

FIRE PROTECTION COVER SHEET

| RELEASED FOR | DATE |
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| <input type="checkbox"/> SCHEMATIC DESIGN | 1/26/2024 |
| <input checked="" type="checkbox"/> DESIGN DEVELOPMENT | 2/21/2024 |
| <input type="checkbox"/> 50% CDS | 3/18/2024 |
| <input type="checkbox"/> PERMIT | 3/25/2024 |
| <input checked="" type="checkbox"/> 100% CONST. DOC. | 4/8/2024 |
| <input checked="" type="checkbox"/> ISSUED FOR CONSTRUCTION | 7/25/2024 |

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| REVISION | DATE |
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DESIGN CRITERIA

- SPRINKLER SYSTEM LAYOUT AND CALCULATIONS SHALL COMPLY WITH 2021 BUILDING CODE OF NEW JERSEY, FIRE CODE OF NEW JERSEY, NFPA 13 (2019), OWNER'S INSURANCE COMPANY REQUIREMENTS AND GOOD ENGINEERING PRACTICE.
- THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY CALCULATED BASED ON COORDINATED SHOP DRAWINGS.
- SPACE OCCUPANCY CLASSIFICATION: AS PER NFPA STANDARD IS: LIGHT HAZARD IN RESIDENTIAL AREAS, EXTRA HAZARD GROUP II IN CAR STACKERS PARKING AREAS, ORDINARY HAZARD GROUP I IN MECHANICAL ROOMS & PARKING SPACE, ORDINARY HAZARD GROUP II IN COMMERCIAL RETAIL SPACES.
- SPRINKLERS PROTECTION SHALL PROVIDE A MINIMUM DENSITY OF DISCHARGE OF 0.1 GPM / SQ.FT. IN LIGHT HAZARD AREAS; 0.15 GPM / SQ.FT. IN OHI AREAS AND 0.2 GPM / SQ.FT. IN OHI2 AREAS; DESIGN AREA FOR WET SYSTEMS IS 1500 SQ.FT.; DESIGN AREA FOR DRY SYSTEM IS 1950 SQ.FT.
- SPRINKLER COVERAGE IS 225 SQ.FT. FOR LIGHT HAZARD AREAS AND 130 SQ.FT. FOR ORDINARY HAZARD LOCATIONS.
- RESIDENTIAL SPRINKLER HEADS ARE PERMITTED TO PROTECT THE DWELLING UNITS. REQUIRED DENSITY SHALL BE 0.10 GPM/SQ.FT. IN THE DWELLING UNITS. RESIDENTIAL SPRINKLER COVERAGE SHALL BE AS PER THE MANUFACTURER'S TABLES.
- MINIMUM PRESSURE AT ANY SPRINKLER HEAD SHALL BE 7.0 PSI OR THE MANUFACTURER'S RECOMMENDED PRESSURE WHICHEVER IS THE HIGHER.

PROVIDE SIDEWALL SPRINKLERS ON 3RD FLOOR UNITS FED FROM THE FLOOR BELOW

CONTRACTOR TO PROVIDE EXPANSION FITTINGS FOR AREAS WITH EXPANSION JOINTS

PERFORMANCE SPECIFICATION CRITERIA

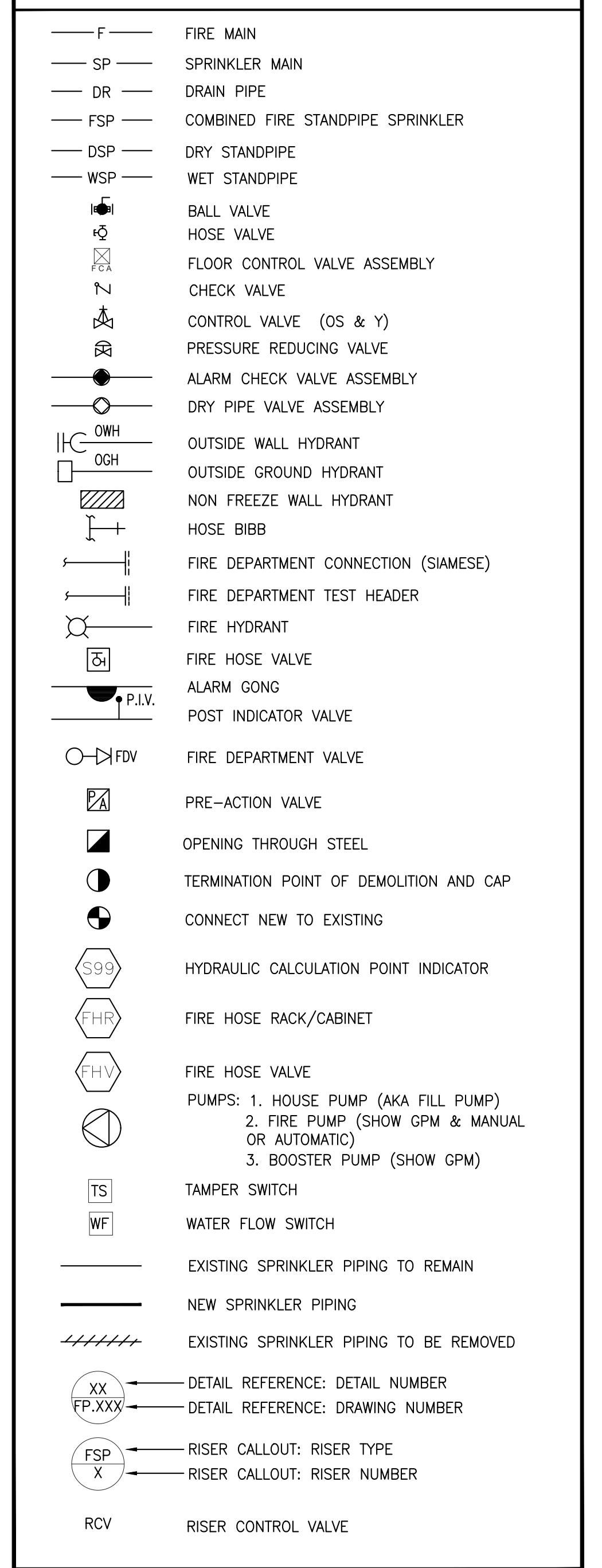
SPRINKLER PLANS AS SHOWN ARE FOR BIDDING PURPOSES ONLY. SPRINKLER CONTRACTOR IS TO OBTAIN CURRENT HYDRANT FLOW TEST DATA AND PROVIDE HYDRAULIC CALCULATIONS FOR SYSTEM PIPE SIZING IN ACCORDANCE WITH NFPA 13R. CONTRACTOR IS TO SUBMIT SHOP DRAWINGS INDICATING HYDRAULIC CALCULATIONS, PIPING LAYOUT & SIZING. SHOP DRAWINGS AND CALCULATIONS ARE TO BE SIGNED & SEALED BY A PROFESSIONAL ENGINEER, AND REVIEWED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION. ALL WORK IS TO BE DONE IN ACCORDANCE WITH NFPA 13R, INTERNATIONAL BUILDING CODE 2021 AND ALL OTHER STATE, LOCAL, GOVERNING AND APPLICABLE CODES.

ABBREVIATIONS

| | |
|-------|--|
| ABV | ABOVE |
| AD | AUTOMATIC BALL DRIP |
| ACC | ACCESS DOOR |
| AFF | ABOVE FINISHED FLOOR |
| BFP | BACK FLOW PREVENTER |
| BLDG | BUILDING |
| BLW | BELOW |
| BSMT | BASEMENT |
| CI | CAST IRON |
| CL | CENTER LINE |
| CLG | Ceiling |
| CO | CLEAN OUT |
| COL | COLUMN |
| CONC | CONCRETE |
| CONN | CONNECTION |
| CV | CHECK VALVE |
| °C | DEGREES CENTIGRADE |
| DIA | DIAMETER |
| DIAG | DIAGRAM |
| DISCH | DISCHARGE |
| DN | DOWN |
| DWG | DRAWING |
| (E) | EXISTING |
| EA | EACH |
| ELEV | ELEVATION |
| ENT | ENTERING |
| EQ | EQUIVALENT |
| EQUIP | EQUIPMENT |
| EQUIV | EQUIVALENT |
| EXT | EXTERNAL |
| °F | DEGREES FAHRENHEIT |
| FAI | FRESH AIR INLET |
| FD | FLOOR DRAIN |
| FH | FIRE HYDRANT |
| FHC | FIRE HOSE CABINET |
| FHR | FIRE HOSE RACK |
| FL | FLANGE |
| FLR | FLOOR |
| FP | FIRE PROTECTION |
| FFM | FEET PER MINUTE |
| FPS | FEET PER SECOND |
| FT | FEET |
| GALV | GALVANIZED |
| GC | GENERAL CONTRACTOR |
| GPLD | GALLONS PER DAY |
| GPH | GALLONS PER HOUR |
| GPM | GALLONS PER MINUTE |
| GV | GATE VALVE |
| HC | HUNG CEILING |
| HD | HEAD |
| HR | HOUR |
| HTR | HEATER |
| ID | INTERNAL DIAMETER |
| INCL | INCLUDING |
| JP | JOCKEY PUMP |
| MAX | MAXIMUM |
| MFR | MANUFACTURER |
| MIN | MINIMUM |
| MISC | MISCELLANEOUS |
| MTD | MOUNTED |
| (N) | NEW |
| NC | NORMALLY CLOSED |
| NIC | NOT IN CONTRACT |
| NO | NUMBER |
| NO | NORMALLY OPEN |
| NPW | NON-POTABLE WATER |
| NOM | NOMINAL |
| NTS | NOT TO SCALE |
| OPC | OPENING |
| OS&Y | OUTSIDE SCREW & YOKE |
| OZ | OUNCE |
| PART | PARTIAL |
| PERF | PERFORATED |
| PEX | CROSS LINKED POLYETHYLENE TUBING |
| PH | PHASE |
| PV | POST INDICATOR VALVE |
| PO | PLUGGED OUTLET |
| POS | POSITIVE |
| PRESS | PRESSURE |
| PS | PRESSURE SWITCH |
| PSI | POUNDS PER SQUARE INCH |
| PSIG | POUNDS PER SQUARE INCH GAUGE |
| PSIA | POUNDS PER SQUARE INCH ABSOLUTE |
| PV | PLUG VALVE |
| QTY | QUANTITY |
| PVC | POLYVINYL CHLORIDE |
| RVC | RISER CONTROL VALVE |
| REQD | REQUIRED |
| ROOM | ROOM |
| RPZ | REDUCED PRESSURE ZONE BACKFLOW PREVENTER |
| SCH | SCHEDULE |
| SCV | SPRINKLER CONTROL VALVE |
| SPEC | SPECIFICATION |
| STD | STANDARD |
| SUP | SUPPLY |
| SYS | SYSTEM |
| TDH | TOTAL DYNAMIC HEAD |
| TEMP | TEMPERATURE |
| TS | TAMPER SWITCH |
| TYP | TYPICAL |
| UG | UNDERGROUND |
| V | VENT |
| VO | VALVED OUTLET |
| W | WASTE |
| WF | WATER FLOW SWITCH |
| WM | WATER METER |

NOTE : SYMBOL LIST AND ABBREVIATIONS PROVIDED FOR CONVENIENCE ONLY. NOT EVERY SYMBOL OR ABBREVIATION IS NECESSARY USED IN.

SYMBOLS



FIRE PROTECTION MATERIAL SCHEDULE

| SYSTEM | PIPE | FITTINGS | JOINTS | REMARKS |
|------------------------------|---------------------------|------------|----------|---|
| BURIED BUILDING FIRE SERVICE | PVC | PVC | PVC | 3" AND LARGER PIPING |
| BURIED BUILDING FIRE SERVICE | PVC | PVC | PVC | 2" PIPING |
| SPRINKLER | CPVC | CPVC | SOCKET | BLAZEMASTER CPVC PIPE MAY BE USED IN RESIDENTIAL APPLICATIONS ONLY WHEN INSTALLED AS PER MANUFACTURER'S SPECIFICATIONS. |
| DRAIN PIPE | STEEL SCHED 40 GALVANIZED | GALVANIZED | THREADED | |

NOTES:
1. ALL MATERIALS SELECTED ON THIS SCHEDULE MUST BE APPROVED BY THE LOCAL AUTHORITIES.

CODE COMPLIANCE

2021 INTERNATIONAL BUILDING CODE
(WITH NEW JERSEY ADOPTED AMENDMENTS)
2021 INTERNATIONAL FIRE CODE WITH AMENDMENTS
NFPA 13 – 2019
NFPA 14 – 2019
NFPA 20 – 2019

FIRE PROTECTION DRAWING / REVISION LOG

| DATE | ISSUE | DESIGN DEVELOPMENT | 50% CD | PERMIT SET | 100% CD SET | ISSUED FOR CONSTRUCTION SET |
|------------|-------|--------------------|--------|------------|-------------|-----------------------------|
| 02/27/2024 | | | | | | |
| 03/18/2024 | | | | | | |
| 03/25/2024 | | | | | | |
| 04/08/2024 | | | | | | |
| 07/25/2024 | | | | | | |

| SHEET NUMBER | SHEET TITLE |
|--------------|--|
| FP0.01 | FIRE PROTECTION COVER SHEET |
| FP1.01 | FIRE PROTECTION 1ST AND 2ND FLOOR PLANS |
| FP1.02 | FIRE PROTECTION 3RD FLOOR AND ROOF PLANS |
| FP3.01 | FIRE PROTECTION SCHEDULES |
| FP4.01 | FIRE PROTECTION DETAILS |
| FP6.01 | FIRE PROTECTION UNIT PLANS |
| FP6.02 | FIRE PROTECTION UNIT PLANS |
| FP6.03 | FIRE PROTECTION UNIT PLANS |
| FP6.04 | FIRE PROTECTION UNIT PLANS |

SCHEDULE OF SPRINKLER HEADS

| SYMBOL | MFR. | MODEL | SIN | TYPE | LOCATION | FINISH & REMARKS | TEMP. RATING | "K" FACTOR | HEAD COVERAGE | MIN. FLOW | MIN. PRESS. | LISTINGS |
|--------|-----------|-------------|--------|---|--|--------------------------|--------------|------------|---------------|-----------|-------------|----------|
| | VIKING | RESIDENTIAL | VK474 | RESIDENTIAL CONCEALED PENDENT | THROUGHOUT THE FACILITY IN RESIDENTIAL AREAS WITH SUSPENDED CEILING UNLESS OTHERWISE NOTED | AS SELECTED BY ARCHITECT | 155°F | 5.8 | 20'x20' | AS LISTED | AS LISTED | |
| | RELIABLE | G5-56 | RA3415 | QUICK RESPONSE CONCEALED PENDENT SPRINKLER | THROUGHOUT THE FACILITY IN CORRIDORS AND UTILITY CLOSET AREAS | AS SELECTED BY ARCHITECT | 155°F | 5.6 | AS LISTED | AS LISTED | AS LISTED | |
| | VICTAULIC | FIRELOCK | V4431 | QUICK RESPONSE RECESSED HORIZONTAL SIDEWALL | THROUGHOUT THE FACILITY ON 3RD FLOOR RESIDENTIAL UNITS OR WITHIN RESIDENTIAL AREA | AS SELECTED BY ARCHITECT | 155°F | 4.4 | AS LISTED | AS LISTED | AS LISTED | |
| | VIKING | VK157 | VK157 | DRY VERTICAL SIDEWALL SPRINKLERS | THROUGHOUT THE FACILITY UNDER GARAGE DOORS | AS SELECTED BY ARCHITECT | 155°F | 5.6 | AS LISTED | AS LISTED | AS LISTED | |

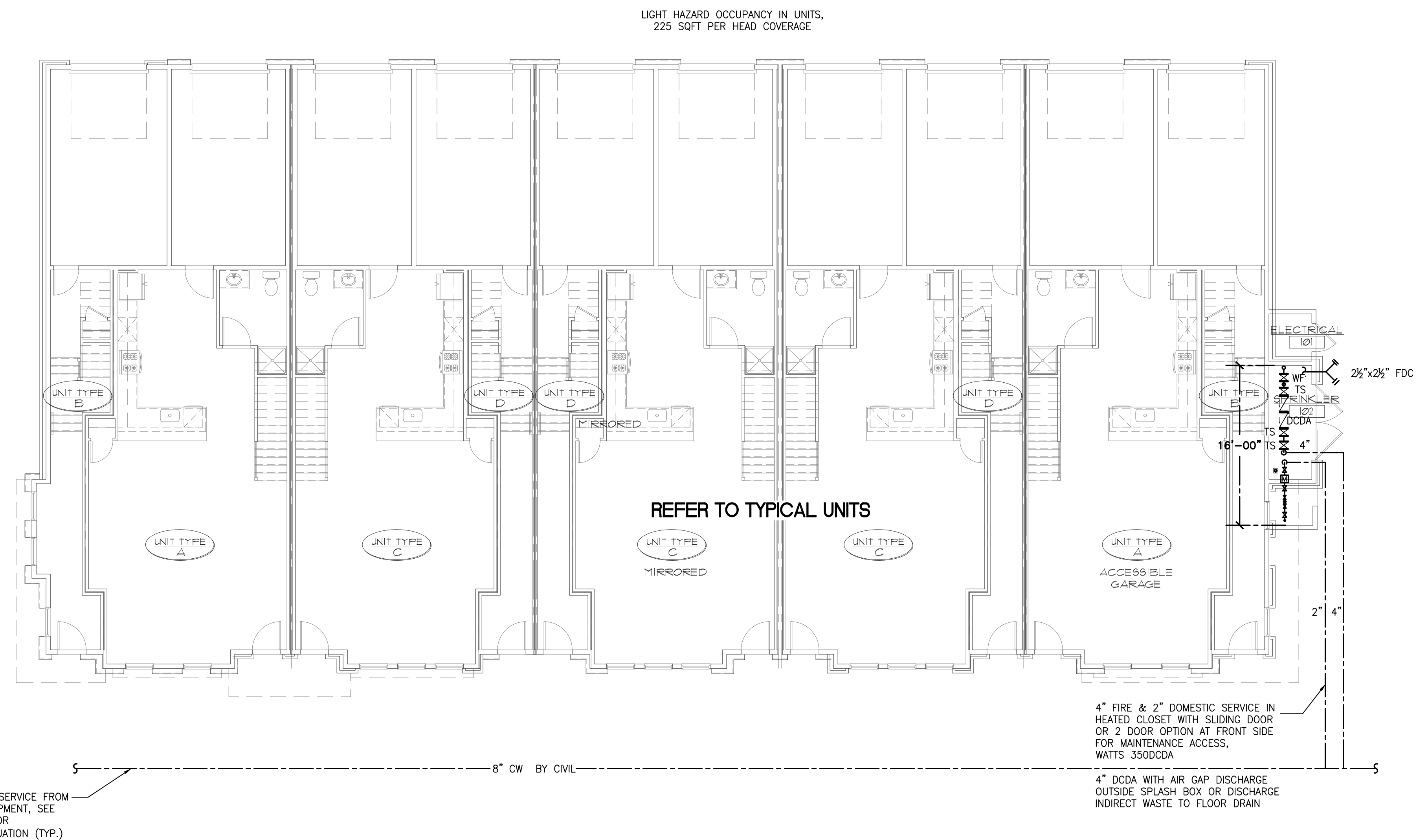
- NOTES:
- SPRINKLER HEADS SHALL BE INSTALLED AS PER MANUFACTURER'S REQUIREMENT.
 - PROVIDE METAL WIRE GUARDS WHERE SPRINKLERS ARE SUBJECT TO DAMAGE AND SPRINKLER HEADS LOCATED UNDER HVAC DUCTS IN FIRE PROTECTION EQUIPMENT ROOMS WHEN LOCATED LOWER THAN 7'-0" A.F.F. ETC.
 - ALL SPRINKLER HEADS THROUGHOUT THE FACILITY SHALL BE OF THE ORDINARY TEMPERATURE RATING EXCEPT AS FOLLOWS:
 - SPRINKLER HEADS IN FIRE PROTECTION ROOMS SHALL BE OF INTERMEDIATE TEMPERATURE RATING (200°).
 - SPRINKLER HEADS LOCATED CLOSE TO HEATERS, SHALL BE OF THE TEMPERATURE RATING AS REQUIRED BY NFPA 13R.
 - ALL HEAT GENERATING EQUIPMENT WHICH CAN AFFECT THE TEMPERATURE RATING OF THE SPRINKLER HEADS SHALL BE CLEARLY IDENTIFIED ON THE SHOP DRAWINGS PRIOR TO SUBMISSION FOR APPROVAL.
 - SPRINKLER HEADS MINIMUM FLOW & MINIMUM PRESSURE REQUIREMENTS TO BE BASED ON HYDRAULIC CALCULATION DESIGN DENSITIES.
 - ALL SPRINKLER HEAD FINISHES TO BE APPROVED BY ARCHITECT.
 - SPRINKLERS FOR THE ATTIC TO BE LISTED AS AN ATTIC SPRINKLER (VIKING MODEL V-BB)

1/2" = 1'-0"
1/4" = 1'-0"
1/8" = 1'-0"

FIRE PROTECTION GENERAL NOTES:

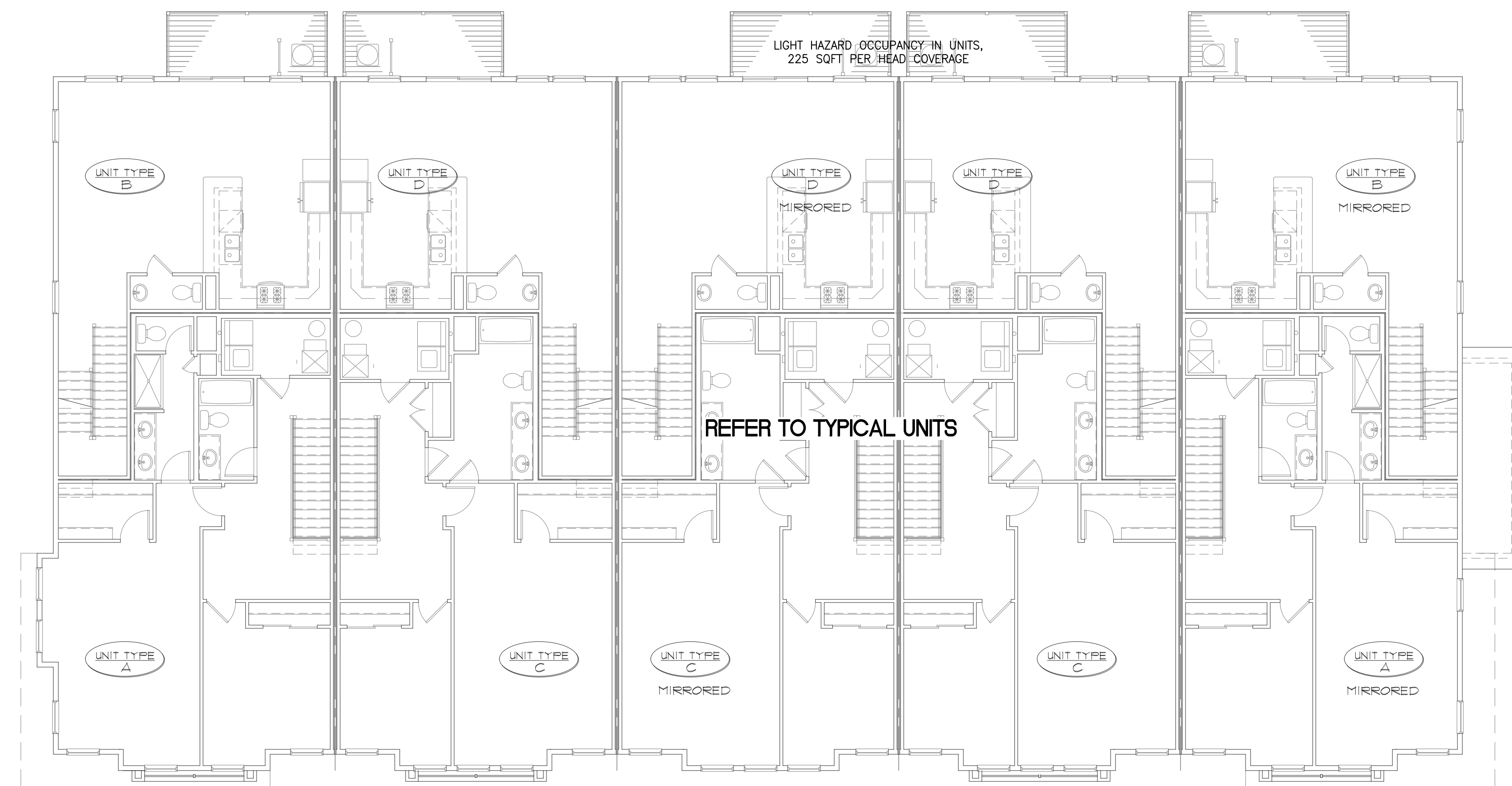
- SPRINKLER DESIGN IN ACCORDANCE WITH NFPA 13R
- LIGHT HAZARD OCCUPANCY IN ALL UNITS, 20'X20' RESIDENTIAL SPRINKLER
- SPRINKLER CONTRACTOR TO VERIFY CEILING HEIGHTS/SOFFITS, ANY OPEN TO ABOVE/BELOW SPACES, AND FOLLOW OBSTRUCTION RULES IN ACCORDANCE WITH NFPA 13R.
- PROVIDE DRY SIDEWALL HEADS FOR CLOSETS IN GARAGE OR SPACES SUBJECT TO FREEZING
- SPRINKLER HEADS TO MEET MANUFACTURERS MINIMUM PRESSURE AND FLOW REQUIREMENTS (TYPICAL FOR ALL UNITS)

IF INSULATION CANNOT BE INSTALLED ON TOP OF SPRINKLER PIPES ON THE THIRD FLOOR, PROVIDE SIDEWALL SPRINKLERS ON 3RD FLOOR UNITS FED FROM THE FLOOR BELOW



FIRE PROTECTION FIRST FLOOR PLAN

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



FIRE PROTECTION SECOND FLOOR PLAN

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



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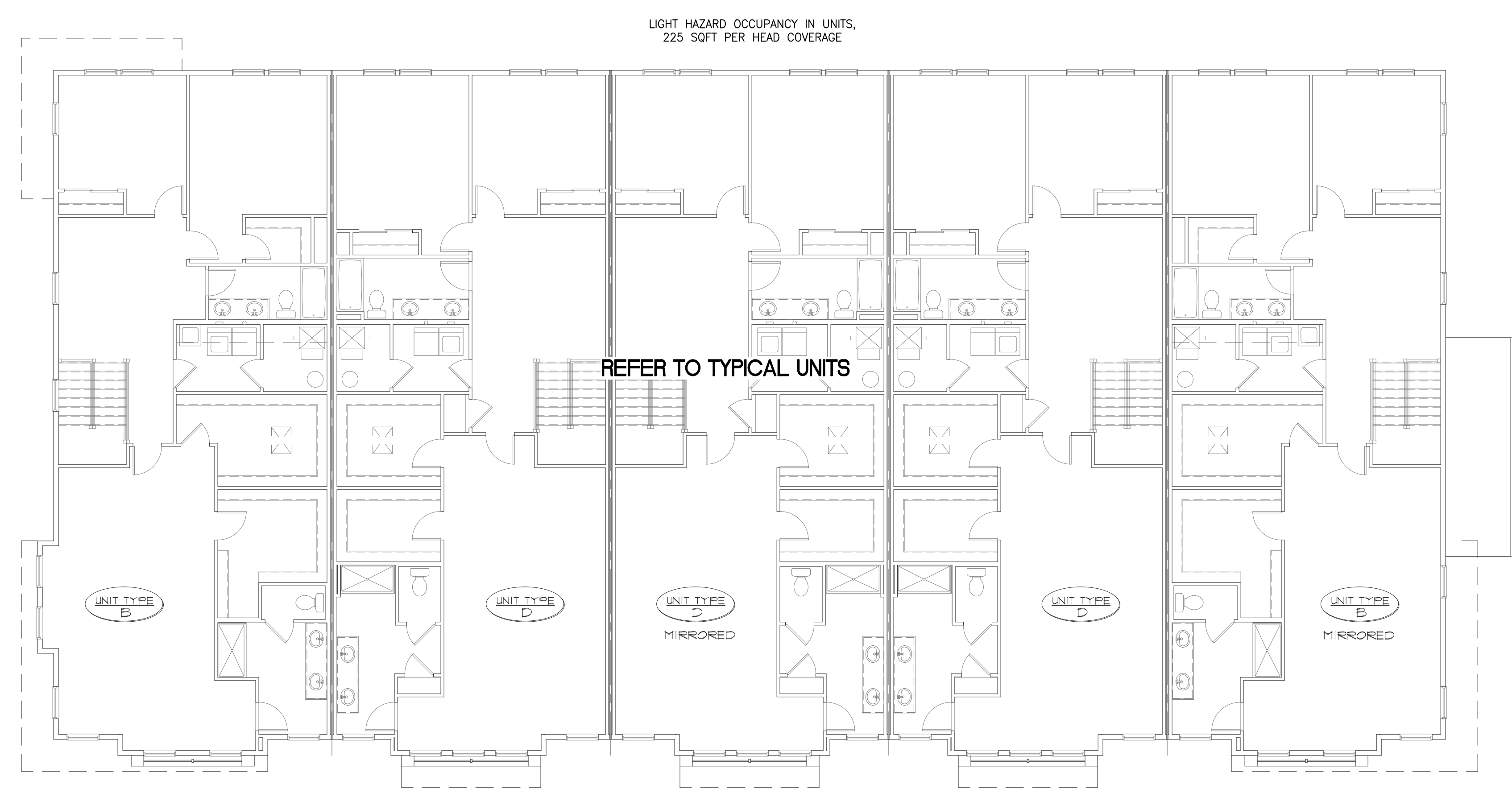
REVISIONS

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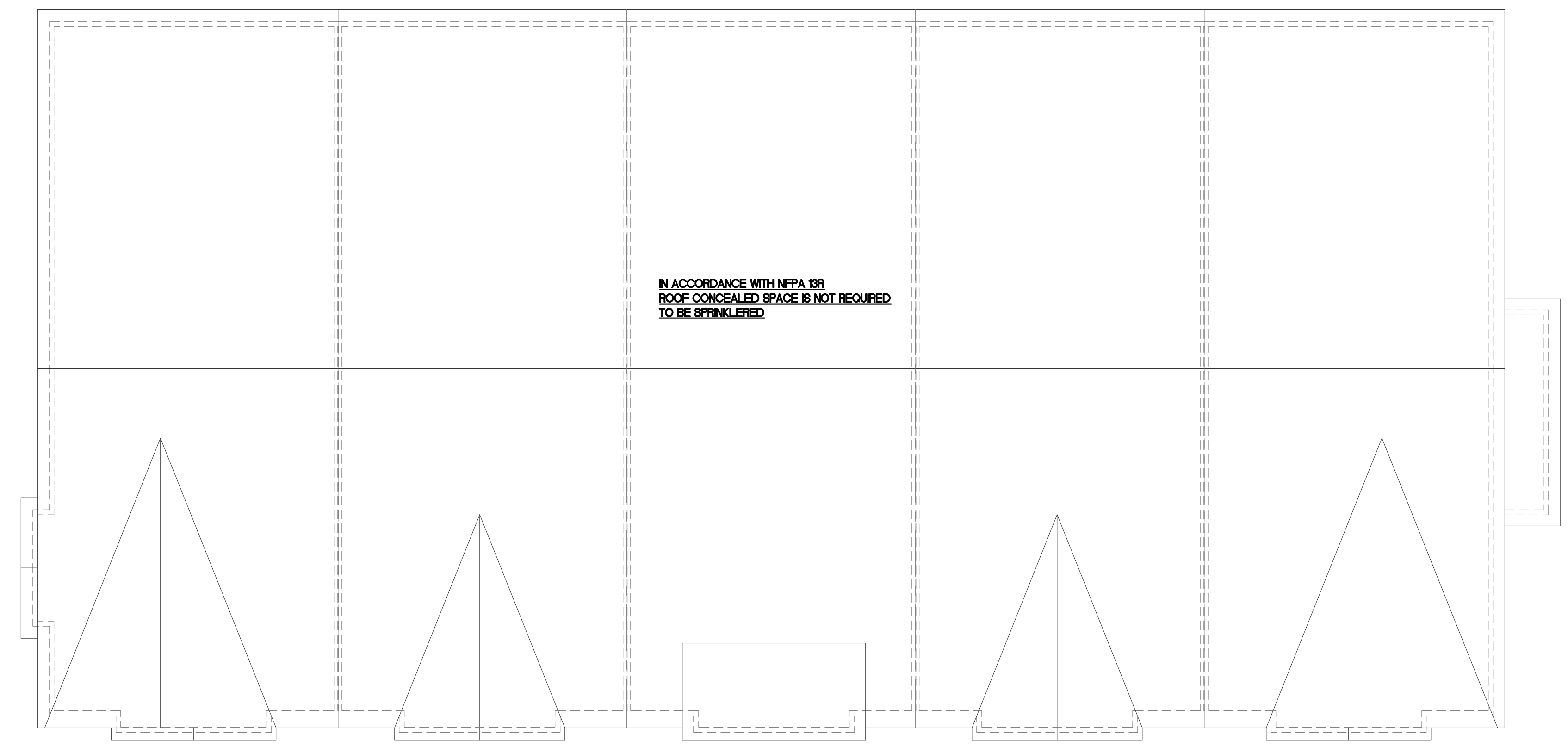
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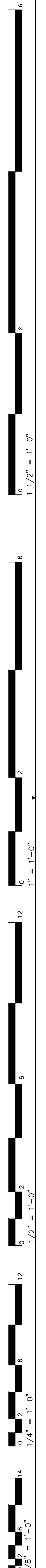
IF INSULATION CANNOT BE INSTALLED ON TOP OF SPRINKLER PIPES ON THE THIRD FLOOR, PROVIDE SIDEWALL SPRINKLERS ON 3RD FLOOR UNITS FED FROM THE FLOOR BELOW



FIRE PROTECTION THIRD FLOOR PLAN
SCALE: 1/8" = 1'-0"



FIRE PROTECTION ROOF PLAN
SCALE: 1/8" = 1'-0"



FIRE PROTECTION SPECIFICATIONS

1. GENERAL:

- 1.1. ALL PROVISIONS IN THE GENERAL SPECIFICATIONS ABOVE APPLY TO THE FIRE PROTECTION SPECIFICATIONS.
- 1.2. THE FIRE PROTECTION SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE BUILDING CODE AND NFPA INSTALLATION OF SPRINKLER SYSTEMS. THE ENGINEERING PLANS PROVIDED ARE PRELIMINARY PLANS AS DEFINED IN NFPA PROVIDED FOR SCOPE AND REVIEW BY THE AUTHORITY HAVING JURISDICTION. WORKING PLANS AND HYDRAULIC CALCULATIONS IN ACCORDANCE WITH NFPA SHALL BE SUBMITTED AND APPROVED BY THE ENGINEER AND THE AHJ PRIOR TO THE INSTALLATION OF SYSTEM EQUIPMENT.
- 1.3. THE FIRE PROTECTION DRAWINGS ARE DIAGRAMMATIC, AND THEREFORE DO NOT RELIEVE THIS CONTRACTOR FROM PROVIDING ALL WORK AND EQUIPMENT NECESSARY TO COMPLETE THE INSTALLATION ACCORDING TO THEIR REQUIREMENTS. THE NUMBER AND SPACING OF SPRINKLER HEADS, SPACING AND SIZE OF A PIPE LOCATION AND NUMBER OF VALVES, METHOD OF DRAWING LINES, ALARM VALVES, AND ALL OTHER WORK AND DETAILS SHALL BE AS REQUIRED BY THE OWNER'S UNDERWRITERS, NFPA, AND ALL OTHER AUTHORITIES HAVING JURISDICTION.
- 1.4. THE SPRINKLER HEADS IN ALL AREAS ARE TO BE INSTALLED ON A TRUE AXIS LINE IN BOTH DIRECTIONS WITH A MAXIMUM DEVIATION FROM AXIS LINE OF 1/2 IN. PLUS OR MINUS. IN ADDITION, ALL SPRINKLERS SHALL BE LOCATED IN CENTER OF TILES, GRIDS AND/OR ALIGNED WITH LIGHTS, DIFFUSERS, ETC., AS INDICATED ON ARCHITECTURAL REFLECTED CEILING PLANS AND DETAILS. AT THE COMPLETION OF THE INSTALLATION, IF ANY HEADS ARE FOUND TO EXCEED THE ABOVE-MENTIONED TOLERANCE, SAME SHALL BE REMOVED AND REINSTALLED BY THIS CONTRACTOR.
- 1.5. THE ARRANGEMENT, POSITIONS AND CONNECTIONS OF PIPE, DRAINS, VALVES, ETC., SHOWN ON THE DRAWINGS SHALL BE TAKEN AS A CLOSE APPROXIMATION AND WHILE THEY SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE, THE RIGHT IS RESERVED BY THE OWNER TO CHANGE LOCATIONS, TO ACCOMMODATE ANY CONDITIONS WHICH MAY ARISE DURING THE PROGRESS OF THE WORK, WITHOUT ADDITIONAL COMPENSATION TO THIS CONTRACTOR FOR SUCH CHANGES, PROVIDED THAT THE CHANGES ARE REQUESTED PRIOR TO THE INSTALLATION OF THIS CONTRACTOR'S WORK, THE RESPONSIBILITY FOR ACCURATELY LAYING OUT THE WORK RESTS WITH THIS CONTRACTOR. SHOULD IT BE FOUND THAT ANY OF HIS WORK IS SO LAID OUT THAT INTERFERENCE WILL OCCUR, HE SHALL SO REPORT THAT TO THE OWNER.
- 1.6. PROVIDE ALL SPRINKLER HEADS IN STRICT ACCORDANCE WITH APPROVED SHOP DRAWINGS. THE ARCHITECT AND OWNER RESERVE THE RIGHT TO REJECT ANY AND ALL WORK NOT IN ACCORDANCE WITH THE APPROVED SHOP DRAWINGS.
- 1.7. ALL PIPING AND EQUIPMENT SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE. HANGERS AND SUPPORTS SHALL BE SPECIALLY APPROVED FOR USE IN EACH APPLICATION, WHERE OVERHEAD CONDITIONS DOES NOT PERMIT THE FASTENING OF HANGER RODS IN REQUIRED LOCATIONS. PROVIDE ADDITIONAL STEEL FRAMING AS REQUIRED AND APPROVED. DO NOT USE EXPANSION SHIELDS.
- 1.8. NO FIRE PROTECTION WORK SHALL BE HUNG FROM DUCTWORK OR THE HANGERS OF OTHER TRADES.
- 1.9. BECOME THOROUGHLY FAMILIAR WITH ACTUAL BUILDING SYSTEMS, WHICH ARE TO BE CHANGED, ALTERED, OR TO WHICH NEW CONNECTIONS ARE TO BE MADE. VERIFY ALL EXISTING CONDITIONS INCLUDING PIPE SIZE, LOCATION, AND ELEVATION.
- 1.10. THE INTENT OF THE WORK IS INDICATED ON THE DRAWINGS AND DESCRIBED HEREINAFTER. NO CONSIDERATION WILL BE GRANTED FOR REASON OF LACK OF FAMILIARITY ON THE PART OF THE CONTRACTOR REGARDING ACTUAL PHYSICAL CONDITIONS AT THE SITE.
- 1.11. COORDINATE WORK WITH ALL TRADES AND EXISTING CONDITIONS OF THE JOB SITE AND MAINTAIN REQUIRED CEILING HEIGHTS AND SPACE CONDITIONS.
- 1.12. ALL EQUIPMENT SHALL BE ASBESTOS FREE AND INDICATED AS SUCH.
- 1.13. DUE TO THE NATURE OF ALTERATION WORK WHICH REQUIRES THE BUILDING OR FACILITY TO BE KEPT OPERABLE AT ALL TIMES, IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE ALL ACTIVITIES, CONNECTIONS, SHUT DOWNS AND THE LIKE WITH THE GENERAL CONTRACTOR, TENANT, AND BUILDING OWNER. ANY INTERRUPTIONS OF BUILDING SERVICES INCLUDING PHYSICAL ACCESS TO ADJACENT SPACES MUST BE COORDINATED WITH THE BUILDING OWNER. ALL TEMPORARY CONNECTIONS OR AFTER-HOURS WORK SHALL BE SO ARRANGED WITH ALL PARTIES INVOLVED.
- 1.14. THIS TRADE MUST PERFORM WORK IN OCCUPIED AREAS, IT SHALL MAKE ARRANGEMENTS WITH THE GENERAL CONTRACTOR AND THE OWNER AS TO THE TIME AND METHOD IN WHICH THIS WORK SHALL BE PERFORMED. ARRANGE FOR ALL ADJACENT AREAS TO BE PROPERLY PROTECTED AGAINST DAMAGE, DEBRIS, DIRT AND DUST.
- 1.15. PROVIDE AS PART OF NEW WORK:
 - 1.15.1. HANGERS AND SUPPORTS FOR PIPING
 - 1.15.2. SCAFFOLDING, RIGGING, AND HOISTING
 - 1.15.3. RUBBISH REMOVAL AND CLEANING
 - 1.15.4. CUTTING AND PATCHING
 - 1.15.5. SLEEVES, OPENINGS AND THE CORE DRILLING OF EXISTING SLABS
 - 1.15.6. CAULKING, FIREPROOFING, AND THE PACKING AND FILLING OF SLEEVES AND OPENINGS
 - 1.15.7. SHOP DRAWINGS AND "AS BUILT" DRAWINGS
 - 1.15.8. OPERATING AND MAINTENANCE INSTRUCTIONS
 - 1.15.9. OBTAINING ALL REQUIRED PERMITS, APPROVALS, ACCEPTANCE, FILING AND INSPECTION CERTIFICATES
 - 1.15.10. GUARANTEE ALL WORK, LABOR AND MATERIALS FOR ONE YEAR FOLLOWING DATE OF ACCEPTANCE
 - 1.15.11. VERIFYING EXISTING CONDITIONS AT THE PROJECT SITE
 - 1.15.12. SPARE PARTS AND TOOLS
 - 1.15.13. TESTS: OPERATION, PERFORMANCE AND CODEP-REQUIRED TESTS
 - 1.15.14. PROTECTION OF WORK AND ADJACENT SPACES DURING CONSTRUCTION
 - 1.15.15. COORDINATION WITH OTHER TRADES
 - 1.15.16. IDENTIFICATION: VALVE TAGS, VALVE TAG SCHEDULES, AND PIPING IDENTIFICATION

2. SCOPE OF WORK:

- 2.1. PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, TOOLS, APPLIANCES, SERVICES, HOISTING, SCAFFOLDING, SUPPORT AND SUPERVISION FOR THE FURNISHING AND INSTALLING OF ALL THE FIRE PROTECTION WORK, AND ALL RELATED WORK, COMPLETE, IN ACCORDANCE WITH THE CONTRACT DOCUMENT, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - 2.1.1. PROVIDE A COMPLETE AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH THE OWNERS UNDERWRITERS', NFPA, AND THE RULES OF ALL AUTHORITIES HAVING JURISDICTION.
 - 2.1.2. SPRINKLER SYSTEMS SHALL INCLUDE CONNECTIONS TO THE SPRINKLER PIPING AND PROVISION OF A COMBINATION SHUTOFF VALVE AND PRESSURE REDUCING VALVE, FLOW SWITCH AND A DRAIN/TEST CONNECTION CONNECTED TO A VERTICAL DRAIN RISER SERVING THE FLOOR CONTROL VALVE.
 - 2.1.3. THE SPRINKLER SYSTEMS SHALL BE HYDRAULICALLY CALCULATED TO THE FOLLOWING PARAMETERS:
 - 2.1.3.1. OFFICE AREAS AND THE LIKE: LIGHT HAZARD, 0.10 GPM/SQ.FT. OVER 1,500 SQ.FT.
 - 2.1.3.2. STORAGE SHOWROOM, MECHANICAL EQUIPMENT ROOMS: ORDINARY HAZARD, 0.15 GPM/SQ.FT. OVER 1,500 SQ.FT.
 - 2.1.4. INCLUDE ALL PIPE, FITTINGS, BRANCHES, VALVES, ALARM VALVES, LADDERS, SIGNS, PROTECTIVE PAINTING, ALARM SWITCHES, TEST CONNECTION, SPRINKLER HEADS, DRAINS, TESTS, ALARM PANELS, ETC., IN FULL ACCORDANCE WITH UNDERWRITERS' AND MUNICIPAL REQUIREMENTS.
 - 2.1.5. DO ANY CUTTING REQUIRED FOR THE PASSAGE OR INSTALLATION OF PIPES, SUPPORTS, AND THE LIKE, IN GENERAL, DEMOLITION OF EXISTING WALLS AND CEILINGS WILL BE DONE BY OTHERS.
 - 2.1.6. ALL PATCHING WILL BE DONE BY OTHERS. THE EXPENSE OF CUTTING AND RESTORING SURFACES TO THEIR ORIGINAL CONDITION WHEN CAUSED BY THIS TRADE'S FAILURE TO PERFORM ITS PRELIMINARY WORK, SHALL BE BORNE BY THIS TRADE.

3. DEMOLITION CONNECTIONS TO EXISTING WORK, AND ALTERATION

- 3.1. REFER TO THE CONTRACT DOCUMENTS FOR THE EXTENT OF SYSTEMS TO BE REMOVED. THE CONTRACTOR SHALL FIELD VERIFY AND INCLUDE IN THE BID ALL REMOVALS REQUIRED FOR THE COMPLETION OF WORK.
- 3.2. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING SYSTEMS TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. SUBMIT TO OWNER AND ARCHITECT FOR APPROVAL. DATE AND SCHEDULE OF ALL NECESSARY TEMPORARY SHUTDOWNS OF EXISTING SERVICES. ALL SHUTDOWNS SHALL BE MADE AT SUCH TIMES AS THEY WILL NOT INTERFERE WITH REGULAR OPERATION OF EXISTING FACILITIES AND ONLY AFTER WRITTEN APPROVAL OF THE SAME HAS BEEN OBTAINED FROM OWNER.
- 3.3. MAKE TEMPORARY CONNECTIONS AS REQUIRED BETWEEN NEW AND EXISTING WORK TO INSURE CONTINUOUS OPERATION OF THE FACILITY. ALL COSTS ASSOCIATED WITH AND RESULTING FROM TEMPORARY CONNECTIONS SHALL BE BORNE BY THIS CONTRACTOR.
- 3.4. CONNECT NEW WORK TO EXISTING WORK IN A NEAT AND APPROVED MANNER. RESTORE ANY DISTURBED EXISTING WORK TO ITS ORIGINAL CONDITION.
- 3.5. PROVIDE CAPS, PLUGS, AND OUTLETS AS REQUIRED ON EXISTING PIPING.
- 3.6. REMOVE AND /OR RELOCATE EXISTING AND OTHER WORK AS REQUIRED TO COMPLETE FINAL INSTALLATION.
- 3.7. ANY PIPING RENDERED DEFUNCT BY THIS ALTERATION WORK SHALL BE REMOVED. ALERT THE ARCHITECT AND GENERAL CONTRACTOR OF ANY "DISCOVERED" ABANDONED PIPING. IN GENERAL, ALL ABANDONED, INACTIVE, OR SUPERFLUOUS PIPING, INCLUDING HANGERS AND CLAMPS SHALL BE REMOVED.
- 3.8. ALL NEW AND EXISTING SYSTEMS SHALL BE LEFT IN PERFECT WORKING ORDER UPON COMPLETION OF ALL NEW WORK.

4. SLEEVES:

- 4.1. PROVIDE SLEEVES FOR ALL PIPES PASSING THROUGH FLOORS, WALLS AND CONCRETE, OR CONCRETE FIREPROOFED BEAMS. SLEEVES IN CONCRETE BEAMS, THROUGH CONCRETE WALLS, AND EXPOSED PIPES PENETRATING FLOORS, SCHEDULE 40 STEEL PIPE. SLEEVES WITHIN FURRED OUT ENCLOSURES IN FLOORS, THROUGH PARTITIONS, STEEL BEAMS AND WALLS: 18 GAUGE GALVANIZED SHEET METAL.
- 4.2. PROVIDE SLEEVES WITH AN I.D. AT LEAST 1/2 IN. GREATER THAN OUTSIDE OF PIPE SERVED, INCLUDING PIPE INSULATION WHICH MUST BE CONTINUOUS THROUGH SLEEVE. FINISH SLEEVES FLUSH WITH UNDERSIDE OF SLAB AND 1 IN. ABOVE FINISHED FLOOR.
- 4.3. WHERE PIPING PENETRATES WALLS (OTHER THAN FOUNDATION WALLS), PARTITIONS, FLOOR SLABS, ETC., SPACE BETWEEN PIPING AND SLEEVE SHALL BE PACKED WITH "3M" M.E.A. APPROVED FIRP-RATED MATERIAL, WHERE SLEEVES PASS THROUGH FIRP-RATED CONSTRUCTION, FIT ESCUTCHEON ON BOTH SIDES OF CONSTRUCTION.
- 4.4. PROVIDE WATERPROOF TYPE PIPE SLEEVES, ZURN Z-197 WITH GALVANIZED SCHEDULE 40 PIPE EXTENSIONS WHERE PENETRATING MEMBRANE WATERPROOFED FLOORS.

5. CODES, PERMITS AND INSPECTIONS

- 5.1. INSTALL ALL WORK IN FULL ACCORDANCE WITH THE REQUIREMENTS OF LOCAL AND GOVERNMENTAL DEPARTMENTS HAVING JURISDICTION OVER THESE MATTERS, AS WELL AS WITH ANY REQUIREMENTS OF NFPA, UL, FM, BSA, MEA, ETC. AND OTHER APPLICABLE CODES.
- 5.2. SECURE AND PAY FOR ALL NECESSARY APPROVALS, PERMITS, INSPECTIONS, CARTING, LEGAL DUMPING, ETC., AND DELIVER THE OFFICIAL RECORDS OF THE GRANTING OF PERMITS TO THE ARCHITECT AND OWNER WITHOUT ANY ADDITIONAL COST TO THE OWNER.
- 5.3. PAY ALL FILING FEES TO OBTAIN RELEASE OF APPROVED PLANS.
- 5.4. PAY ROYALTIES OR FEES REQUIRED IN CONNECTION WITH THE USE OF PATENTED DEVICES OR SYSTEMS, AND SAVE THE OWNER, THE ARCHITECT, THE CONSULTING ENGINEER, AND THE TENANT HARMLESS FROM ANY CLAIMS OR LAWSUITS ARISING FROM SUCH USE, AND INDEMNIFY EACH THEREOF AGAINST ATTORNEY'S FEES IN CONNECTION THEREWITH.
- 5.5. PROVIDE ALL SIGNS REQUIRED BY THE MUNICIPAL AUTHORITIES.

6. MATERIALS OF PIPING SYSTEMS

- 6.1. WET SPRINKLER PIPING SHALL BE BLACK STEEL, SCHEDULE 40, SCHEDULE 10 WILL BE PERMITTED FOR SIZES 2 1/2" AND LARGER.
- 6.2. FITTINGS SHALL BE SCREWED, STANDARD WEIGHT, CAST IRON, UL AND FM APPROVED, FITTINGS, MECHANICAL GROOVE COUPLINGS, VICTAULIC STYLE 76, OR AS APPROVED. MAY BE USED WITH SCHEDULE 10 PIPE, COUPLINGS SHALL BE ROLLED GROOVE. WHEN USED WITH SCHEDULE 80 PIPE, COUPLINGS SHALL BE CUT GROOVE, EITHER ROLL OR CUT GROOVE MAY BE USED WITH SCHEDULE 40 PIPE. WELDED JOINTS AND FITTINGS MAY BE USED WHERE PERMITTED BY THE AUTHORITIES HAVING JURISDICTION PROVIDED SAFETY PROCEDURES DESCRIBED IN NFPA-13 AND 14 ARE FOLLOWED.
- 6.3. FOR PIPING 2 IN. AND LARGER, VICTAULIC STYLE 920 OR STYLE 921 MECHANICAL-T WITH LOCKING COLLAR ENGAGING INTO THE PIPE MAY BE USED FOR LESS THAN FULL SIZE BRANCH CONNECTIONS.
- 6.4. EXTERIOR WATER PIPING SHALL BE DUCTILE IRON WATER PIPE CLASS 56, ANSI A21.51. FITTINGS SHALL BE PUSH ON OR MECHANICAL JOINT ANS1 A21.10, AND ANSI A21.11. FITTINGS SHALL BE CONCRETE LINED PER A21.4.

7. IDENTIFICATION OF SYSTEMS

- 7.1. PROVIDE A TAG FOR EACH VALVE, THREE INCH DIAMETER BRASS OR ALUMINUM TAGS STAMPED WITH DESIGNATING NUMBERS TWO INCH HIGH, PAINTED WITH WHITE ENAMEL, BACKGROUND PAINTED WITH RED ENAMEL. ATTACH TAG TO VALVE HANDLE OR SPRINDEL WITH BRASS CHAIN.

8. HANGERS, INSERTS AND PIPE SUPPORTS

- 8.1. PROVIDE SUITABLE AND SUBSTANTIAL HANGERS AND SUPPORTS FOR ALL PIPING.
- 8.2. SPACE SUPPORTS SO THAT THERE IS AT LEAST ONE HANGER FOR EACH LENGTH OF PIPE, WITH ONE HANGER WITHIN 30 INCHES OF THE END SPRINKLER HEAD. WHERE THIS WOULD REQUIRE HANGERS CLOSER THAN 6 FEET 0 INCHES APART, HANGER SPACING MAY BE INCREASED TO 10 FEET 0 INCHES BETWEEN HANGERS FOR PIPES UP TO AND INCLUDING 2 INCH IPS AND 12 FEET 0 INCHES BETWEEN HANGERS FOR PIPES 2-1/2 INCH IPS AND LARGER, WHERE POSSIBLE, FASTEN HANGER RODS TO STRUCTURAL STEEL BEAMS.
- 8.3. SUPPORT HANGERS FROM APPROVED CONCRETE INSERTS WHERE CONCRETE SLABS EXIST, IF ANY PIPE HAS TO BE HUNG IN A SPACE WHERE NO INSERTS HAVE BEEN PROVIDED, DRILL A HOLE FROM BELOW THROUGH STONE CONCRETE SLABS, AND PROVIDE A ROD AND HANGER ATTACHED TO AN APPROVED FISHPLATE, OR FOR PIPES SMALLER THAN 3 INCH IPS, INSTALL A PHILLIPS HEAD STUD CONCRETE ANCHOR OR OTHER.
- 8.4. DO NOT HANG PIPING FROM DUCTWORK OR PIPING.
- 8.5. THIS CONTRACTOR MAY COORDINATE WITH THE OTHER CONTRACTORS TO USE COMMON MEANS OF SUPPORT. SUBMIT FOR APPROVAL ALL PERTINENT DESIGN DATA RELATING TO THE SUPPORT, AS WELL AS VERIFICATION OF THE RESPONSIBILITY FOR THE SUPPORT.

9. VALVES

- 9.1. ALL WATER CONTROL VALVES WITHIN THE BUILDING SHALL BE MILWAUKEE "GATE 2885-FP OS&Y WEDGE GATE VALVES WITH PAINTED IRON WHEEL HANDLES, SHALL HAVE THE NAME OF THE MANUFACTURER AND WORKING PRESSURE CAST OR STAMPED THEREON.
- 9.2. VALVES CONTROLLING SPRINKLER BUTTERFLY, BALL OR OS&Y GATE VALVES.
 - 9.2.1. BALL VALVES SHALL BE MILWAUKEE "BA-100" OR APPROVED ALL BRASS OR BRONZE CONSTRUCTION WITH REPLACEABLE TEFLON SEAT RING. TWO-PIECE UNION OR THREE-PIECE BOLTED CONSTRUCTION, WITH STUFFING BOX. WORKING PRESSURE SHALL NOT BE LESS THAN 175 PSI AT 125°F. AND SHALL CONFORM WITH ANSI STANDARDS. ALL VALVES SHALL BE STANDARD PORT UNLESS FULL-PORTED VALVES ARE INDICATED ON PLANS. THREADED VALVES USED IN BRAZED OR SOLDERED PIPING SYSTEMS SHALL BE FITTED WITH ADAPTERS. WHEN BRAZED OR SOLDERED END VALVES ARE USED, TEFLON SEATS MUST BE REMOVED PRIOR TO SOLDERING OR BRAZING.
 - 9.2.2. BUTTERFLY VALVES SHALL BE MILWAUKEE BUTTERBALL "BB-50" SERIES SLOW CLOSING INDICATING WATER TYPE BUTTERFLY VALVE WITH BUTTERFLY VALVE TAMPER SWITCH ASSEMBLY (USE SCREWED LUG TYPE WHEN VALVE HAS TO PERFORM DEAD-END SERVICE). CAST IRON BODY TO 200 PSI WWP, DUCTILE IRON FOR HIGHER PRESSURES. INSTALLED BETWEEN FLANGES OF SIMILAR RATING. ACTUATORS SHALL BE MANUAL GEAR TYPE WITH HANDWHEEL; AND VALVE SHALL INCORPORATE A VISIBLE INDICATION OF OPEN OR CLOSED POSITION.
 - 9.2.3. PRESSURE REGULATING VALVES (PRV) WHERE INSTALLED SHALL BE COMBINATION SHUTOFF AND PRESSURE REGULATING TYPE 400 PSI WWP BRONZE BODY WITH BALANCED PISTON. VALVE SHALL BE ZURN SERIES 23004 "PRESSURFF-TRU" OR POTTER ROEMER SERIES PRV-400-2.5 "REG-U-MATIC" OR AS APPROVED. PROVIDE PRESSURE GAUGE DOWNSTREAM OF PRV.
 - 9.2.4. PROVIDE LADDERS TO ALL VALVES LOCATED MORE THAN 7 FEET 0 INCHES ABOVE FLOOR.
 - 9.2.5. DRY PIPE VALVE SHALL BE A 4" DIFFERENTIAL TYPE VALVE RELIABLE "MODEL D" OR APPROVED EQUAL WATER TO AIR SEAT AREA DIFFERENTIAL TO BE AT LEAST 6 TO 1, CAPABLE OF CONTROLLING AIR PRESSURE RANGING FROM 20 TO 50 PSI. DRY PIPE VALVE CONSTRUCTION SHALL BE CAST IRON, DRY PIPE VALVE SEAT SHALL BE OF BRONZE CONSTRUCTION WITH O-RING SEALS TO PREVENT CORROSION AND LEAKAGE. THREADED-IN, ONE PIECE AIR AND WATER SEAT SHALL BE REMOVABLE FOR EASE OF MAINTENANCE. END CONNECTION STYLES TO BE 4" (100 MM) OR 6" (150 MM) ANSI FLANGED INLET AND OUTLET IN ACCORDANCE WITH ANSI B16.1 (126 LB) FLANGES [4" (100 MM) OR 6" (150 MM) ANSI FLANGED INLET AND GROOVED OUTLET, WITH GROOVED OUTLET DIMENSIONS PER ANS/AWWA C608] (100 MM OR 150 MM METRIC FLANGED INLET AND OUTLET PER EN 1059-2, NF-FF-28-282, AND BS 4504 PN 16 FLANGES). DRY PIPE VALVE SHALL HAVE A RATED WORKING PRESSURE OF 175 PSI (12.1 BAR) AND SHALL BE FACTORY HYDROSTATIC TESTED AT 350 PSI (24.1 BAR). THE FRICTION LOSS FOR THE DRY VALVE SHALL NOT EXCEED (28 FEET (8.5 M) FOR 4") (47 FEET (14.3M) FOR 6") OF EQUIVALENT LENGTH OF 4") [6] SCHEDULE 40 PIPE.

10. SPRINKLER HEADS

- 10.1. PROVIDE AUTOMATIC SPRINKLER HEADS OF FINISH AS APPROVED BY THE OWNER. THE MUNICIPAL AUTHORITIES AND BY THE INSURING AGENCIES HAVING JURISDICTION. SPRINKLER HEADS SHALL BE SELECTED AS PER THE SPRINKLER SCHEDULE TAB IN DRAWING SP-001.
- 10.2. ALL HEADS SHALL BE "STANDARD" 1/2 INCH DIAMETER ORICE, UPRIGHT, PENDENT, FLUSH TYPE PENDENT, COVER PLATE FLUSH TYPE, OR DRY TYPE PENDENT, TO FIT THE CONDITIONS IN WHICH THEY ARE INSTALLED.
- 10.3. ALL HEADS SHALL BE OF THE PROPER TEMPERATURE RATING FOR THE LOCATIONS IN WHICH THEY ARE INSTALLED. IN GENERAL, TEMPERATURE RATING SHALL BE 165°F. EXCEPT FOR MECHANICAL EQUIPMENT ROOMS, WHICH SHALL BE 286°F.

11. SPRINKLER SYSTEM APURTENANCES

- 11.1. PROVIDE THE SPRINKLER SYSTEM APURTENANCES REQUIRED TO PROVIDE FIRE TAMPER FOR THE RENOVATED AREA.
- 11.2. DETECTOR CHECK VALVE SHALL BE WAITS MODEL NO. 7990CDA.
12. ALARM DEVICES
 - 12.1. ALL INTERCONNECTING FIRE PROTECTION WIRING WILL BE FURNISHED UNDER THE SPECIFICATIONS OF OTHER TRADES. PROVIDE ALL SWITCHES DIRECTLY CONNECTED TO EQUIPMENT PROVIDED BY THIS TRADE. REQUIRED FOR THE TRANSMISSION OF ALARM IMPULSES. SWITCHES SHALL BE OPEN OR CLOSED TYPE TO CONFORM WITH THE ALARM SYSTEM TO WHICH THEY ARE CONNECTED.
 - 12.2. PROVIDE TAMPER SWITCHES FOR THE FOLLOWING VALVES:
 - 12.2.1. ALL VALVES CONTROLLING THE FLOW OF WATER TO SPRINKLER HEADS, INCLUDING FLOOR CONTROL VALVES, AND METER VALVES, ETC.
 - 12.2.2. SWITCHES SHALL GIVE AN ALARM IF THE VALVES SERVED ARE CLOSED, THE SWITCHES ARE REMOVED, OR IF THE COVER IS OPENED. VALVE STEMS SHALL BE NOTCHED TO TAKE THE SWITCHES. SWITCHES SHALL BE ACOME FIRE ALARM CO. TYPE O5Y5-UL, OR AS APPROVED.
 - 12.3. PROVIDE THE FOLLOWING FLOW ALARM DEVICES:
 - 12.3.1. RETARD CHAMBER AND CLOSED CIRCUIT ELECTRIC SWITCH FOR EACH ALARM VALVE.
 - 12.3.2. PADDLE TYPE WATER FLOW DETECTORS, CLOSED CIRCUIT TYPE WITH AN ADJUSTABLE RETARD OR TIME DELAY TO PREVENT FALSE ALARMS DUE TO WATER PRESSURE SURGES. SWITCHES SHALL BE ACOME FIRE ALARM CO., TYPE WFD, OR AS APPROVED.

13. SPRINKLER DRAINS

- 13.1. PROVIDE ALL NECESSARY DRAIN VALVES, CAPPED NIPPLES, AUXILIARY PIPING, ETC., AS REQUIRED TO DRAIN TRAPPED PORTIONS OF THE SYSTEM.
- 13.2. INSPECTORS TEST CONNECTIONS SHALL BE PROVIDED WITH A SIGHT CONNECTION AND PIPED TO WASTE.
- 13.3. MAIN DRAIN AND TEST CONNECTION SHALL BE PIPED TO WASTE.
- 13.4. PROVIDE ALL PIPING REQUIRED TO SPILL THE DRAINS AND TEST CONNECTIONS TO THE FLOOR, FUNNEL, OR OTHER DRAINAGE CONNECTIONS PROVIDED UNDER THE PLUMBING CONTRACT, OR ARRANGE WITH THE PLUMBING CONTRACTOR TO PROVIDE ADDITIONAL DRAINAGE FACILITIES, IN WHICH CASE PAY ALL CHARGES RELATED TO THE ADDITIONAL PLUMBING WORK.

14. ACCESS DOORS FOR FINISHED CONSTRUCTION

- 14.1. PROVIDE ACCESS DOORS AS REQUIRED FOR ALL CONCEALED VALVES, CLEANOUTS AND OTHER ELEMENTS REQUIRING ACCESS ABOVE CEILINGS OR BEHIND WALLS OR AS INDICATED ON THE DRAWINGS. THE INSTALLATION OF ALL DOORS WILL BE PERFORMED UNDER THE SPECIFICATIONS OF ANOTHER TRADE. COORDINATE THE WORK AND ASSUME RESPONSIBILITY FOR THE ACCESSIBILITY OF ALL VALVES.
- 14.2. USE THE FOLLOWING TYPE DOORS AS MANUFACTURED BY KARP ASSOCIATES, INC.
 - 14.2.1. IN PLASTER CEILINGS, KARP DSC 210-PL.
 - 14.2.2. IN 3 HOUR MASONRY ENCLOSURES (PIPE OR DUCT SHAKTS), KARP DSC-211-FRT WITH 1-1/2 INCH VERMICULITE PLASTER FULL METAL LATH LINING FOR PLASTER SHALL BE SELF-FURRING TYPE, TACK WELDED TO PAN.
 - 14.2.3. IN NON-RATED MASONRY, KARP DSC-211.
 - 14.2.4. IN DRY WALL CONSTRUCTION, KARP DSC-214M.
- 14.3. SIZE ACCESS DOORS AS INDICATED ON THE DRAWINGS, OR AS SPECIFIED, BUT NOT SMALLER THAN 18 INCHES BY 18 INCHES. WHERE MORE THAN TWO VALVES ARE SERVED BY A DOOR AND THE BONNETS ARE WITHIN 12 INCHES OF THE FACE OF THE DOOR, THE SIZE OF THE DOOR SHALL BE INCREASED SO THAT ALL PORTIONS OF THE VALVES ARE WITHIN THE AREA DEFINED BY THE OPENING IN THE DOOR. WHERE THE BONNETS OF THE VALVES ARE MORE THAN 12 INCHES FROM THE FACE OF THE DOOR, THE DOORS SHALL HAVE A MINIMUM OF 20 INCH X 20 INCH CLEAR OPENING.
- 14.4. FURNISH BUTTONS OR TABS TO CEILING CONTRACTOR FOR SETTING, AS APPROVED BY ARCHITECT, TO INDICATE LOCATION OF VALVES, CLEANOUTS OR OTHER EQUIPMENT LOCATED ABOVE REMOVABLE TYPE CEILINGS WHERE ACCESS DOORS ARE NOT FURNISHED.

15. TESTS

- 15.1. TEST THE SYSTEMS BEFORE ANY PAINT IS APPLIED.
- 15.2. TEST ALL SYSTEMS IN FULL ACCORDANCE WITH APPLICABLE UNDERWRITERS' AND MUNICIPAL REQUIREMENTS, BUT IN NO CASE SHALL THE SPRINKLER SYSTEM BE TESTED AT LESS THAN 200 PSI. HYDROSTATIC PRESSURE. APPLY THE TEST FOR A MINIMUM OF TWO (2) CONSECUTIVE HOURS WITH NO LOSS IN PRESSURE. PRIOR TO APPLYING THE HYDROSTATIC TEST ON A DRY PIPE SYSTEM, IT SHALL BE TESTED WITH 40 PSIG COMPRESSED AIR FOR A PERIOD OF 24 HOURS WITH A PRESSURE LOSS NOT TO EXCEED 1/2" PSIG.
- 15.3. FURNISH AND PAY FOR ALL DEVICES, MATERIALS, SUPPLIES, LABOR AND POWER REQUIRED IN CONNECTION WITH TESTS. MAKE ALL TESTS IN THE PRESENCE AND TO THE SATISFACTION OF THE ENGINEER, INSURANCE UNDERWRITERS AND CITY INSPECTORS HAVING JURISDICTION.
- 15.4. REPAIR, OR IF REQUIRED BY THE ENGINEER REPLACE, DEFECTIVE WORK WITH NEW WORK WITHOUT EXTRA CHARGE TO THE OWNER. REPEAT TESTS AS DIRECTED, UNTIL ALL WORK IS PROVEN SATISFACTORY.
- 15.5. RESTORE TO ITS ORIGINAL CONDITION ANY WORK DAMAGED OR DISTURBED BY TESTS, ENGAGING THE ORIGINAL TRADES TO DO THE WORK OF RESTORATION.
- 15.6. NOTIFY THE ENGINEER AND INSPECTORS HAVING JURISDICTION AT LEAST 48 HOURS IN ADVANCE OF MAKING THE REQUIRED TESTS, SO THAT ARRANGEMENTS MAY BE MADE FOR THEIR PRESENCE TO WITNESS THE TESTS.
- 15.7. TEST EQUIPMENT IN SERVICE AND DEMONSTRATE THAT THE EQUIPMENT PERFORMS THE WORK INTENDED FOR AND THAT IT COMPLIES WITH THE REQUIREMENTS OF THESE SPECIFICATIONS FOR SUCH EQUIPMENT.

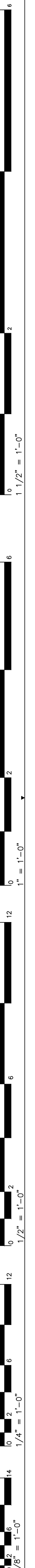
16. GUARANTEE AND CERTIFICATIONS

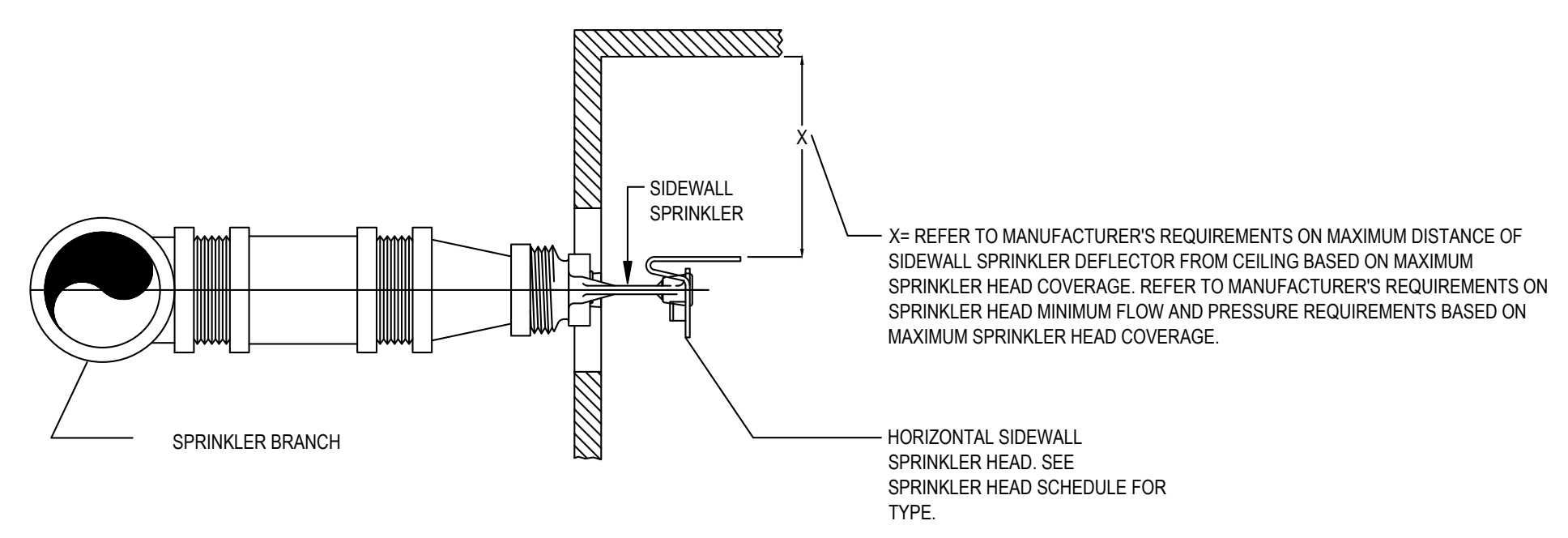
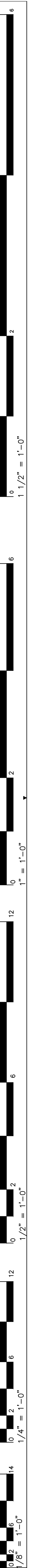
- 16.1. ALL WORK SHALL BE GUARANTEED TO BE FREE FROM LEAKS OR DEFECTS. ANY DEFECTIVE MATERIALS OR WORKMANSHIP AS WELL AS DAMAGE TO THE WORK OF OTHER TRADES RESULTING FROM SAME SHALL BE REPLACED OR REPAIRED AS DIRECTED FOR THE DURATION OF STIPULATED GUARANTEE PERIODS. THE DURATION OF GUARANTEE PERIODS SHALL BE ONE YEAR FROM THE DATE OF THE FINAL ACCEPTANCE OF THE INSTALLATION BY THE OWNER, UNLESS A MORE STRINGENT PERIOD IS STIPULATED ELSEWHERE.

17. ENGINEER REVIEW, SHOP DRAWINGS, AND CERTIFICATIONS

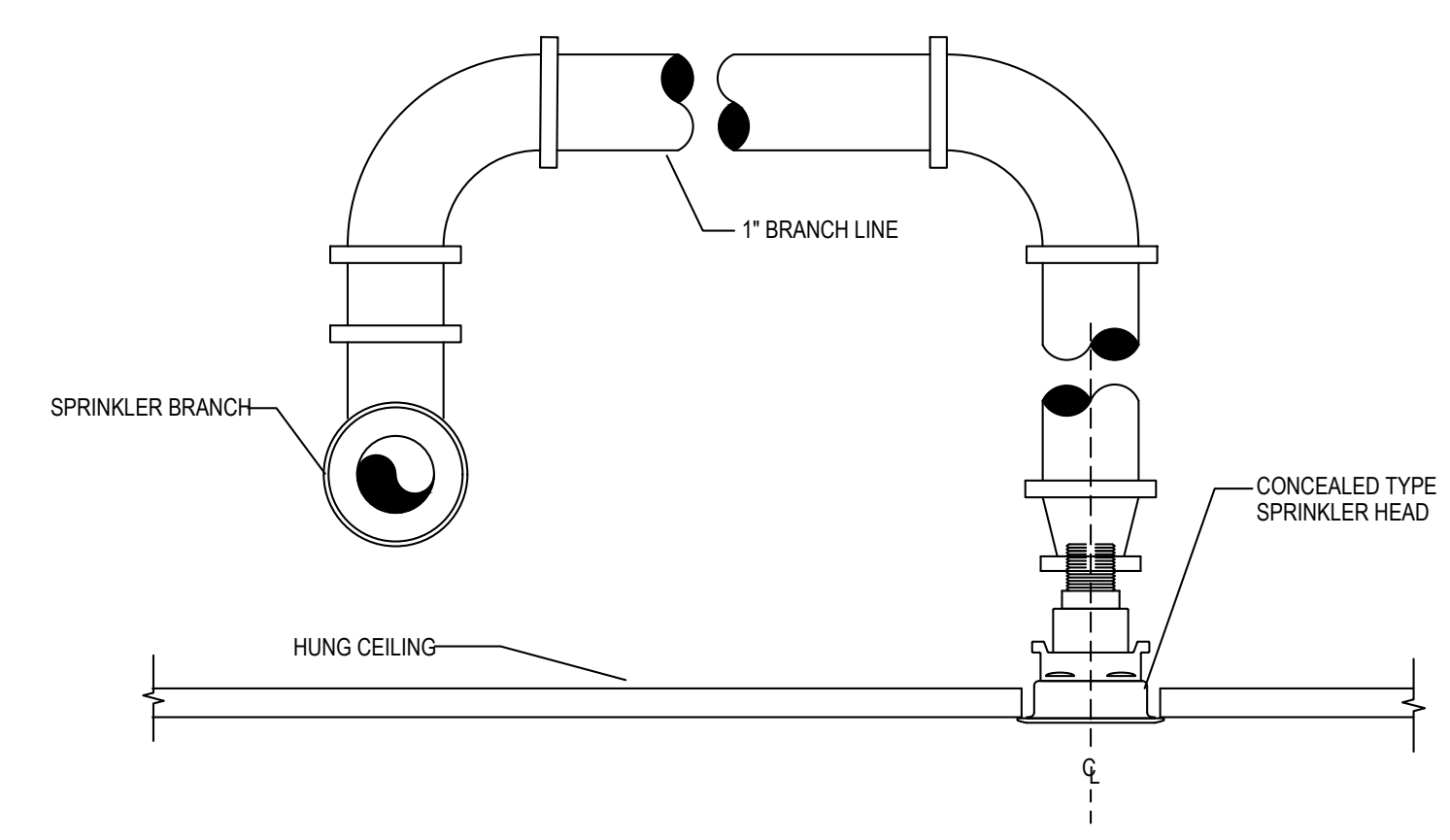
- 17.1. PREPARE AND SUBMIT DETAILED SHOP DRAWINGS. THE ENGINEER WILL REVIEW SHOP DRAWINGS AND SAMPLES FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND THE INFORMATION CONTAINED IN THE CONTRACT DOCUMENTS. THE ENGINEER'S REVIEW OF SHOP DRAWINGS AND SAMPLES IS ONLY FOR THE CONFORMANCE OF THE OWNER IN FOLLOWING THE WORK AND DOES NOT RELIEVE THIS TRADE OF RESPONSIBILITY FOR DEVIATIONS FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE ENGINEER'S REVIEW SHALL NOT BE CONSTRUED AS A COMPLETE OR DETAILED CHECK OF THE WORK SUBMITTED, NOR SHALL IT RELIEVE THIS TRADE OF RESPONSIBILITY FOR ERRORS OF ANY SORT IN THE SHOP DRAWINGS AND SAMPLES, OR FROM THE NECESSITY OF FURNISHING ANY WORK REQUIRED BY THE CONTRACT DOCUMENTS WHICH HAVE BEEN OMITTED FROM THE SHOP DRAWING SUBMITTALS.
- 17.2. NO PART OF THE WORK SHALL BE STARTED IN THE SHOP OR IN THE FIELD UNTIL THE ENGINEER HAS REVIEWED THE SHOP DRAWINGS AND SAMPLES FOR THAT PORTION OF THE WORK. THEREAFTER, THE WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND THE INDICATED STATUS OF THE REVIEWED SHOP DRAWINGS. PRIOR TO ASSEMBLING THE WORK, THE FOLLOWING SHALL BE SUBMITTED: SCALED FLOOR PLAN AND CEILING DRAWINGS WITH DIMENSIONED LOCATIONS OF ALL PIPING AND EQUIPMENT INCLUDING SIZES, ELEVATIONS, AND APPROPRIATE INDICATION OF COORDINATION BETWEEN STRUCTURAL AND MECHANICAL ELEMENTS, MANUFACTURER'S CATALOGUE CUTS OF ALL EQUIPMENT TO BE USED. SAMPLES OF ALL DEVICES, WHICH WILL BE CLEARLY VISIBLE TO VIEW. ALL SUBMITTALS SHALL BE PROPERLY IDENTIFIED WITH PROJECT NAME, ARCHITECT, ENGINEER, AND SUBCONTRACTOR'S NAME, ADDRESS, AND TELEPHONE NUMBER. PROVIDE CLEAR DETAILED REPRODUCIBLE "AS-BUILT" DRAWINGS UPON COMPLETION OF WORK AND PROVIDE SETS OF THE SAME TO LANDLORD AS DIRECTED.
- 17.3. THE ARCHITECT AND/OR ENGINEER WILL REVIEW SHOP DRAWINGS AND SAMPLES WITH REASONABLE PROMPTNESS AND WILL RETURN THEM TO THE CONTRACTOR STAMPED TO INDICATE THE APPROPRIATE ACTION AS FOLLOWS:
 - 17.3.1. "NO EXCEPTIONS TAKEN" MEANS THAT FABRICATION, MANUFACTURE OR CONSTRUCTION MAY PROCEED PROVIDING THE SUBMITTAL COMPLEX WITH THE CONTRACT DOCUMENTS.
 - 17.3.2. "MAKE CORRECTIONS NOTED" MEANS THAT FABRICATION, MANUFACTURE OR CONSTRUCTION MAY PROCEED PROVIDING THE SUBMITTAL COMPLEX WITH THE ARCHITECT'S AND/OR ENGINEER'S NOTATIONS AND THE CONTRACT DOCUMENTS. A COPY OF THE CORRECTED SUBMITTAL SHALL BE RETURNED TO THE ARCHITECT AND/OR ENGINEER FOR RECORD. IF, FOR ANY REASON, THE CONTRACTOR CANNOT COMPLY WITH THE NOTATIONS, THE CONTRACTOR SHALL RESUBMIT AS DESCRIBED FOR SUBMITTALS STAMPED "REVISE AND RESUBMIT".
 - 17.3.3. "REVISE AND RESUBMIT" MEANS THAT THE CONTRACTOR MUST COMPLY WITH THE ARCHITECT'S AND/OR ENGINEER'S NOTATIONS AND RESUBMIT BEFORE FABRICATION, MANUFACTURE OR CONSTRUCTION MAY PROCEED. SUBMITTALS STAMPED IN THIS MANNER ARE NOT PERMITTED ON THE JOB SITE.
 - 17.3.4. "REJECTED" MEANS THAT THE SUBMITTAL DOES NOT COMPLY WITH THE CONTRACT DOCUMENTS AND THAT FABRICATION, MANUFACTURE, CONSTRUCTION SHALL NOT PROCEED. SUBMITTALS STAMPED IN THIS MANNER ARE NOT PERMITTED ON THE JOB SITE.

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| <input type="checkbox"/> DESIGN DEVELOPMENT | 2/21/2024 |
| <input type="checkbox"/> 50% CDs | 3/18/2024 |
| <input type="checkbox"/> PERMIT | 3/25/2024 |
| <input checked="" type="checkbox"/> 100% CONST. DOC. | 4/8/2024 |
| <input checked="" type="checkbox"/> ISSUED FOR CONSTRUCTION | 7/25/2024 |

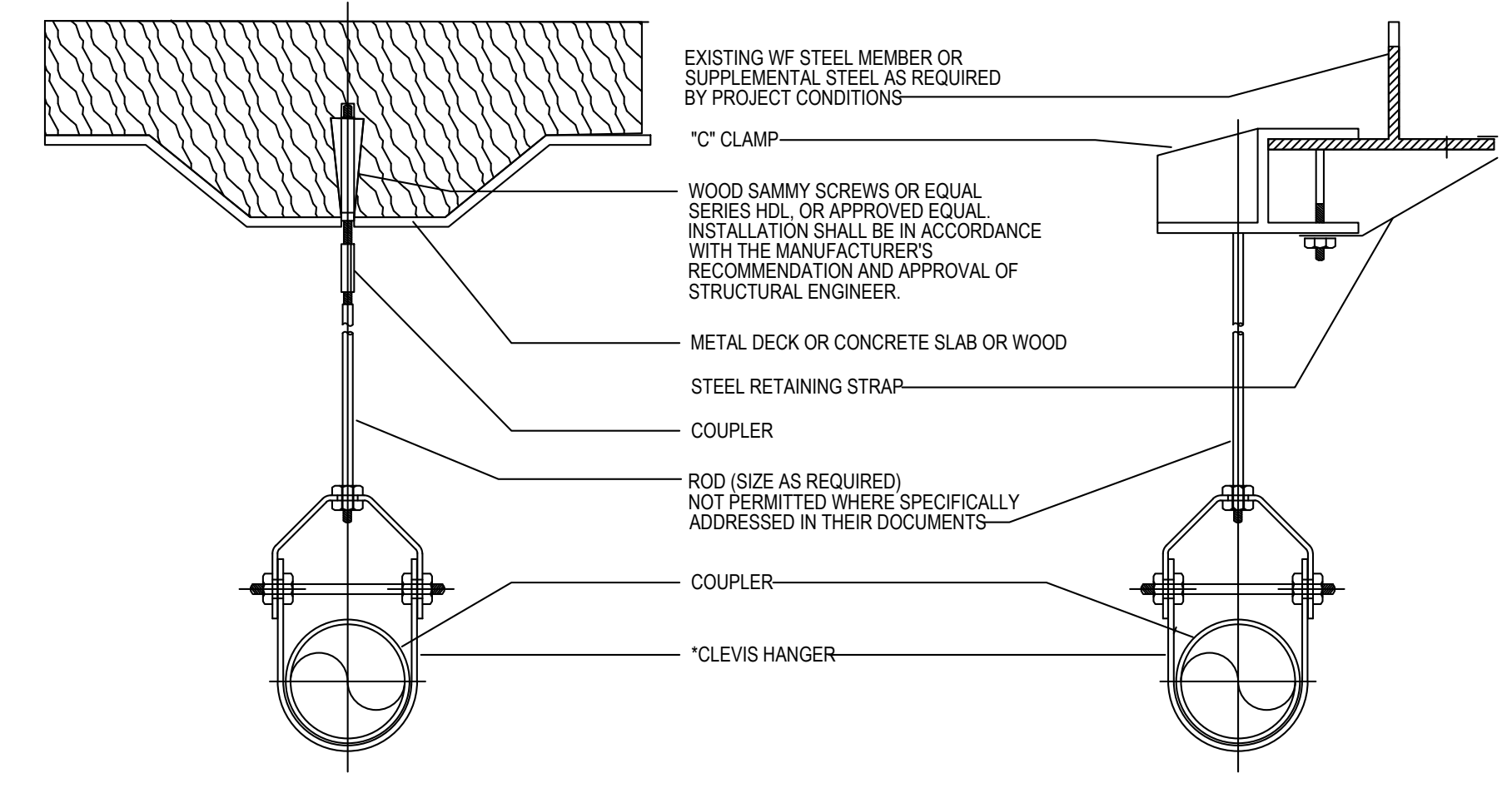




1 TYPICAL HORIZONTAL SIDEWALL SPRINKLER HEAD DETAIL
NOT TO SCALE

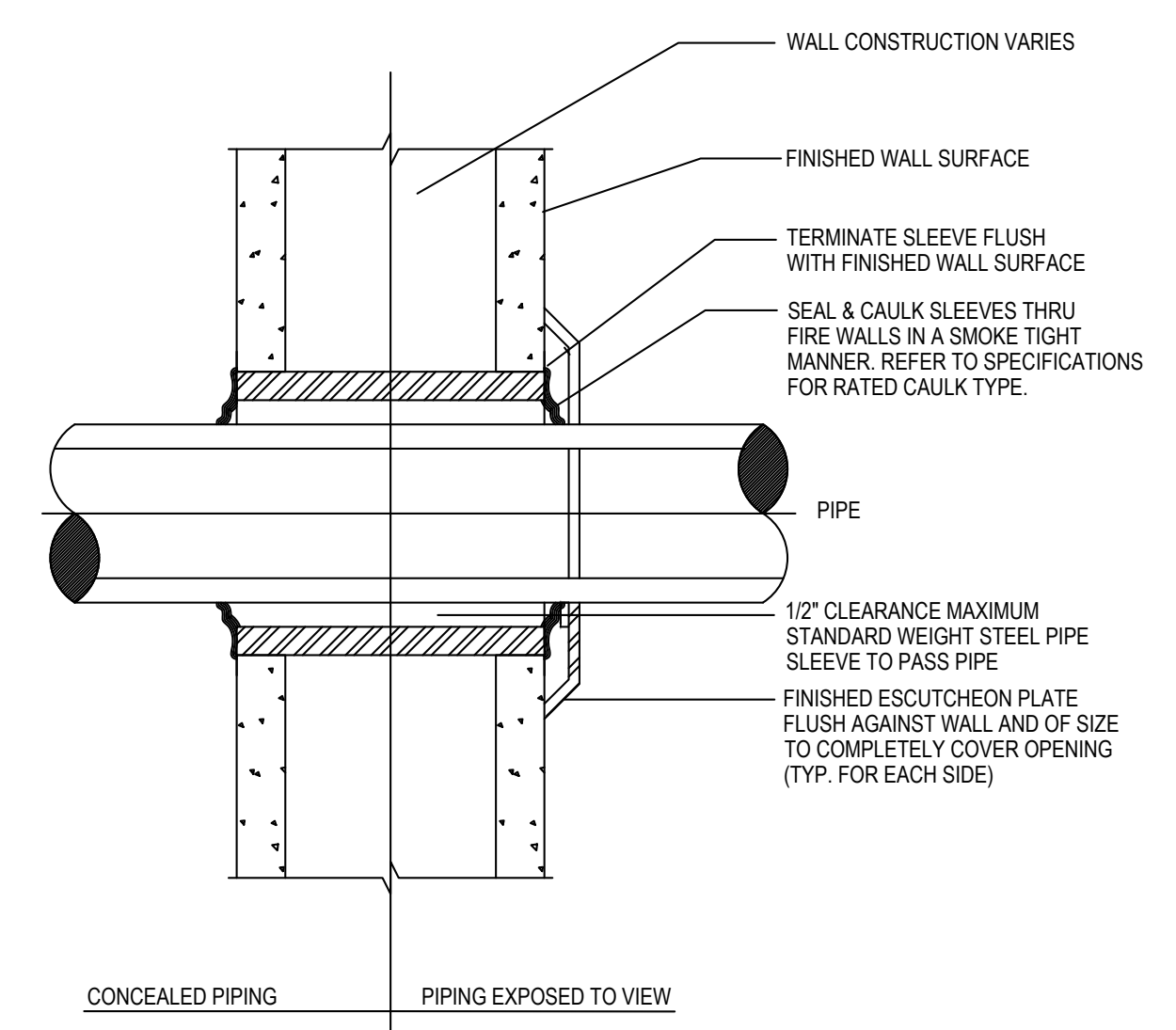


2 TYPICAL SPRINKLER ARM OVER DETAIL
NOT TO SCALE

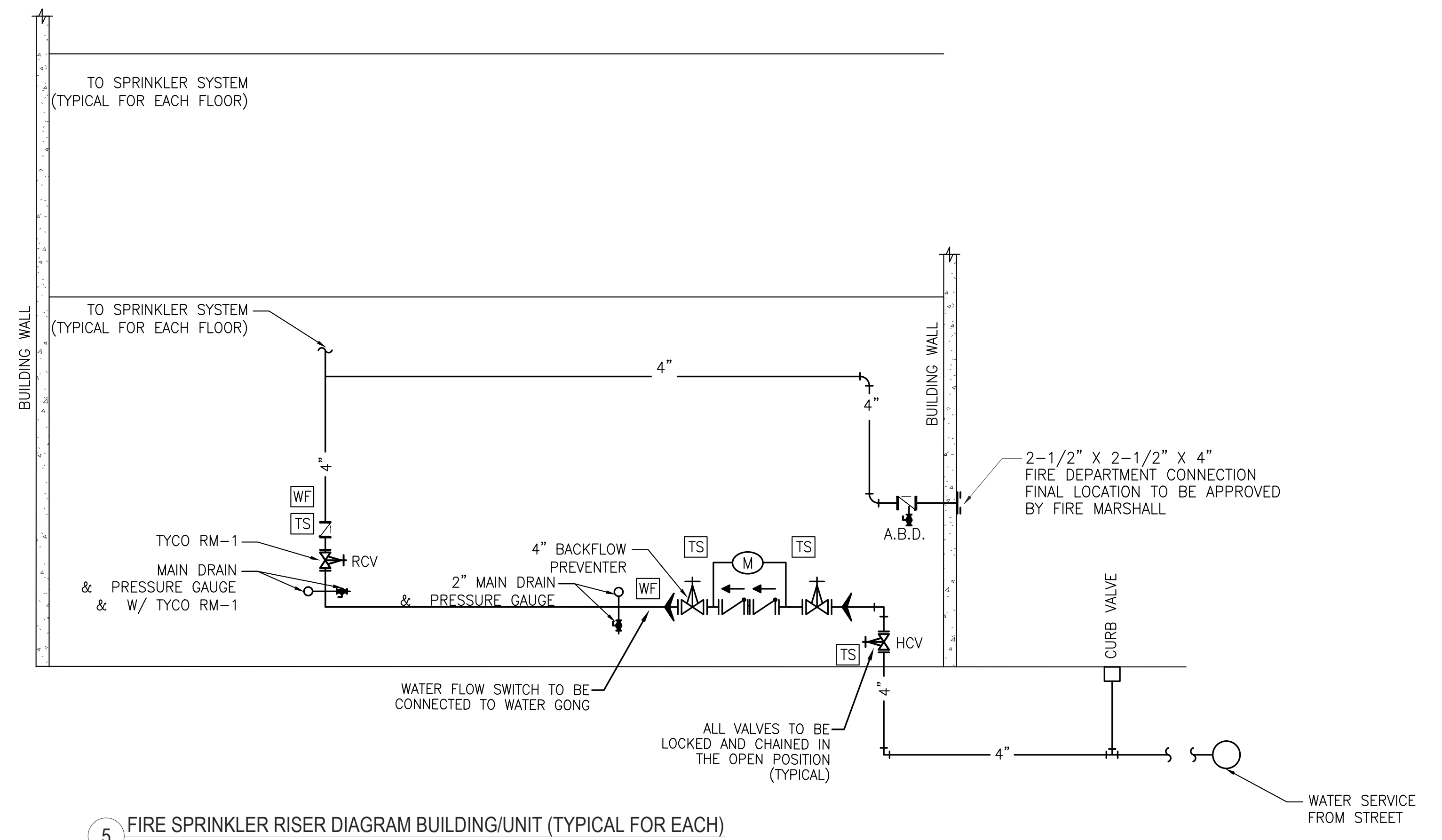


NOTES:
1. CLEVIS HANGERS REQUIRED ON PIPING LARGER THAN 1"
2. GENERAL PURPOSE HANGERS MAY BE USED ON 1" SPRINKLER PIPING ONLY.

3 TYPICAL HANGER DETAIL
NOT TO SCALE



4 TYPICAL DETAIL OF PIPE INSTALLATION THROUGH RATED WALL
NOT TO SCALE



5 FIRE SPRINKLER RISER DIAGRAM BUILDING/UNIT (TYPICAL FOR EACH)
NOT TO SCALE

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| <input type="checkbox"/> DESIGN DEVELOPMENT | 2/21/2024 |
| <input type="checkbox"/> 50% CDS | 3/18/2024 |
| <input type="checkbox"/> PERMIT | 3/25/2024 |
| <input checked="" type="checkbox"/> 100% CONST. DOC. | 4/8/2024 |
| <input checked="" type="checkbox"/> ISSUED FOR CONSTRUCTION | 7/25/2024 |

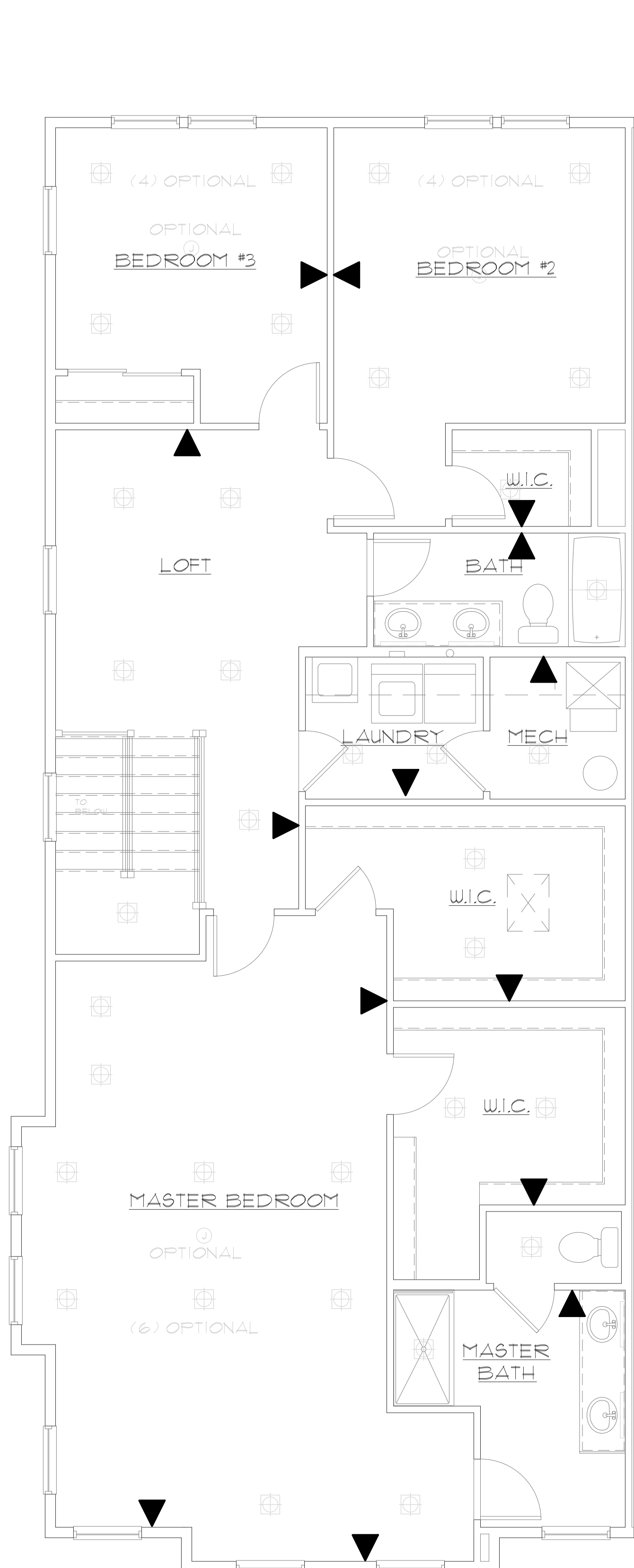
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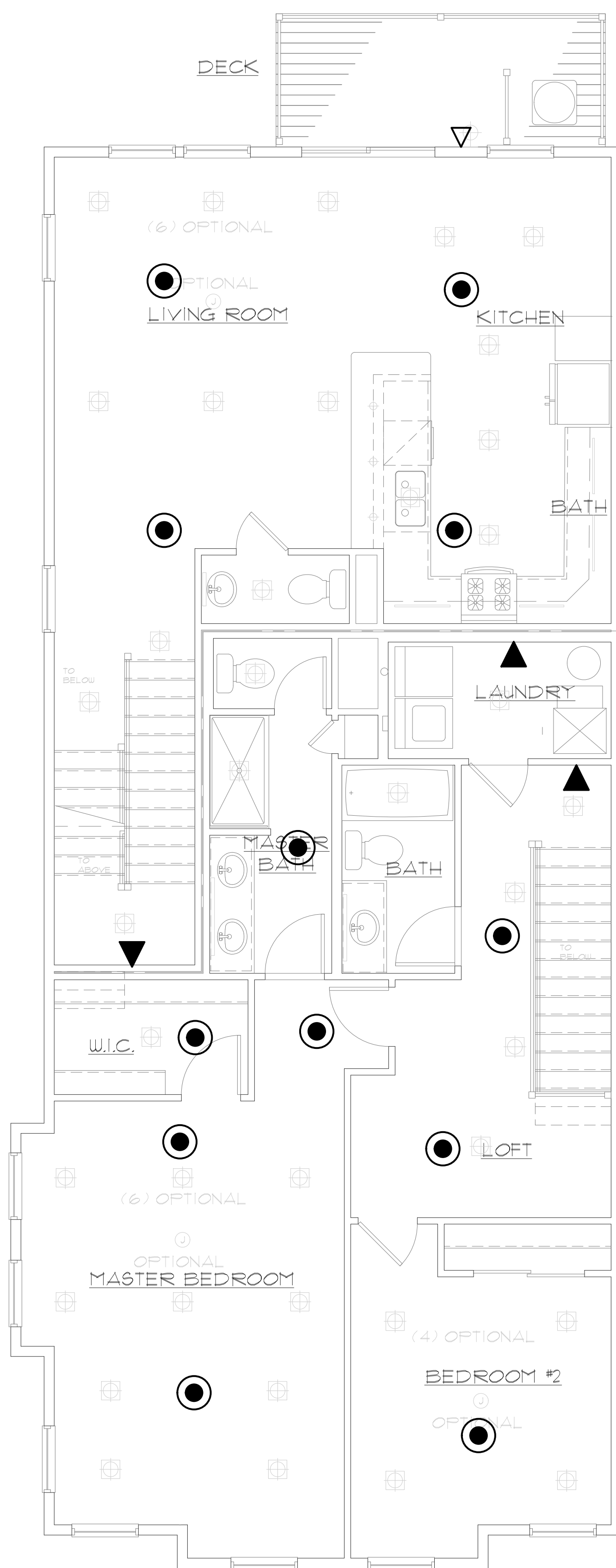
FIRE PROTECTION GENERAL NOTES:

1. SPRINKLER SHALL NOT BE LESS THAN 8 FT IN SAME COMPARTMENT
2. PROVIDE SPRINKLER HEADS UNDER FIXED OBSTRUCTIONS OVER 4 FT WIDE. SPRINKLER HEADS SHALL BE COORDINATED WITH FIXED OBSTRUCTIONS AND POSITION HEADS AS PER NFPA FOR ADEQUATE SPRINKLER DISCHARGE PATTERN.
3. NO SPRINKLER HEADS REQUIRED IN BATHROOMS LESS THAN 55 SQFT.
4. PROVIDE CORROSION RESISTANT PROTECTIVE COATING SPRINKLER HEADS IN BATHROOM OVER 55 SQFT.
5. CLOSETS THAT CONTAINS FIRE PROTECTION EQUIPMENT SHALL BE SPRINKLERED REGARDLESS OF SIZE.
6. PROVIDE 20'X20' RESIDENTIAL SPRINKLER IN ALL APARTMENT UNITS.
7. INSTALLING CONTRACTOR TO VERIFY CEILING HEIGHTS/SOFFITS, ANY OPEN TO ABOVE/BELOW SPACES AND MODIFY HEAD LAYOUT IN ACCORDANCE WITH NFPA 13R
8. SPRINKLER HEADS TO MEET MANUFACTURERS MINIMUM PRESSURE AND FLOW REQUIREMENTS (TYPICAL FOR ALL UNITS)
9. ALL HEADS TO BE CENTERED WITH OTHER CEILING DEVICES AND SPACED EQ/EQ
10. FIRE SPRINKLER CONTRACTOR TO COORDINATE WITH INTERIOR DESIGN REFLECTED CEILING PLANS AND MEP CEILING PLANS

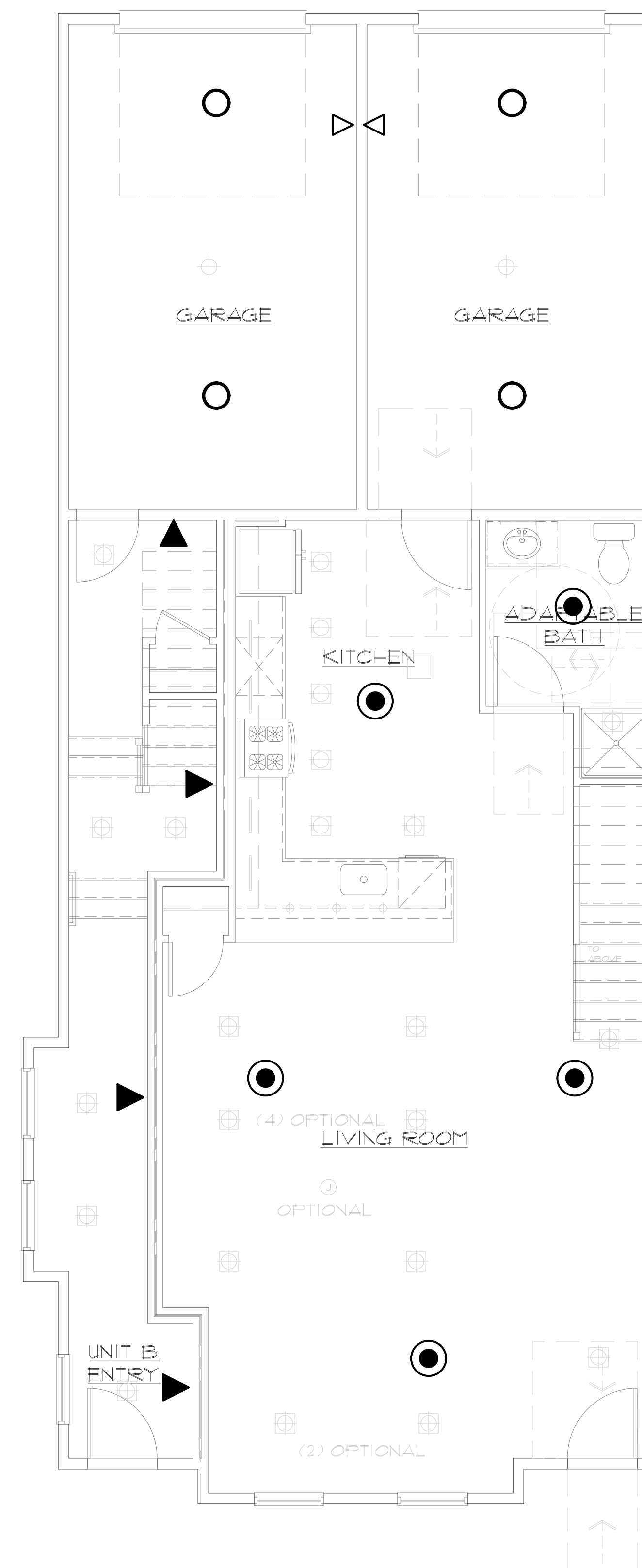
IF INSULATION CANNOT BE INSTALLED ON TOP OF SPRINKLER PIPES ON THE THIRD FLOOR, PROVIDE SIDEWALL SPRINKLERS ON 3RD FLOOR UNITS FED FROM THE FLOOR BELOW



FIRE PROTECTION THIRD FLOOR PLAN - A + B
SCALE: 1/4" = 1'-0"



FIRE PROTECTION SECOND FLOOR PLAN - A + B
SCALE: 1/4" = 1'-0"



FIRE PROTECTION FIRST FLOOR PLAN - A + B
SCALE: 1/4" = 1'-0"

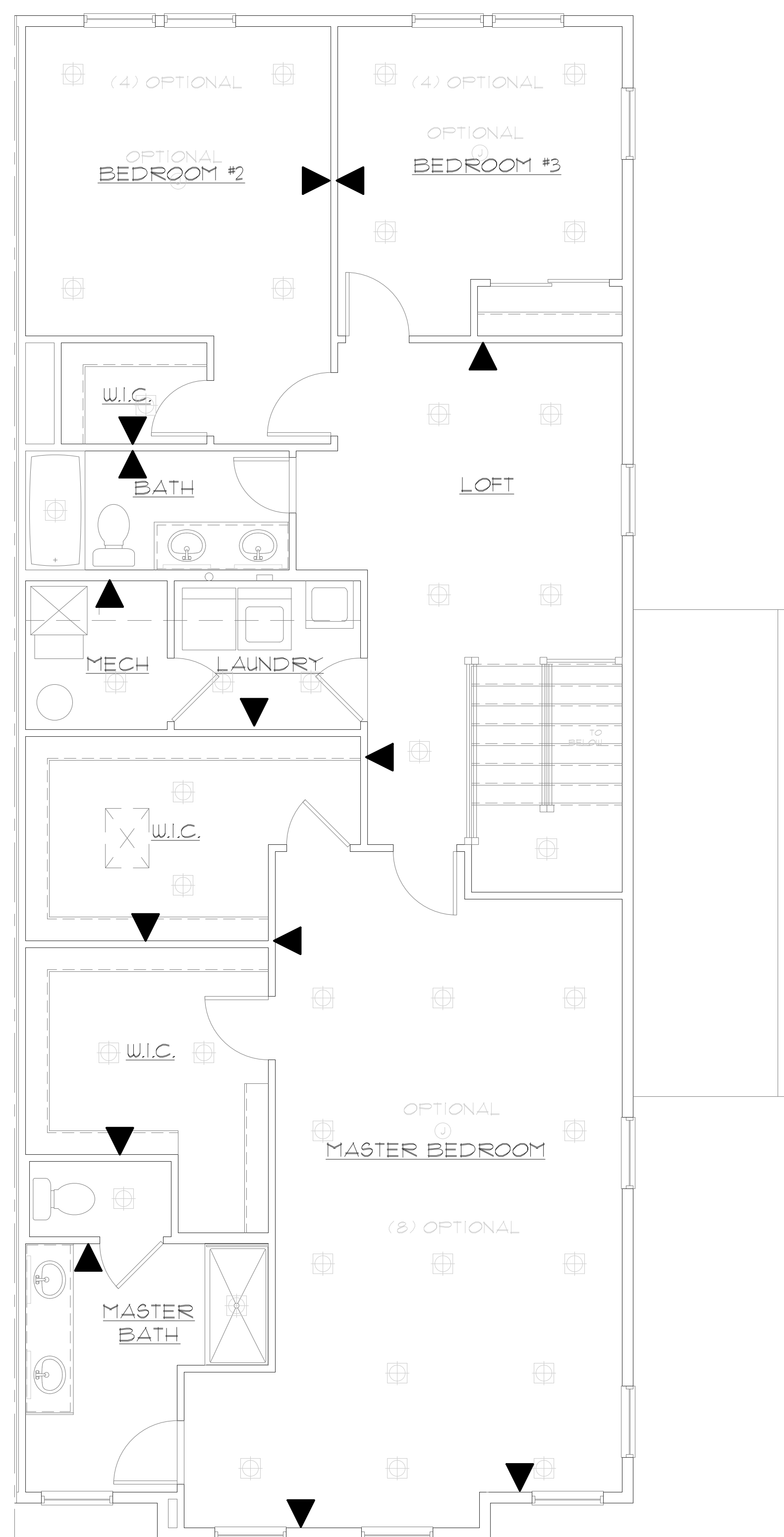
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| <input type="checkbox"/> SCHEMATIC DESIGN | 1/26/2024 |
| <input type="checkbox"/> DESIGN DEVELOPMENT | 2/21/2024 |
| <input type="checkbox"/> 50% CDS | 3/18/2024 |
| <input type="checkbox"/> PERMIT | 3/25/2024 |
| <input checked="" type="checkbox"/> 100% CONST. DOC. | 4/8/2024 |
| <input checked="" type="checkbox"/> ISSUED FOR CONSTRUCTION | 7/25/2024 |

| NO. | DATE | DESCRIPTION |
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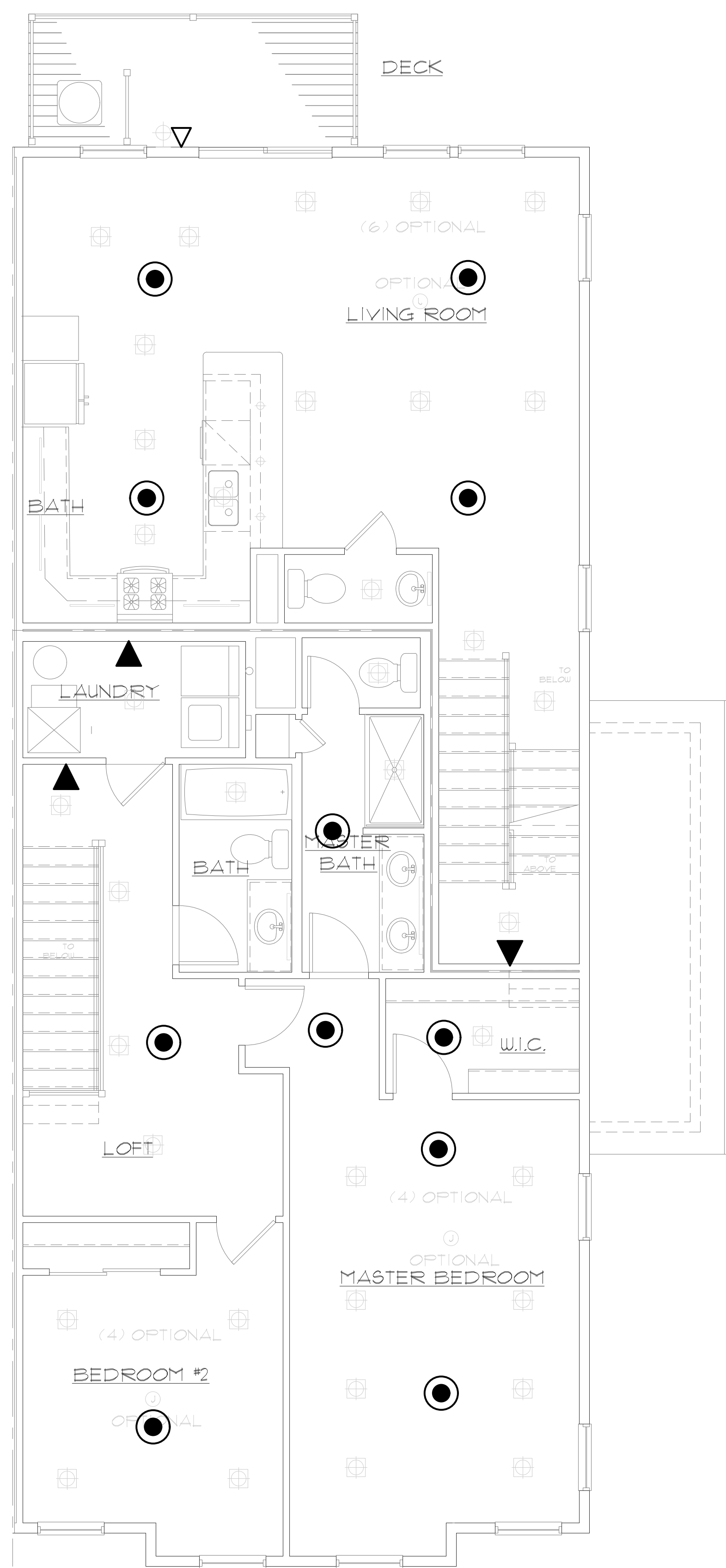
FIRE PROTECTION GENERAL NOTES:

1. SPRINKLER SHALL NOT BE LESS THAN 8 FT IN SAME COMPARTMENT
2. PROVIDE SPRINKLER HEADS UNDER FIXED OBSTRUCTIONS OVER 4 FT WIDE. SPRINKLER HEADS SHALL BE COORDINATED WITH FIXED OBSTRUCTIONS AND POSITION HEADS AS PER NFPA FOR ADEQUATE SPRINKLER DISCHARGE PATTERN.
3. NO SPRINKLER HEADS REQUIRED IN BATHROOMS LESS THAN 55 SQFT.
4. PROVIDE CORROSION RESISTANT PROTECTIVE COATING SPRINKLER HEADS IN BATHROOM OVER 55 SQFT.
5. CLOSETS THAT CONTAINS FIRE PROTECTION EQUIPMENT SHALL BE SPRINKLERED REGARDLESS OF SIZE.
6. PROVIDE 20'X20' RESIDENTIAL SPRINKLER IN ALL APARTMENT UNITS.
7. INSTALLING CONTRACTOR TO VERIFY CEILING HEIGHTS/SOFFITS, ANY OPEN TO ABOVE/BELOW SPACES AND MODIFY HEAD LAYOUT IN ACCORDANCE WITH NFPA 13R
8. SPRINKLER HEADS TO MEET MANUFACTURERS MINIMUM PRESSURE AND FLOW REQUIREMENTS (TYPICAL FOR ALL UNITS)
9. ALL HEADS TO BE CENTERED WITH OTHER CEILING DEVICES AND SPACED EQ/EQ
10. FIRE SPRINKLER CONTRACTOR TO COORDINATE WITH INTERIOR DESIGN REFLECTED CEILING PLANS AND MEP CEILING PLANS

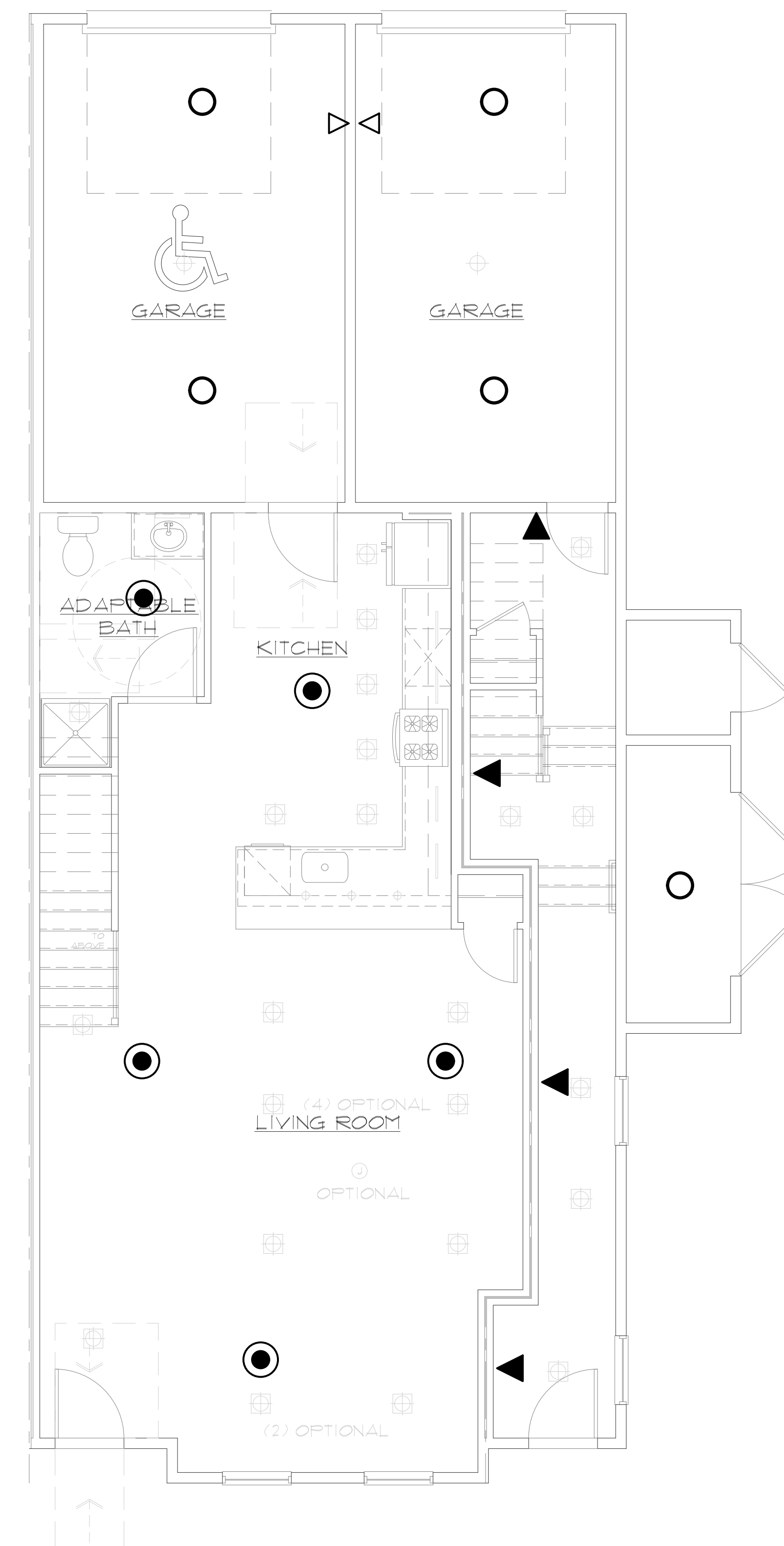
IF INSULATION CANNOT BE INSTALLED ON TOP OF SPRINKLER PIPES ON THE THIRD FLOOR, PROVIDE SIDEWALL SPRINKLERS ON 3RD FLOOR UNITS FED FROM THE FLOOR BELOW



FIRE PROTECTION THIRD FLOOR PLAN - A + B (MIRRORED)
SCALE: 1/4" = 1'-0"



FIRE PROTECTION SECOND FLOOR PLAN - A + B (MIRRORED)
SCALE: 1/4" = 1'-0"



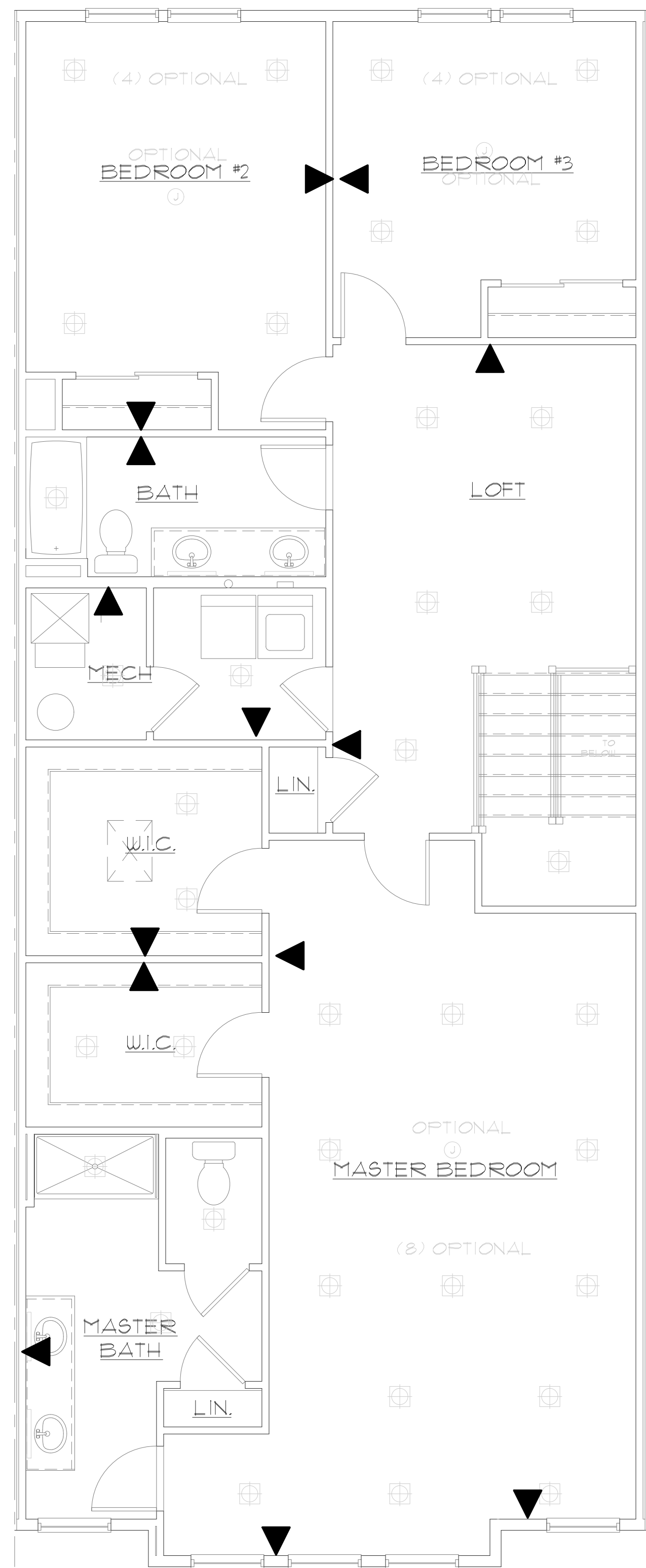
FIRE PROTECTION FIRST FLOOR PLAN - A + B (MIRRORED)
SCALE: 1/4" = 1'-0"

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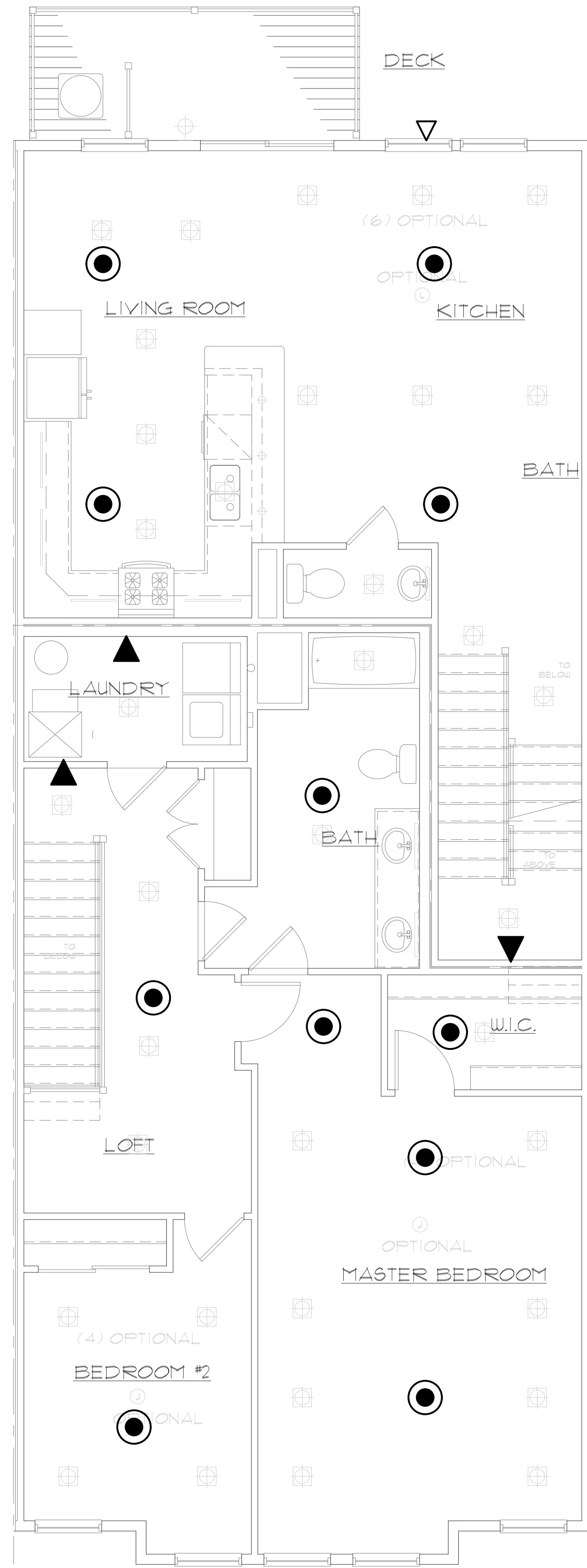
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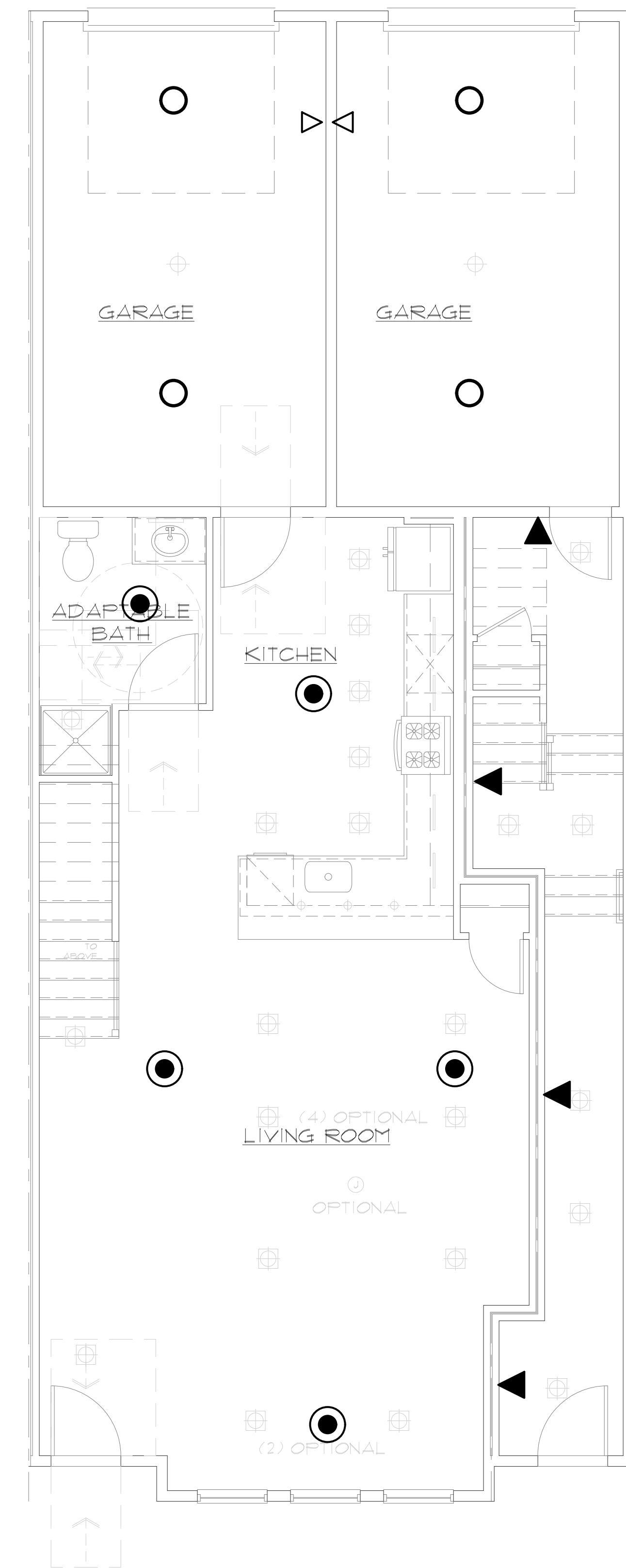
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FIRE PROTECTION THIRD FLOOR PLAN - C + D
SCALE: 1/4" = 1'-0"



FIRE PROTECTION SECOND FLOOR PLAN - C + D
SCALE: 1/4" = 1'-0"

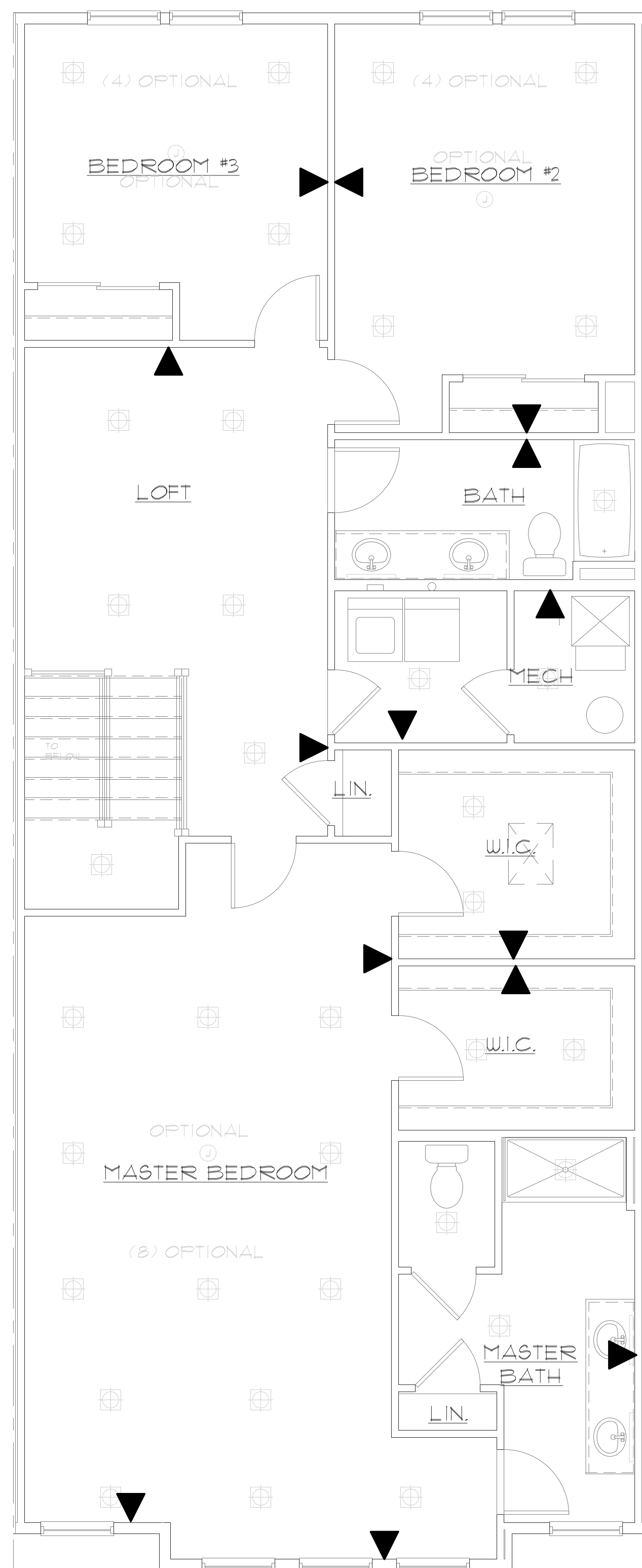


FIRE PROTECTION FIRST FLOOR PLAN - C + D
SCALE: 1/4" = 1'-0"

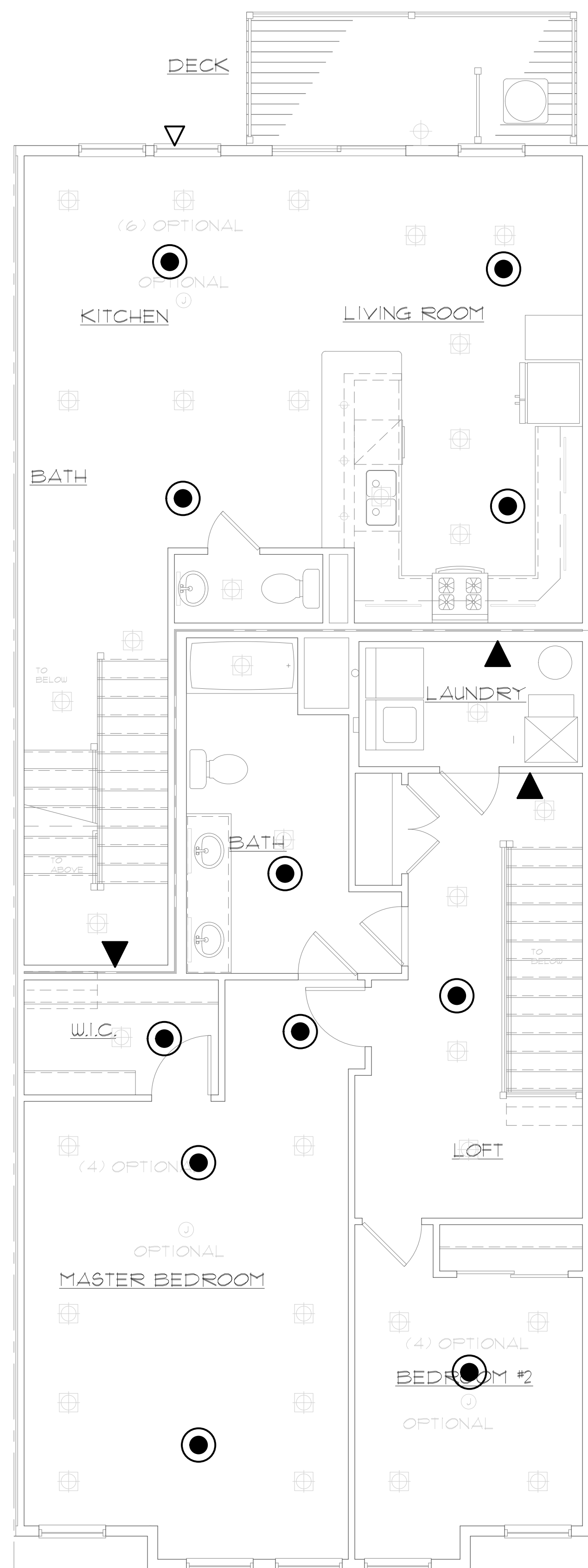
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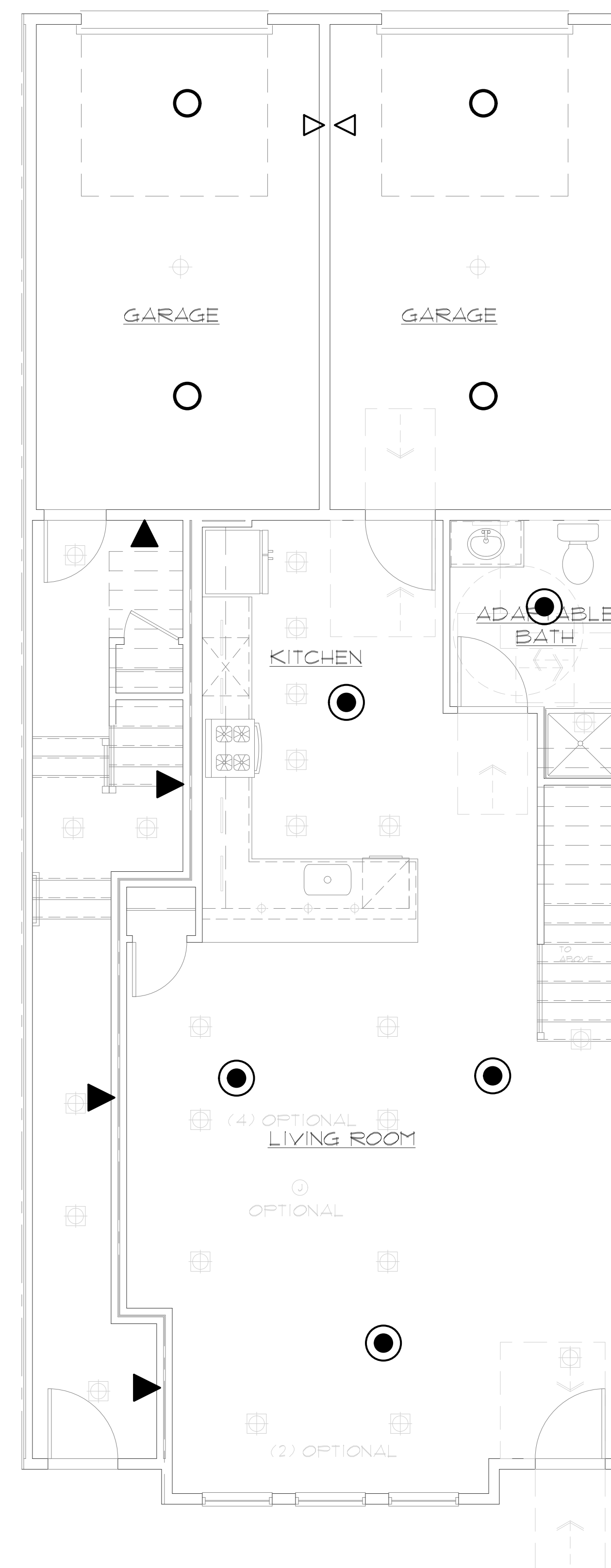
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**FIRE PROTECTION THIRD FLOOR PLAN - C + D
(MIRRORED)**
SCALE: 1/4" = 1'-0"



**FIRE PROTECTION SECOND FLOOR PLAN - C + D
(MIRRORED)**
SCALE: 1/4" = 1'-0"



**FIRE PROTECTION FIRST FLOOR PLAN - C + D
(MIRRORED)**
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