A1

CALC G — GAS LOAD & PIPE SIZING | 508 MAIN STREET — JOHNSTOWN, PA 15901 | Commercial Mixed-Use

Code: 2018 IFGC / NFPA 54 | 8 Residential Units — Natural Gas Ranges | Date: May 24, 2026

GAS LOAD TABLE — 8 Residential Units Each with 1 Six-Burner Range

Equipment	BTU/hr per Appliance	Run Length to Appliance (ft)	Pipe Size (IFGC Table 402.4)	Location	Note
6-Burner Range	200,000	67	1½"	Apt. Unit 1 — 2nd Floor	Per IFGC Table 402.4(2) — 1½" @ max 96 ft run for 200,000 BTU/hr
6-Burner Range	200,000	78	1½"	Apt. Unit 2 — 2nd Floor	Per IFGC Table 402.4(2) — 1½" @ max 96 ft run for 200,000 BTU/hr
6-Burner Range	200,000	30	1½"	Apt. Unit 3 — 2nd Floor	Per IFGC Table 402.4(2) — 1½" @ max 96 ft run for 200,000 BTU/hr
6-Burner Range	200,000	57	1½"	Apt. Unit 4 — 2nd Floor	Per IFGC Table 402.4(2) — 1½" @ max 96 ft run for 200,000 BTU/hr
6-Burner Range	200,000	50	1½"	Apt. Unit 5 — 3rd Floor	Per IFGC Table 402.4(2) — 1½" @ max 96 ft run for 200,000 BTU/hr
6-Burner Range	200,000	96	1½"	Apt. Unit 6 — 3rd Floor	Per IFGC Table 402.4(2) — 1½" @ max 96 ft run for 200,000 BTU/hr
6-Burner Range	200,000	47	1½"	Apt. Unit 7 — 3rd Floor	Per IFGC Table 402.4(2) — 1½" @ max 96 ft run for 200,000 BTU/hr
6-Burner Range	200,000	67	1½"	Apt. Unit 8 — 3rd Floor	Per IFGC Table 402.4(2) — 1½" @ max 96 ft run for 200,000 BTU/hr
TOTAL GAS LOAD (BTU/hr)	**1,600,000**				

PIPE SIZING — 2018 IFGC / NFPA 54 | Max. Run 96 ft (longest branch) per gas load table

Segment	Load	IFGC Pipe Size	Basis	Specified	Note
Building gas service entry (from utility main)	**1,600,000**	1½" steel min.	IFGC Tbl 402.4(2), max run includes longest 96 ft branch	1½"	
Vertical riser — all floors	**1,600,000**	1½" steel	Full building load through riser	1½"	
Branch to each residential unit (per unit)	200,000 BTU/hr	1" steel	Single appliance per unit per IFGC Table 402.4(2)	1"	
Flexible connector at range (per unit)	200,000 BTU/hr	¾" CSST flex	IFGC §403.5 — flexible connector at appliance connection only	¾" flex	

8 residential 6-burner ranges at 200,000 BTU/hr each — total gas load calculated by formula above. No commercial gas equipment — commercial units are all-electric. Confirm meter sizing, inlet pressure, and service capacity with Peoples Natural Gas (800) 764-0111 prior to rough-in. FLOOD ZONE: Gas meter, regulator, and main shutoff elevated to BFE + 2 ft min. (IBC §1612). Install manual shutoff valve at building entry operable from above BFE. Coordinate elevated meter installation with Peoples Natural Gas.

GAS LEGEND:

SYMBOL	DESCRIPTION
	GAS SUPPLY PIPE
	SHUT OFF VALVE
	GATE VALVE
	TEE WITH REDUCER
	GAS CAP

Natural Gas Pipe Sizing Chart

Length of Pipe in Feet	Size of Pipe in Inches								
	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
10	108	230	387	793	1237	2259	3640	6434	
20	74	160	265	589	877	1610	2613	5238	9521
30	61	129	224	471	719	1325	2185	4107	7859
40	52	110	191	402	616	1145	1909	3636	6776
50	46	96	171	364	540	1043	1680	3258	6140
60	42	89	159	336	515	957	1559	2984	5647
70	38	82	148	317	476	898	1447	2749	5260
80	35	76	140	229	443	840	1353	2575	4900
90	33	71	133	215	420	793	1286	2453	4667
100	32	68	126	266	411	775	1246	2128	4518
125	28	62	112	243	369	630	1109	1969	3905
150	25	54	101	218	339	629	1024	1664	3543
175	23	50	93	198	303	583	993	1554	3170
200	22	47	84	182	280	541	877	1437	2180
300	17	37	70	145	224	439	686	1139	2539

Natural Gas flow is given in thousands of BTU/hr. - One cubic foot of LP gas = 1000 BTU

Nominal pressure at the burner for Natural Gas is 3.5" of water column. (Typical machine supply 6"-7")

Pipe length must include additional length for all fittings. Add approximately 5 feet of pipe per fitting

Natural Gas Example: A machine with a burner that requires 440,000 BTU would need a 1 -1/4" pipe for a 20' long run.

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
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CLIENT/CONSULTANT APPROVAL STATUS

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DRAWING STATUS: DESIGN DRAWING

DISCIPLINE: PLUMBING

PROJECT TITLE: COMMERCIAL MIXED-USE

DRAWING TITLE: GAS LOAD TABLE

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-PL-08	SCALE: AS SHOWN @A1

MECHANICAL LEGEND

SYMBOL	ABBREV.	DESCRIPTION
E		COORDINATE WITH ELECTRICAL
CD	CD	CONDENSATE DRAIN (A.C)
D	D	DRAIN
RD	RD	REFRIGERANT DISCHARGE
RL	RL	REFRIGERANT LIQUID
RS	RS	REFRIGERANT SUCTION
		PIPE DOWN
		PIPE UP
UP		PIPE RISE (OR DN. FOR DROP)
		DIRECTION OF FLOW IN PIPE
	AV	AIR VENT (VALVE)
	CHV	CHECK VALVE
	CV (2W)	CONTROL VALVE (2-WAY)
	CV (3W)	CONTROL VALVE (3-WAY)
	FCD	AUTOMATIC FLOW CONTROL DEVICE
	SOV	SHUT OFF VALVE
		GLOBE/BALL/BUTTERFLY VALVE
	BV	COMBINATION BALANCING & SHUT-OFF VALVE
	FEV	FLOW ELEMENT VENTURI
		VALVE ON RISE OR DROP
	STR.	STRAINER
	CL	CAPPED LINE
	DN.	DOWN OR DROP
	UP	RISE OR RISER
	RV	PRESSURE RELIEF VALVE
	PG	PRESSURE GAUGE WITH BALL VALVE
	R.	ECCENTRIC REDUCER
	R.	CONCENTRIC REDUCER
	FC	FLEXIBLE CONNECTION (PIPE)
	PA	PIPE ANCHOR
	U	UNION
10x6		DUCTWORK (1ST NUMBER INDICATES WIDTH SHOWN), NET INSIDE DIMENSION
	TV	SQUARE ELBOW WITH TURNING VANES
		RADIUS ELBOW
	MVD	MANUAL VOLUME DAMPER
	MOD	MOTOR OPERATED DAMPER
	BDD	BACKDRAFT DAMPER
FD	FD	FIRE DAMPER
SD	SD	DUCT MOUNTED SMOKE DETECTOR
SFD	SFD	AUTOMATIC SMOKE AND FIRE DAMPER
	FLEX	FLEXIBLE CONNECTION (DUCTWORK)
	FLEX	FLEXIBLE CONNECTION OR SEISMIC JOINT

SYMBOL	ABBREV.	DESCRIPTION
		LINED DUCTWORK (OR PLENUM)
UP		DUCT RISE IN DIRECTION OF FLOW
DN		DUCT DROP IN DIRECTION OF FLOW
		ROUND DUCT UP
		ROUND DUCT DOWN
		SUPPLY DUCT UP
		SUPPLY DUCT DOWN
	RA/OA	RETURN AIR DUCT/OUTSIDE AIR DUCT UP
		RETURN AIR DUCT/OUTSIDE AIR DUCT DOWN
		EXHAUST AIR DUCT UP
		EXHAUST AIR DUCT DOWN
		DUCT TRANSITION
	CD	CEILING DIFFUSER
	RR	RETURN REGISTER
	ER	EXHAUST REGISTER
T AC-3	T'STAT	THERMOSTAT OR TEMPERATURE SENSOR (NUMBER INDICATES EQUIPMENTOR ZONE SERVED)
H	H'STAT	HUMIDISTAT
C2		CARBON DIOXIDE SENSOR
	CFM	CUBIC FEET PER MINUTE
OR		SYMBOL, SEE EQUIPMENT SCHEDULE
		SUPPLY AIR REGISTER
		RETURN AIR REGISTER
		SUPPLY AIR DIFFUSER W/ AIR DIRECTION
		SUPPLY AIR SIDEWALL DIFFUSER
		4-WAY SUPPLY AIR DIFFUSER
E		RETURN/ EXHAUST AIR GRILLE
		SUPPLY/EXHAUST AIR FAN
10x8 175 CFM D 2x		TERMINAL TAG/ QTY, AIR QUANTITY (CFM)
L		DOOR LOUVER
UC		UNDER CUT
		INTAKE/ EGRESS
		DUCT HEATER
		WASHROOM VENTILATOR

HVAC ABBREVIATIONS

A	AMPERES	HZ	FREQUENCY
AC	AIR CONDITIONING	IN	INCH OR INCHES
AD	ACCESS DOOR	KW	KILOWATT
AFF	ABOVE FINISHED FLOOR	LG	LENGTH
AL	ACOUSTICAL LINING	LAT	LEAVING AIR TEMPERATURE
BHP	BRAKE HORSEPOWER	LBS	POUNDS
BTU	BRITISH THERMAL UNIT	LDB	LEAVING DRY BULB TEMPERATURE
BTUH	BTU PER HOUR	LIN FT	LINEAR FEET
CD	CEILING DIFFUSER	LWB	LEAVING WET BULB TEMPERATURE
CFM	CUBIC FEET PER MINUTE	MAX	MAXIMUM
CG	CEILING GRILLE	MBH	THOUSAND BTU PER HOUR
CLG	CEILING	MHP	MOTOR HORSEPOWER
COMPR	COMPRESSOR	MIN	MINIMUM
CR	CEILING REGISTER	NIC	NOT IN CONTRACT
DB	DRY BULB	NO.	NUMBER
DIAM	DIAMETER	NTS	NOT TO SCALE
DN	DOWN	RA	RETURN AIR
DWG	DRAWING	RM	ROOM
DX	DIRECT EXPANSION	RPM	REVOLUTIONS PER MINUTE
EAT	ENTERING AIR TEMPERATURE	SP	STATIC PRESSURE
EDB	ENTERING DRY BULB TEMPERATURE	SPEC	SPECIFICATION
EF	EXHAUST FAN	TEMP	TEMPERATURE
EWB	ENTERING WET BULB	TG	TOP GRILLE
EWT	ENTERING WATER TEMPERATURE	TV	TURNING VANES
°F	DEGREES FAHRENHEIT	TYP	TYPICAL
FC	FLEXIBLE CONNECTION	W	WIDTH
FD	FIRE DAMPER	W/	WITH
FIN FL	FINISHED FLOOR	W/O	WITHOUT
FLA	FULL LOAD AMPERES	WB	WET BULB
FPM	FEET PER MINUTE	WMS	WIRE MESH SCREEN
FT	FEET	SG	SUPPLY GRILLE
HD	HEAD	RG	RETURN GRILLE
HR	HOUR	SP	SMOKE PURGE
MAU	MAKE UP AIR UNIT		

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
00			
01			
02			
03			
04			

CLIENT/CONSULTANT APPROVAL STATUS

APPROVED	(A)
APPROVED WITH NOTES	(B)
RESUBMIT	(C)
DISAPPROVED	(D)

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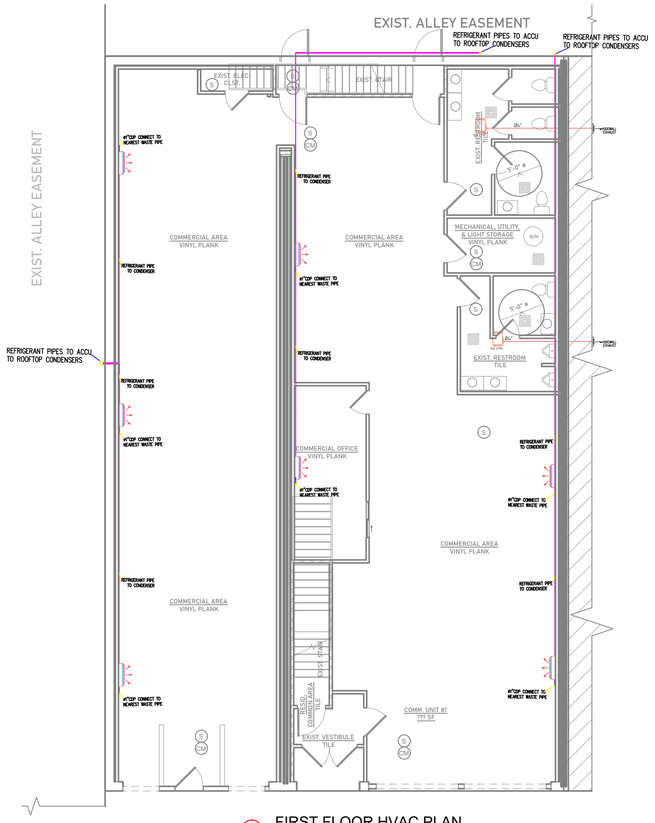
DRAWING STATUS: DESIGN DRAWING

DISCIPLINE: MECHANICAL

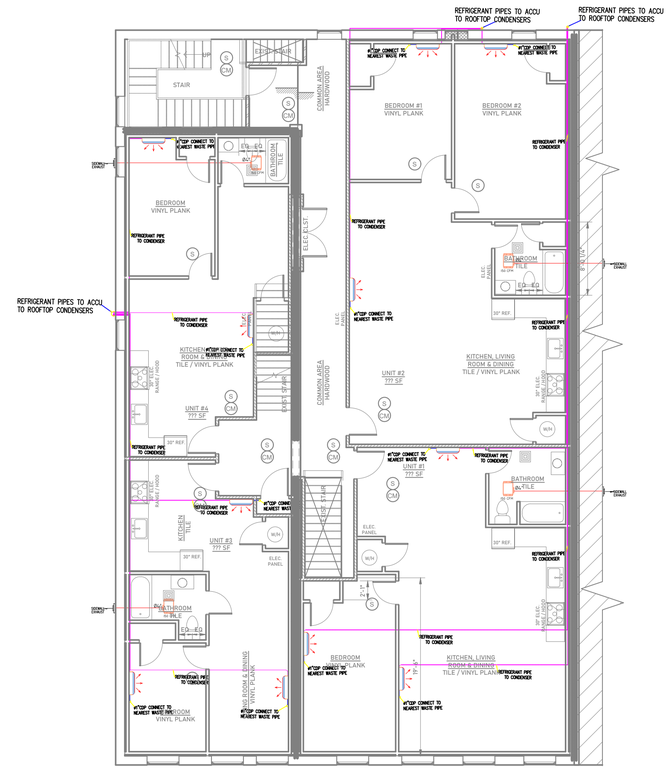
PROJECT TITLE: COMMERCIAL MIXED-USE

DRAWING TITLE: NOTES

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-ME-01	SCALE: NTS @A1



ME 02 FIRST FLOOR HVAC PLAN
SCALE 3" = 1'-0"



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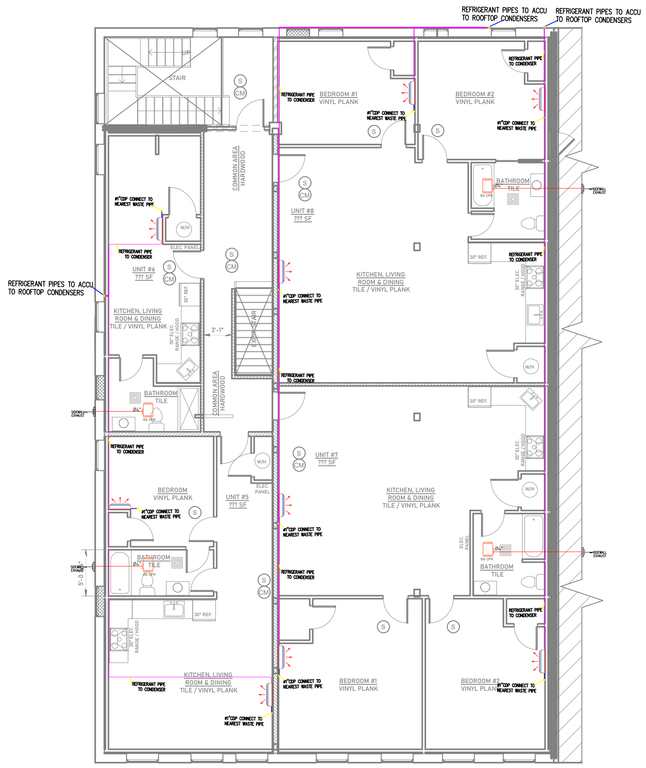
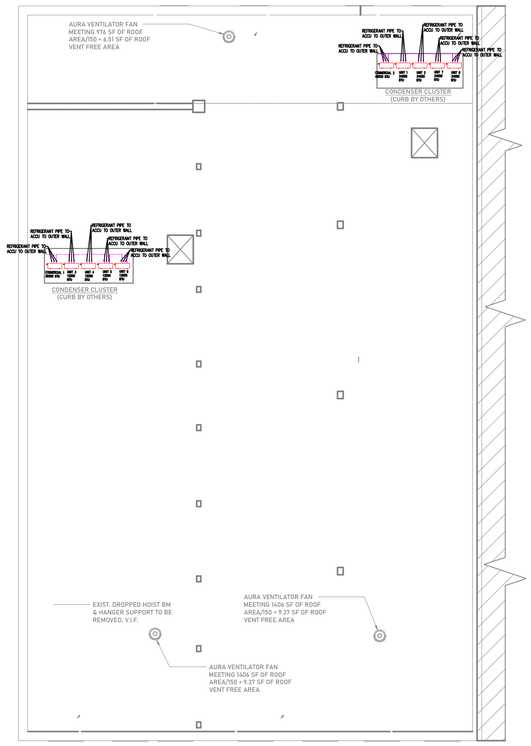
SCALE 3" = 1'-0"



ME 02 THIRD FLOOR HVAC PLAN
SCALE 3" = 1'-0"



ME 02 ROOF TOP HVAC PLAN
SCALE 3" = 1'-0"

LEGEND

SYMBOL	DESCRIPTION
	SPLIT TYPE AIRCONDITIONING INDOOR UNIT
	CONDENSATE DRAIN PIPE
	REFRIGERANT PIPE
	SPLIT TYPE AIRCONDITIONING OUTDOOR UNIT
CDP	CONDENSATE DRAIN PIPE

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
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01			
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CLIENT/CONSULTANT APPROVAL STATUS

APPROVED	(A)
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DRAWING STATUS:
DESIGN DRAWING

DISCIPLINE:
MECHANICAL

PROJECT TITLE:
COMMERCIAL MIXED-USE

DRAWING TITLE:
FIRST, SECOND, THIRD FLOORS & ROOF TOP HVAC PLANS

DRAWN BY:	CHECKED BY:	DATE:
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JOB NO	SHT NO JS-ME-02	SCALE: AS SHOWN @A1

CALC I — HVAC / MINI-SPLIT SCHEDULE | 508 MAIN STREET — JOHNSTOWN, PA 15901 | Commercial Mixed-Use

Source: Mechanical Equipment Schedule | 4 Condensing Units + Exhaust Fans + Roof Ventilators | Date: May 24, 2026

CONDENSING UNIT SCHEDULE

Tag	Location / Zones Served	Tons	BTU/hr	V/Ph/Hz	Refrig.	MCA (A)	MOCP (A)	Panel	Notes
CU-4T	Commercial 1st floor + basement	4.0	48,000	208/1/60	R-410A	30	40	Comm. panel	Roof-mounted; curb by structural; serves commercial retail + basement mech.
CU-3T	Residential 2nd floor — Units 1–4	3.0	36,000	208/1/60	R-410A	30	40	Res. panel	Roof-mounted; multi-split indoor units; curb by structural
CU-2T	Residential 3rd floor — Units 5–8	2.0	24,000	208/1/60	R-410A	30	40	Res. panel	Roof-mounted; multi-split indoor units; curb by structural
CU-1T	Basement / utility / common areas	1.0	12,000	208/1/60	R-410A	30	40	Comm. panel	Roof-mounted; serves basement mechanical and common areas

EXHAUST FAN SCHEDULE — Ø4" 150 CFM exhaust fans (all bathrooms and commercial restrooms)

Tag	Location	CFM	V/Ph/Hz	Duct Dia.	Mounting	Control	Sound (max)	Qty	Notes
EF-1 thru 8	Residential bathrooms — all 8 units	150	120/1/60	Ø4"	Ceiling-mount	Switch-controlled — 0.25 in.w.g.	≤1.0 sone	8	Back-draft damper; 1 per residential bathroom; IMC §403.4.2
EF-C1, C2	Commercial restrooms — 1st floor (2 restrooms)	150	120/1/60	Ø4"	Ceiling-mount	Switch-controlled	≤1.0 sone	2	1 per commercial restroom; IMC §403.4.2 — 50 CFM min.

ROOF VENTILATORS — Aura Ventilator Fans (per mechanical plans)

Tag	Zone	Roof Area	Required Free Area	Calculation: SF ÷ 150	Specified Unit	Code Reference
RV-1	Zone A	1,406	9.37	9.37	Aura ventilator fan	IMC §1203 — 1 SF free area per 150 SF roof
RV-2	Zone B	1,406	9.37	9.37	Aura ventilator fan	IMC §1203
RV-3	Zone C	976	6.51	6.51	Aura ventilator fan	IMC §1203

CALC D — OUTDOOR AIR (VENTILATION) | 508 MAIN STREET — JOHNSTOWN, PA 15901 | Commercial Mixed-Use

Code: 2018 IMC Table 403.3.1 / ASHRAE 62.1-2016 | Ductless Mini-Split System | Date: May 24, 2026

DESIGN BASIS

Standard:	2018 IMC Table 403.3.1 — OA = (Area × Ra) + (Occupants × Rp)
HVAC system:	Ductless mini-split — roof condensing units + wall-mount indoor units per mechanical plans
Res. area rate Ra:	0.06 CFM/SF (IMC Table 403.3.1 — R-2 residential occupancy)
Comm. area rate Ra:	0.12 CFM/SF (IMC Table 403.3.1 — Retail mercantile occupancy)
People rate Rp:	5.0 CFM/person residential | 7.5 CFM/person commercial retail (IMC Table 403.3.1)
Bath exhaust min:	50 CFM intermittent per bathroom — IMC §403.4.2

BUILDING AREA AND OCCUPANCY INPUTS

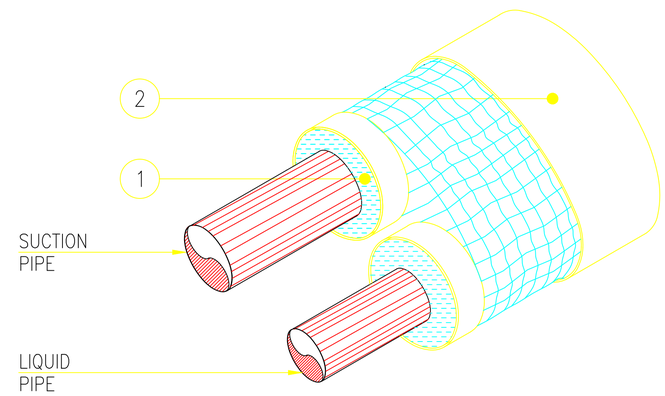
Commercial unit area per unit (SF, estimated):	650	2 units × 650 SF = 1,300 SF commercial — verify with architectural drawings
Commercial occupant load per unit (1 per 60 SF):	**11**	IBC Table 1004.5 — mercantile: 1 per 60 SF
1-BR unit floor area (SF, estimated — 6 units):	380	Estimated from plan dimensions — verify with architectural drawings
2-BR unit floor area (SF, estimated — 2 units):	420	Estimated from plan dimensions — verify with architectural drawings

UNIT-BY-UNIT OA CALCULATION — Q = (Area × Ra) + (Occupants × Rp) — 2018 IMC Table 403.3.1

Unit / Space	SF (est.)	Occ.	Ra CFM/SF	Rp CFM/occ	Area OA	Occ. OA	Total OA CFM	Notes
Commercial Unit A (mercantile, 1st Fl.)	**650**	IBC Table 1004.5 — mercantile: 1 per 60 SF	0.12	7.5	78.0	**#VALUE!**	**#VALUE!**	CU-4T — commercial mini-split
Commercial Unit B (mercantile, 1st Fl.)	**650**	IBC Table 1004.5 — mercantile: 1 per 60 SF	0.12	7.5	78.0	**#VALUE!**	**#VALUE!**	CU-4T — commercial mini-split
Residential Common / Lobby	**200**	**5**	0.06	5.0	12.0	**25.0**	**37.0**	Common area estimate
Apt. Unit 1 (1-BR, 2nd Fl.)	**380**	3	0.06	5.0	22.8	**15.0**	**37.8**	CU-3T — 2nd floor
Apt. Unit 2 (1-BR, 2nd Fl.)	**380**	3	0.06	5.0	22.8	**15.0**	**37.8**	CU-3T — 2nd floor
Apt. Unit 3 (1-BR, 2nd Fl.)	**380**	3	0.06	5.0	22.8	**15.0**	**37.8**	CU-3T — 2nd floor
Apt. Unit 4 (1-BR, 2nd Fl.)	**380**	3	0.06	5.0	22.8	**15.0**	**37.8**	CU-3T — 2nd floor
Apt. Unit 5 (1-BR, 3rd Fl.)	**380**	3	0.06	5.0	22.8	**15.0**	**37.8**	CU-2T — 3rd floor
Apt. Unit 6 (1-BR, 3rd Fl.)	**380**	3	0.06	5.0	22.8	**15.0**	**37.8**	CU-2T — 3rd floor
Apt. Unit 7 (2-BR, 3rd Fl.)	**420**	4	0.06	5.0	25.2	**20.0**	**45.2**	CU-2T — 3rd floor
Apt. Unit 8 (2-BR, 3rd Fl.)	**420**	4	0.06	5.0	25.2	**20.0**	**45.2**	CU-2T — 3rd floor
Bathroom exhaust — all units (10 total)	**0**	0	0.00	0.0	0.0	**0.0**	**500.0**	10 × 50 CFM per IMC §403.4.2 (8 res. + 2 comm.)
Basement / mechanical / storage	**1,200**	2	0.06	5.0	72.0	**10.0**	**82.0**	CU-1T — basement utility
TOTAL REQUIRED OUTDOOR AIR (CFM)							**#VALUE!**	

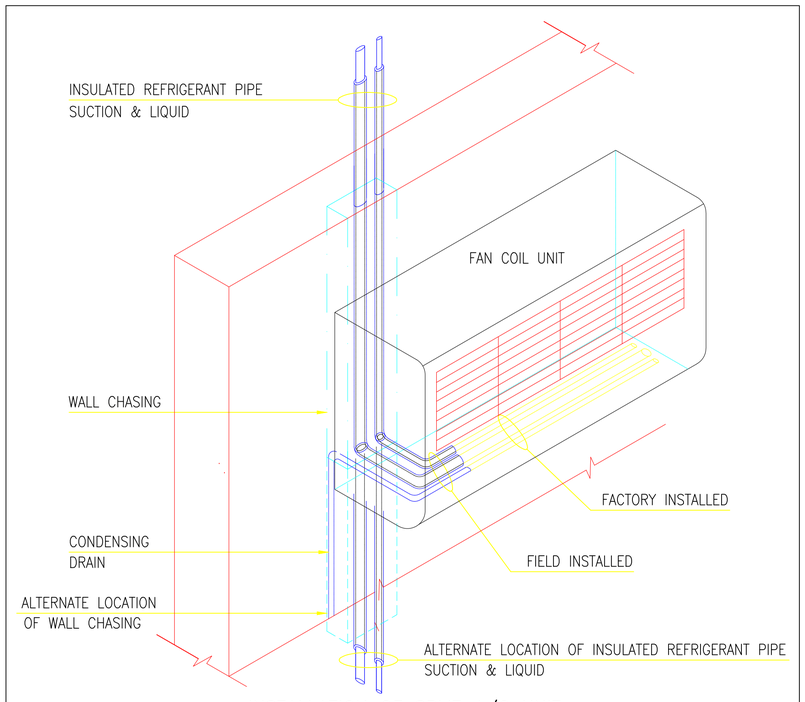
VENTILATION SUMMARY

Parameter	Requirement	Code Reference	Provided / Design	Status
Bath exhaust — residential (8 units)	50 CFM min. per bathroom	IMC §403.4.2	8 × Ø4" @ 150 CFM per mechanical plans	**COMPLIES**
Restroom exhaust — commercial (2)	50 CFM min. per WC room	IMC §403.4.2	2 × Ø4" @ 150 CFM per mechanical plans	**COMPLIES**
Roof ventilation (3 Aura ventilators)	1 SF free area per 150 SF	IMC §1203	Zones A/B: 9.37 SF ea. | Zone C: 6.51 SF per mechanical plans	**COMPLIES**
OA intakes — FLOOD ZONE	Intakes at BFE + 2 ft min.	IBC §1612	All condensing units roof-mounted — satisfies elevation req.	**COMPLIES**



1. CLOSED CELL TUBE INSULATION 13mm THICKNESS
2. 24 GAUGE ALUMINUM CLADDING

2 INSULATION OF REFRIGERANT PIPES
NTS



1 INSTALLATION OF SPLIT A/C UNIT EVAPORATOR (INDOOR UNIT)
NTS

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
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CLIENT/CONSULTANT APPROVAL STATUS

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APPROVED WITH NOTES	(B)
RESUBMIT	(C)
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DRAWING STATUS: DESIGN DRAWING

DISCIPLINE: MECHANICAL

PROJECT TITLE: COMMERCIAL MIXED-USE

DRAWING TITLE: HVAC DETAILS & MECHANICAL SCHEDULE

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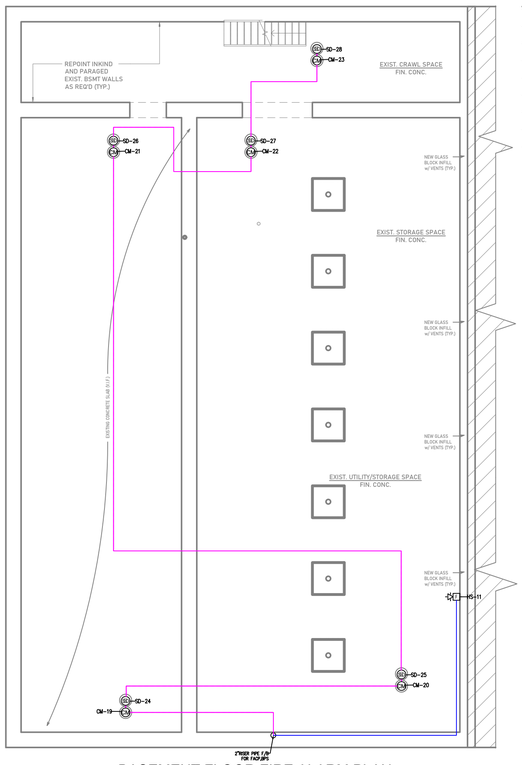
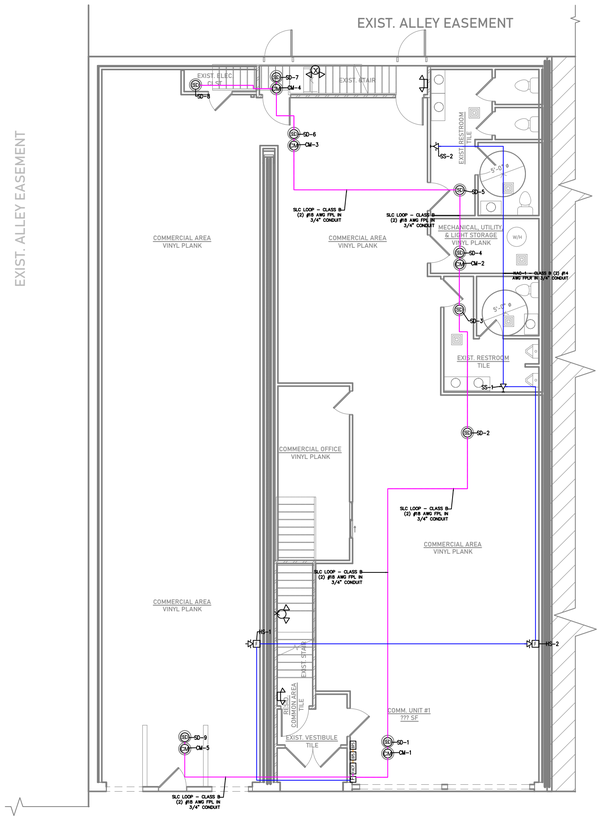
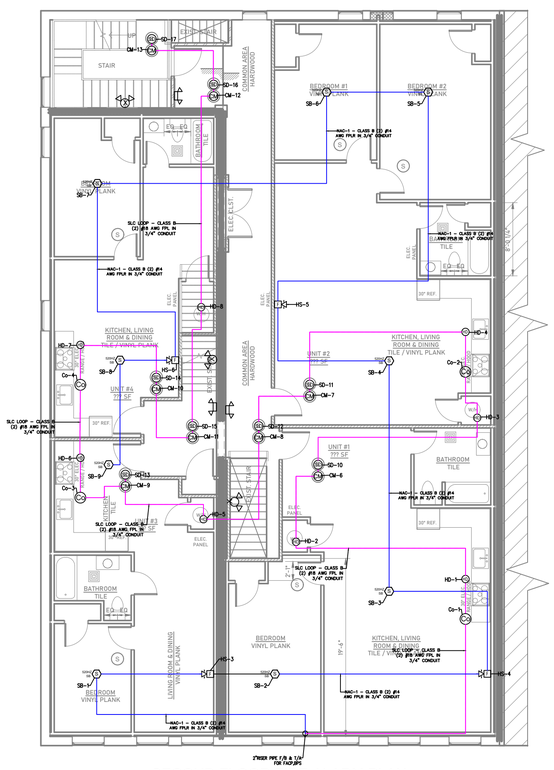


FA 01 BASEMENT FLOOR FIRE ALARM PLAN
SCALE 3" = 1'-0"



FA 01 FIRST FLOOR FIRE ALARM PLAN
SCALE 3" = 1'-0"



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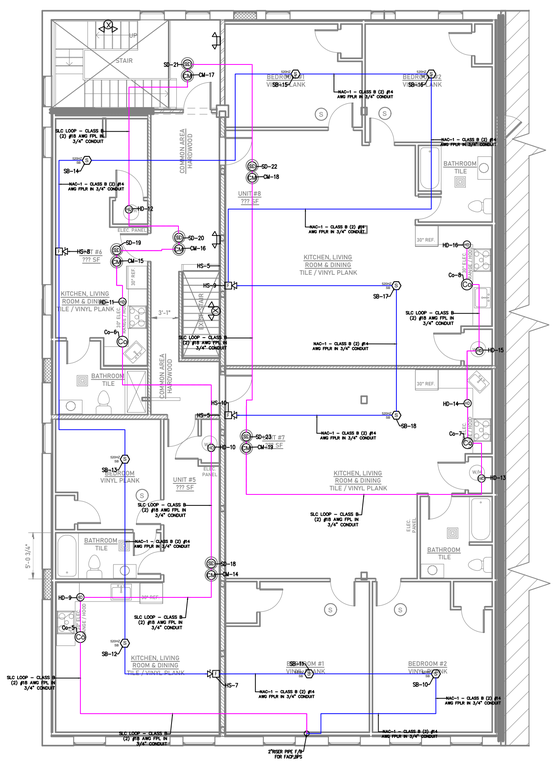

FA 01 THIRD FLOOR FIRE ALARM PLAN
SCALE 3" = 1'-0"

GENERAL FIRE ALARM INSTALLATION NOTES

VERIFY EXISTING CONDITIONS: The fire alarm contractor shall verify all existing site conditions prior to beginning work and make any necessary adjustments to the installation, as required by field conditions.

WIRE SIZE & TYPE: Minimum wire size for fire alarm circuits shall be 18 AWG, unless otherwise specified by the manufacturer's requirements or the fire alarm control panel specifications.

CODE COMPLIANCE: All work shall comply with the latest edition of the National Fire Alarm and Signaling Code (NFPA 72), National Electrical Code (NEC), and all other applicable local and state codes and regulations.

CONDUIT & WIRING: All fire alarm wiring shall be installed in conduit unless otherwise specified or permitted by local code. Wire must be fire-rated and approved for fire alarm system use.

DEVICE MOUNTING LOCATIONS: All fire alarm devices (smoke detectors, heat detectors, pull stations, notification appliances) must be installed in locations per the approved fire alarm plans and in accordance with NFPA 72 spacing requirements.

ALARM TESTING: Contractor to conduct full system testing upon completion of installation, including testing of all notification appliances and initiating devices, in compliance with NFPA 72. Testing shall be documented, and results provided to the owner.

SYSTEM LABELING & DOCUMENTATION: All fire alarm circuits, devices, and wiring shall be properly labeled in accordance with code and as per the fire alarm system design documents. As-built drawings and manuals shall be provided to the owner upon completion.

COORDINATION WITH OTHER TRADES: The fire alarm contractor shall coordinate with other trades, including electrical, mechanical, and general contractors, to avoid conflicts and ensure proper installation.

BATTERY BACKUP: Ensure that the fire alarm system's battery backup complies with the system requirements for standby power, as outlined in NFPA 72.

MONITORING: Contractor to ensure fire alarm system is properly connected to the required central monitoring station or fire department as per project specifications and local jurisdiction requirements.

FIRE ALARM SEQUENCE OF OPERATIONS

Overview

The fire alarm system is designed to ensure prompt detection and notification of a fire event, enabling safe evacuation and response. The system includes sounder basins in each bedroom, horn strobes throughout the building, fire alarm pull stations, and heat and duct detectors.

Sequence of Operations

Detection Phase
Heat Detector Activation: The heat detector is strategically placed in the duct to monitor for abnormal temperature increases indicative of a fire. When the heat detector senses a temperature rise above its threshold, it triggers the fire alarm system.

Duct Detector Activation: The duct detector monitors air flow and temperature in the HVAC system. If smoke is detected in the ductwork, the duct detector sends a signal to the fire alarm panel.
Alarm Activation

Signal Processing: Upon receiving signals from the heat detector or duct detector, the fire alarm panel processes these inputs and determines the appropriate response.

Alarm Notification: The fire alarm panel activates the alarm system to alert occupants. This includes:

Sounder Basins: The sounder basins in each bedroom emit a 540 Hz tone. This sound is specifically designed to be easily heard and recognized, even during sleep.

Horn Strobes: Horn strobes are activated throughout the building. The horn emits a loud alarm sound while the strobe light provides a visual alert, ensuring that both hearing and visually impaired occupants are notified.

Fire Alarm Pull Stations: If any occupant manually activates a fire alarm pull station, the system immediately processes this input as a fire emergency and initiates the same alarm notification procedures as described above.

Notification and Evacuation

Alarm Signal Transmission: Once the alarm is triggered, the system sends an alarm signal to the central monitoring station (if applicable) and activates all alert devices.

Evacuation Instructions: The horn strobes and sounder basins continue to operate until the fire alarm panel is manually reset or until the fire is deemed to be under control. Occupants are instructed to evacuate the building immediately upon hearing the alarm.
System Reset

Alarm Panel Reset: After the alarm event has been addressed and the cause of the alarm has been resolved, the fire alarm panel can be reset to return the system to its normal monitoring state. The system must be inspected to ensure it is fully operational before it can be reset.

NOTES:

FLOOD FIRE ALARM MATERIALS NOTE:
FACP, NAC BOOSTER POWER SUPPLIES, BATTERIES, SURGE PROTECTIVE DEVICES, COMMUNICATORS, AND FIRE ALARM CONTROL EQUIPMENT SHALL BE LOCATED ABOVE BFE/DFE/RFE. FIRE ALARM RACEWAYS BELOW BFE/DFE/RFE SHALL BE RMC, IMC, OR SCH. 80 PVC WITH WET-LOCATION-RATED FITTINGS. FIRE ALARM CONDUCTORS BELOW BFE/DFE/RFE SHALL BE LISTED FOR WET LOCATIONS WHERE INSTALLED IN RACEWAYS SUBJECT TO FLOODING.

FIRE ALARM JUNCTION BOXES, TERMINAL CABINETS, MODULE BOXES, AND DEVICE BACKBOXES BELOW BFE/DFE/RFE SHALL BE CORROSION-RESISTANT AND GASKETED WHERE EXPOSED TO MOISTURE. DEVICES EXPOSED TO FLOODWATER SHALL BE REPLACED AFTER FLOOD EVENT UNLESS MANUFACTURER AND AHJ APPROVE REUSE.

ELECTRICAL SYMBOL LEGEND

NOTES:
1. ALL SYMBOLS MAY NOT APPLY.
2. MOUNTING HEIGHTS AS SHOWN UNLESS NOTED OTHERWISE ON THE DRAWING.
3. MOUNTED HEIGHTS ARE FROM FINISHED FLOOR TO CENTER OF DEVICE OR FROM FINAL GRADE AS APPLICABLE.

FAA	FIRE ALARM ANNUNCIATOR		SMOKE DETECTOR
FACP	FIRE ALARM CONTROL PANEL		HEAT DETECTOR
F	PULL STATION @42" AFF		CARBON MONOXIDE DETECTOR
	SPEAKER STROBE		DUCT DETECTOR
F	HORN-STROBE	RTS	REMOTE TEST STATION
	STROBE – CEILING MOUNTED	S/D	SMOKE DETECTOR WITH LF SOUNDER
	HORN-STROBE – CEILING MOUNTED	TS	TAMPER SWITCH
BPS	BOOSTER POWER SUPPLY	PS	PRESSURE SWITCH
D	ELECTRONIC DOOR HOLD-OPEN DEVICE	R	RELAY MODULE
	EXIT SIGN		FIRE ALARM SIREN LIGHT
	EXIT SIGN EMERGENCY LIGHTING COMBO	CM	CARBON-MONOXIDE DETECTOR HARD-WIRED w/ BATTERY (R315).

OWNER SIGNATURE

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DRAWING STATUS:
DESIGN DRAWING

DISCIPLINE:
FIRE ALARM

PROJECT TITLE:
COMMERCIAL MIXED-USE

DRAWING TITLE:
BASEMENT, FIRST, SECOND, THIRD FLOOR FIRE ALARM PLANS

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-FA-01	SCALE: AS SHOWN @A1

GENERAL FIRE ALARM MOUNTING NOTES

MANUAL PULL STATIONS:

42 TO 48 INCHES (3.5 TO 4 FEET) FROM THE FINISHED FLOOR TO THE OPERATING HANDLE.

HORN/STROBE ALARMS (WALL-MOUNTED):

80 TO 96 INCHES (6.5 TO 8 FEET) FROM THE FINISHED FLOOR TO THE BOTTOM OF THE DEVICE.

HEAT AND SMOKE DETECTORS (WALL-MOUNTED):

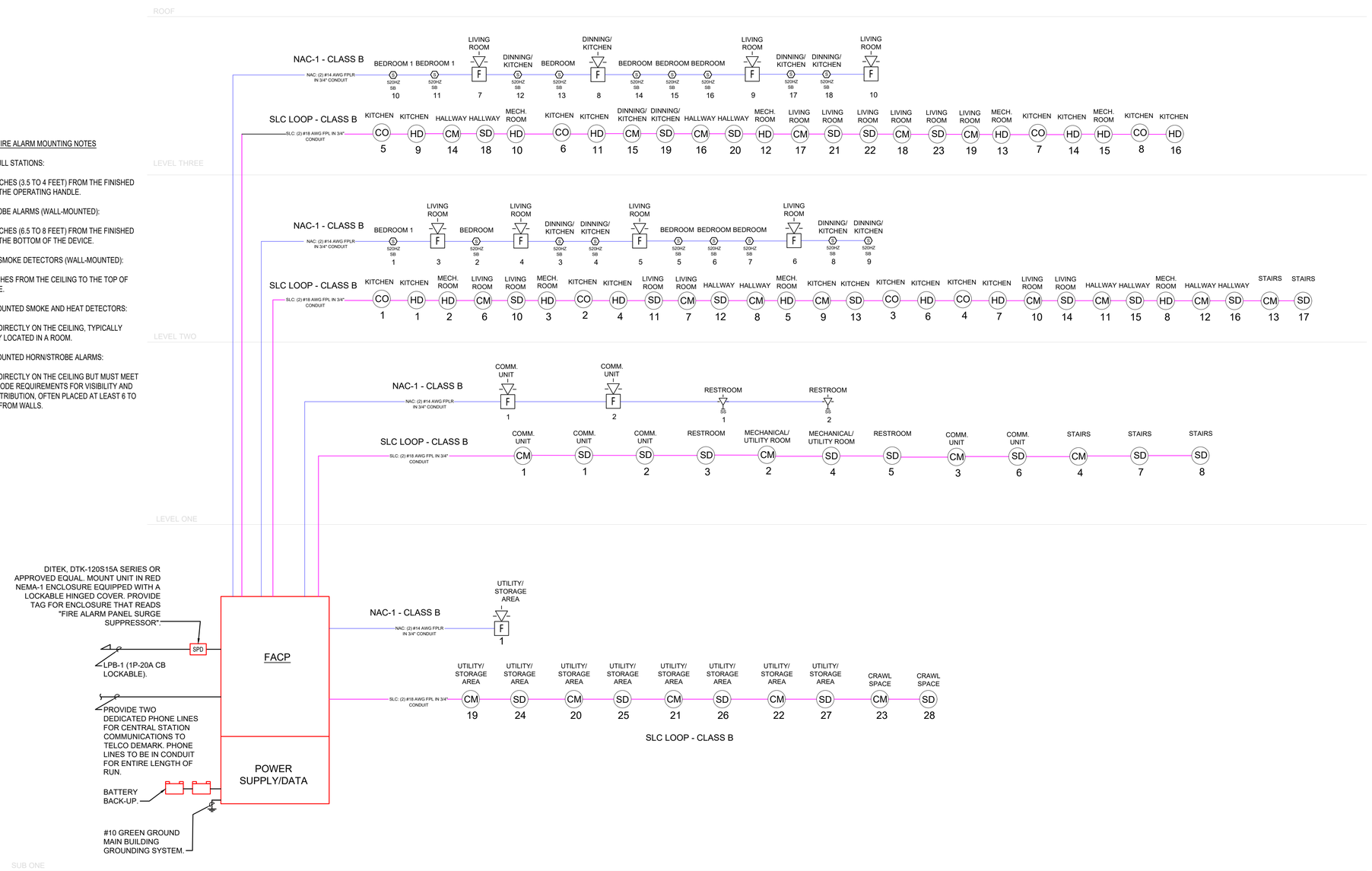
4 TO 12 INCHES FROM THE CEILING TO THE TOP OF THE DEVICE.

CEILING MOUNTED SMOKE AND HEAT DETECTORS:

MOUNTED DIRECTLY ON THE CEILING, TYPICALLY CENTRALLY LOCATED IN A ROOM.

CEILING MOUNTED HORN/STROBE ALARMS:

MOUNTED DIRECTLY ON THE CEILING BUT MUST MEET SPECIFIC CODE REQUIREMENTS FOR VISIBILITY AND SOUND DISTRIBUTION, OFTEN PLACED AT LEAT 6 TO 12 INCHES FROM WALLS.



FA 02 FIRE ALARM RISER DIAGRAM
SCALE NTS

ELECTRICAL SYMBOL LEGEND

NOTES:
1. ALL SYMBOLS MAY NOT APPLY.
2. MOUNTING HEIGHTS AS SHOWN UNLESS NOTED OTHERWISE ON THE DRAWING.
3. MOUNTED HEIGHTS ARE FROM FINISHED FLOOR TO CENTER OF DEVICE OR FROM FINAL GRADE AS APPLICABLE.

FAA	FIRE ALARM ANNUNCIATOR	SD	SMOKE DETECTOR
FACP	FIRE ALARM CONTROL PANEL	HD	HEAT DETECTOR
F	PULL STATION @42" AFF	CO	CARBON MONOXIDE DETECTOR
	SPEAKER STROBE	SD	DUCT DETECTOR
F	HORN-STROBE	RTS	REMOTE TEST STATION
	STROBE - CEILING MOUNTED	520HZ SB SD	SMOKE DETECTOR WITH LF SOUNDER
	HORN-STROBE - CEILING MOUNTED	TS	TAMPER SWITCH
BPS	BOOSTER POWER SUPPLY	PS	PRESSURE SWITCH
D	ELECTRONIC DOOR HOLD-OPEN DEVICE	R	RELAY MODULE
X	EXIT SIGN		FIRE ALARM SIREN LIGHT
	EXIT SIGN EMERGENCY LIGHTING COMBO	CM	CARBON-MONOXIDE DETECTOR HARD-WIRED w/ BATTERY (R315).

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
00			
01			
02			
03			
04			

CLIENT/CONSULTANT APPROVAL STATUS

APPROVED	(A)
APPROVED WITH NOTES	(B)
RESUBMIT	(C)
DISAPPROVED	(D)

OWNER:

ADDRESS:

508 MAIN STREET, JOHNSTOWN, PA 15901

DESIGN CONSULTANT:
TSABA CORP
NADIF BRACEY
254 CHAPMAN RD, STE 208 #13130
NEWARK, DELAWARE 19702
EMAIL:NADIF@TS9DESIGNS.COM

DRAWING STATUS:
DESIGN DRAWING

DISCIPLINE:
FIRE ALARM

PROJECT TITLE:
COMMERCIAL MIXED-USE

DRAWING TITLE:
FIRE ALARM RISER DIAGRAM
NOTES & DETAILS

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-FA-02	SCALE: NTS @A1

CALC E — FIRE ALARM BATTERY BACKUP | 508 MAIN STREET — JOHNSTOWN, PA 15901 | Commercial Mixed-Use

Code: NFPA 72 (2019) §10.6.7 | AHJ: City of Johnstown / Johnstown Fire Bureau | Date: May 24, 2026

Device quantities are engineering estimates based on building program (2 commercial + 8 residential units). Device currents are from manufacturer data per NFPA 72 device specifications. FA contractor to verify all quantities and currents against submitted FACP and final device data sheets prior to installation.

DEVICE CURRENT SCHEDULE — Fire Alarm System | Basis: Building program (2 commercial units + 8 apartments) + NFPA 72 spacing

Device Description	Qty	Standby (mA ea.)	Total Standby (mA)	Alarm (mA ea.)	Total Alarm (mA)	Basis / NFPA 72 Reference
FACP — addressable, main electrical room	1	100.000	100.000	200.000	200.000	Honeywell 6700 or equal; 120VAC dedicated lockable circuit
Smoke detectors — photoelectric, addressable	24	1.000	24.000	50.000	1,200.000	NFPA 72 §17.7 — 1 per 900 SF; required in all bedrooms + corridors
Heat detectors — ROR + fixed temp., addressable	8	1.000	8.000	30.000	240.000	NFPA 72 §17.6 — OH-1 spacing; 1 per mechanical / utility room
CO detectors — addressable (gas range units)	8	5.000	40.000	20.000	160.000	IBC §915 / NFPA 720 — 1 per residential unit kitchen + mech. rooms
Sounder bases — 520 Hz low frequency (sleeping areas)	16	0.000	0.000	75.000	1,200.000	NFPA 72 §29.5.1 — 520 Hz required in bedrooms; 1–2 per unit
Manual pull stations — addressable (at exits)	8	0.000	0.000	0.000	0.000	NFPA 72 §17.14 — within 5 ft of each exit door
Control modules — addressable (HVAC / door holders)	10	5.000	50.000	0.000	0.000	NFPA 72 §21 — SLC Class B; 1 per HVAC unit + door holders
Door holders — EM, 24VDC, fail-safe	4	65.000	260.000	0.000	0.000	IBC §716.5 — fire-rated corridor / stairwell doors; fail-safe release
Duct smoke detectors — HVAC return (>2,000 CFM units)	2	5.000	10.000	20.000	40.000	2018 IMC §606.4 — 1 per AHU unit > 2,000 CFM; shuts fan on alarm
TOTALS — BUILDING FIRE ALARM SYSTEM			**492.000**		**3,040.000**	

BATTERY CAPACITY CALCULATION — NFPA 72 §10.6.7 (24-Hour Standby + 5-Minute Alarm + 20% Safety Factor)

Total standby current (A)			0.492	A	Convert mA to A — Total system standby current
Total alarm current (A)			3.040	A	Convert mA to A — Total system alarm current
24-hour standby capacity required (Ah)			11.808	Ah	NFPA 72 §10.6.7.2.1 — 24 hours at standby current
5-minute alarm capacity required (Ah)			0.253	Ah	NFPA 72 §10.6.7.2.1 — 5 minutes (0.0833 hr) at alarm current
Subtotal required (Ah)			12.061	Ah	Standby Ah + Alarm Ah
Apply 20% safety factor (NFPA 72 §10.6.7.2)			14.474	Ah	Subtotal × 1.20 — REQUIRED BATTERY CAPACITY
MINIMUM BATTERY REQUIRED (Ah)	*See formula cell E26 — per NFPA 72 §10.6.7 calculation above*		14.474	Ah	Specify sealed lead-acid battery at or above this value
Minimum required (calculated, Ah):	14.474	Ah minimum required	COMPLIES — 24.0 Ah specified EXCEEDS 14.47 Ah minimum		

SPECIFIED BATTERY — NFPA 72 §10.6.7 COMPLIANCE

Specified battery type:	Two (2) 12V / 24Ah sealed lead-acid (SLA) batteries wired in series = 24V / 24Ah total
Capacity provided (Ah):	24.0 Ah [two (2) 12V / 24Ah SLA batteries in series]
Battery location:	Inside FACP enclosure or adjacent NEMA 1 lockable enclosure — at BFE + 2 ft min.
Battery charger:	Integral to FACP — supervised trickle charge per NFPA 72 §10.6.7.3
Low battery supervisory:	FACP shall annunciate low battery condition per NFPA 72 §10.6.7.4
Central station monitoring:	Required — provide two dedicated telephone lines in conduit per NFPA 72
FLOOD ZONE:	FACP and battery assembly elevated to BFE + 2 ft minimum per IBC §1612

CALC J — FIRE ALARM DEVICE SCHEDULE | 508 MAIN STREET — JOHNSTOWN, PA 15901 | Commercial Mixed-Use

Code: NFPA 72-2019 | AHJ: City of Johnstown / Johnstown Fire Bureau | Submit FA plans separately | Date: May 24, 2026

⚠ FLOOD ZONE: FACP and all FA equipment at BFE + 2 ft minimum (IBC §1612). If electrical room is below BFE, relocate FACP to 2nd floor prior to equipment order. Submit FA plans to Johnstown Fire Bureau separately from building permit (814) 533-2000.

DEVICE SCHEDULE — Quantities based on building program + NFPA 72 spacing requirements | 2 commercial + 8 residential units

Sym.	Device Description	Mfr / Model (Specify)	Qty	Mounting	Location	NFPA 72 Basis	Stby mA	Alm mA
FACP	**Fire Alarm Control Panel — addressable, Class B SLC**	Honeywell 6700 or approved equal	1	Elect. room at BFE+2ft	Main electrical room (2nd floor if 1st floor below BFE)	NFPA 72 §21 — dedicated 120VAC; lockable red-handle breaker	100	200
SD	**Smoke Detector — addressable photoelectric**	Honeywell / System Sensor or equal	24	Ceiling	All bedrooms, corridors, living areas, stairwells, common areas	NFPA 72 §17.7 — spacing per Annex B; required in all bedrooms	1	50
HD	**Heat Detector — ROR + fixed temp., addressable**	Honeywell SK-HEAT or equal	8	Ceiling	1 per mechanical / utility room (basement + floors)	NFPA 72 §17.6 — OH-1 spacing (196 SF max); kitchens/mech. rooms	1	30
CO	**CO Detector — addressable**	Honeywell SK-FIRE-CO or equal	8	Wall 12" below ceiling	Residential unit kitchens (gas ranges) + basement mech. areas	IBC §915 / NFPA 720 — 1 per residential unit with gas appliance	5	20
SB	**Sounder Base — 520 Hz low frequency**	System Sensor COSMO-2WB or equal	16	Ceiling	All bedrooms — 1 to 2 per bedroom per NFPA 72 §29.5.1	NFPA 72 §29.5.1 — 520 Hz tone required in all sleeping areas	0	75
F	**Manual Pull Station — addressable**	System Sensor S3500PS or equal	8	Wall 42–48" AFF	1 per exit door — within 5 ft of each exit	NFPA 72 §17.14 — manual station within 5 ft of each exit	0	0
CM	**Control Module — addressable**	Honeywell M500MX or equal	10	At device location	HVAC duct detectors, door holders, HVAC shutdowns	NFPA 72 §21 — SLC Class B	5	0
DH	**Door Holder — EM, 24VDC, fail-safe release**	Specify — 24VDC EM holder	4	Wall or floor	Stairwell + corridor fire-rated door assemblies	IBC §716.5 — deenergize to release on any alarm signal	65	0
DD	**Duct Smoke Detector — HVAC return air**	System Sensor FAPT or equal	2	Duct-mounted	Installed in return air duct of any AHU > 2,000 CFM	2018 IMC §606.4 — initiates unit shutdown on alarm	5	20

Sequence of operations: manual pull / smoke / heat / CO detection → FACP alarm → activate all sounder bases (520 Hz) and horn/strobes → initiate HVAC shutdown via duct detector control modules → release door holders → transmit to central monitoring station. All wiring in ¾" conduit per NFPA 72 §12.3. Battery backup per Sheet E. FA contractor verifies device locations against NFPA 72 spacing before rough-in. FLOOD ZONE: FACP and all battery assemblies at BFE + 2 ft minimum per IBC §1612.

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
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01			
02			
03			
04			

CLIENT/CONSULTANT APPROVAL STATUS

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APPROVED WITH NOTES	(B)
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NADIF BRACEY
254 CHAPMAN RD, STE 208 #13130
NEWARK, DELAWARE 19702
EMAIL:NADIF@TS9DESIGNS.COM

DRAWING STATUS: DESIGN DRAWING

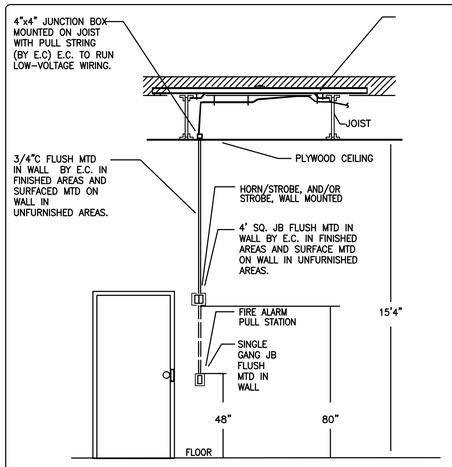
DISCIPLINE: FIRE ALARM

PROJECT TITLE: COMMERCIAL MIXED-USE

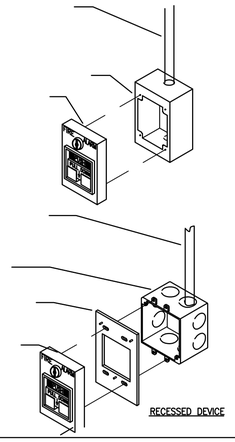
DRAWING TITLE: FIRE ALARM SEQUENCE OF OPERATION MATRIX & BATTERY-SET CALCULATION

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-FA-03	SCALE: NTS @A1

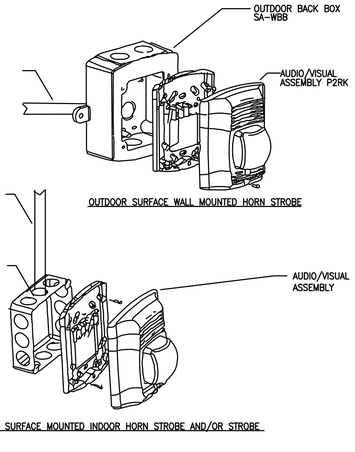
NOTE:
SURGE SUPPRESSOR SHALL BE LISTED FOR FIRE ALARM APPLICATION AND INSTALLED PER MANUFACTURER INSTRUCTIONS. PROVIDE MANUFACTURER CUT SHEET WITH SUBMITTAL PACKAGE.



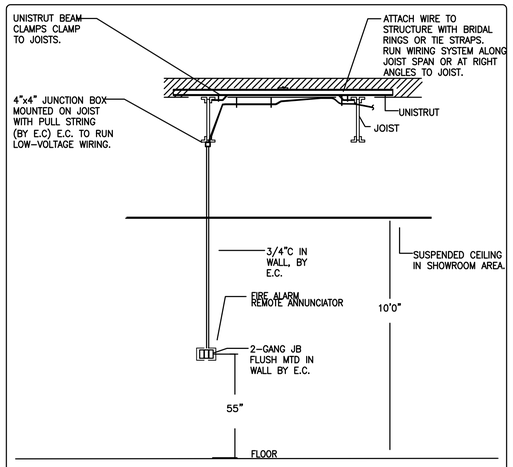
MANUAL PULL STATION AND SIGNAL MOUNTING.
N.T.S.



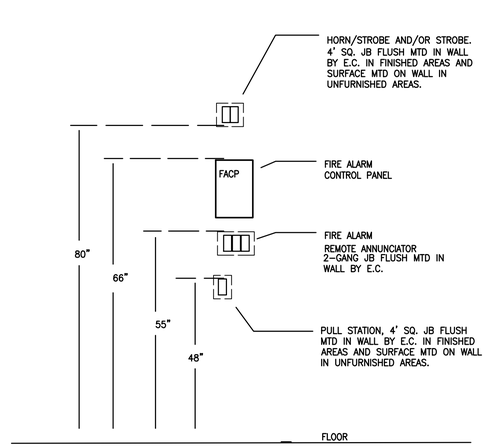
4 TYPICAL MANUAL PULL STATION
N.T.S.



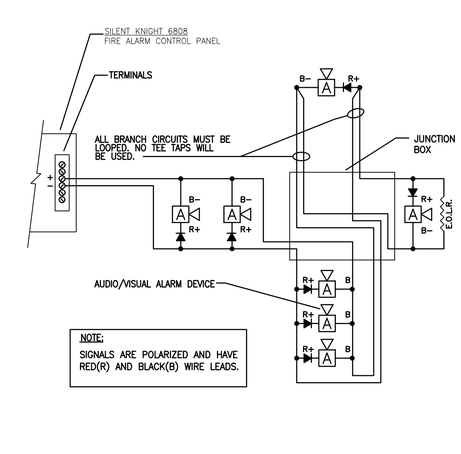
1 FIRE ALARM AUDIO/VISUAL DETAIL
N.T.S.



8 REMOTE ANNUNCIATOR MOUNTING
N.T.S.

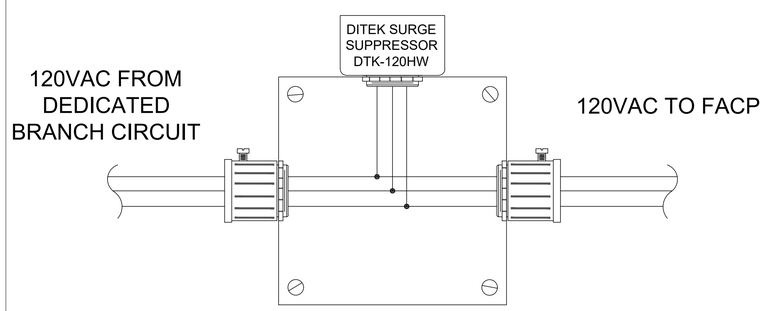


5 DEVICE MOUNTING HEIGHT DETAILS
NTS

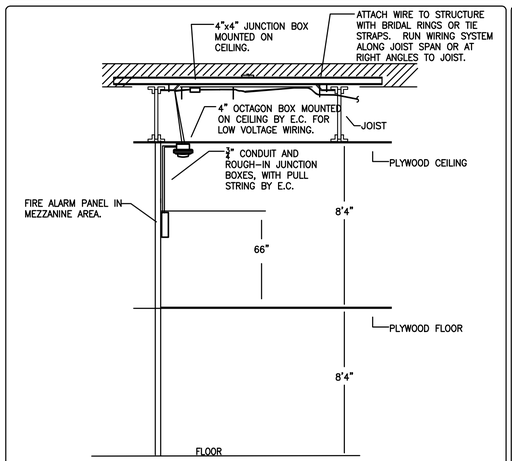


2 SUPERVISED SIGNAL CIRCUIT WIRING DIAGRAM
N.T.S.

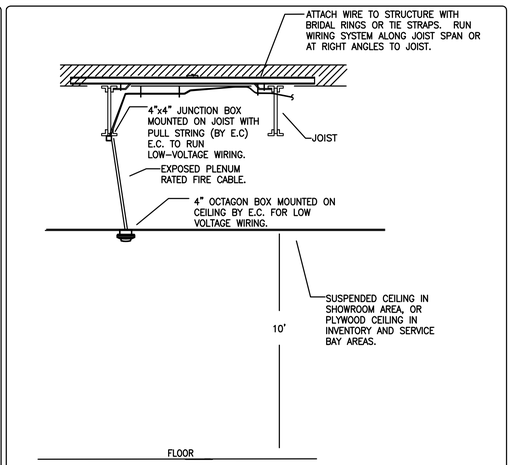
120VAC Surge Suppressor Detail



4 SQUARE JUNCTION BOX SHALL BE A MINIMUM 3' FROM FACP (SEE GENERAL NOTE 7)



6 FIRE PANEL MOUNTING
NTS



3 SMOKE DETECTOR MOUNTING
NTS

ELECTRICAL SYMBOL LEGEND

NOTES:
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FAA	FIRE ALARM ANNUNCIATOR	SD	SMOKE DETECTOR
FACP	FIRE ALARM CONTROL PANEL	HD	HEAT DETECTOR
F	PULL STATION @42" AFF	CO	CARBON MONOXIDE DETECTOR
	SPEAKER STROBE	DD	DUCT DETECTOR
F	HORN-STROBE	RTS	REMOTE TEST STATION
C	STROBE - CEILING MOUNTED	S/D/H/C SB	SMOKE DETECTOR WITH LF SOUNDER
C	HORN-STROBE - CEILING MOUNTED	TS	TAMPER SWITCH
BPS	BOOSTER POWER SUPPLY	PS	PRESSURE SWITCH
D	ELECTRONIC DOOR HOLD-OPEN DEVICE	R	RELAY MODULE
	EXIT SIGN		FIRE ALARM SIREN LIGHT
C	EXIT SIGN EMERGENCY LIGHTING COMBO	CM	CARBON-MONOXIDE DETECTOR HARD-WIRED w/ BATTERY (R315).

OWNER SIGNATURE

REVISION STATUS

Rev	DATE	DESCRIPTION	DRAWN BY
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01			
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04			

CLIENT/CONSULTANT APPROVAL STATUS

APPROVED	(A)
APPROVED WITH NOTES	(B)
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DESIGN CONSULTANT:
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NADIF BRACEY
254 CHAPMAN RD, STE 208 #13130
NEWARK, DELAWARE 19702
EMAIL:NADIF@TS9DESIGNS.COM

DRAWING STATUS:
DESIGN DRAWING

DISCIPLINE:
FIRE ALARM

PROJECT TITLE:
COMMERCIAL MIXED-USE

DRAWING TITLE:
DETAILS

DRAWN BY:	CHECKED BY:	DATE:
G.M	N.B	11/05/2026
JOB NO	SHT NO JS-FA-04	SCALE: NTS @A1

6700

Addressable Fire Alarm Control Panel

The 6700 is an addressable fire alarm control panel (FACP) that can be configured to achieve an panel point capacity of up to 1,992 points. It has one built-in signaling line circuit (SLC) which can support Honeywell Series2 700 devices and 3030K modules or 501-bolt NF 3030 devices per loop.

A common communications and annunciator bus allows up to 127 panels to be connected via copper or fiber optic cable. A designated panel is configured as the annunciator for all panels in the bus. Common engineering-point communications. It also has a built-in, dual-line PSTN and IP communication and optional cellular side-cars.

The 6700 system can be enhanced by adding modules such as the 3030 series annunciator which also has four programmable function buttons to help automate tasks and reduce time spent at the panel.

5881 Y wireless compatibility provides options for wireless expansion through a Class A loop network. It is ideal for hard-to-wire locations, buildings where new wiring is not allowed or to provide an easy installed for system for new construction projects. 5881 Y devices can be combined with other hard-wired SIFS devices on the same loop. 5881 Y devices are compatible with Honeywell 5800 devices. It is not compatible with Honeywell 3030 devices.

The 6700 also has, from C, trouble relay, and two programmable, Form C relays along with powerful features such as drift compensation, pre-trouble maintenance alert, a built-in prompt to comply with NFPA 72 calibration testing requirements, and carbonation trouble alert.

FEATURES & BENEFITS

- Capacity of providing 1,992 points to satisfy complex installation needs
- Connect up to 127 panels on one site with Ethernet or fiber optic access using the SK-RIC Network Interface Card. Connected panels can have nested compatible FACP modules
- Convenient, comprehensive, scalable, reliable, and secure communications Upgrade Saving Time and Money
- Built-in prompt to comply with NFPA 72 calibration testing requirements
- Programmable alarm and supervisory verification Upgrade Saving Time and Money
- Built-in USB interface for easy programming and device programming
- LCD software screen simulator for easy program for faster troubleshooting

6700 Product Information

SIGNAL LINE CIRCUIT (SLC)
The 6700 SLC allows support multiple device types, maintenance alerts, and a built-in transmitter to comply with NFPA 72 calibration testing requirements.

INDICATOR LIGHTS
- **General Alarm (Red):** Flashes if an alarm solution or events is detected.
- **Supervisory (Yellow):** Flashes if a supervisory condition exists, solid when supervisory is detected.
- **System Trouble (Yellow):** Flashes if a trouble condition exists, solid when trouble is detected.
- **System Silenced (Yellow):** On when an alarm, trouble or supervisory condition has been silenced but not cleared.
- **System Power (Green):** Flashes for AC failure, solid when system operations are normal.

USER INTERFACE
The 6700 comes with a 2-20 annunciator with 80 character LCD display and large easy-to-read fascia. Backpanel can be used for system operation, programming and maintenance. It has two LCDs for alarm, supervisory, system trouble, system silenced and system power.

System operations include silencing alarms and trouble, resetting alarms and trouble, and initiating alarms and testing. The system is non-volatile, event history buffer stores 2,000 events for viewing from the built-in or remote annunciator. System operations can be initiated with a mechanical keyboard key or a reader for digital operator's code.

6700

6700 KEYPAD

PROGRAMMING
The 6700 system offers several ways to modify and speed up programming: Jumpers, Keypad, Keyboard, Keyboard, Keyboard