



8. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
9. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.
10. PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
11. PROVIDE VIBRATION ISOLATORS FOR ALL PIPING SUPPORTS CONNECTED TO, AND WITHIN 50 FT. OF, ISOLATED EQUIPMENT (EXCEPT AT BASE ELBOW SUPPORTS AND ANCHOR POINTS).
12. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
13. WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATION OF BEAMS.
14. ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
15. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.
16. MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.
17. ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
18. ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.
19. ALL ROOF-MOUNTED EQUIPMENT CURBS/STEEL RAILS FOR EQUIPMENT PROVIDED BY THE MECHANICAL CONTRACTOR SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR.
20. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
21. ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
22. ALL AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH AIR HANDLING UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, AND PIPED TO THE NEAREST DRAIN. SEE THE DETAILS SHOWN IN THE DRAWINGS OR THE CONTRACT SPECIFICATIONS FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP.
23. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.
24. REINFORCEMENT, DETAILING, AND PLACEMENT OF CONCRETE SHALL CONFORM TO ASTM 315 AND ACI 318. CONCRETE SHALL CONFORM TO ASTM C94. CONCRETE WORK SHALL CONFORM TO ACI 318 PART ENTITLED "CONSTRUCTION REQUIREMENTS". COMPRESSIVE STRENGTH IN 28 DAYS SHALL BE 3,000 PSI. TOTAL AIR CONTENT OR EXTERIOR CONCRETE SHALL BE BETWEEN 5 AND 7 PERCENT BY VOLUME. SLUMP SHALL BE BETWEEN 3 AND 4 IN. CONCRETE SHALL BE CURED FOR 7 DAY AFTER PLACEMENT.
25. CONCRETE HOUSEKEEPING PADS TO SUIT MECHANICAL EQUIPMENT SHALL BE SIZED AND LOCATED BY THE MECHANICAL CONTRACTOR. MINIMUM CONCRETE PAD THICKNESS SHALL BE 6 IN. PAD SHALL EXTEND BEYOND THE EQUIPMENT A MINIMUM OF 6 IN. ON EACH SIDE. CONCRETE HOUSEKEEPING PADS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE THE SIZE AND LOCATION OF CONCRETE HOUSEKEEPING PADS WITH THE GENERAL CONTRACTOR.
26. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.
27. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). TESTING, ADJUSTING, AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE AABC STANDARDS.

#### HVAC DUCTWORK – SHEET METAL

1. CERTAIN ITEMS SUCH AS RISES AND DROPS IN DUCTWORK ACCESS DOORS, VOLUME DAMPERS, ETC., ARE INDICATED ON THE CONTRACT DOCUMENT DRAWINGS FOR CLARITY FOR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENTS FOR THESE ITEMS.
2. ALL NEW DUCTWORK WILL COMPLY WITH THE LATEST SMACNA GUIDELINES AND CONFORM WITH REQUIREMENTS OF THE LATEST HANDBOOKS PUBLISHED BY ASHRAE.

3. PROVIDE VOLUME DAMPER AT EACH TAP TO MAIN DUCT AND WHERE NECESSARY TO PROPERLY BALANCE SYSTEM.
4. SUPPLY AND RETURN DUCTWORK OF ALL AC UNITS SHALL BE LINED WITH 1.5" INSULATION HAVING ACOUSTIC AND THERMAL PROPERTIES.
5. CONTRACTOR SHALL SUPPLY AND INSTALL ALL NECESSARY SUPPLY DIFFUSERS AND RETURN AIR REGISTERS WHERE INDICATED ON THE DRAWING. COORDINATE LOCATION OF DIFFUSERS AND REGISTERS WITH REFLECTED CEILING PLAN.
6. IN CORRIDORS WHERE CEILING SPEAKERS AND AIR DIFFUSERS ARE INDICATED BETWEEN THE SAME LIGHT FIXTURES, INSTALL BOTH DEVICES AT THE QUARTER POINTS BETWEEN THE FIXTURES.
7. UNLESS OTHERWISE SHOWN, LOCATE ALL ROOM THERMOSTATS (CENTER LINE) ABOVE THE FINISHED FLOOR. NOTIFY THE ENGINEER OF ANY ROOMS WHERE THE PRECEDING LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.
8. ALL DUCTWORK SHALL CLEAR DOORS AND WINDOWS.

9. ALL DUCTWORK DIMENSIONS, AS SHOWN ON THE DRAWINGS, ARE INTERNAL CLEAR DIMENSIONS AND DUCT SIZE SHALL BE INCREASED TO COMPENSATE FOR DUCT LINING THICKNESS.
10. PROVIDE ALL 90-DEGREE SQUARE ELBOWS WITH DOUBLE RADIUS TURNING VANES UNLESS OTHERWISE INDICATED. ELBOWS IN KITCHEN, AND LAUNDRY EXHAUSTS SHALL BE OF UN-VANED SMOOTH RADIUS CONSTRUCTION WITH A RADIUS EQUAL TO 1-1/2 TIMES THE WIDTH OF THE DUCT. PROVIDE ACCESS DOORS UPSTREAM OF ALL ELBOWS WITH TURNING VANES.
11. COORDINATE DIFFUSER AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING, AND OTHER CEILING ITEMS AND MAKE MINOR DUCT MODIFICATIONS TO SUIT.
12. FIELD-ERECTED AND FACTORY-ASSEMBLED AIR HANDLING UNIT COILS SHALL BE ARRANGED FOR REMOVAL FROM THE UPSTREAM SIDE WITHOUT DISMANTLING SUPPORTS. PROVIDE GALVANIZED STRUCTURAL STEEL SUPPORTS FOR ALL COILS (EXCEPT THE LOWEST COIL) IN BANKS OVER TWO COILS HIGH TO PERMIT THE INDEPENDENT REMOVAL OF ANY COIL.
13. ALL AIR HANDLING UNITS SHALL OPERATE WITHOUT MOISTURE CARRYOVER.
14. LOCATE ALL MECHANICAL EQUIPMENT (SINGLE DUCT, CONSTANT VOLUME, ETC.) FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS, AND VALVING.
15. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO AIR HANDLING UNITS, FANS, AND OTHER EQUIPMENT THAT REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.
16. UNLESS OTHERWISE NOTED, ALL DUCTWORK IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE, WITH SPACE FOR INSULATION IF NEEDED.
17. ALL DUCTWORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN DUCTS, INCLUDING DIVIDED DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
18. PROVIDE ACCESS DOORS IN DUCTWORK TO PROVIDE ACCESS FOR ALL SMOKE DETECTORS, FIRE DAMPERS, SMOKE DAMPERS, VOLUME DAMPERS, AND OTHER ITEMS LOCATED IN THE DUCTWORK THAT REQUIRE SERVICE AND/OR INSPECTION.
19. PROVIDE ACCESS DOORS IN DUCTWORK FOR THE OPERATION, ADJUSTMENT, AND MAINTENANCE OF ALL FANS, VALVES, AND MECHANICAL EQUIPMENT.
20. ALL DUCTS SHALL BE GROUNDED ACROSS FLEXIBLE CONNECTIONS WITH FLEXIBLE COPPER GROUNDING STRAPS. GROUNDING STRAPS SHALL BE BOLTED OR SOLDERED TO BOTH THE EQUIPMENT AND THE DUCT.
21. SMOKE DETECTORS SHALL BE FURNISHED AND WIRED BY THE ELECTRICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR MOUNTING THE SMOKE DETECTOR IN DUCTWORK AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS.
22. SEE SPECIFICATIONS FOR DUCTWORK GAUGES, BRACING, HANGERS, AND OTHER REQUIREMENTS.
23. EXCEPT AS OTHERWISE SHOWN OR NOTED, ALL DUCTWORK AND OTHER SHEET METAL WORK SHALL BE GALVANIZED SHEET STEEL AND SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. DUCT CONSTRUCTION STANDARDS, PRESSURE CLASSIFICATION 2 IN. W.G.

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24. SEALING OF DUCTWORK SHALL COMPLY WITH SECTION 603.9 OF THE MECHANICAL CODE OF NEW JERSEY STATES CONSTRUCTION CODES.
25. VOLUME DAMPERS: GALVANIZED STEEL, PER SMACNA "LOW VELOCITY MANUAL," EXCEPT PROVIDE BEARING AT ONE END OF DAMPER ROD AND QUADRANT, WITH LEVER AND LOCKSCREW AT OTHER END. FOR INSULATED DUCTS, QUADRANTS MOUNTED ON COLLAR TO CLEAR INSULATION. INSTALL WITH LEVERS ACCESSIBLE.
26. ACCESS DOORS: INSULATED OR UNINSULATED, SAME AS DUCT.

- 1) PROVIDE MINIMUM 20 IN. X 20 IN. (OR EQUIVALENT) ON ALL DUCTS, UNLESS OTHERWISE APPROVED, AT FIRE DAMPERS, AND AT ALL DUCT ACCESSORIES SUCH AS

#### VIBRATION ISOLATION

##### A. GENERAL:

- 1) PROVIDE ISOLATION FOR EQUIPMENT, PIPING AND DUCTWORK.
- 2) INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- 3) PROVIDE LEVELING DEVICES AND APPROVED RESILIENT RESTRAINING DEVICES AS REQUIRED TO LIMIT EQUIPMENT AND PIPING MOTION IN EXCESS OF 1/4".
- 4) ACCEPTABLE MANUFACTURERS:
  - a. MASON INDUSTRIES, INC.
  - b. VIBRATION ELIMINATOR CO.
  - c. KORFUND DYNAMICS CORP.

##### B. CEILING-HUNG FANS AND EQUIPMENT:

- 1) PROVIDE SPRING HANGER ROD ISOLATORS. STEEL COMPRESSION SPRING AND NEOPRENE SOUND PAD WITHIN A STEEL RETAINER BOX. SIMILAR TO MASON TYPE PCHS.
- 2) 1 IN. MINIMUM STATIC DEFLECTION. 1/2 IN. MINIMUM RESERVE DEFLECTION. FACTORY-PRELOADED TO 75% OF RATED LOAD.
- 3) PROVIDE SUPPLEMENTAL STEEL AS REQUIRED WHERE EQUIPMENT OR STRUCTURE CANNOT SUPPORT POINT LOADS.

##### C. FLOOR MOUNTED EQUIPMENT HAVING INTERNAL ISOLATION:

- 1) PROVIDE 5/16 IN.-THICK NEOPRENE ACOUSTICAL BASE PADS OF RIB.
- 2) ALL ROOM NC LEVELS SHALL BE 35 OR LESS.
- 3) PROVIDE SOUND LINING FOR THE FOLLOWING DUCTWORK:
  - 1) ALL DUCTWORK WITHIN NOT LESS THAN 20 FT ON EACH SIDE OF ALL FANS AND AC UNITS.
  - 2) AIR TRANSFER DUCTS.
  - 3) DOWNSTREAM OF ALL CONSTANT VOLUME BOXES FOR A MINIMUM OF 15 FT.
  - 4) ALL MIXED AIR PLENUMS.
  - 5) FULL EXTENT OF SUPPLY DUCTS SERVING CONFERENCE ROOMS.
  - 6) ALL EXPOSED INTERIOR SUPPLY DUCTWORK.
  - 7) ALSO WHERE NOTED ON A DRAWING.

##### NOISE CONTROL

- A. ALL ROOM NC LEVELS SHALL BE 35 OR LESS.
- B. PROVIDE SOUND LINING FOR THE FOLLOWING DUCTWORK:
  - 1) ALL DUCTWORK WITHIN NOT LESS THAN 20 FT ON EACH SIDE OF ALL FANS AND AC UNITS.
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  - 6) ALL EXPOSED INTERIOR SUPPLY DUCTWORK.
  - 7) ALSO WHERE NOTED ON A DRAWING.

##### THERMOSTATIC CONTROLS:

- A. GENERAL:
 

THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE INDIVIDUALLY CONTROLLED BY THERMOSTATIC CONTROLS RESPONDING TO TEMPERATURE WITHIN THE ZONE. FOR THE PURPOSES OF SECTION 6.4.3.1, A DWELLING UNIT SHALL BE PERMITTED TO BE CONSIDERED A SINGLE ZONE.
- B. DEAD BAND:
 

WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEAD BAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.
- C. SETBACK CONTROLS:
 

HEATING SYSTEMS LOCATED IN CLIMATE ZONES 2-8 SHALL BE EQUIPPED WITH CONTROLS THAT HAVE THE CAPABILITY TO AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM AS REQUIRED TO MAINTAIN ZONE TEMPERATURES ABOVE A HEATING SETPOINT ADJUSTABLE DOWN TO 55°F OR LOWER. COOLING SYSTEMS LOCATED IN CLIMATE ZONES 1B, 2B, AND 3B SHALL BE EQUIPPED WITH CONTROLS THAT HAVE THE CAPABILITY TO AUTOMATICALLY RESTART AND TEMPORARILY OPERATE THE SYSTEM AS REQUIRED TO MAINTAIN ZONE TEMPERATURES BELOW A COOLING SETPOINT ADJUSTABLE UP TO 90°F OR HIGHER OR TO PREVENT HIGH SPACE HUMIDITY LEVELS.
- D. AUTOMATIC SHUTDOWN:
 

HVAC SYSTEMS SHALL BE EQUIPPED WITH AT LEAST ONE OF THE FOLLOWING CONTROLS THAT CAN START AND STOP THE SYSTEM UNDER DIFFERENT TIME SCHEDULES FOR SEVEN DIFFERENT DAY-TYPES PER WEEK, ARE CAPABLE OF RETAINING PROGRAMMING AND TIME SETTING DURING LOSS OF POWER FOR A PERIOD OF AT LEAST TEN HOURS, AND INCLUDE AN ACCESSIBLE MANUAL OVERRIDE, OR EQUIVALENT FUNCTION, THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO TWO HOURS.

- A. GENERAL:
 

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- E. SETPOINT OVERLAP RESTRICTION:
 

WHERE HEATING AND COOLING TO A ZONE ARE CONTROLLED BY SEPARATE ZONE THERMOSTATIC CONTROLS LOCATED WITHIN THE ZONE, MEANS (SUCH AS LIMIT SWITCHES, MECHANICAL STOPS, OR, FOR DDC SYSTEMS, SOFTWARE PROGRAMMING) SHALL BE PROVIDED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT MINUS ANY APPLICABLE PROPORTIONAL BAND.
- F. HEAT PUMP SUPPLEMENTARY HEAT :
 

HEAT PUMPS HAVING SUPPLEMENTARY ELECTRIC RESISTANCE HEAT SHALL HAVE CONTROLS THAT, EXCEPT DURING DEFROST, PREVENT SUPPLEMENTARY HEAT OPERATION WHERE THE HEAT PUMP CAN PROVIDE THE HEATING LOAD.

#### SPECIFICATIONS

#### SECTION 0001 – NOTICE TO BIDDERS

##### 1.1 BIDDERS REPRESENTATIONS

- A. THE BIDDER BY MAKING A BID REPRESENTS THAT:
  - THE BIDDER HAS READ AND UNDERSTANDS THE BIDDING DOCUMENTS, TO THE EXTENT THAT SUCH DOCUMENTATION RELATES TO THE WORK FOR WHICH THE BID IS SUBMITTED, AND FOR OTHER PORTIONS OF THE PROJECT, IF ANY, BEING BID CONCURRENTLY OR PRESENTLY UNDER CONSTRUCTION.
  - THE BID IS MADE IN COMPLIANCE WITH THE BIDDING DOCUMENTS.
  - THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS FOR THE BIDDER TO SUBMIT A CONTRACT PRICE FOR THE MATERIAL AND LABOR.
  - SHOULD CONFLICTS OR DISCREPANCIES OCCUR WITHIN THE BIDDING DOCUMENTS, THE ITEM OR ITEMS IN DISPUTE THAT REPRESENT THE GREATER COST SHALL PREVAIL IN THE FINAL BID.
  - THE BID IS BASED UPON THE MATERIALS, EQUIPMENT AND SYSTEMS REQUIRED BY THE BIDDING DOCUMENTS WITHOUT EXCEPTION.

##### 1.2 EXISTING CONDITIONS AND COORDINATION

- A. THE BIDDER HAS VISITED THE SITE, BECOME FAMILIAR WITH LOCAL CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED AND HAS CORRELATED THE BIDDER'S PERSONAL OBSERVATIONS WITH THE REQUIREMENTS OF THE PROPOSED BIDDING DOCUMENTS.
- B. THE BIDDER SHALL PROPOSE COORDINATION OF WORK SUCH THAT CONFLICTS WITH OTHER TRADES AND SPACE ALLOCATIONS ARE AVOIDED.

##### 1.3 RESPONSIBILITIES

- A. THE BIDDER UNDERSTANDS THAT ANY CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE TIMELY COMPLETION AND ACCEPTANCE OF THEIR WORK AND THAT ANY ITEMS DAMAGED, LOST OR STOLEN DURING TIME OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED WITHOUT ANY ADDITIONAL COST TO THE OWNER.
- B. THE BIDDER UNDERSTANDS THAT ANY PROPOSED WORK IN OCCUPIED TENANT SPACES SHALL BE PERFORMED DURING TIMES OF NON-TENANT OCCUPANCY OR AS SCHEDULED OR DIRECTED BY THE BUILDING MANAGER.
- C. THE BIDDER UNDERSTANDS THAT ANY PROPOSED SHUT-DOWN OF EXISTING SYSTEMS DURING CONSTRUCTION SHALL BE PRE-ARRANGED WITH THE BUILDING MANAGER AND THAT SUCH SHUT-DOWNS ARE TO BE KEPT TO A MINIMUM.

##### END OF SECTION 0001

#### SECTION 0101 – QUALITY OF WORK

##### 1.1 WORKMANSHIP

- A. ALL WORK SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
- B. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT OR BUILDING MANAGER AT NO ADDITIONAL COST TO THE OWNER.
- C. UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL REMOVE FROM THE SITE, ALL TOOLS, DEMOLISHED APPLIANCES AND ANY SURPLUS MATERIAL.

##### 1.2 CODE COMPLIANCE

- A. ALL WORK SHALL MEET ALL STATE AND LOCAL CODES HAVING JURISDICTION.

##### END OF SECTION 0101

#### SECTION 0102 –REQUIRED DOCUMENTS

##### 1.1 SHOP DRAWINGS

- A. A SET OF PRINTS FOR ANY MECHANICAL WORK INCLUDING BUT NOT LIMITED TO, DUCTWORK AND PIPING LAYOUT SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO CONSTRUCTION OR PURCHASE OF MATERIALS.

##### 1.2 SUBMITTALS

- A. EQUIPMENT SUBMITTALS OF ALL PROPOSED MECHANICAL AND ANCILLARY EQUIPMENT INCLUDING ALL ACCESSORIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL PERTINENT MODELS, SIZES, ACCESSORIES AND CHOICES SHALL BE CLEARLY CHECKED, PRINTED OR OTHERWISE INDICATED ON THE SUBMITTALS.

##### 1.3 RECORD DRAWINGS

- A. UPON COMPLETION OF THE WORK, A RECORD DRAWING SHALL BE SUBMITTED TO THE OWNER DEPICTING ALL SUBSEQUENT CHANGES, ADDITIONS AND OR CORRECTIONS TO THE CONTRACT DRAWINGS AND OR CONTRACT SCOPE MADE DURING CONSTRUCTION. THIS DRAWING SHALL REPRESENT A COMPLETE RECORD OF THE WORK INSTALLED.

##### 1.4 EQUIPMENT OPERATING INSTRUCTIONS

- A. ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS, EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

- B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE-RING BINDERS WITH CLEAR ACETATE COVERS. THE CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE ELECTRONIC COPY TO THE ENGINEER.
- C. THE INSTRUCTION BOOKLET SHALL BE ORGANIZED IN SECTIONS, WITH ONE SECTION PER SYSTEM. THE COVER OF THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND PHONE NUMBER OF THE PROJECT, ARCHITECT, ENGINEER, MECHANICAL CONTRACTOR AND SUBCONTRACTORS.

##### END OF SECTION 0102

#### SECTION 078413-PENETRATION FIRE-STOPPING

##### 1.1 QUALITY ASSURANCE

- A. INSTALLER QUALIFICATIONS: AN FM GLOBAL-APPROVED FIRE-STOP CONTRACTOR OR A UL-QUALIFIED FIRE-STOP CONTRACTOR.
- B. FIRE-TEST-RESPONSE CHARACTERISTICS: UL, INTERTEK ETL SEMKO OR FM GLOBAL
- 1.2 PENETRATION FIRESTOPPING
  - A. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS: F-RATINGS PER ASTM E 814 OR UL 1479.
  - B. PENETRATIONS IN HORIZONTAL ASSEMBLIES: F- AND T-RATINGS PER ASTM E 814 OR UL 1479.
  - C. PENETRATIONS IN SMOKE BARRIERS: L-RATINGS PER UL 1479.
  - D. W-RATINGS: PER UL 1479.

##### 1.3 INSTALLATION

- A. IDENTIFICATION: PREPRINTED METAL OR PLASTIC LABELS.
- 1.4 FIELD QUALITY CONTROL
  - A. INSPECTION OF INSTALLED FIRE-STOPPING: BY OWNER-ENGAGED AGENCY ACCORDING TO ASTM E 2174.

- 1.5 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE WHERE UL-CLASSIFIED SYSTEMS ARE INDICATED, THEY REFER TO SYSTEM NUMBERS IN UL'S "FIRE RESISTANCE DIRECTORY" UNDER PRODUCT CATEGORY XHEZ.

##### FOR THE FOLLOWING SYSTEMS:

- METALLIC AND NON-METALLIC PIPES, CONDUIT, OR TUBING, ELECTRICAL CABLES, CABLE TRAYS WITH ELECTRIC CABLES, MISCELLANEOUS ELECTRICAL PENETRANTS, INSULATED PIPES, GROUPINGS OF PENETRANTS, USE ON OR MORE THE FOLLOWING MATERIALS:
  - a. LATEX SEALANT
  - b. SILICONE SEALANT
  - c. INTUMESCENT PUTTY
  - d. MORTAR
  - e. SILICONE FOAM
  - f. PILLOWS/BAGS
  - g. INTUMESCENT WRAP STRIPS
  - h. INTUMESCENT COMPOSITE SHEET

##### 1.6 MANUFACTURERS

1. HILTI CONSTRUCTION CHEMICAL, INC
2. TREMCO INC.
3. 3M FIRE PROTECTION PRODUCTS

##### END OF SECTION 078413

#### SECTION 230517 – SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

##### 1.1 SLEEVE-SEAL SYSTEMS

- A. FIELD-ASSEMBLED, MODULAR SEALING-ELEMENT UNIT FOR FILLING ANNULAR SPACE BETWEEN PIPING AND SLEEVE.

1. SEALING ELEMENTS: EPDM RUBBER OR NBR.
2. PRESSURE PLATES: CARBON STEEL, PLASTIC, STAINLESS STEEL.
3. CONNECTING BOLTS AND NUTS: CARBON STEEL WITH CORROSION-RESISTANT COATING, STAINLESS STEEL.

- B. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
  1. ADVANCE PRODUCTS & SYSTEMS, INC.
  2. CALPICO, INC.
  3. METRAFLEX COMPANY (THE).
  4. PIPELINE SEAL AND INSULATOR, INC.
  5. PROCO PRODUCTS, INC.

##### 1.2 SLEEVE-SEAL FITTINGS

SECTION 230529 – HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

1.1 PERFORMANCE REQUIREMENTS

A. DELEGATED DESIGN: DESIGN TRAPEZE PIPE HANGERS AND EQUIPMENT SUPPORTS, INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS BY A QUALIFIED PROFESSIONAL ENGINEER, USING PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.

B. STRUCTURAL PERFORMANCE: HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS INDICATED ACCORDING TO ASCE/SEI 7.

1. DESIGN SUPPORTS FOR MULTIPLE PIPES CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, SYSTEM CONTENTS, AND TEST WATER.

2. DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND COMPONENTS.

1.2 SUBMITTALS

A. SHOP DRAWINGS: SIGNED AND SEALED BY A PROFESSIONAL ENGINEER

1.3 QUALITY ASSURANCE

A. AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE – STEEL."

1.4 COMPONENTS

A. METAL PIPE HANGERS AND SUPPORTS: CARBON OR STAINLESS STEEL

B. TRAPEZE PIPE HANGERS: CARBON OR STAINLESS STEEL

C. FIBERGLASS PIPE HANGERS: –CLEVIS, CENTURY COMPOSITES, COOPER B–LINE

D. METAL FRAMING SYSTEMS: MFMA MANUFACTURER

E. FIBERGLASS STRUT SYSTEMS: COOPER B–LINE

F. THERMAL–HANGER SHIELD INSERTS:

G. FASTENER SYSTEMS: POWDER–ACTUATED FASTENERS OR MECHANICAL–EXPANSION ANCHORS

H. PIPE STANDS: COMPACT, LOW TYPE, SINGLE PIPE, HIGH TYPE, SINGLE PIPE, HIGH TYPE, MULTIPLE PIPES, CURB–MOUNTED TYPE

I. EQUIPMENT SUPPORTS.

SECTION 230548 – VIBRATION CONTROLS FOR HVAC EQUIPMENT

PART 1 – GENERAL

1.1 PERFORMANCE REQUIREMENTS

A. SEISMIC–RESTRAINT LOADING:

1. SITE CLASS AS DEFINED IN THE IBC: A, B

2. ASSIGNED SEISMIC USE GROUP OR BUILDING CATEGORY AS DEFINED IN THE IBC: I II III

a. COMPONENT IMPORTANCE FACTOR: 1.0

b. COMPONENT RESPONSE MODIFICATION FACTOR: 2.5

c. COMPONENT AMPLIFICATION FACTOR: 2.5.

3. DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS (0.2 SECOND) 18%

4. DESIGN SPECTRAL RESPONSE ACCELERATION AT 1–SECOND PERIOD: 8%

1.2 COMPONENTS

A. VIBRATION ISOLATORS:

1. ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS

2. MOUNTS: DOUBLE–DEFLECTION TYPE.

3. RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINT; CAST–DUCTILE–IRON HOUSING.

4. SPRING ISOLATORS: FREESTANDING, LATERALLY STABLE, OPEN–SPRING TYPE.

5. RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN–SPRING TYPE WITH SEISMIC RESTRAINT.

6. HOUSED SPRING MOUNTS: DUCTILE–IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS.

7. ELASTOMERIC HANGERS: DOUBLE–DEFLECTION TYPE.

8. SPRING HANGERS: COMBINATION COIL–SPRING AND ELASTOMERIC–INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.

9. SPRING HANGERS WITH VERTICAL–LIMIT STOP–COMBINATION COIL–SPRING AND ELASTOMERIC–INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL–LIMIT STOP.

10. PIPE RISER RESILIENT SUPPORT: ALL–DIRECTIONAL, ACOUSTICAL PIPE ANCHOR.

11. RESILIENT PIPE GUIDES.

B. AIR–MOUNTING SYSTEMS:

1. AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED–AIR BELLOWES.

2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED–AIR BELLOWES.

C. RESTRAINED VIBRATION ISOLATION ROOF–CURB RAILS:

FACTORY–ASSEMBLED, FULLY ENCLOSED, INSULATED, AIR– AND WATERTIGHT CURB RAIL; WITH SPRING ISOLATORS MOUNTED ON ELASTOMERIC ISOLATION PADS, AND SNUBBER BUSHINGS.

D. VIBRATION ISOLATION EQUIPMENT BASES:

1. STEEL BASE: FACTORY–FABRICATED, WELDED, STRUCTURAL–STEEL BASES AND RAILS.

2. INERTIA BASE: FACTORY–FABRICATED, WELDED, STRUCTURAL–STEEL BASES AND RAILS READY FOR FIELD–APPLIED, CAST–IN–PLACE CONCRETE

1.3 FIELD QUALITY CONTROL

A. TESTING: BY EITHER: OWNER–ENGAGED AGENCY, CONTRACTOR–ENGAGED AGENCY, OR CONTRACTOR.

PART–2 PRODUCTS

1.4 VIBRATION ISOLATORS & SEISMIC–RESTRAINT DEVICES

A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

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

1. ACE MOUNTINGS CO., INC.

2. AMBER/BOOTH COMPANY, INC.

3. CALIFORNIA DYNAMICS CORPORATION.

4. COOPER B–LINE, INC.; A DIVISION OF COOPER INDUSTRIES.

5. HILTI, INC.

6. ISOLATION TECHNOLOGY, INC.

7. KINETICS NOISE CONTROL.

8. LOOS & CO.; CABLEWARE DIVISION.

9. MASON INDUSTRIES.

10. TOLCO INCORPORATED; A BRAND OF NIBCO INC.

11. UNISTRUT; TYCO INTERNATIONAL, LTD.

12. VIBRATION ELIMINATOR CO., INC.

13. VIBRATION ISOLATION.

14. VIBRATION MOUNTINGS & CONTROLS, INC.

SECTION 230593 – TESTING, ADJUSTING, AND BALANCING FOR HVAC

1.1 SUMMARY

A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:

1. MOTORS.

2. CONDENSING UNITS.

3. AIR SYSTEM: CONSTANT VOLUME

1.2 QUALITY ASSURANCE

A. THE CONTRACTOR SHALL PROCURE THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.

1.3 EXECUTION

A. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL EXISTING AIR AND HYDRONIC SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR TO THE STARTING OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

B. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR AND HYDRONIC SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.

C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.

D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.

E. THE CONTRACTOR SHALL HAVE FURNISH AND INSTALL ALL ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS, GAUGES AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER. SUCH ADDITIONAL EQUIPMENT SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS SECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.

G. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.

H. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.

I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.

J. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.

END OF SECTION 230593

SECTION 230713 – DUCT INSULATION

1.1 QUALITY ASSURANCE

SURFACE–BURNING CHARACTERISTICS: ALL INSULATION SHALL HAVE COMPOSITE (INSULATION JACKET OR FACING AND ADHESIVE USED TO ADHERE THE FACING OR JACKET TO THE INSULATION) A FLAME–SPREAD INDEX OF 25, AND SMOKE–DEVELOPED INDEX OF 50 FOR INSULATION INSTALLED INDOOR, 75, AND SMOKE–DEVELOPED INDEX OF 150 FOR INSULATION INSTALLED OUTDOORS; ACCORDING TO ASTM 84.

1.2 FIELD QUALITY CONTROL

A. FIELD INSPECTIONS: BY OWNER–ENGAGED AGENCY.

1.3 INDOOR DUCT AND PLENUM INSULATION SCHEDULE;

A. CONCEALED, RECTANGULAR, ROUND AND FLAT–OVAL, SUPPLY–RETURN, OUTDOOR–AND EXHAUST–AIR DUCT AND AIR PLENUM INSULATION:

B. FLEXIBLE ELASTOMERIC, MINERAL–FIBER BLANKET, MINERAL–FIBER BOARD OR POLYOLEFIN WITH MINIMUM INSTALLED THERMAL RESISTANCE AS FOLLOWS:  
UNCONDITIONED SPACES WITHIN BUILDING: R–6  
WITHIN BUILDING ENVELOPE ASSEMBLY: R–8  
OUTSIDE OF BUILDING: R–8

1.4 ITEMS NOT INSULATED:

1. FIBROUS–GLASS DUCTS.  
2. METAL DUCTS WITH DUCT LINER OR SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE ANDASHRAE/IESNA 90.1.  
3. FACTORY–INSULATED FLEXIBLE DUCTS.  
4. FACTORY–INSULATED PLENUMS AND CASINGS.  
5. FLEXIBLE CONNECTORS.  
6. VIBRATION–CONTROL DEVICES.  
7. FACTORY–INSULATED ACCESS PANELS AND DOORS.  
8. DUCTS THAT HAVE INTERNAL ACOUSTICAL LINING.

1.5 PRODUCTS

A. THE FOLLOWING INSULATION MANUFACTURERS WILL BE ACCEPTABLE:  
1. JOHNS–MANVILLE  
2. OWENS–CORNING

1.6 ACOUSTICAL TREATMENT  
1. WHERE SHOWN ON THE DRAWINGS, LOW PRESSURE DUCTWORK SHALL BE LINED WITH 1.5" THICK R–6 AS MANUFACTURED BY DUCTMATE, 1–1/2 POUND MINIMUM DENSITY, NEOPRENE COATED, FLEXIBLE FIBERGLASS DUCT LINER. LINING SHALL COMPLY WITH NFPA 90A AND SHALL HAVE A FLAME SPREAD CLASSIFICATION OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING NOT MORE THAN 50. DUCT SIZES WHERE LINING IS INDICATED ON PLANS ARE MINIMUM INSIDE CLEAR DIMENSIONS REQUIRED.

END OF SECTION 230713

SECTION 233113 – METAL DUCTS

1.1 CONSTRUCTION

A. EACH DUCT SYSTEM SHALL BE CONSTRUCTED FOR THE SPECIFIC SMACNA DUCT PRESSURE CLASSIFICATIONS SHOWN ON THE CONTRACT DRAWINGS, WHERE NO PRESSURE CLASSES ARE SPECIFIED BY THE DESIGNER, THE SMACNA 2–1/2 INCH WG PRESSURE CLASS IS THE BASIS OF COMPLIANCE WITH THESE STANDARDS, REGARDLESS OF THE VELOCITY IN THE DUCT.

B. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 2" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:  
1. DUCTWORK SHALL BE TRANSVERSELY JOINTED BY CONNECTING SEAMS OF COMPANION ANGLES, FORMED FROM 1–1/2"x1–1/2"x1/8" GALVANIZED ANGLES, TACK–WELDED OR RIVETED TO THE DUCT. THE ANGLE FRAME SHALL BE CONTINUOUSLY FLANGED UP INTO UPRIGHT OF ANGLE AND EACH CORNER SHALL BE FILLED IN AND GROUND SMOOTH. JOINTS SHALL BE GASKETED WITH 1/8" THICK REINFORCED GASKET, OVERLAPPED AT CORNERS, GASKET SIMILAR TO 3M–1202 OR APPROVED EQUAL.  
2. RECTANGULAR FITTINGS AND ALL TRANSITION PIECES FROM RECTANGULAR TO ROUND SHALL BE NO. 16 GAUGE ALL WELDED CONSTRUCTION.  
3. HORIZONTAL DUCTS SHALL BE SUPPORTED ON NOT MORE THAN 6' CENTERS. VERTICAL RISERS SHALL BE SUPPORTED AT EACH FLOOR.  
4. LONGITUDINAL SEAMS FOR RECTANGULAR DUCTWORK SHALL BE PITTSBURGH LOCK SEAMS WITH SEALING COMPOUND, EQUAL TO BENJAMIN FOSTER NO. 30–03 INSERTED INTO SEAM. ALL SEAMS SHALL BE BRUSHED WITH NO. 30–02 AND COVERED WITH APPROVED SEALING TAPE.  
5. RECTANGULAR DUCTWORK 18 GAUGE AND HEAVIER, FILLER RODS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS FOR IRON AND STEEL GAS WELDING RODS, ASTM 215; AWG A5.2.  
6. ALL FITTINGS SUCH AS ELBOWS, TEES, ETC., SHALL BE NO. 20 GAUGE ZINC COATED STEEL. ELBOWS SHALL BE OF FIVE (5) PIECE WELDED AIRTIGHT CONSTRUCTION.

C. WHERE LATEST EDITION OF SMACNA DOES NOT CLEARLY STATE GAUGES AND/OR STIFFENERS TO BE USED OR, WHERE SMACNA STANDARDS REQUIRE INTERPRETATION, THE FOLLOWING MINIMUM METAL GAUGES AND BRACING SHALL BE USED:

USG MAX. SIDE INCHES TRANSVERSE JOINTS AND BRACING

22 UP TO 12 S SLIP, DRIVE SLIP, ONE INCH POCKET LOCK ON 8 FOOT CENTERS

22 13 TO 24 1"x1"x1/8" ANGLES ON 4 FOOT CENTERS

20 25 TO 35 1"x1"x1/8" ANGLES ON 2 FOOT CENTERS

D. FLAT OVAL OR ROUND DUCTWORK MAY BE PROVIDED IN LIEU OF RECTANGULAR DUCTWORK WITH THE REINFORCEMENT FOR FLAT SIDES SAME AS SPECIFIED FOR THE RECTANGULAR DUCTWORK, AND AS PER SMACNA FLAT OVAL DUCT CONSTRUCTION STANDARDS SHOWN IN FIG. 3–6 AND AS SHOWN IN FIG. 3–1 AND 3–2 FOR ROUND DUCTWORK.

E. ALL DUCTWORK SHALL BE SEALED TO CLASS "A" AND LEAK TESTED TO MEAT SMACNA CLASS 6 FOR RECTANGULAR AND CLASS 3 FOR ROUND DUCTS.

1.2 MATERIALS

A. SINGLE–WALL RECTANGULAR DUCTS AND FITTINGS.

B. DOUBLE–WALL RECTANGULAR DUCTS AND FITTINGS.

4. FIBROUS–GLASS OR FLEXIBLE ELASTOMERIC DUCT LINER FOR INTERSTITIAL INSULATION.

5. PERFORATED INNER DUCT.

SINGLE–WALL ROUND AND FLAT–OVAL DUCTS AND FITTINGS.

D. DOUBLE–WALL ROUND AND FLAT–OVAL DUCTS AND FITTINGS.

1. FIBROUS–GLASS OR FLEXIBLE ELASTOMERIC DUCT LINER FOR INTERSTITIAL INSULATION.

2. PERFORATED INNER DUCT.

SHEET METAL MATERIALS:

1. GALVANIZED SHEET STEEL.

2. PVC–COATED, GALVANIZED SHEET STEEL.

3. CARBON–STEEL SHEETS.

4. STAINLESS–STEEL SHEETS.

5. ALUMINUM SHEETS.

6. FACTORY–APPLIED ANTI–MICROBIAL COATING.

F. DUCT LINER:

1. FIBROUS GLASS, TYPE 1, FLEXIBLE.

a. WITH ANTI–MICROBIAL EROSION–RESISTANT COATING.

2. FLEXIBLE ELASTOMERIC.

3. NATURAL FIBER.

G. SEALANT MATERIALS:

1. TWO–PART TAPE SEALING SYSTEM.

2. WATER–BASED JOINT AND SEAM SEALANT.

3. SOLVENT–BASED JOINT AND SEAM SEALANT.

4. FLANGED JOINT SEALANT.

5. FLANGE GASKETS.

6. ROUND DUCT JOINT O–RING SEALS.

1.3 SEISMIC–RESTRAINT DEVICES

A. CHANNEL SUPPORT SYSTEM.

B. STAINLESS–STEEL RESTRAINT CABLES.

C. HANGER ROD STIFFENER: STEEL TUBE OR STEEL SLOTTED–SUPPORT–SYSTEM SLEEVE WITH INTERNALLY BOLTED CONNECTIONS OR REINFORCING STEEL ANGLE CLAMPED TO HANGER ROD.

1.4 DUCT CLEANING

A. CLEAN EXISTING DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND BALANCING.

B. CLEAN THE FOLLOWING ITEMS:

1. AIR OUTLETS AND INLETS.

2. SUPPLY, RETURN, AND EXHAUST FANS.

3. RETURN–AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.

4. SUPPLY–AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.

5. DEDICATED EXHAUST AND VENTILATION COMPONENTS AND MAKEUP AIR SYSTEMS.

1.5 DUCT SCHEDULE

A. ALL DUCTS SHALL BE GALVANIZED STEEL EXCEPT AS FOLLOWS:  
1. MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.

END OF SECTION 233113

SECTION 233713 – GRILLES

1.1 PRODUCTS

A. GRILLES SHALL BE FURNISHED AND INSTALLED FOR CAPACITIES AND IN LOCATIONS INDICATED ON DRAWINGS. ALL REGISTERS AND DIFFUSERS SHALL BE PRIME COATED STEEL OR EXTRUDED ALUMINUM FINISHED UNLESS OTHERWISE NOTED IN BAKED WHITE ENAMEL.

B. MANUFACTURERS: TITUS

1. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCT BY ONE OF THE FOLLOWING:  
a. CARNES.  
b. KRUEGER.  
c. METALAIR, INC.

C. ALL DUCTED RETURN REGISTERS SHALL HAVE AN OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.

END OF SECTION 233713

PIPING INSULATION

A. PIPING SERVING AS PART OF A HEATING OR COOLING SYSTEM SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH TABLE C403.11.3.

B. PIPING, VALVES AND FITTINGS TO BE INSULATED:

1) LOW TEMPERATURE PIPING SYSTEMS – 0 TO 60 DEG F INCLUDING:  
CONDENSATE DRAIN PIPING.

INSULATION SCHEDULE – PIPING

SERVICE	SIZE	THICKNESS	MATERIAL FINISH
REFRIGERANT PIPING		1.5"	P–6
CONDENSER DRAIN PIPING (IF RUNNING THROUGH EXTERIOR WALL)		1.0"	P–6

2) PROTECTIVE COVERINGS SHALL BE INSTALLED ON AREAS OF INSULATION THAT ARE EXPOSED TO WEATHER OR SUBJECT TO MECHANICAL DAMAGE. THE PROTECTIVE COVERING SHALL BE:

a. ARMA–CHEK SILVER® MULTI–LAYER LAMINATE OF ALUMINUM, COATED WITH A UV PROTECTIVE FILM AND BACKED WITH A FLEXIBLE PVC FILM. THE MATERIAL SHOULD BE ADHERED WITH ARMAFLEX 520 ADHESIVE OR EQUIVALENT, AND ALL JOINTS AND SEAMS SECURED WITH ARMA–CHEK SILVER TAPE. INSTALLATION SHALL BE IN ALL CASES TO THE MANUFACTURER'S RECOMMENDATIONS.

OR  
b. HIGH DENSITY RUBBER CLADDING OF THE "ARMA–CHECK R" TYPE BONDED USING AN APPROPRIATE FULL CONTACT ADHESIVE WITH A MINIMUM 50 MM OVERLAP AT ALL BUTT JOINTS AND LONGITUDINAL SEAMS. A WEATHER–PROOF MASTIC SEALANT SHALL BE APPLIED OVER ALL SEAMS AND JOINTS. ALL MATERIAL SHALL BE OVERLAPPED AND STAGGERED IN SUCH A WAY AS TO ENSURE A WATERSHED IS ALWAYS PROVIDED. INSTALLATION SHALL BE IN ALL CASES TO THE MANUFACTURER'S RECOMMENDATIONS. ALL EXCESS ADHESIVE VISIBLE ON THE SURFACE OF THE COMPLETED ASSEMBLY SHALL BE REMOVED USING AN APPROPRIATE CLEANING MATERIAL.

OR  
c. METAL CLADDING, COMPRISED OF COATED SHEET METAL, WITH ALL EXTERNAL JOINTS AND FIXING MADE WEATHER–PROOF WITH SILICONE SEALANT.

C. MATERIAL:

1) TYPE P–1: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS, MAXIMUM 0.24 K–FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY–APPLIED FIRE–RETARDANT FOIL–SKRIM–KRAFT FACING. ALL SERVICE JACKET. SIMILAR TO OWENS–CORNING 650 ASJ.

2) TYPE P–3: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS FITTING, MAXIMUM 0.23 K–FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO EPOLUX HAMFAB MOLDED FITTINGS.

3) TYPE P–4: MINIMUM 1 LB DENSITY FIBERGLASS FITTING INSERTS, MAXIMUM 0.27 K–FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO MANVILLE HI–LO TEMP INSULATION INSERTS.

4) TYPE P–6: MINIMUM 6 LB MOLDED FOAMED PLASTIC, MAXIMUM 0.27 K–FACTOR AT 75 DEG F MEAN TEMPERATURE, MAXIMUM 0.17 PERMEANCE. SIMILAR TO ARMSTRONG ARMAFLEX II.

D. FINISH:

1) TYPE F–1: FITTING COVER, MOLDED WHITE PVC JACKET, UL CLASS 1, MAXIMUM PERMEANCE 0.05 SIMILAR TO MANVILLE ZESTRON.

2) TYPE F–2: WHITE VAPOR BARRIER COATING WITH 10X10 OR 20X20 MESH WHITE GLASS, POLYESTER OR NYLON CLOTH REINFORCING MEMBRANE, MINIMUM 31 MIL DRY FILM THICKNESS, SIMILAR TO FOSTER TITE–FIT, UL LABEL.

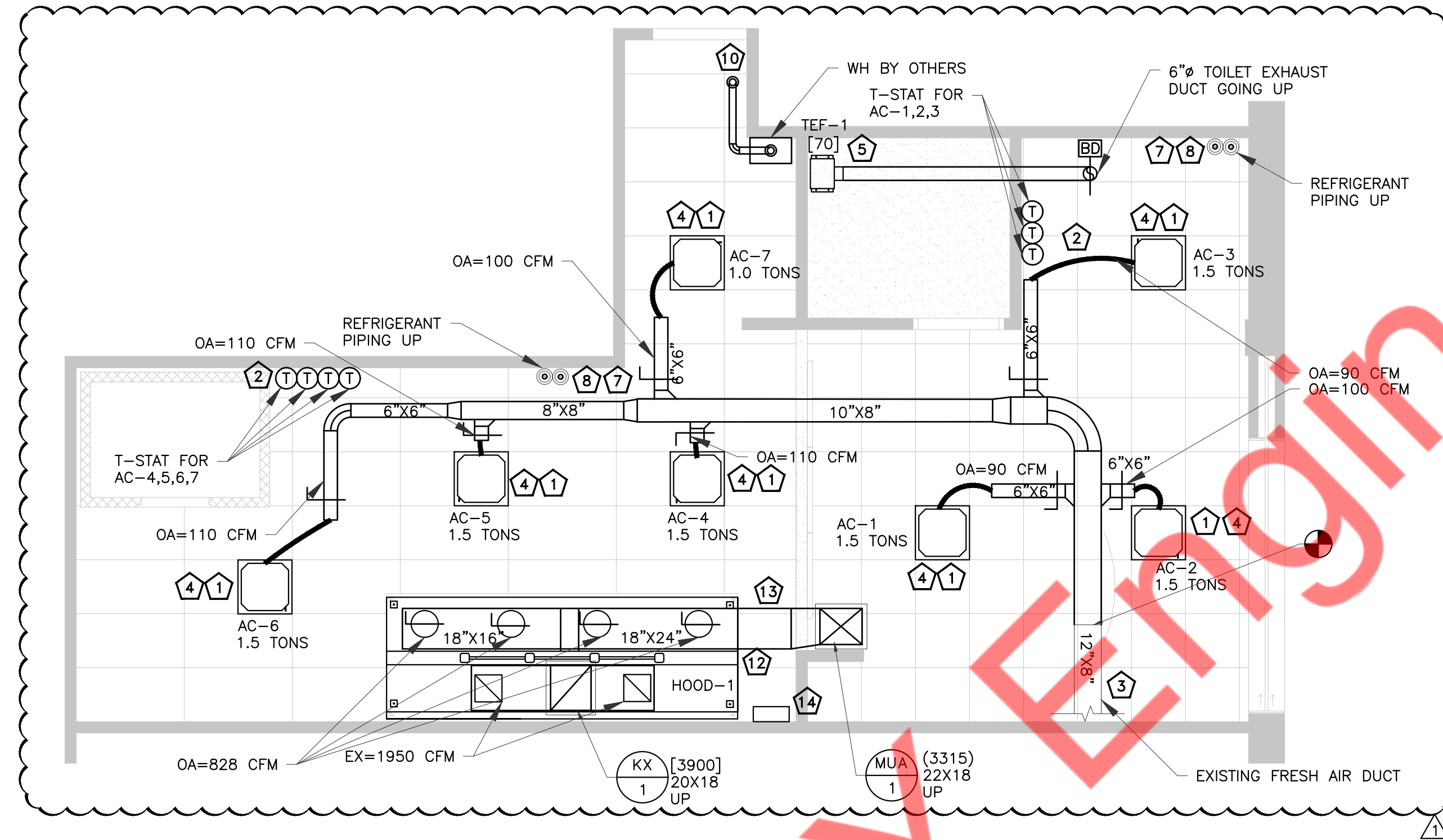
3) TYPE F–4: ALUMINUM JACKETING WITH MINIMUM 0.016 IN. WALL THICKNESS AND LONGITUDINAL JOINTS WITH LOCK SEAMS.

4) TYPE F–6: WHITE FINISHING AND INSULATING CEMENT APPLIED OVER HEXAGONAL WIRE MESH. CEMENT SIMILAR TO KEENE SUPERSLICK.

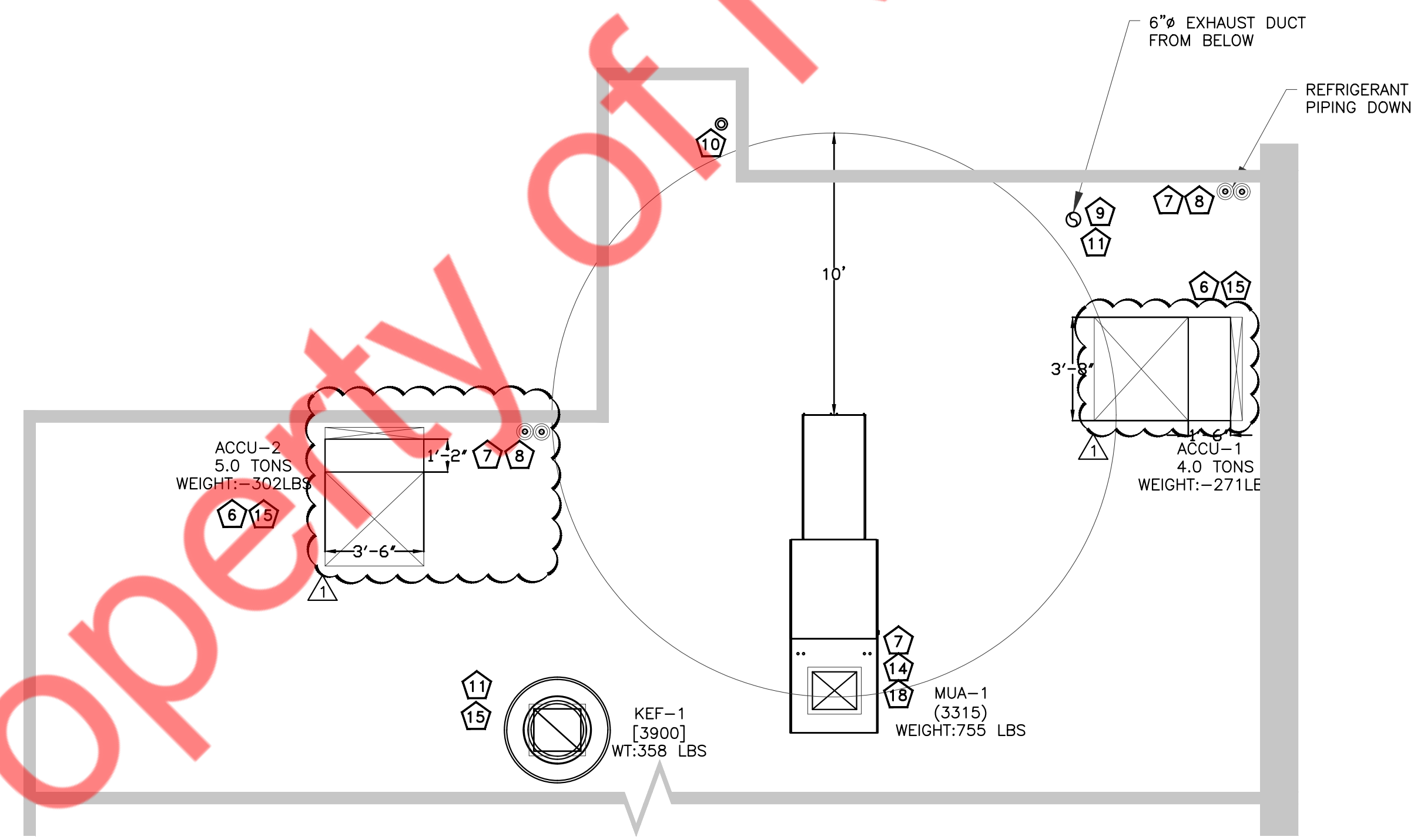
E. INSTALLATION:

1) BEFORE APPLYING INSULATION ALL PRESSURE AND LEAK TESTS SHALL BE COMPLETED AND APPROVED.

2) ALL



**A MECHANICAL FLOOR PLAN - CONCOURSE LEVEL**  
1/4"=1'-0"



**B MECHANICAL ROOF PLAN - CONCOURSE LEVEL**  
1/4"=1'-0"

**MECHANICAL GENERAL NOTES**

- A. CONTRACTOR SHALL BALANCE EACH DEVICE WITH THE CFM SHOWN ON PLAN.
- B. NEW DUCTWORK SHOWN ON PLAN ARE SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING, OFFSET AND RUN PIPING, DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ANY EXTRA PIPING, DUCTWORK, FITTINGS, INSULATIONS AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATION.
- C. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND STRUCTURAL ENGINEERS.
- D. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
- E. DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE AIR STREAM DIMENSIONS.
- F. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
- G. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
- H. COORDINATE WITH ALL TRADES FOR MATERIALS IN RATED AND PLENUM SPACES.
- I. TEST AND BALANCE AIR SYSTEMS. PROVIDE REPORT TO G.C AND OWNER.
- J. NEW DUCTWORK IN CONCEALED AREAS MAY BE RECTANGULAR WITH EQUIVALENT CROSS SECTIONAL FLOW AREA.
- K. PROVIDE R-8 INSULATION FOR OAI DUCT AND R-6 INSULATION FOR SUPPLY AND RETURN DUCT.
- L. PROVIDE 1-1/4" CONDENSATE DRAIN FOR ALL AC'S.
- M. PROVIDE WEATHER PROOF COATING FOR ALL EXTERIOR PIPING INSULATION.
- N. PROVIDE WEATHER PROOF COATING FOR ALL EXTERIOR DUCTING.
- O. PROVIDE FIRE OR FIRE+SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/ BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWING FOR FIRE RATING OF THE WALLS.
- P. PROVIDE 1.5" FIRE WRAP (TWO LAYERS) TO KITCHEN EXHAUST DUCT AS PER MANUFACTURERS RECOMMENDATIONS.

**MECHANICAL KEY NOTES**

- 1. CONNECT 1-1/4" CD TO SINK/LAV WITH AIR GAP FITTING. INSTALL CONDENSATE DRAIN WITH 1/4" SLOPE TOWARDS SINK. PROVIDE 1" INSULATION TO CONDENSATE DRAIN.
- 2. PROVIDE PROGRAMMABLE THERMOSTAT WITH LOCKING COVER. COORDINATE LOCATION ON SITE WITH ARCHITECT / OWNER. PROVIDE REMOTE SENSOR LOCATED 72" ABOVE FINISHED FLOOR NEAR LOCATION INDICATED. SEAL WALL OPENINGS WITH CAULK. COORDINATE LOCATION ON SITE WITH GENERAL CONTRACTOR AND EQUIPMENT. AVOID LOCATING NEAR OR ABOVE SOURCES OF HEAT.
- 3. CONTRACTOR TO FIELD VERIFY THE EXACT LOCATION OF OUTSIDE AIR TAPPING FROM BASE BUILDING AND CONNECT TO THE NEW DUCT TAPPING OF EQUIPMENT. AND VERIFY THE CFM OF SUPPLIED AIR AS PER REQUIREMENT.
- 4. COORDINATE FINAL LOCATION OF EQUIPMENT WITH STRUCTURAL DRAWINGS.
- 5. CEILING MOUNTED EXHAUST FAN. INTERCONNECT EXHAUST FAN WITH LIGHTS IN THIS ROOM. REFER TO ELECTRICAL LIGHTING PLAN. FAN SHALL BE SUSPENDED FROM STRUCTURE ABOVE. VERIFY EXACT LOCATION OF STRUCTURAL MEMBERS PRIOR TO INSTALLATION.
- 6. INSTALL OUTDOOR CONDENSING UNITS ON THE ROOF WITH ALL REQUIRED ACCESSORIES. COORDINATE EXACT LOCATION IN FIELD. PROVIDE STEEL DUNNAGE AS REQUIRED.
- 7. INSTALL REFRIGERANT PIPING FROM INDOOR UNITS TO OUTDOOR UNITS AS PER MANUFACTURER RECOMMENDATION. PROVIDE WEATHER PROOF COATING FOR EXPOSED PIPING. PROVIDE PIPING INSULATION AS PER TABLE 6.8.3B FROM ASHRAE/IES STANDARDS 90.1.
- 8. CONTRACTOR TO COORDINATE THE LOCATION OF RISER/PENETRATIONS ON FIELD WITH OWNER/BUILDING ENGINEER. NOTIFY ENGINEER FOR ANY DISCREPANCY BEFORE COMMENCING BID.
- 9. THE EXHAUST DUCT SHALL BE TERMINATED 10 FEET FROM ANY OUTSIDE AIR INTAKE OPENING, 10 FEET FROM THE PROPERTY LINE, 10 FEET ABOVE GRADE, AND NOT LESS THAN 30 INCHES ABOVE THE ROOF.
- 10. #3"/#5" CONCENTRIC VENT FOR COMBUSTION AIR INTAKE/EXHAUST FROM GAS FIRED EQUIPMENT TO ROOF TERMINATION KIT.ROUTE PIPING WITH MINIMAL AMOUNT OF BEND AND LENGTH AS REQUIRED BY RESPECTIVE UNIT MANUFACTURERS'S REQUIREMENT.
- 11. ALL EXHAUST AIR SOURCES ON THE ROOF SHALL BE MINIMUM 10 FT. AWAY FROM OUTSIDE AIR INTAKES.
- 12. TYPE-1 HOOD. RUN SHEET METAL DUCT FROM CONNECTION ON HOOD TO RESPECTIVE EXHAUST FAN. OFFSET AND TRANSITION AT CONNECTIONS AS NEEDED. VERIFY DIMENSIONS PRIOR TO FABRICATION OR INSTALLATION. USE FACTORY-MANUFACTURED PIPE AND FITTINGS ONLY. VERIFY LOCATION ON SITE WITH MOST RECENT KITCHEN PLANS.
- 13. DUCT SHALL BE SLOPED 1/4" UNIT VERTICAL IN 12" UNIT HORIZONTAL TOWARD HOOD.
- 14. LOCATION OF ANSUL SYSTEM REMOTE MANUAL PULL STATION. VERIFY EXACT LOCATION WITH KITCHEN EQUIPMENT SUPPLIER.
- 15. COORDINATE EQUIPMENT LOCATION WITH LL/ARCHITECT.

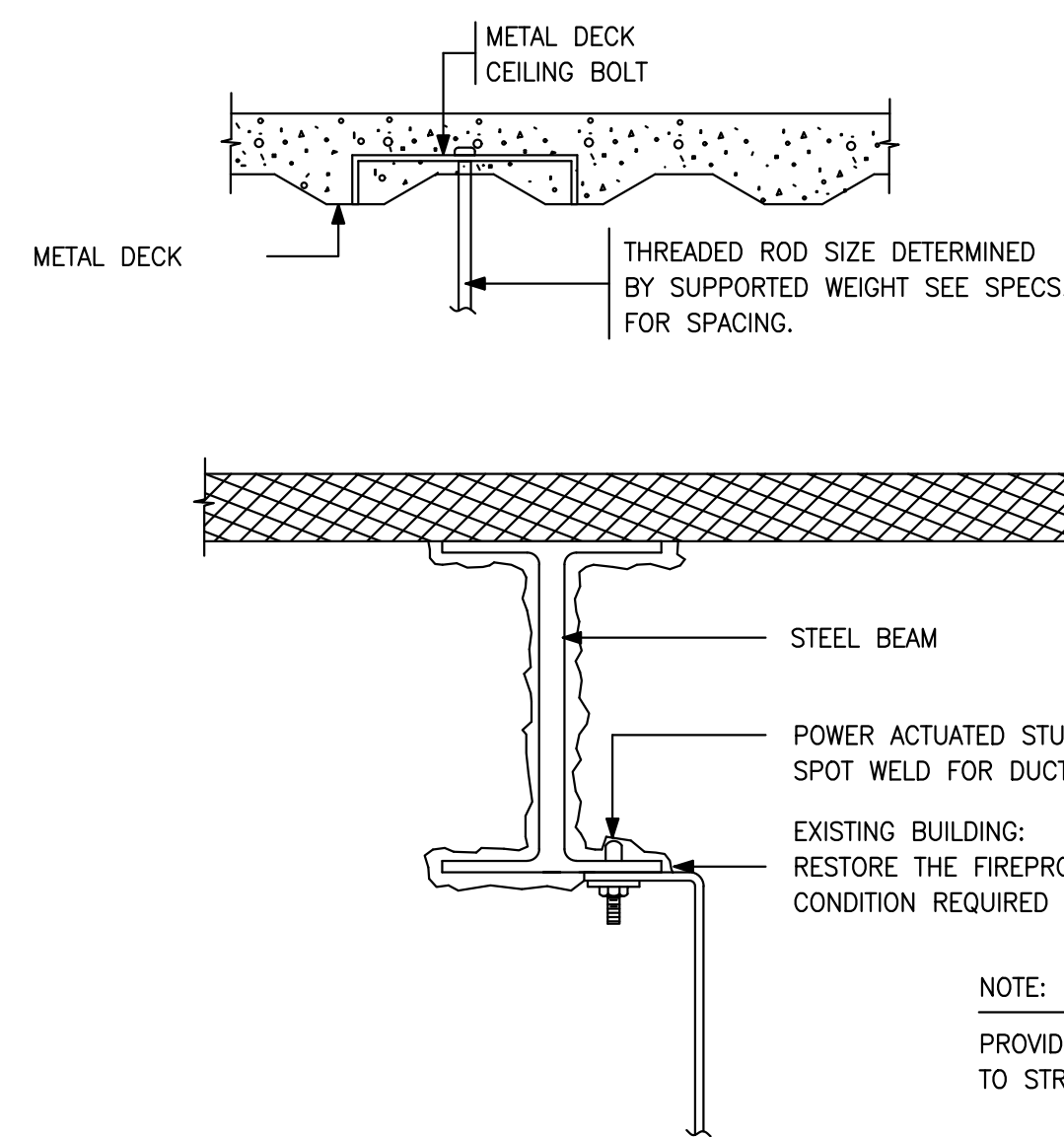
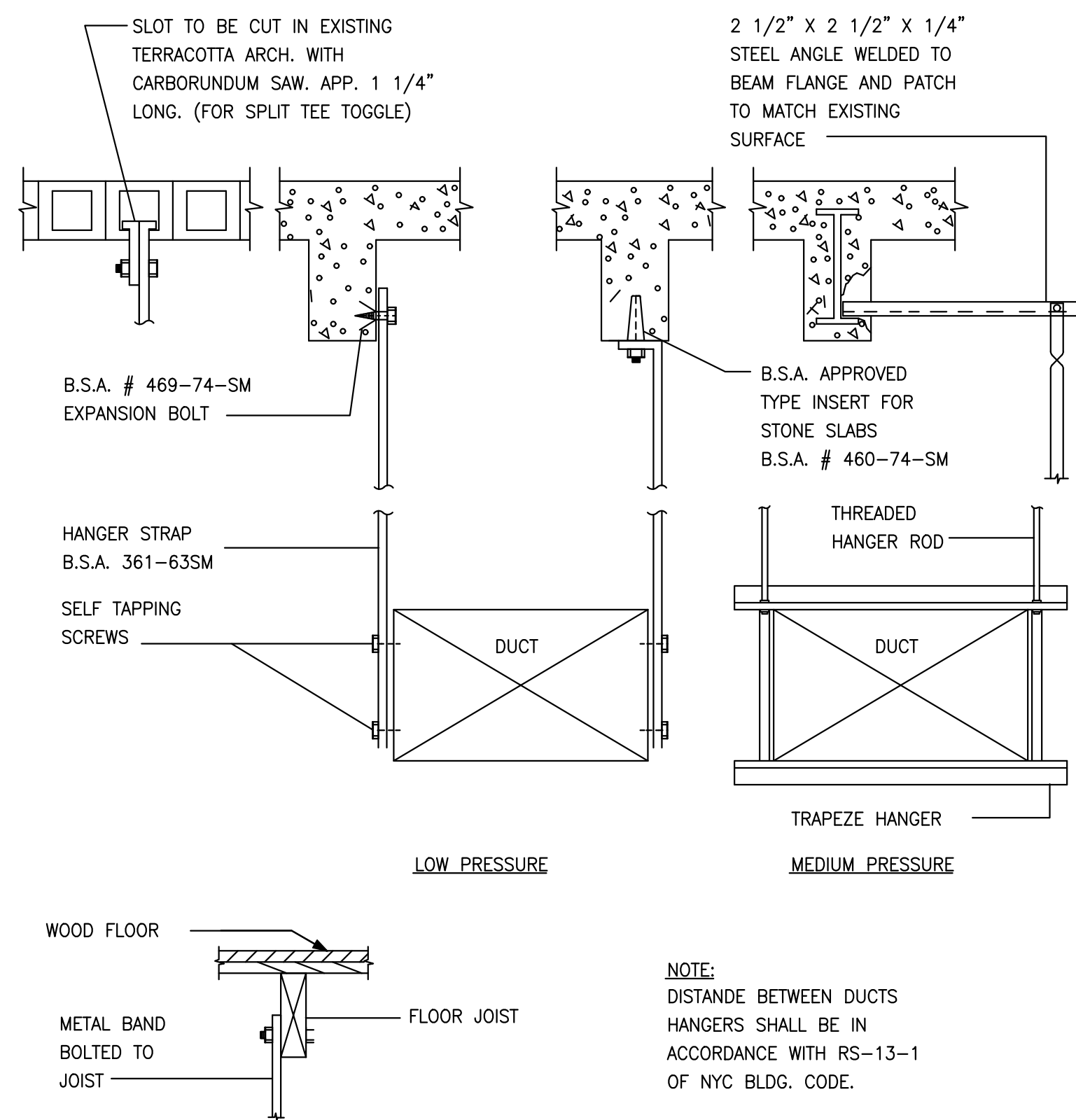
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01	HVAC CHANGES	10/17/2022

**PROJECT INFORMATION:**  
**UNCLE WILLIE'S WINGS**

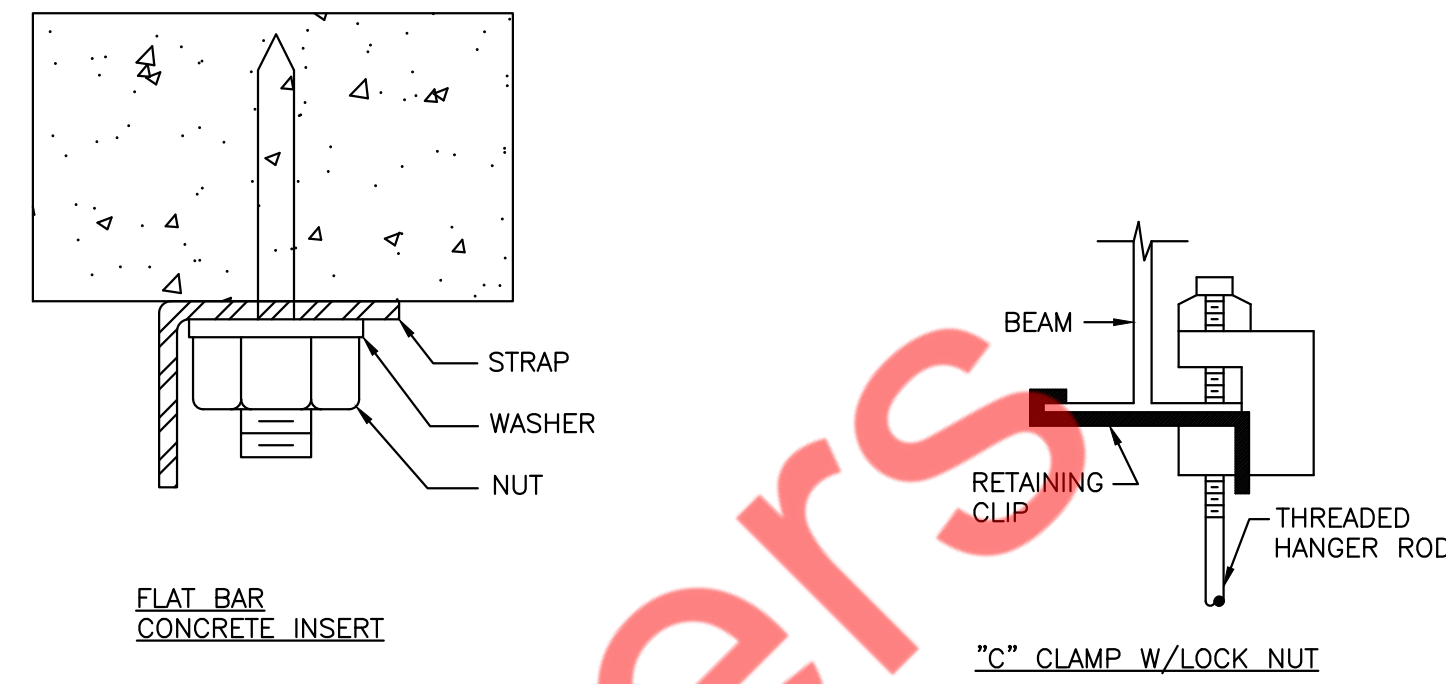
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**MECHANICAL PLANS**

DRAWING NO.:  
**M1.0**

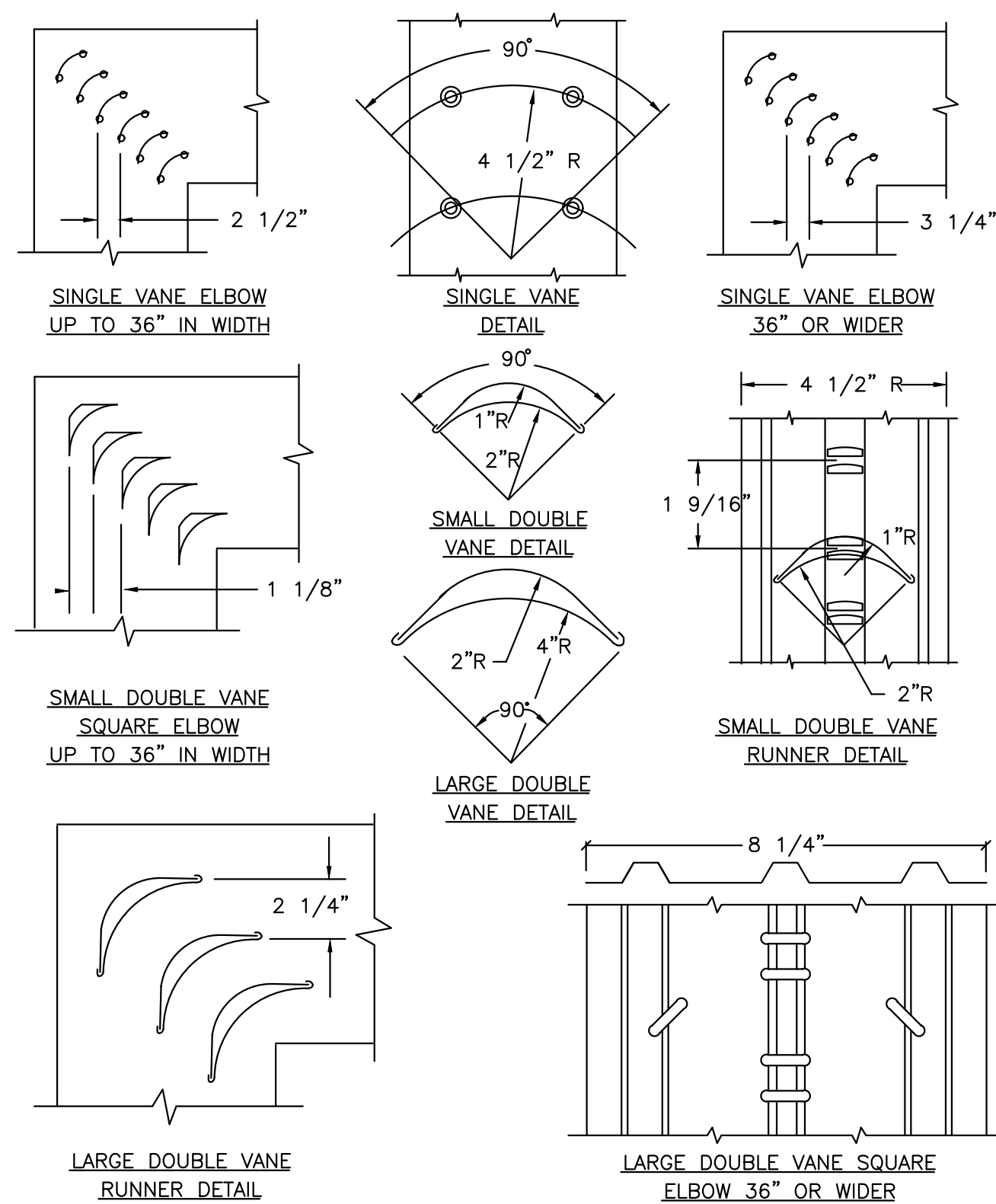


NOTE:  
PROVIDED SUPPLEMENTARY ATTACHMENT TO STRUCTURE WHERE REQUIRED.

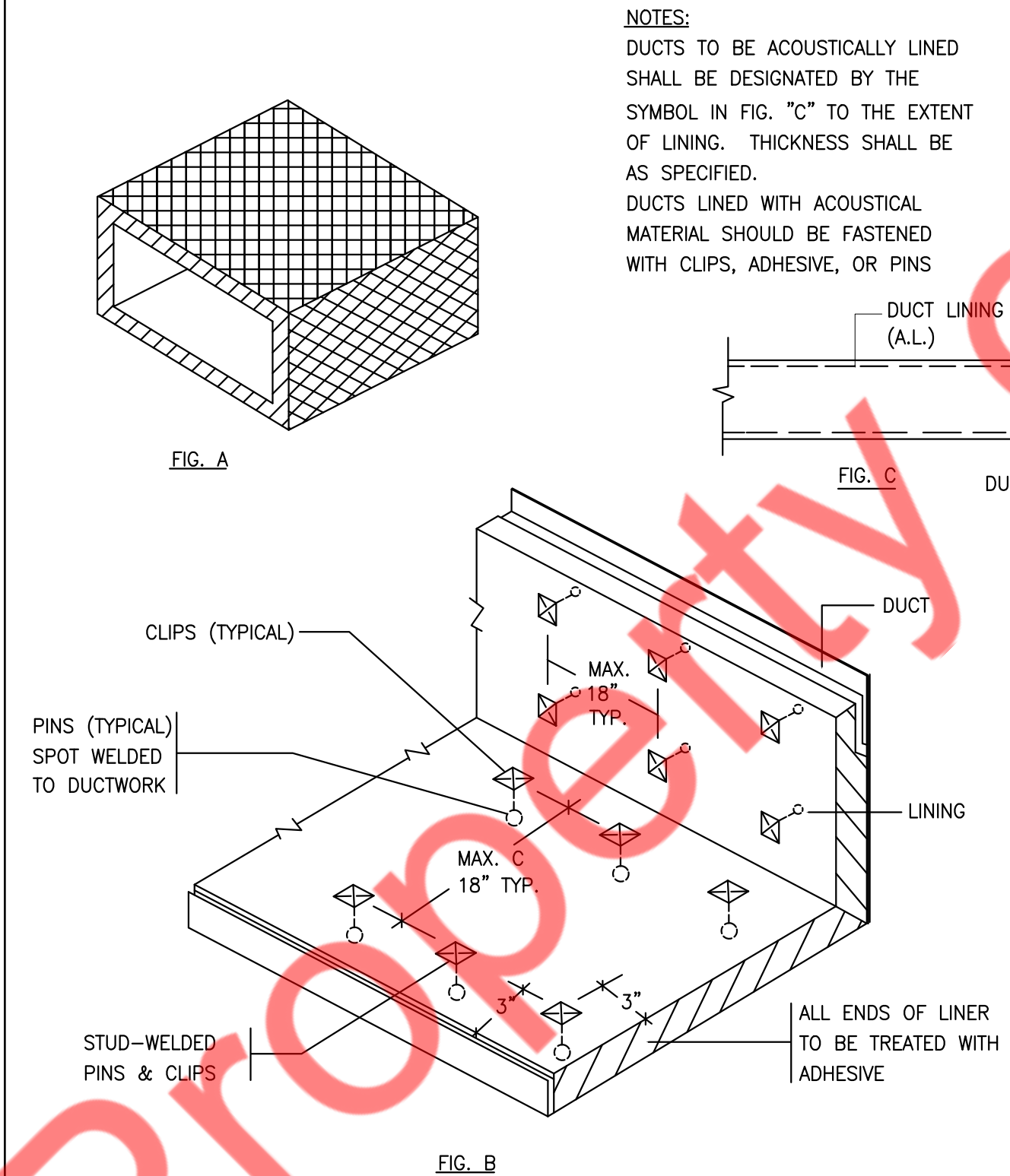


DUCT HANGER SCHEDULE		
DUCT CROSS SECTIONAL AREA	STRAP HANGER SIZE	MAX. SPACING
UNDER 2 SQ. FT.	1" X 1/16"	6'-0" O.C.
2 TO 4 SQ. FT.	1" X 1/8"	8'-0" O.C.
4 TO 8 SQ. FT.	1" X 1/8"	6'-0" O.C.
OVER 8 SQ. FT.	1" X 1/8"	4'-0" O.C.

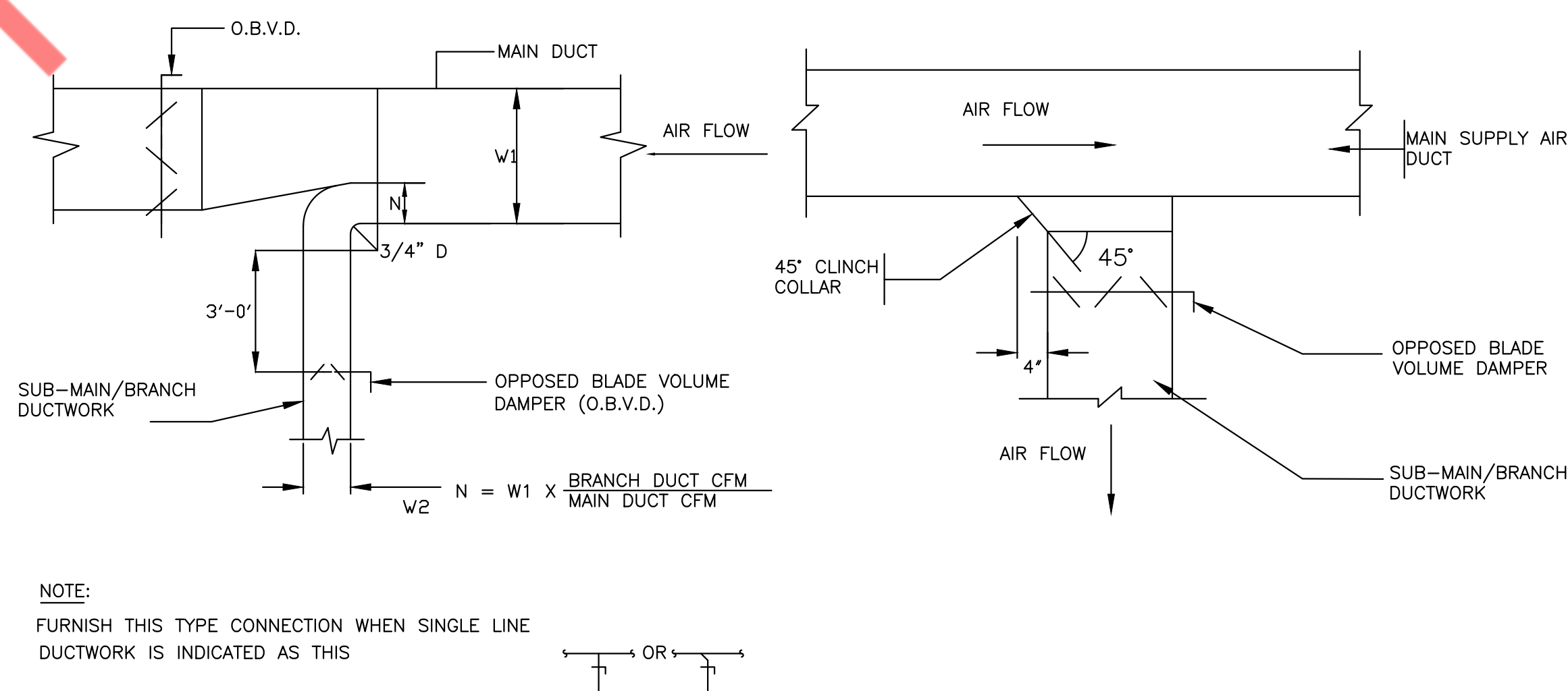
1 METHOD OF HANGING DUCTWORK  
M5.0 N.T.S



2 LOW VELOCITY DUCTWORK ELBOWS  
M5.0 N.T.S



3 ACOUSTICAL TREATMENT DUCT LINING  
M5.0 N.T.S



4 SUPPLY AIR DUCTWORK SUB-MAIN/BRANCH DUCT CONNECTION  
M5.0 N.T.S

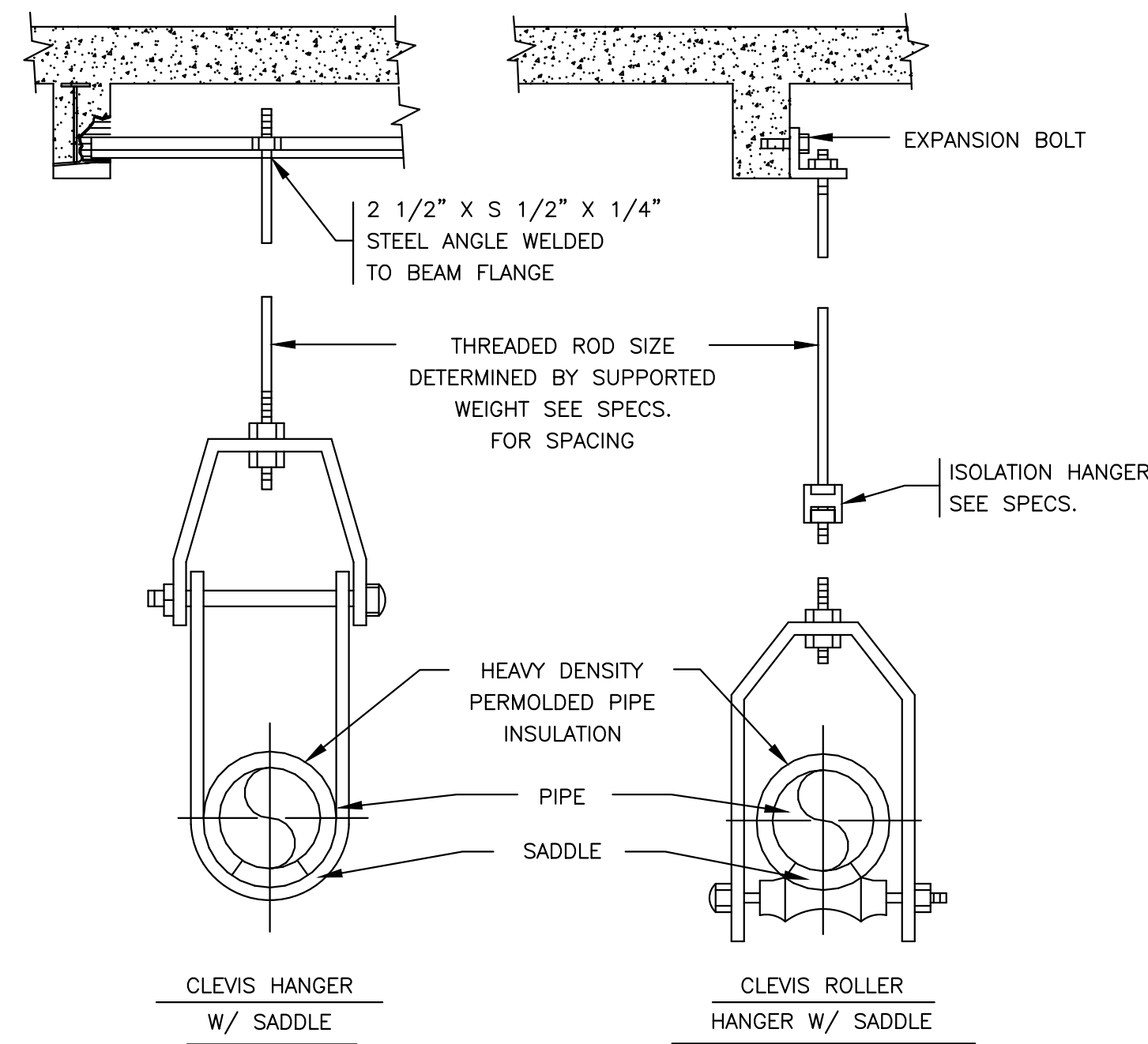
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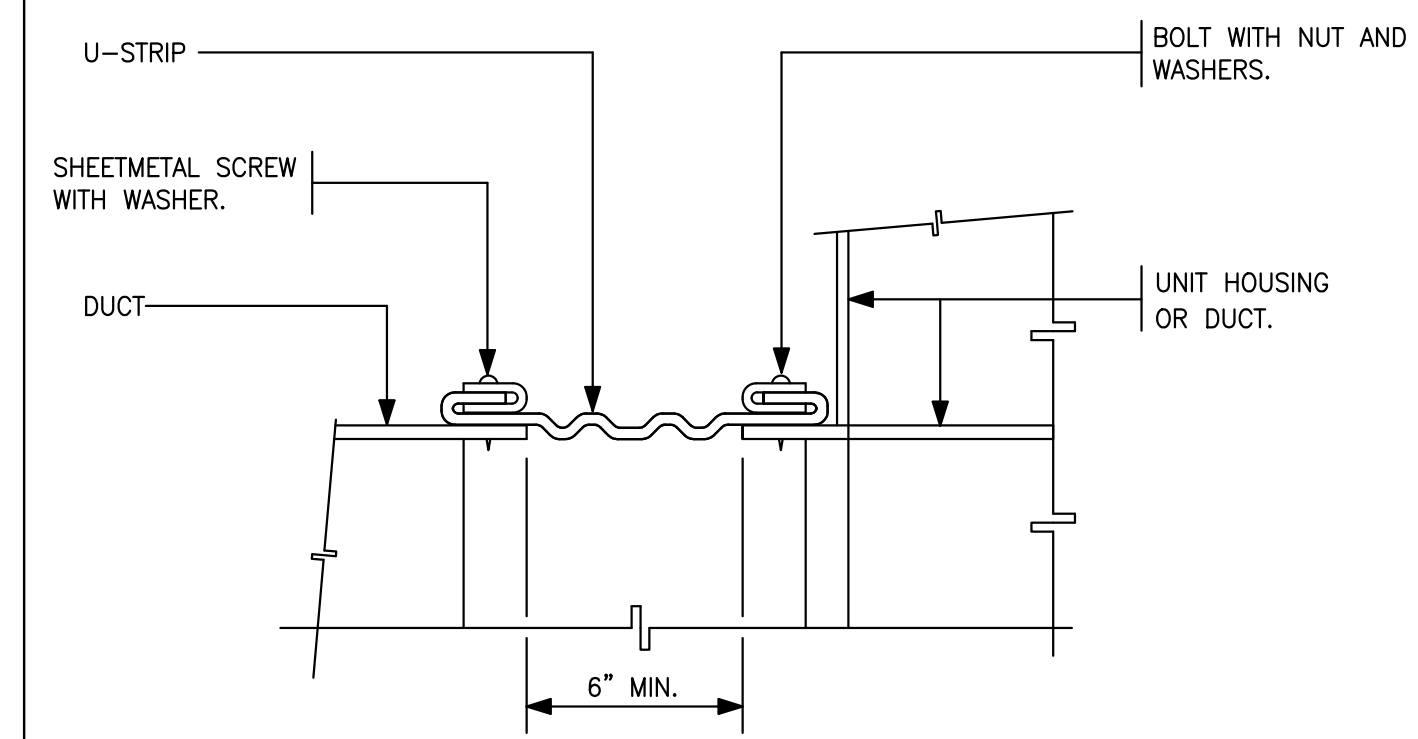
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MECHANICAL DETAILS  
(1 OF 4)

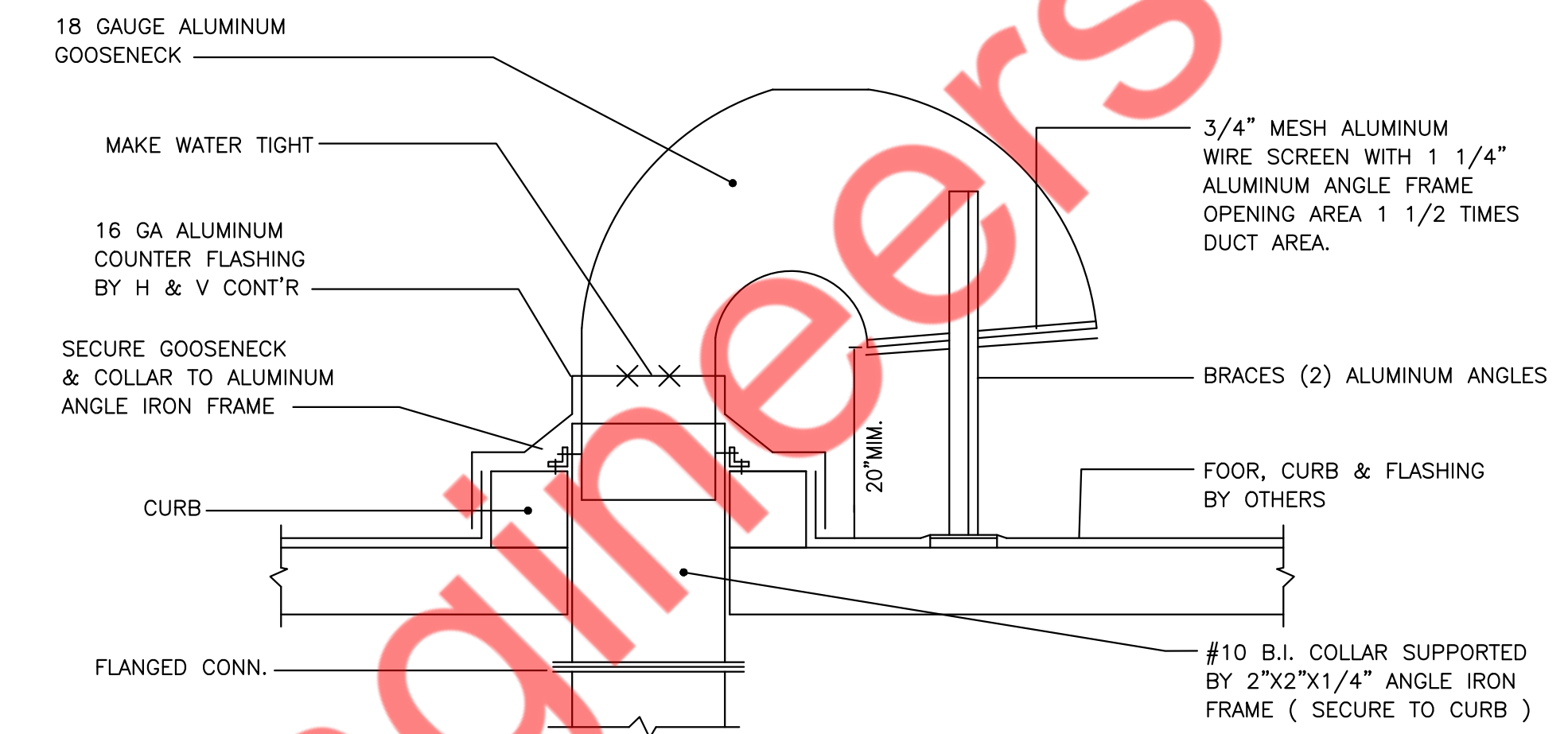
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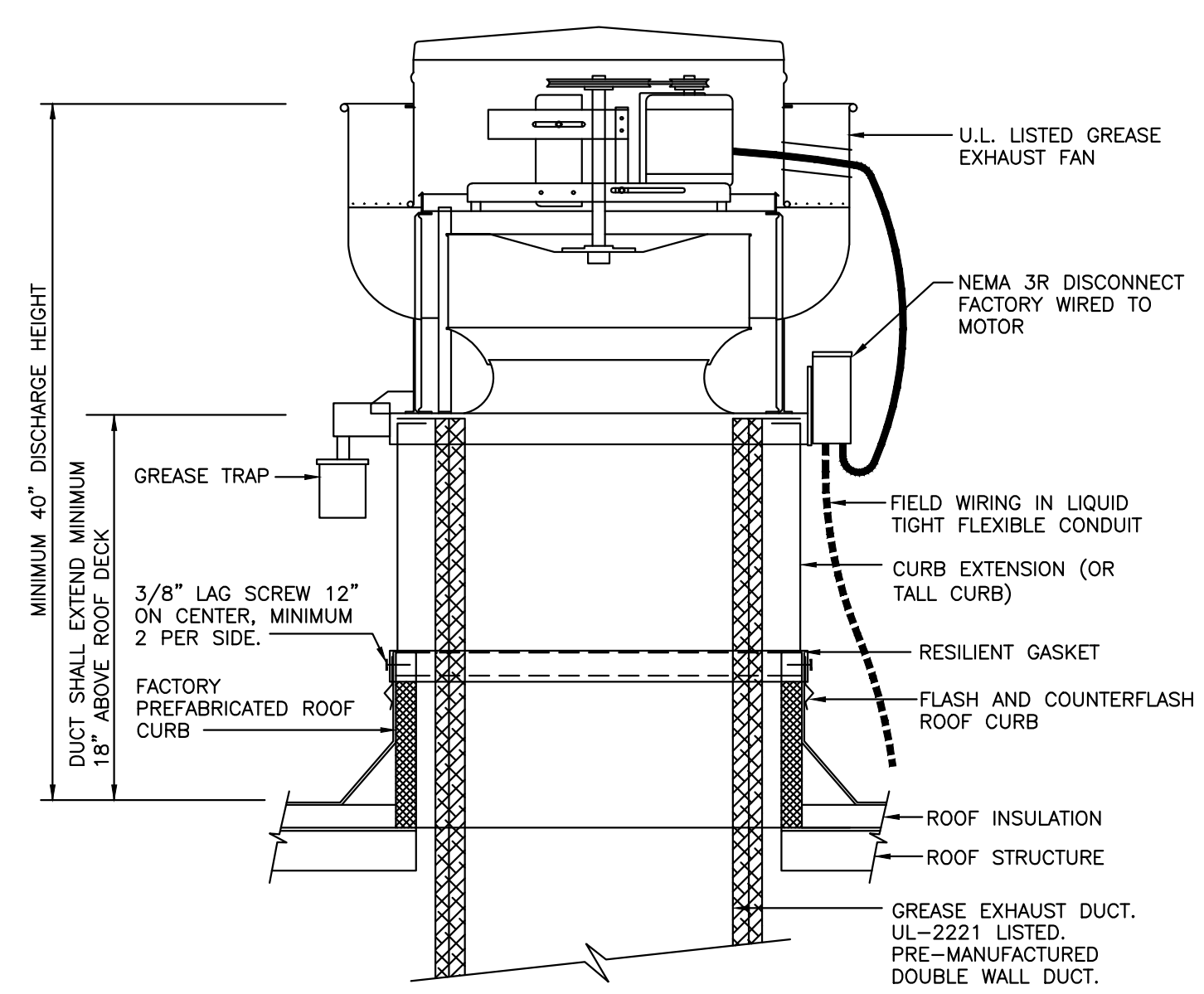
1 METHOD OF HANGING PIPING  
M5.1 N.T.S



2 FLEXIBLE CONNECTION (DUCT-EQUIPMENT)  
M5.1 N.T.S

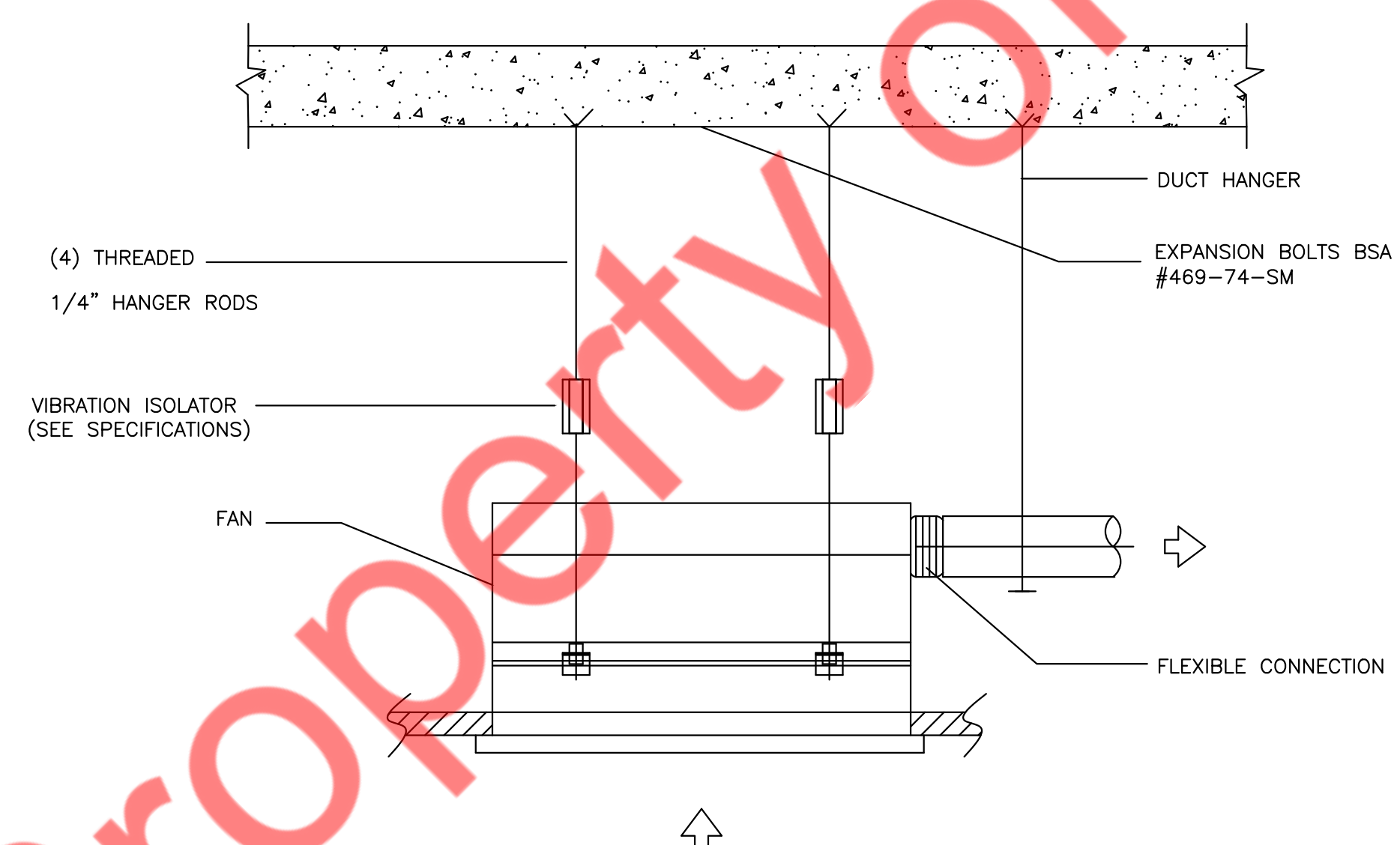


3 TYPICAL DETAIL OF ROOF GOOSENECK  
M5.1 N.T.S

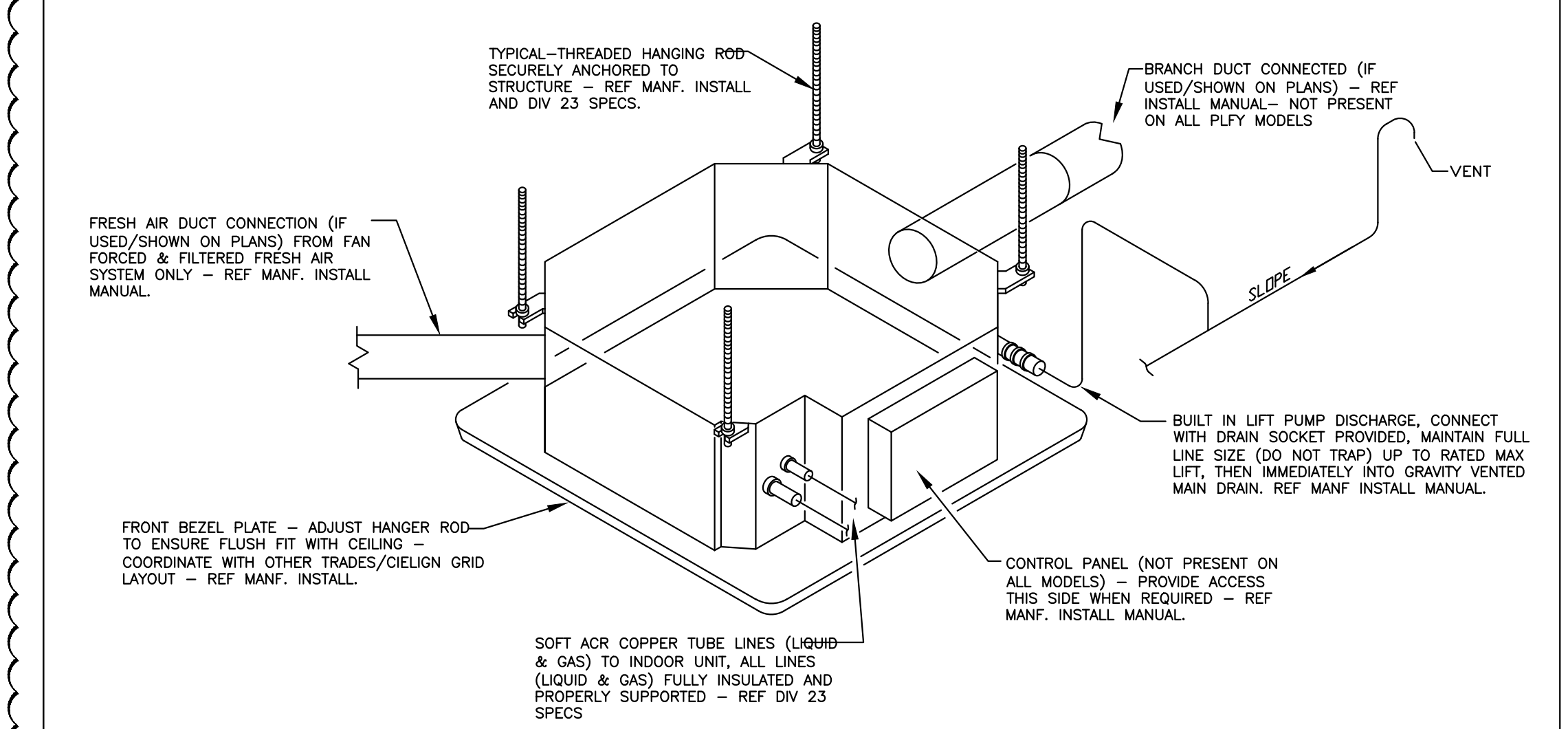


NOTE: INSTALLATION SHALL BE IN ACCORDANCE WITH NFPA 96 REQUIREMENTS.

4 ROOF MOUNTED GREASE EXHAUST FAN DETAIL  
M5.1 N.T.S



5 CEILING FAN HANGING SUPPORT DETAIL  
M5.1 N.T.S



6 4 WAY CASSETTE AC DETAIL  
M5.1 N.T.S

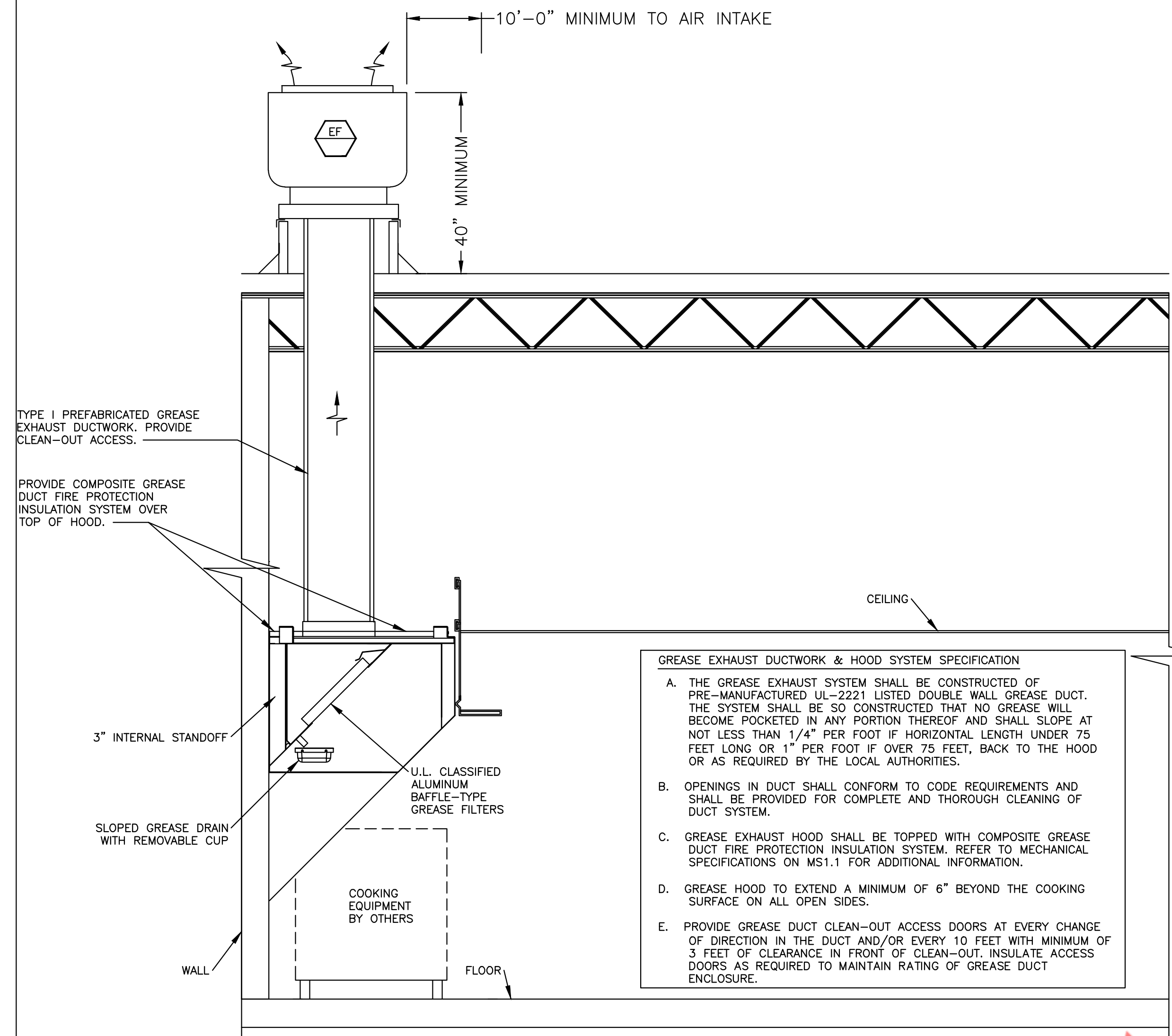
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(2 OF 4)

DRAWING NO.:  
**M5.1**



**GREASE EXHAUST DUCTWORK & HOOD SYSTEM SPECIFICATION**

A. THE GREASE EXHAUST SYSTEM SHALL BE CONSTRUCTED OF PRE-MANUFACTURED UL-2221 LISTED DOUBLE WALL GREASE DUCT. THE SYSTEM SHALL BE SO CONSTRUCTED THAT NO GREASE WILL BECOME POCKETED IN ANY PORTION THEREOF AND SHALL SLOPE AT NOT LESS THAN 1/4" PER FOOT IF HORIZONTAL LENGTH UNDER 75 FEET LONG OR 1" PER FOOT IF OVER 75 FEET, BACK TO THE HOOD OR AS REQUIRED BY THE LOCAL AUTHORITIES.

B. OPENINGS IN DUCT SHALL CONFORM TO CODE REQUIREMENTS AND SHALL BE PROVIDED FOR COMPLETE AND THOROUGH CLEANING OF DUCT SYSTEM.

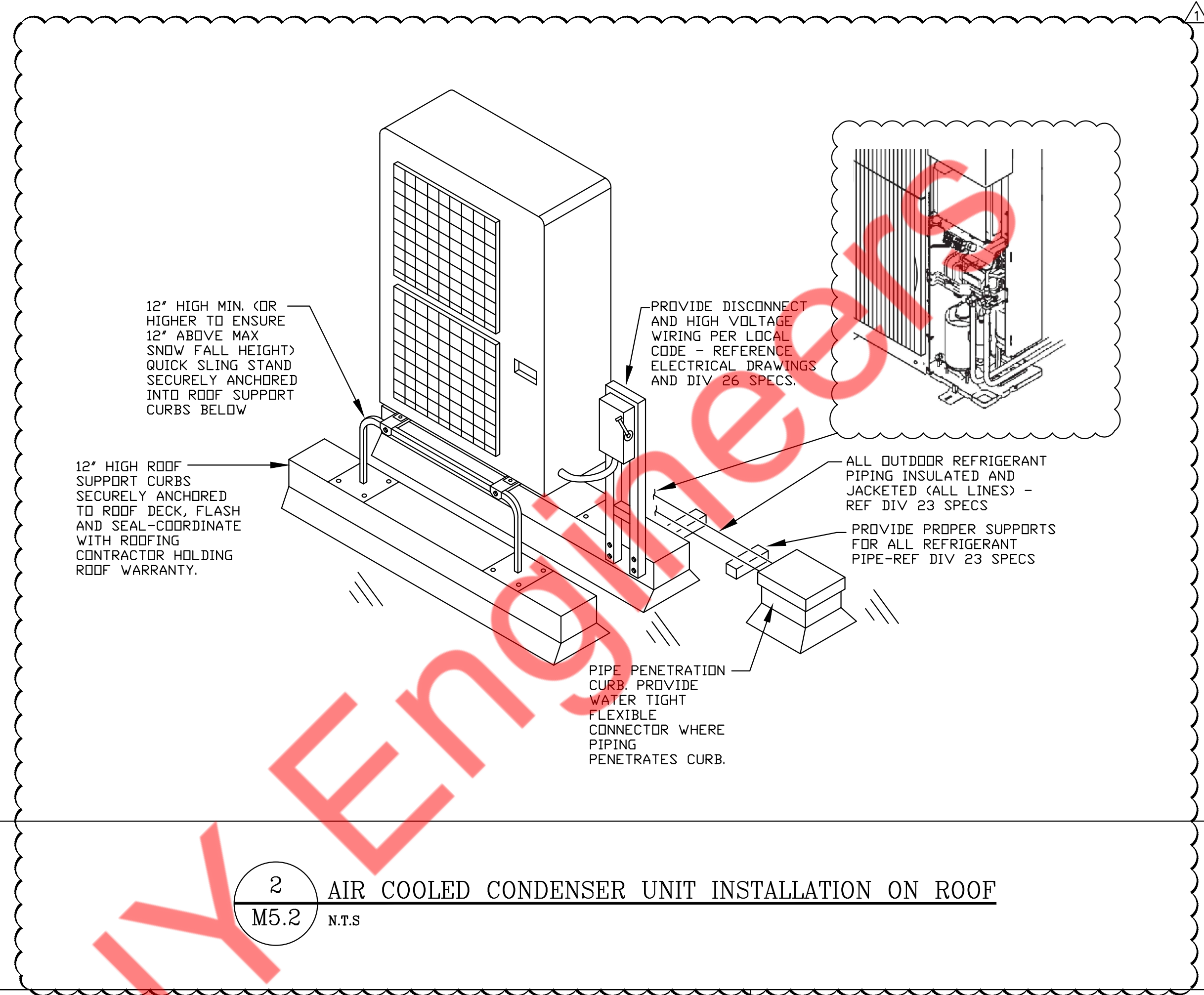
C. GREASE EXHAUST HOOD SHALL BE TOPPED WITH COMPOSITE GREASE DUCT FIRE PROTECTION INSULATION SYSTEM. REFER TO MECHANICAL SPECIFICATIONS ON MS1.1 FOR ADDITIONAL INFORMATION.

D. GREASE HOOD TO EXTEND A MINIMUM OF 6" BEYOND THE COOKING SURFACE ON ALL OPEN SIDES.

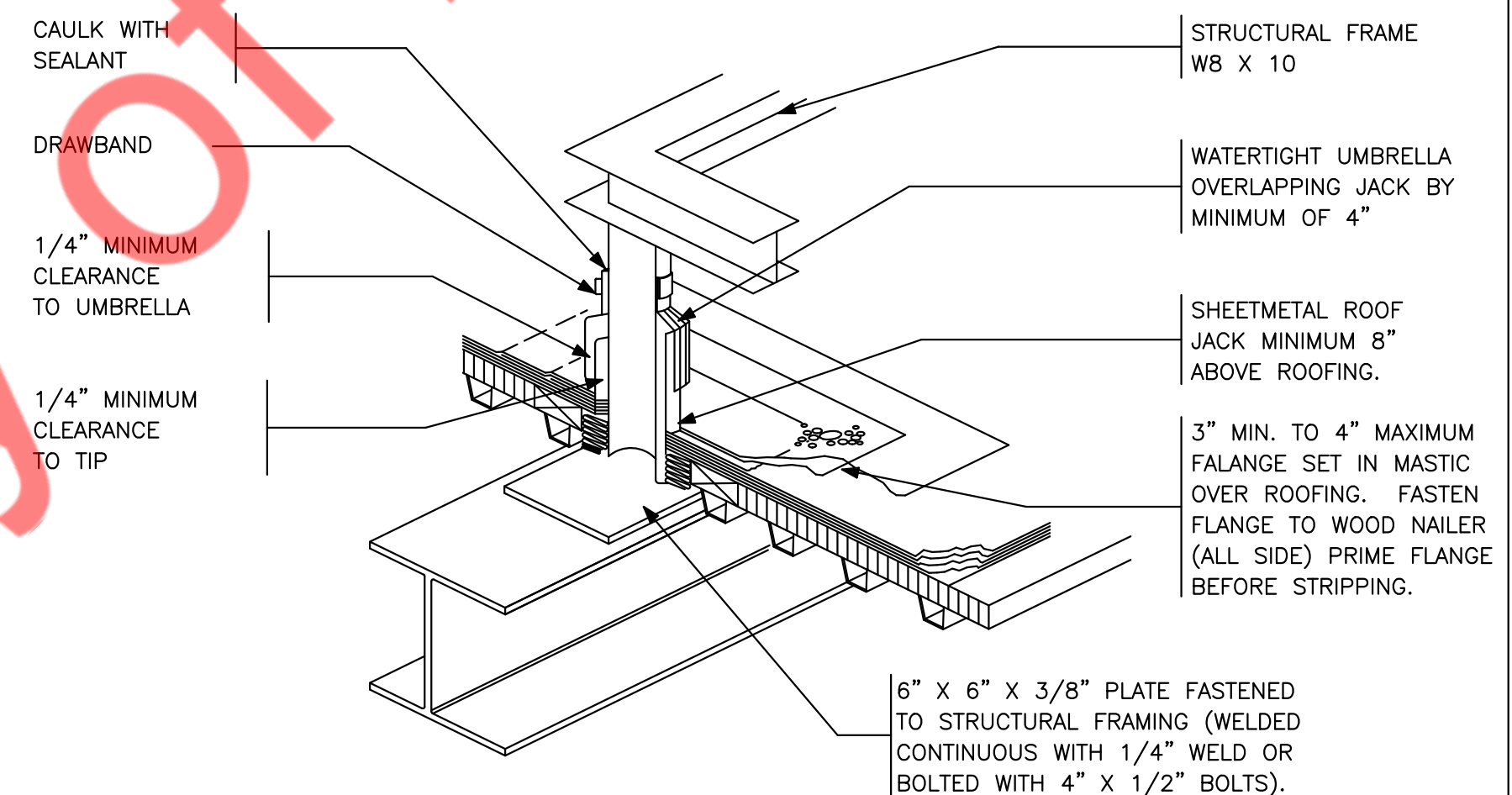
E. PROVIDE GREASE DUCT CLEAN-OUT ACCESS DOORS AT EVERY CHANGE OF DIRECTION IN THE DUCT AND/OR EVERY 10 FEET WITH MINIMUM OF 3 FEET OF CLEARANCE IN FRONT OF CLEAN-OUT. INSULATE ACCESS DOORS AS REQUIRED TO MAINTAIN RATING OF GREASE DUCT ENCLOSURE.

- NOTES:
1. PROVIDE UL LISTED TYPE I EXHAUST HOOD.
  2. GREASE HOOD SHALL MEET THE REQUIREMENTS OF MECHANICAL CODE, NSF AND NFPA FOR A TYPE I HOOD.
  3. FIRE DEPARTMENT APPROVAL SHALL BE REQUIRED ON FIRE PROTECTION SYSTEM FOR GREASE HOODS AND DUCTS AS REQUIRED BY MECHANICAL AND FIRE CODES.
  4. PROVIDE CHEMICAL FIRE SUPPRESSION SYSTEM AS REQUIRED BY NFPA 17A.
  5. PERFORM SMOKE TEST ON GREASE EXHAUST DUCTWORK AFTER DUCTWORK INSTALLATION IS COMPLETE BUT PRIOR TO DUCTWORK CONCEALMENT PER REQUIREMENTS OF LOCAL CODE AUTHORITIES.

**1** KITCHEN HOOD SCHEMATICS  
M5.2 N.T.S



**2** AIR COOLED CONDENSER UNIT INSTALLATION ON ROOF  
M5.2 N.T.S



**3** EQUIPMENT STAND DETAIL  
M5.2 N.T.S

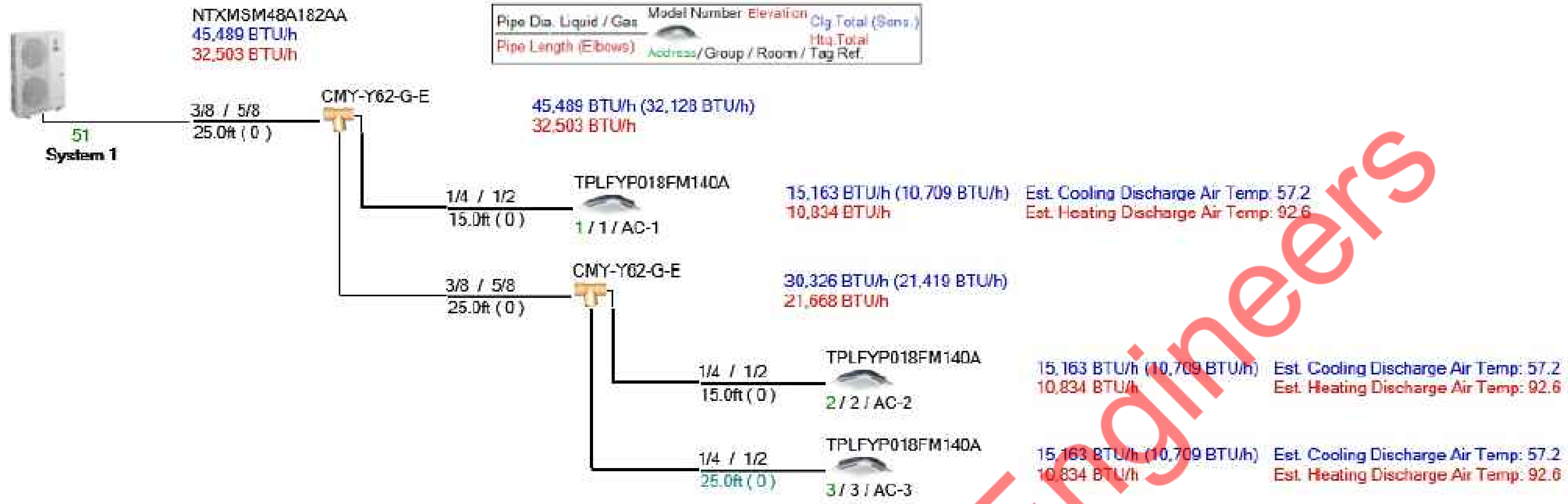
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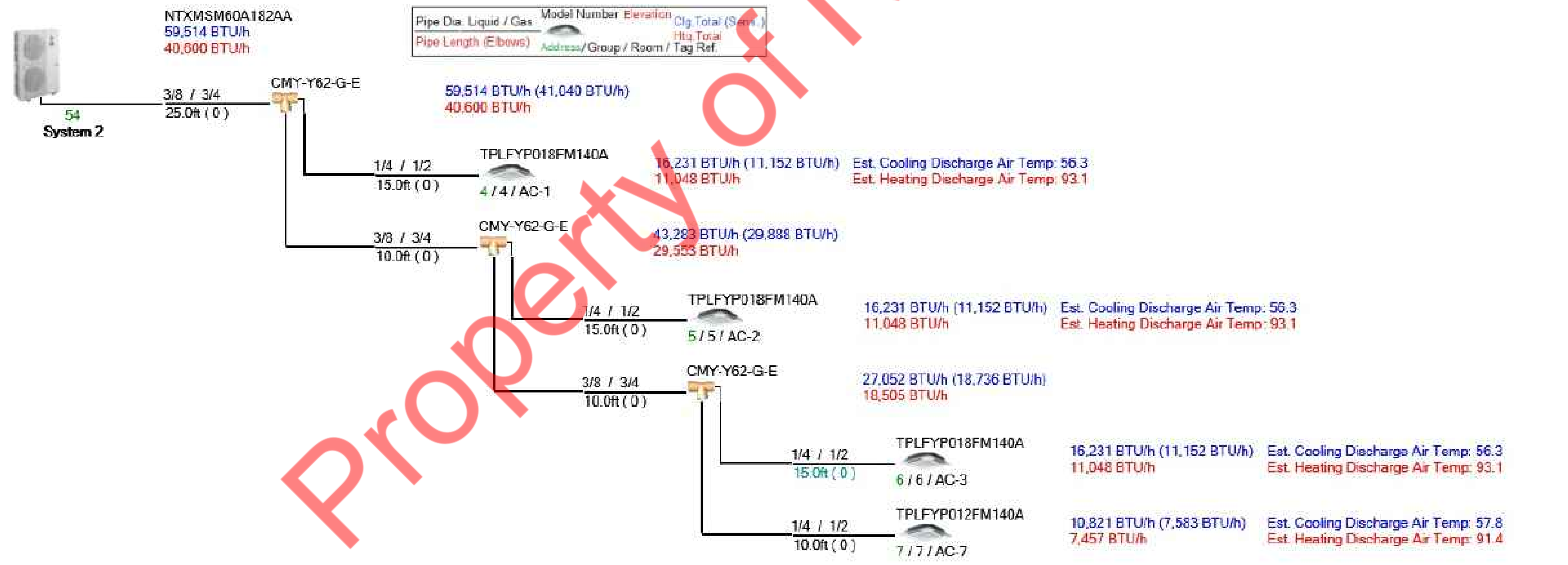
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(3 OF 4)

DRAWING NO.:  
**M5.2**



1 ACCU-1 PIPE RISER DIAGRAM  
M5.3 N.T.S.



2 ACCU-2 PIPE RISER DIAGRAM  
M5.3 N.T.S.

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(4 OF 4)

DRAWING NO.:  
**M5.3**



VRF HEAT PUMP CONDENSING UNITS SCHEDULE																						
UNIT TAG	LOCATION	INDOOR UNIT SERVED	CAP. TR	COOLING MBH	HEATING MBH	COMPRESSOR TYPE	NO. OF COMPRESSOR PER UNIT	TYPE OF REFRIGERANT	UNIT DIMENSIONS IN. (HXWXD)	PIPING DIMENSION		ELECTRICAL				SOUND LEVEL (Dba)	MODEL NO.	MAKE				
										WEIGHT (LBS)	LIQUID-HI PRESSURE	GAS HIGH-PRESSURE	(V/Hz/Ph)	MCA (A)	MOC (A)				EER	SEER	HSPF	COP
ACCU-1	SEE ON PLAN	AC-1, AC-2 & AC-3	4	48	54	HERMATIC	1	R410	53"X42"X13"	271	3/4"	5/8"	208/60/1	29	40	13.1	23	12	4	54	NTXMSM48A182AA	TRANE-MITSUBISHI
ACCU-2	SEE ON PLAN	AC-4, AC-5, AC-6 & AC-7	5	60	66	HERMATIC	1	R410	53"X44"X18"	302	3/4"	3/4"	208/60/1	36	50	13.3	20	12	4	59	NTXMSM60A182AA	TRANE-MITSUBISHI

- NOTES:-
- UNIT SHALL HAVE TEN YEAR EXTENDED WARRANTY FOR COMPRESSORS/PARTS.
  - PROVIDE LOW AMBIENT CONTROL FOR CONDENSING UNIT OPERATION DOWN TO -4°F.
  - PROVIDE COMPRESSOR CYCLE PROTECTOR.
  - PROVIDE STEEL RAILS AND VIBRATION ISOLATORS FOR CONDENSER MOUNTING.
  - STEEL RAILS TO BE PROVIDED BY MECH. CONTRACTOR.
  - CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEED THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.

INDOOR UNIT SCHEDULE																				
UNIT TAG	AREA SERVED	CONNECTED TO	TYPE	CAP. (TON)	COOLING MBH	HEATING MBH	OUTSIDE AIR FLOW	MAX. SOUND PRESS. (DBA)	ELECTRICAL DATA			DIMENSIONS			PIPE SIZE			WEIGHT (LBS.)	MODEL NO.	MAKE
									PH/VOLT/Hz	MCA (A)	MOC (A)	(HXWXD) (IN.)	LIQ. (IN.)	SUCTION (IN.)	DRAIN (ID) (IN.)					
AC-1	SEE ON PLAN	ACCU-1	4-WAY CEILING CASSETTE	1.5	18.0	20.0	100	-	1/208-230/60	0.5	15	9"X23"X23"	1/4"	1/2"	1-1/4"	36.6	TPLFY018FM140A	TARENE-MITSUBISHI		
AC-2	SEE ON PLAN	ACCU-1	4-WAY CEILING CASSETTE	1.5	18.0	20.0	90	-	1/208-230/60	0.5	15	9"X23"X23"	1/4"	1/2"	1-1/4"	36.6	TPLFY018FM140A	TARENE-MITSUBISHI		
AC-3	SEE ON PLAN	ACCU-1	4-WAY CEILING CASSETTE	1.5	18.0	20.0	90	-	1/208-230/60	0.5	15	9"X23"X23"	1/4"	1/2"	1-1/4"	36.6	TPLFY018FM140A	TARENE-MITSUBISHI		
AC-4	SEE ON PLAN	ACCU-2	4-WAY CEILING CASSETTE	1.5	18.0	20.0	110	-	1/208-230/60	0.5	15	9"X23"X23"	1/4"	1/2"	1-1/4"	36.6	TPLFY018FM140A	TARENE-MITSUBISHI		
AC-5	SEE ON PLAN	ACCU-2	4-WAY CEILING CASSETTE	1.5	18.0	20.0	110	-	1/208-230/60	0.5	15	9"X23"X23"	1/4"	1/2"	1-1/4"	36.6	TPLFY018FM140A	TARENE-MITSUBISHI		
AC-6	SEE ON PLAN	ACCU-2	4-WAY CEILING CASSETTE	1.5	18.0	20.0	110	-	1/208-230/60	0.5	15	9"X23"X23"	1/4"	1/2"	1-1/4"	36.6	TPLFY018FM140A	TARENE-MITSUBISHI		
AC-7	SEE ON PLAN	ACCU-2	4-WAY CEILING CASSETTE	1.0	12.0	13.5	100	-	1/208-230/60	0.29	15	9"X23"X23"	1/4"	1/2"	1-1/4"	36.6	TPLFY012FM140A	TARENE-MITSUBISHI		

- NOTES FOR INDOOR UNIT
- REFRIGERANT R410A SHALL BE PROVIDED.
  - PROVIDE HANGING BRACKETS WITH MANUFACTURER RECOMMENDED VIBRATION ISOLATORS AND ALL ASSOCIATED ACCESSORIES.
  - ALL REFRIGERANT PIPING TO BE SIZED PER MANUFACTURERS RECOMMENDATIONS.
  - SEE FLOOR PLAN FOR QUANTITIES.
  - PROVIDE EQUIPMENT GRILL WITH 3D I-SEE SENSOR.
  - CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEEDS THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
  - PROVIDE UNITS WITH 7 DAYS PROGRAMMABLE HEATING AND COOLING WALL MOUNTED CONTROLLERS BY THE UNIT MANUFACTURER.

EXHAUST FANS SCHEDULE											
TAG	SERVICE	AIRFLOW (CFM)	ESP (IN W.G)	ELEC. DATA (V/Hz/Ph.)	FLA (A)	INPUT POWER	FAN SPEED (RPM)	WEIGHT (LBS.)	SOUND	MODEL	MAKE
TEF-1	TOILET EXHAUST	70	0.2	115/60/1	0.29	6 (W)	838	12	30 (dBA)	SP-A50-90-VG	GREENHECK
KEF-1	KITCHEN	3900	1.6	208/60/3	15.80	5 (HP)	886	358	17.1 (5ones)	EADU240H	ECON-AIR

NOTES :-

- FAN SWITCH TO BE PROVIDED AT ALL BATHROOM FOR ENGAGING RESPECTIVE FAN. COORDINATE HEIGHT, COLOR AND STYLE WITH THE OWNER AND ARCHITECT.
- ALL DIRECT DRIVE FANS SHALL BE FURNISHED WITH VARI-GREEN MOTOR CONTROL.
- FAN SPEED SHALL BE EASILY FIELD ADJUSTABLE.
- REFER TO DETAILS, FAN SHALL BE MOUNTED W/SUPPORT FRAMING BY OTHERS.
- PROVIDE MOTOR STARTERS, DISCONNECTS. ALL EQUIPMENT NORMAL POWER WIRING BY ELECTRICAL CONTRACTOR. COORDINATE POWER REQUIREMENTS.
- PROVIDE RUBBER IN SHEAR ISOLATION AND ALL-THREAD HANGING RODS FOR INLINE FANS.
- COORDINATE WITH ARCH./G.C. ACCESS DOORS FOR SERVICING ALL FANS WITHIN CEILINGS.
- TEF-1 FAN SHALL BE INTERLOCK WITH LIGHT.
- EF-1 SHOULD INTERLOCK WITH HOOD.
- PROVIDE ROOF CURB FOR THE EF-1.

AIR BALANCE					
UNIT	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR (CFM)
OAI	SEE PLAN	0	710	0	0
TXF-1	SEE PLAN	0	0	0	70
KEF-1	SEE PLAN	0	0	0	3900
MUA-1	SEE PLAN	3315	3315	0	0
TOTAL:		3315	4025	0	3970
BUILDING PRESSURE:		55		POSITIVE	

NOTES:

- CONTRACTOR TO ADJUST MOTORIZED DAMPER ON FRESH AIR TAP TO PROVIDE OUTSIDE AIR AS MENTIONED IN ABOVE TABLE.

MAKEUP AIR FAN SCHEDULE														
TAG	SERVICE	MODEL	STATIC IN. WG	CFM (MAX.)	ELEC (V/Hz/Ph.)	POWER	MCA (A)	MOC (A)	HEATING CAPACITY		GAS PRESSURE IN. W.C.	EFFICIENCY	WEIGHT (LBS)	MAKE
									INPUT (MBH)	OUTPUT (MBH)				
MUA-1	KITCHEN	EA2-D.500-20D	0.80	3315	208/60/3	3.0 (HP)	11.9	20	223.1	205.3	7"-14"	92%	755	ECON-AIR

NOTES :-

- FAN SPEED SHALL BE EASILY FIELD ADJUSTABLE.
- REFER TO DETAILS, FAN SHALL BE MOUNTED W/SUPPORT FRAMING BY OTHERS.
- PROVIDE MOTOR STARTERS, DISCONNECTS AND 14" CURB. ALL EQUIPMENT NORMAL POWER WIRING BY ELECTRICAL CONTRACTOR. COORDINATE POWER REQUIREMENTS.

KITCHEN HOOD SCHEDULE						
UNIT ID	LENGTH (FEET-INCH)	MODEL	APPLIANCE DUTY	COOKING TEMPERATURE (DEG F)	EXHAUST AIR (CFM)	CONSTRUCTION
HOOD-1	13'	GCH-1300	HEAVY	600	3900	18 GA, #430 S/S

NOTES:-

- REFER ATTACHED DRWING FROM RELIABLE FIR & MECHANICAL

ISSUE	DESCRIPTION	DATE
01	HVAC CHANGES	10/17/2022

PROJECT INFORMATION:

**UNCLE WILLIE'S WINGS**

DATE: \_\_\_\_\_

PROJECT NO.: \_\_\_\_\_

DRAWN BY: NYE

CHECKED BY: NYE

SCALE: AS NOTED

DRAWING TITLE:

**MECHANICAL SCHEDULE**

DRAWING NO.:

**M6.0**

# ELECTRICAL SYMBOLS LIST

## GENERAL NOTES (APPLY TO ALL "E" DRAWINGS)

SWITCHES AND CONTROLS	
Ⓐ	20A SPST TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE CONTROLLED.
Ⓐ	20A 3-WAY TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE CONTROLLED
Ⓐ	20A 4-WAY TOGGLE SWITCH U.O.N. "a" DENOTES LIGHTING FIXTURE CONTROLLED
Ⓐ	WALL BOX INCANDESCENT DIMMER SWITCH, LUTHRON MAESTRO SERIES. "a" DENOTES LIGHTING FIXTURE CONTROLLED.
OS	WALL OCCUPANCY SENSOR, NUMBER INDICATES TYPE; SEE OCCUPANCY SENSOR SCHEDULE.
VS	WALL MOUNTED VACANCY SENSOR SWITCH, WATTSTOPPER CS-50PIR SERIES.
Ⓐ	WALL MOUNTED SPRING WOUND TIME SWITCH TORK
ASCO	ASCO CONTACTOR C-25 TORK TIMER T-25 STACKED.
D	DOOR SWITCH
PC	PHOTOCELL IN NEMA 3R ENCLOSURE.
PC	WALL MOUNTED PHOTOCELL MOUNTED IN NEMA 3R ENCLOSURE.
OS A	CEILING OCCUPANCY SENSOR, NUMBER INDICATES TYPE; SEE OCCUPANCY SENSOR SCHEDULE. 'A' LETTER REFERS TO WIRING DIAGRAM.
OS	WALL OCCUPANCY SENSOR, NUMBER INDICATES TYPE; SEE OCCUPANCY SENSOR SCHEDULE.
VS	WALL VACANCY SENSOR, NUMBER INDICATES TYPE; SEE OCCUPANCY SENSOR SCHEDULE.
VS	CEILING VACANCY SENSOR, NUMBER INDICATES TYPE; SEE OCCUPANCY SENSOR SCHEDULE.
DS	CEILING MOUNTED DAYLIGHT SENSOR.

POWER AND TELECOMMUNICATION	
J	JUNCTION BOX WITH BLANK COVER PLATE, FLUSH IN FLOOR.
J	JUNCTION BOX WITH BLANK COVER PLATE, WALL MOUNTED, +18" AFF OR AS NOTED.
J	JUNCTION BOX WITH BLANK COVER PLATE, CEILING MOUNTED..
Ⓜ	DUPLEX CONVENIENCE RECEPTACLE, +18" AFF OR AS NOTED.
Ⓜ	DUPLEX DEDICATED RECEPTACLE, +18" AFF OR AS NOTED.
CL	DUPLEX CONVENIENCE RECEPTACLE - 20A-1P, 125V, NEMA 5-20R MOUNTED FLUSH IN CEILING.
Ⓜ	DUPLEX RECEPTACLE WITH GFCI PROTECTION
Ⓜ AC	DUPLEX RECEPTACLE WITH GFCI PROTECTION MOUNTED ABOVE COUNTER
Ⓜ	ELECTRICAL FLOOR BOX
Ⓜ	RECEPTACLE FOR DRYER
NID	NETWORK INTERFACE DEVICE. NID IS 'ONT' BOX WHICH INCLUDES BOTH 'ONT' AND ITS SISTER BOX AS PER VERIZON STANDARDS.
Ⓜ	DOUBLE DUPLEX RECEPTACLE - 20A-1P, 125V, NEMA 5-20R.
Ⓜ	TELEPHONE/DATA OUTLET, 4" SQUARE OUTLET BOX WITH SINGLE GANG COLLAR AND BLANK PLATE. PROVIDE 3/4" E.C., U.O.N. UP TO HUNG CEILING AND TERMINATE WITH 90° ELBOW, BUSHING AND DRAG WIRE.
Ⓜ	TELEPHONE OUTLET, WALL-MOUNTED +48" AFF UNO TEL / DATA OUTLET TO BE PROVIDED WITH 1" CONDUIT U.O.N. TO H.C. AND TERMINATED WITH 90 DEGREE REE ELBOW AND BUSHING. TEL / DATA OUTLET PLATE SHALL BE PROVIDED WITH 1 1/4" DIAMETER GROMMETED OPENING.
Ⓜ	DATA OUTLET - (1) PORT UNO, +18" AFF, UNO TEL / DATA OUTLET TO BE PROVIDED WITH 1" CONDUIT U.O.N. TO H.C. AND TERMINATED WITH 90 DEGREE ELBOW AND BUSHING. TEL / DATA OUTLET PLATE SHALL BE PROVIDED WITH 1 1/4" DIAMETER GROMMETED OPENING.

ELECTRICAL ABBREVIATIONS			
A	AMPERES	EA	EACH
A/C, AC	AIR CONDITIONING UNIT	EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR
AF	AMPERE FRAME/AMP FUSE	EF	EXHAUST FAN
AFF	ABOVE FINISHED FLOOR	EM	EMERGENCY
AS	AMP SWITCH	EMT	ELECTRICAL METALLIC TUBING
AIC	AMPS INTERRUPTING CAPACITY	EQUIP	EQUIPMENT
AT	AMP TRIP	ER	EXISTING TO BE RELOCATED
ATS	AUTOMATIC TRANSFER SWITCH	ETR	EXISTING TO REMAIN
AUTO	AUTOMATIC	EFW	ELECTRIFIED WORKSTATION FURNITURE
AWG	AMERICAN WIRE GAUGE	EW	ELECTRIC WATER HEATER
C	CONDUIT	FA	FIRE ALARM
C/B,CB	CIRCUIT BREAKER	FBO	FURNISHED BY OTHERS, INSTALLED & WIRED BY EC
CKT	CIRCUIT	FDR	FEEDER
CLG	CEILING	FIBO	FURNISHED & INSTALLED BY OTHERS, WIRED BY EC
COMM	COMMUNICATION	FIXT	FIXTURE
CT	CURRENT TRANSFORMER	FL	FLOOR
CU	COPPER	FLOOR	FLUORESCENT
°C	DEGREE CELSIUS	G	GROUND
°F	DEGREE FAHRENHEIT	GFI	GROUND FAULT INTERRUPTER
DIA	DIAMETER	GP	GENERAL PURPOSE
DISC	DISCONNECT	HC	HUNG CEILING
DN	DOWN	HP	HORSEPOWER
DP	DISTRIBUTION PANEL	HWH	HOW WATER HEATER
DWH	DOMESTIC WATER HEATER	HZ	HERTZ
DWG	DRAWING	IC	INTERRUPTING CAPACITY
JB	JUNCTION BOX	PP	POWER PANEL
KCMIL	ONE THOUSAND CIRCULAR MILS	PVC	POLYVINYL CHLORIDE
KV	KILOVOLT	PWR	POWER
KVA	KILOVOLT-AMPERES	R	REMOVE
KW	KILOWATTS	RE	RELOCATED EXISTING
LP	LIGHTING PANEL	REC	RECEPTACLE
LTG	LIGHTING	RGS	RIGID GALVANIZED STEEL
MAX	MAXIMUM	RR	REMOVE & RELOCATE
MC	MOTOR CONTROLLER	SECT	SECTION
MCB	MAIN CIRCUIT BREAKER	SPDT	SINGLE POLE DOUBLE THROW
MER	MECHANICAL EQUIPMENT ROOM	SPST	SINGLE POLE SINGLE THROW
MIN	MINIMUM	SPEC	SPECIFICATION
MLO	MAIN LUGS ONLY	SW	SWITCH
MTD	MOUNTED	SWBD	SWITCHBOARD
MTS	MANUAL TRANSFER SWITCH	SYM	SYMMETRICAL
N	NEUTRAL	SYS	SYSTEMS
NE	NEW DEVICE TO REPLACE EXISTING	TELE	TELEPHONE
NIC	NOT IN CONTRACT	TEMP	TEMPERATURE
NL	NIGHT LIGHT	TXF	TOILET EXHAUST FAN
NTS	NOT TO SCALE	TYP	TYPICAL
OC	ON CENTER	UON	UNLESS OTHERWISE NOTED
P	POLES	V	VOLT/VOLTAGE
PB	PULLBOX	VA	VOLT AMPERE
PC	PERSONAL COMPUTER	VAV	VARIABLE AIR VOLUME
∅	PHASE	VFD	VARIABLE FREQUENCY DRIVE
PNL	PANEL	VP	VAPORPROOF
W	WATT	WP	WEATHER PROOF
W	WIRE	XFMR	TRANSFORMER
WH	WALL HEATER	ZRT	ZONE REGISTER TERMINALS
E	EXISTING	IG	ISOLATED GROUND

- ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CURRENT VERSION OF THE NATIONAL ELECTRIC CODE(NEC) 2017 WITH NEW JERSEY AMENDMENTS, LOCAL JURISDICTION REQUIREMENTS, AND ALL GOVERNING LOCAL CODES, LAWS, AND REGULATIONS.
- CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK. NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR FAILURE TO DO SO.
- CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, TEST REPORTS, AND CERTIFICATIONS FOR TEMPORARY AND FINAL CERTIFICATE OF OCCUPANCY.
- FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER IN ORDER TO MAINTAIN FIRE RATING. ALL PENETRATIONS SHALL BE SLEEVED AND SEALED WATERTIGHT.
- SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS (HOLLOW MASONRY), EXPANSION SHIELDS OR INSERTS (CONCRETE AND BRICK), MACHINE SCREWS (METAL), BEAM CLAMPS (FRAMEWORK), WOOD SCREWS (WOOD) OR PAN THRU STRAPS (METAL DECK), NAILS, RAWL PLUGS AND WOOD PLUGS ARE NOT PERMITTED. WHERE REQUIRED BY STRUCTURE, PROVIDE THRU BOLTS AND FISH PLATES. SUPPORT HORIZONTAL RUNS OF METALLIC RACEWAYS NOT MORE THAN 10 FT APART. SUPPORT RACEWAY RISERS AT EACH FLOOR LEVEL. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.
- LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS. RACEWAYS OVER 10 FT LONG IN WHICH WIRING IS NOT INSTALLED: FURNISH FISH WIRE.
- VERIFY LOCATIONS OF OUTLETS AND SWITCHES IN FINISHED ROOMS WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISH. IN CENTERING OUTLETS AND LOCATING BOXES AND OUTLETS, ALLOW FOR OVERHEAD PIPES, DUCTS AND MECHANICAL EQUIPMENT, EQUIPMENT, VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRIM, PANELING, HUNG CEILINGS AND THE LIKE. CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.
- CONTRACTOR SHALL PROVIDE A WARRANTY ON ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
- ALL UNUSED MATERIALS AND DEBRIS SHALL BE LEGALLY REMOVED AND DISPOSED OF AWAY FROM THE PREMISES ON A DAILY BASIS.
- CONTRACTOR SHALL PATCH, PAINT, AND RESTORE EXISTING SURFACES DAMAGED DURING THE COURSE OF THIS CONSTRUCTION TO PRE-EXISTING CONDITIONS OR BETTER.
- MINIMUM SIZE OF CONDUIT SHALL BE 3/4", AND TYPE SHALL BE ELECTRICAL METALLIC TUBING (EMT), UNLESS OTHERWISE NOTED. PROVIDE NYLON DRAG LINE AND CONDUIT CAP FOR ALL EMPTY CONDUITS.
- CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH FLEXIBLE CONDUIT (MINIMUM 18 IN. LENGTH AND 50% SLACK). DO NOT TERMINATE IN OR FASTEN RACEWAYS TO MOTOR FOUNDATION.
- PULL AND JUNCTION BOXES WHERE INDICATED ON THE DRAWINGS, SHALL BE CONSIDERED SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL LOCATE THEM AS FIELD CONDITIONS DICTATE. ADDITIONAL PULL AND JUNCTION BOXES NOT SHOWN ON DRAWINGS SHALL BE PROVIDED WHERE REQUIRED BY APPLICABLE CODE PROVISIONS OR WHERE CALLED FOR BY FIELD CONDITIONS. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE IN UNFINISHED AREAS AND INSTALLED CANCELED IN FINISHED AREAS, AND ALL COVERS TO PULL & JUNCTION BOXES SHALL BE READILY ACCESSIBLE.
- SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON RACEWAYS.
- FOR EXACT LOCATION AND MOUNTING HEIGHT OF LIGHTING FIXTURES AND SWITCH/RECEPTACLE OUTLETS, REFER TO ARCHITECTURAL REFLECTED CEILING AND POWER PLANS.
- ALL ELECTRICAL ACCESSORIES AND EQUIPMENT INSTALLED OUTSIDE OR EXPOSED TO WEATHER SHALL HAVE NEMA 3R ENCLOSURES AND SHALL BE TIGHTLY GASKETED FOR A COMPLETE RAINTIGHT INSTALLATION. ALL BUILDING EXTERIOR MOUNTED RECEPTACLES SHALL BE GFCI RATED AND MOUNTED IN WEATHERPROOF ENCLOSURE.
- ALL ACCESS PANEL LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
- ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION AND INSTALLATION OF NEW WORK WITH THE GENERAL CONTRACTOR AND OTHER ASSOCIATED TRADES IN A TIMELY MANNER. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL, DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
- ALL CONDUITS AND EQUIPMENT TO BE CONCEALED IN FINISHED SPACES UNLESS OTHERWISE NOTED. CONDUITS SHALL BE ENCASED IN THE CONCRETE FLOOR SLAB.
- ALL EQUIPMENT AND MATERIALS INSTALLED IN PLENUM CEILINGS SHALL BE APPROVED FOR THAT APPLICATION.
- OUTLET BOXES AND JUNCTION BOXES ON OPPOSITE SIDES OF FIRE-RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24 INCHES, UNLESS FIRE-RATED BOXES OR PUTTY PADS ARE UTILIZED.
- COORDINATE ALL FLOOR PENETRATIONS WITH THE STRUCTURAL AND ARCHITECTURAL DRAWINGS. CONFIRM PENETRATION LOCATIONS WITH THE ENGINEER AND OWNER BEFORE INSTALLATION.
- COORDINATE THE MOUNTING HEIGHT AND LOCATION OF RACEWAYS, COMMUNICATIONS OUTLETS, AND RECEPTACLES WITH THE ARCHITECTURAL CASEWORK DRAWINGS AND DETAILS. COORDINATE LOCATIONS OF LIGHT FIXTURES, SWITCHES, AND RELATED DEVICES WITH THE ARCHITECTURAL DRAWINGS AND DETAILS.
- REFER TO ARCHITECTURAL PLANS FOR FINAL LOACTIONS OF ALL LUMINARIES AND SWITCHES, AND FOR ALL FINISHED CEILING HEIGHTS.
- REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATIONS OF ALL ELECTRICAL DEVICES, AND FOR FINAL CEILING AND WALL HEIGHTS AND LAYOUTS.
- LIGHTING FIXTURES PROVIDED WITH EMERGENCY BATTERY PACKS AND INDICATED WITH SWITCH CONTROL SHALL BE WIRED WITH BATTERY CHARGING/SENSING CIRCUIT WIRED AHEAD OF SWITCH CONTROL.
- NUMBER(S) SHOWN AT RECEPTACLES, JUNCTION BOXES AND EQUIPMENT INDICATES CIRCUIT NUMBERS IN PANELBOARD. PROVIDE WIRE AND CONDUIT TO INTERCONNECT EQUIPMENT AND DEVICES WITH SAME CIRCUIT NUMBERS AND RUN TO PANELBOARD.

WIRING SYSTEMS	
UP 3	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 1#12 Ø, 1#12 N. & 1#12 G. IN 3/4"Ø, UNLESS OTHERWISE NOTED.
UP 3.5	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 2#12 Ø, 2#12 N. & 2#12 G. IN 3/4"Ø, UNLESS OTHERWISE NOTED.
UP 3.5 7	POWER OR LIGHTING CIRCUITRY HOMERUN WITH PANELBOARD DESIGNATION, NUMBER WHERE USED INDICATES CIRCUIT NUMBER. IT SHALL CONSISTS OF 3#12 Ø, 3#12 N. & 3#12 G. IN 3/4"Ø, UNLESS OTHERWISE NOTED.
○	CONDUIT TURNING UP, SEE FLOOR PLANS FOR CONDITIONS.
●	CONDUIT TURNING DOWN, SEE FLOOR PLANS FOR CONDITION.
Ⓜ	CONDUIT AND WIRE TO BUILDING GROUND.
Ⓜ	CABLE TRAY, WIDTH AND MOUNTING AS NOTED.
---	UNDERGROUND
---	EXISTING
---	NEW
Ⓜ	CEILING MOUNTED SMOKE DETECTOR.
Ⓜ/CO	COMBINATION OF SMOKE AND CO DETECTOR.

MOTORS AND CONTROLS	
Ⓜ	AC INDOOR UNIT MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.
Ⓜ WP	AC OUTDOOR UNIT MOTOR AS NOTED WITH CONTROLLER AND DISCONNECT SWITCH WITH WEATHER PROOF.
Ⓜ NF	NON FUSED DISCONNECT SWITCH AMPERAGE, AND NUMBER OF POLES AS NOTED.
Ⓜ A	30A NON FUSED DISCONNECT SWITCH
Ⓜ B	60A NON FUSED DISCONNECT SWITCH
Ⓜ C	100A NON FUSED DISCONNECT SWITCH
Ⓜ D	200A NON FUSED DISCONNECT SWITCH
Ⓜ	COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, FURNISHED BY HVAC/CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
Ⓜ 400/350	FUSED DISCONNECT SWITCH AND FUSE AMPERAGE AS INDICATED. TOP NUMBER DENOTS SWITCH SIZE AND BOTTOM NUMBER DENOTES FUSE.
Ⓜ	COMBINATION SOLID-STATE MOTOR STARTER.
Ⓜ MD	MOTORIZED DAMPER.
Ⓜ FSD	FIRE SMOKE DAMPER
Ⓜ	DUPLEX PUMP. NUMBER INDICATES HP RATING OF PUMP.
Ⓜ	THERMAL OVERLOAD SWITCH AT MOTOR. PROVIDE THERMAL ELEMENTS AS PER MOTOR RATING.
Ⓜ	MANUAL MOTOR SWITCH
Ⓜ 1.5 kW	ELECTRICAL HEATER, NUMBER DENOTES HEATER RATING

ELECTRICAL DRAWING LIST	
E0.1	ELECTRICAL SYMBOL LIST, ABBREVIATIONS & GENERAL NOTES
E0.2	ELECTRICAL SPECIFICATIONS SHEET 1 OF 2
E0.3	ELECTRICAL SPECIFICATIONS SHEET 2 OF 2
E1.0	ELECTRICAL LIGHTING PLAN
E2.0	ELECTRICAL POWER & ROOF PLAN
E3.0	ELECTRICAL DETAILS
E4.0	ELECTRICAL PANEL SCHEDULES AND RISER DIAGRAM

ANNOTATION	
+24"	INDICATES MOUNTING HEIGHT, CENTER LINE TO FINISHED FLOOR.
X	KEYED NOTE REFERENCE
1 E/2-T	DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM

POWER DISTRIBUTION	
Ⓜ	MAJOR ELECTRICAL COMPONENT OR DEVICE. VOLTAGE AND AMPERAGE AS NOTED.
Ⓜ	DISTRIBUTION PANELBOARD, 208Y/120V-SURFACE OR FLUSH MOUNTED.

ISSUE	DESCRIPTION	DATE

**PROJECT INFORMATION:**  
**UNCLE WILLIE'S WINGS**

DATE:  
PROJECT NO.:  
DRAWN BY: NYE  
CHECKED BY: NYE  
SCALE: AS NOTED

DRAWING TITLE:  
ELECTRICAL SYMBOL LIST,  
ABBREVIATIONS & GENERAL  
NOTES

DRAWING NO.:  
**E0.1**

**ELECTRICAL SPECIFICATIONS**

1. GENERAL:
  - A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.
  - B. DRAWING ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISERS OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS. COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED, MAINTAIN HEADROOM AND SPACE CONDITIONS.
  - C. BIDDERS, BEFORE SUBMITTING PROPOSALS, SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS, REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
  - D. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWING MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
  - E. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES AND CHANGES IN MAKING UP THE WORK PROPOSAL.
  - F. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES. AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER. ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.
  - G. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.
  - H. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
  - I. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL, UNLESS OTHERWISE NOTED.
  - J. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT, PROVIDE EQUIPMENT CURBS AS REQUIRED.
  - K. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.
  - L. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFOR SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
  - M. UNLESS OTHERWISE SPECIFICALLY NOTED OR SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.
  - N. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
  - O. INSURANCE: PROVIDE IN ACCORDANCE WITH OWNER/BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
  - P. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATED OF INSPECTION AND APPROVAL.
2. GENERAL PROVISIONS FOR ELECTRICAL WORK:
  - A. DEFINITIONS:
    - 1) "PROVIDE": TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
    - 2) "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
    - 3) "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE, AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
    - 4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
    - 5) "WIRING": RACEWAY, FITTINGS, WIRE, BOXES, AND RELATED ITEMS.
    - 6) "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
    - 7) "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.
    - 8) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.
  - B. TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREIN DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE. MAINTAIN SYSTEM DURING WORKING OWNER. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.
  - C. QUALITY ASSURANCE
    - 1) QUALITY OF MATERIALS: ALL EQUIPMENT SHALL BE NEW SPECIFICATION GRADE, FREE FROM DEFECTS AND LISTED BY APPROVED TESTING AGENCY AND BEARING THEIR LABEL MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.

- 2) GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AS DEFINED IN PARAGRAPH 2.C.
- 3) CURRENT CHARACTERISTICS:
  - a. SERVICE: 277/480 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.
  - b. DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.
- 4) HEIGHTS OF OUTLETS:
  - a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:
    - RECEPTACLES AND TELEPHONES: 1 FT-6 IN.
    - WALL SWITCHES: 4 FT-0 IN.
    - WALL FIXTURES: 7 FT-0 IN.
    - MOTOR CONTROLLERS: 5 FT-0 IN.
    - CLOCKS: 7 FT 6 IN
  - b. EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, A WHITE LINE SHALL BE PAINTED ON SURFACE, IN VIOLATION OF CODE, OR AS NOTED OR DIRECTED.
- D. PRODUCT DELIVERY, STORAGE AND HANDLING
  - 1) MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.
  - 2) ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMITTED, CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.
- E. MATERIALS
  - 1) NAMEPLATES: PROVIDE BLACK LAMICOID SHEET WITH 3/4 IN. WHITE LETTERING, FASTENED WITH EPOXY GEMENT FOR EACH DISCONNECT SWITCH, CIRCUIT BREAKER, PANEL, CABINET, TRANSFORMER, ENCLOSURE, MOTOR CONTROLLER AND THE LIKE. NAMEPLATES SHALL DESCRIBE THE NAME AND NUMBER OF EACH COMPONENT.
  - 2) CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH SPLICE OR FULLBOX WITH A WHITE LINEN TAG, INDICATING POINT OF ORIGIN AND TERMINATION OF THE CIRCUIT.
  - 3) INSERTS AND SUPPORTS:
    - a. INSERTS: STEEL, SLOTTED TYPE, FACTORY PAINTED.
      - SINGLE ROD: SIMILAR TO GRINNELL FIG. 281.
      - MULTI-ROD: SIMILAR TO FEE AND MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.
      - CLIP FORM NAILS FLUSH WITH INSERTS.
      - MAXIMUM LOADING 75 PERCENT OF RATING.
    - b. SUPPORTS FROM BUILDING CONSTRUCTION: INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), CANTILEVER BRACKETS OR OTHER MEANS. SUBMIT FOR REVIEW.
    - c. GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLE OR CHANNELS.
    - d. WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW.
- F. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC BASED PRIMER FOR: OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. ZINC BASED PRIMER SHALL BE APPLIED TO ALL STEEL SURROUNDINGS SHALL BE USED FOR MARRED SURFACES OF STEEL EQUIPMENT AND RACEWAYS. A FIELD-APPLIED ZINC BASED PRIME COAT SHALL BE UTILIZED FOR STEEL OR IRONWORK.
- G. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED; CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.
- H. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL SWITCHES, RECEPTACLES AND LIGHT FIXTURES SHALL BE VERIFIED WITH ARCHITECT.
- I. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
3. SCOPE OF WORK:
  - A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION IN CONFORMING WITH THE NATIONAL ELECTRICAL CODE (NEC) WITH LOCAL ADOPTIONS, AND ALL OTHER APPLICABLE INDUSTRY, NATIONAL AND LOCAL CODES AND AUTHORITIES HAVING JURISDICTION, AS INDICATED ON DRAWINGS AND HEREIN SPECIFIED.
  - B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLIED OR SPECIFIED HEREIN.
  - C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR COMPLETION AND/OR FROM DATE OF ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER, DATE IS EARLIER, THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDED THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR
  - D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, WORK AND PAY ALL FEES THEREFOR. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.
  - E. CONTRACTOR SHALL PERFORM ALL CONTROLLED INSPECTIONS IN ACCORDANCE WITH THE BUILDING CODE. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.
  - F. AREAS WITH NO ELECTRICAL WORK SHALL REMAIN AS IS. CONTRACTOR SHALL MAINTAIN CONTINUITY OF ALL ELECTRICAL SYSTEMS TO ALL AREAS NOT COVERED BY THIS RENOVATION AND SHALL PROVIDE 48 HOUR NOTICE TO LANDLORD OF ANY PLANNED POWER INTERRUPTIONS OR SIGNAL SYSTEM OUTAGES.

4. SHOP DRAWINGS
  - A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY, DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.
  - B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:
    - 1) PROJECT NAME AND LOCATION
    - 2) NAME OF ARCHITECT AND ENGINEER
    - 3) ITEM IDENTIFICATION
    - 4) APPROVAL STAMP OF PRIME CONTRACTOR
  - C. SUBMISSIONS:
    - 1) SUBMISSIONS 11 IN. X 17 IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES. OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.
    - 2) SUBMISSIONS LARGER THAN 11 IN. X 17 IN.: SUBMIT TWO FRONTS AND ONE PAPER SEPIA TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SEPIA TO THE ENGINEER.
  - D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
    - 1) SAFETY/DISCONNECT SWITCHES
    - 2) FUSES
    - 3) CIRCUIT BREAKERS
    - 4) PANELBOARDS/LOADCENTER (INCLUDING DIMENSIONS, SCHEDULES, AND CATALOG CUTS).
    - 5) RACEWAYS
    - 6) WIRE AND CABLE
    - 7) WALL SWITCHES
    - 8) INSERTION RECEPTACLES
    - 9) MOMENTARY CONTACT SWITCHES
    - 10) TIME SWITCHES
    - 11) LIGHTING FIXTURES.
    - 12) TRANSFORMER.
  - E. ASSIST AND PROVIDE ALL NECESSARY INFORMATION, DIAGRAMS, SKETCHES, ETC. TO THE HVAC CONTRACTOR, FOR THE PREPARATION OF COORDINATED SHOP DRAWINGS INDICATING ROUTING OF FEEDERS, CONTROL CONDUITS, RECESSED FIXTURES AND ADJACENT NEARBY PIPING AND DUCTWORK WHERE APPLICABLE, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT FOUR(4) BOOKBOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL SHOP DRAWINGS, PROVIDE SHOP DRAWINGS FOR PANELS, FIXTURES, WIRING DEVICES, CONDUIT, CABLE, DISCONNECT SWITCH, RELAYS, CONTRACTORS, AND OTHER SYSTEMS AS DIRECTED BY THE ENGINEER.
  5. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS
    - A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.
    - B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.
    - C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.
    - D. REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.
  6. LOW-VOLTAGE DISTRIBUTION EQUIPMENT:
    - A. PROVIDE COMPLETE EQUIPMENT INCLUDING: SWITCHES, FUSES, CIRCUIT BREAKERS, PANELS AND TRANSFORMERS.
    - B. ALL EQUIPMENT SHALL CONFORM TO NEMA, ANSI AND IEEE STANDARDS.
    - C. DISCONNECT SWITCHES SHALL BE FUSED OR NONFUSED AS NOTED. VOLTAGE SHALL BE AS REQUIRED. SWITCHES SHALL BE HEAVY DUTY, EXCEPT AS NOTED, AND HORSEPOWER RATED FOR MOTOR LOADS. TOGGLE TYPE SWITCHES SHALL BE NONFUSED, LOAD BREAK, HAVING MAXIMUM RATINGS OF 20 AMP AT 600 VOLTS AND 30 AMP AT 240 VOLTS. TWO-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 6808F. THREE-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 7810F. KNIFE-BLADE TYPE SWITCHES SHALL BE LOAD BREAK, QUICK-MAKE- QUICK-BREAK, UL CLASS R UP TO 600 AMP. MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. SWITCHES SHALL BE SIMILAR TO GENERAL ELECTRIC QMR. ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED.
    7. FUSES:
      - A. CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMAN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.
      - B. MOTOR CIRCUITS - ALL INDIVIDUAL MOTOR CIRCUITS WITH FULL LOAD AMPERE RATINGS (FLA) OF 480 AMPERES OR LESS SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMANN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP)SP (250V) /LPS-RK (AMP)SP (600V) OR LPJ (AMP)SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.
      - C. ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER.
      - D. PROVIDE 1 SPACE MATCHING FUSE FOR EACH SET OF 3.
    - E. CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL-MAGNETIC, QUICK-MAKE-QUICK-BREAK, BOLT-ON TYPE, MANUALLY OPERATED WITH INSULATED TRIP-FREE HANDLE. MULTI-POLE TYPE BREAKERS SHALL CONTAIN INTERNAL TRIP BAR. TERMINALS SHALL BE SUITABLE FOR COPPER OR ALUMINUM CABLE. FURNISH AUXILIARY DEVICES WHERE REQUIRED FOR SHUNT-TRIPPING. OPEN A ND CLOSE MOTOR OPERATOR AND ALARM INDICATION. ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED. FRAMES, IO, AND INTERCHANGEABLE TRIPS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED.
      - 1) 120 VOLTS, 100-AMP FRAME: 10,000 AMPS, 1 POLE.

- 2) 120/240 VOLTS, 225-AMP FRAME: 22,000 AMPS MINIMUM
8. DISTRIBUTION PANELBOARDS, CIRCUIT BREAKER TYPE:
  - A. THREE PHASE, 4 OR 5 WIRE, COPPER BUS BARS, WITH 2, 3, OR 4 WIRE BRANCHES, AS NOTED. CAPACITY OF PANEL AND CIRCUITS, AS NOTED BELOW. PANELBOARD TO HAVE GROUND BUS SAME SIZE AS PHASE BUSES.
  - B. CABINETS: CODE GAUGE GALVANIZED SHEET STEEL PRIMED AND PAINTED WITH TRIM AND DOOR. TYPE AS NOTED. LAP AND RIVET CORNERS OR FORM AS APPROVED.
  - C. TRIM: ONE PIECE FULL FINISH PRIMED AND PAINTED SHEET STEEL. TRIM SHALL BE MOUNTED WITH A CONTINUOUS PIANO HINGE CONFIGURED IN SUCH A MANNER THAT IT SHALL BE POSSIBLE TO GAIN FULL ACCESS TO CIRCUIT BREAKERS AND WIRING GUTTERS WITHOUT REMOVING THE TRIM. PROVIDE A MULTI-PIN CYLINDER LOCK (YALE, CORBIN OR EQUAL) TO LATCH THE TRIM. KEYS SHALL BE MILLED.
  - D. HARDWARE: MULTI-PIN, CYLINDER LOCKS WITH MILLED KEYS. ALL PANELS SHALL BE KEYS ALIKE. DOOR OVER 48" HIGH SHALL BE EQUIPPED WITH A CHROMIUM PLATED VERTICAL BUILT-IN LOCK AND 3-POINT CATCH FASTENING DOOR AT TOP, BOTTOM AND CENTER.
  - E. HINGES: CONCEALED, CONTINUOUS PIANO HINGE AS DESCRIBED ABOVE.
  - F. DIRECTORY HOLDER: MEAL FRAME WITH NONBREAKABLE TRANSPARENT COVER AND DIRECTORY CARD. ENTRIES TO BE TYPEWRITTEN BY ELECTRICAL CONTRACTOR. PROVIDED FOR EACH BRANCHED NAMEPLATE ADJACENT TO EACH BRANCH BREAKER. MOUNT WITH SELF TAPPING MACHINE SCREWS.
  - G. FURNISH MULTI-CABLE LUGS WHERE REQUIRED, DOUBLE LUGGING NOT PERMITTED. SECURE LUGS TO BUS BY STUD BOLTS.
  - H. PANELBOARD CONSTRUCTION FOR BOLTED TYPE BREAKERS: MINIMUM SPACING BETWEEN BREAKERS SHALL BE 1/2 IN. SPACING FOR ALL 120/208V APPLICATIONS. INDIVIDUAL CIRCUIT BREAKERS SHALL HAVE MINIMUM 100A FRAME, TRIPS SIZED AS SHOW ON THE PLANS.
  - I. MINIMUM GUTTER SPACES: PANELS WITH 225 AMPERE MAINS, 5-3/4" MINIMUM, ADD AMPERES AND OVER, MINIMUM GUTTERS 8", FOR PANELS WITH THROUGH FEEDERS, INCREASE GUTTER WIDTH BY 2" MINIMUM AND PROVIDE A SHEET STEEL BARRIER BETWEEN THE PANEL GUTTER AND THE THROUGH FEEDER PORTION OF THE BACK BOX. BRANCH CIRCUIT BREAKERS SHALL BE MECHANICALLY INTERLOCKED WHEN SHOWN ON DRAWINGS.
  - J. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.
  - K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.
  - L. PANELBOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMACOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).
9. DISTRIBUTION PANELBOARDS, SWITCH AND FUSE:
  - A. THREE PHASE, 3 OR 4 WIRE WITH COPPER BUS BARS. ALL THROUGH BUS SHALL BE INSULATED.
  - B. NEMA CLASS 1 CONSTRUCTION TO ACCOMMODATE FUSIBLE, INDIVIDUALLY ENCLOSED SWITCHES, FRONT REMOVABLE, SWITCH AND DOOR INTERLOCKS. COVERS TO BE PAD-LOCKABLE.
  - C. PANELBOARD SHALL BE CONSTRUCTED OF CODE-GAUGE STEEL, GRAY FINISH OVER RUST INHIBITOR, FOR SURFACE MOUNTING. BOX AND PANEL FRAMES SHALL BE FLANGED AND REINFORCED FOR RIGID SUPPORT OF INTERIOR AND ACCURATE ALIGNMENT OF INTERIOR WITH FRONT. TRIMS TO BE FASTENED TO BACK BOX WITH SCREWS.
  - D. ALL BRANCH SWITCHES SHALL HAVE INDIVIDUAL ENGRAVED LAMICOID NAMEPLATES (BLACK WITH WHITE CORE).
  - E. DISTRIBUTION PANELBOARD CONSTRUCTION MINIMUM SHORT CIRCUIT RATING 25,000 AMPERES, REMS SYMMETRICAL FOR ALL 120/208V APPLICATIONS. APPLICATIONS.
  - F. DISCONNECTS
    - 1) DISCONNECT SWITCHES SHALL CONFORM TO NEMA AND UL STANDARDS, AND SHALL BE HORSEPOWER RATED.
    - 2) SWITCHING MECHANISM SHALL BE QUICK-MAKE, QUICK-BREAK, SINGLE THROW WITH EXTERNAL OPERATING HANDLE MECHANICALLY INTERLOCKED WITH ENCLOSURE COVER TO PROVIDE ACCESS TO INTERIOR WHEN DISCONNECT IS IN OFF POSITION ONLY. PROVIDE MEANS TO LOCK OPERATING HANDLE IN THE OPEN AND CLOSED POSITION. DESIGNATE ON THE ENCLOSURE THE OPEN AND CLOSED POSITION OF THE OPERATING HANDLE.
    - 3) SWITCHES SHALL BE OF THE DOUBLE STATIONARY CONTACT TYPE.
    - 4) SWITCHES SHALL BE EQUIPPED WITH REJECTION TYPE FUSE HOLDERS, FUSIBLE AS SHOWN ON THE DRAWINGS; PROVIDE COMPLETE WITH FUSES AS SCHEDULED.
- G. INSTALLATION
  - 1) DISTRIBUTION PANELBOARD SHALL BE MOUNTED TO STRUCTURAL STEEL CHANNEL (KINDORF) WHICH SHALL BE BOLTED TO THE WALL USING EXPANSION ANCHORS FOR LARGE PANELS.
- H. IDENTIFICATION
  - 1) PROVIDE NAMEPLATE AT EACH SWITCH IDENTIFYING THE LOAD SERVED.
  - 2) NAMEPLATES SHALL BE MOUNTED ON THE FRONT COVER SECURED WITH SELF-TAPPING SCREWS OR NUTS AND BOLTS. NAMEPLATES SHALL BE LAMINATED PHENOLIC, BLACK WITH A MINIMUM OF 1/4" HIGH WHITE LETTERING.
- I. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.
- J. POWER PANELBOARDS SHALL BE SIMILAR TO GENERAL ELECTRIC TYPE "QMR", AS MANUFACTURED BY ATLAS SWITCH COMPANY, ELECTRIC SWITCHBOARD COMPANY OR APPROVED EQUAL.
- K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.
- L. PANELBOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMACOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).

- E. ENAMEL. COVERS SHALL BE SCREW-ON.
- e. SURFACE METAL RACEWAY: SIZE AS NOTED. BASE 0.04 IN., COVER 0.25 IN. MATERIAL SHALL BE STEEL. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.
- 2) FITTINGS AND ACCESSORIES:
  - a. RIGID STEEL: NONSPLUT, THREADED. STEEL OR MALLEABLE IRON. ZINC DIE CAST NOT PERMITTED.
  - b. ELECTROMETALLIC TUBING: COMPRESSION TYPE. GALVANIZED RIGID STEEL ELBOWS, 2 IN. OR LARGER.
  - c. FLEXIBLE METALLIC CONDUIT: ANGLE WEDGE TYPE WITH INSULATED THROAT.
  - d. BUSHINGS: METALLIC INSULATED TYPE.
- 3) BOXES:
  - a. OUTLET BOXES: EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION, DEVICES OR WIRING, BOXES SHALL BE STAMPED STEEL, 4 IN. SQUARE OR OCTAGON FOR FIXTURES. BOXES ABOVE CEILING SHALL BE 1-1/2 IN. DEEP. BOXES IN CEILING OR SLAB SHALL BE 3 IN. DEEP. BOXES IN WALL FOR FIXTURES SHALL BE 2-3/4 IN. DEEP. BOXES IN WALL FOR RECEPTACLES AND SWITCHES SHALL BE 1-1/2 IN. DEEP. FURNISH WITH RAISED COVERS AND FIXTURE STUDS WHERE REQUIRED. WITHOUT FIXTURE OR DEVICE, FURNISH BLANK COVER, OFFSET BACK-TO-BACK OUTLETS WITH MINIMUM 6 IN. SEPARATION.
  - b. JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW-ON COVERS, EXCEPT AS NOTED. FURNISH WITH INSULATED SUPPORTS FOR CABLES. LOCATIONS SHALL BE AS NOTED OR REQUIRED AND ACCESSIBLE. PROVIDE BARRIERS IN NEW AND RENOVATED BOXES BETWEEN 120/208 VOLT AND 265/460 VOLT WIRING AND BETWEEN EMERGENCY AND NORMAL WIRING. FLOOR BOXES SHALL BE SUITABLE FOR CONDUIT AND DEVICES NOTED. RAISED OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH ABOVE FLOOR FITTING. TELEPHONE: BUSHED HOLE. POWER: DUPLEX RECEPTACLE OR OTHER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY. FLUSH OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH FLUSH FLOOR FITTING FOR TELEPHONE AND FLUSH DUAL FLAP COVER WITH DUPLEX RECEPTACLE FOR POWER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY.

ISSUE	DESCRIPTION	DATE

**PROJECT INFORMATION:**

**UNCLE WILLIE'S WINGS**

DATE:

PROJECT NO.:

DRAWN BY: NYE

CHECKED BY: NYE

SCALE: AS NOTED

**DRAWING TITLE:**

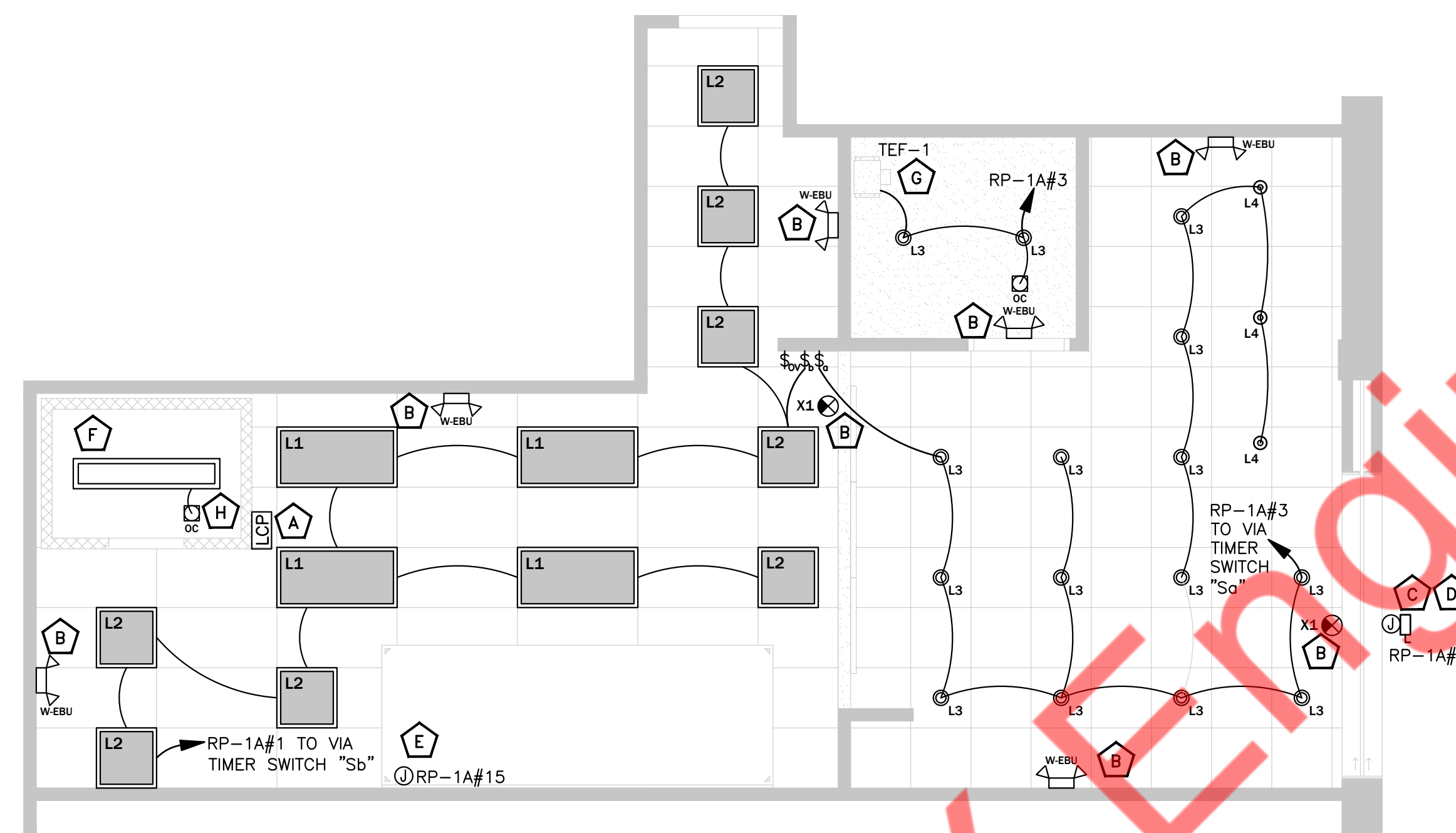
**ELECTRICAL SPECIFICATIONS**

**SHEET 1 OF 2**

**DRAWING NO.:**

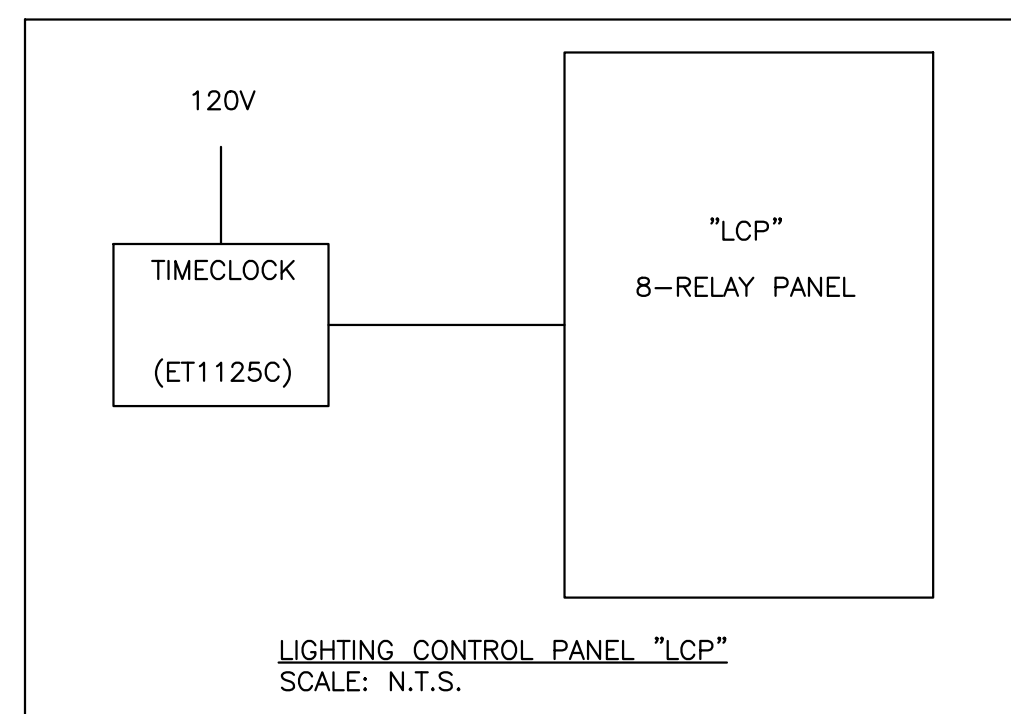
**E0.2**





**A LIGHTING PLAN - CONCOURSE LEVEL**  
1/4"=1'-0"

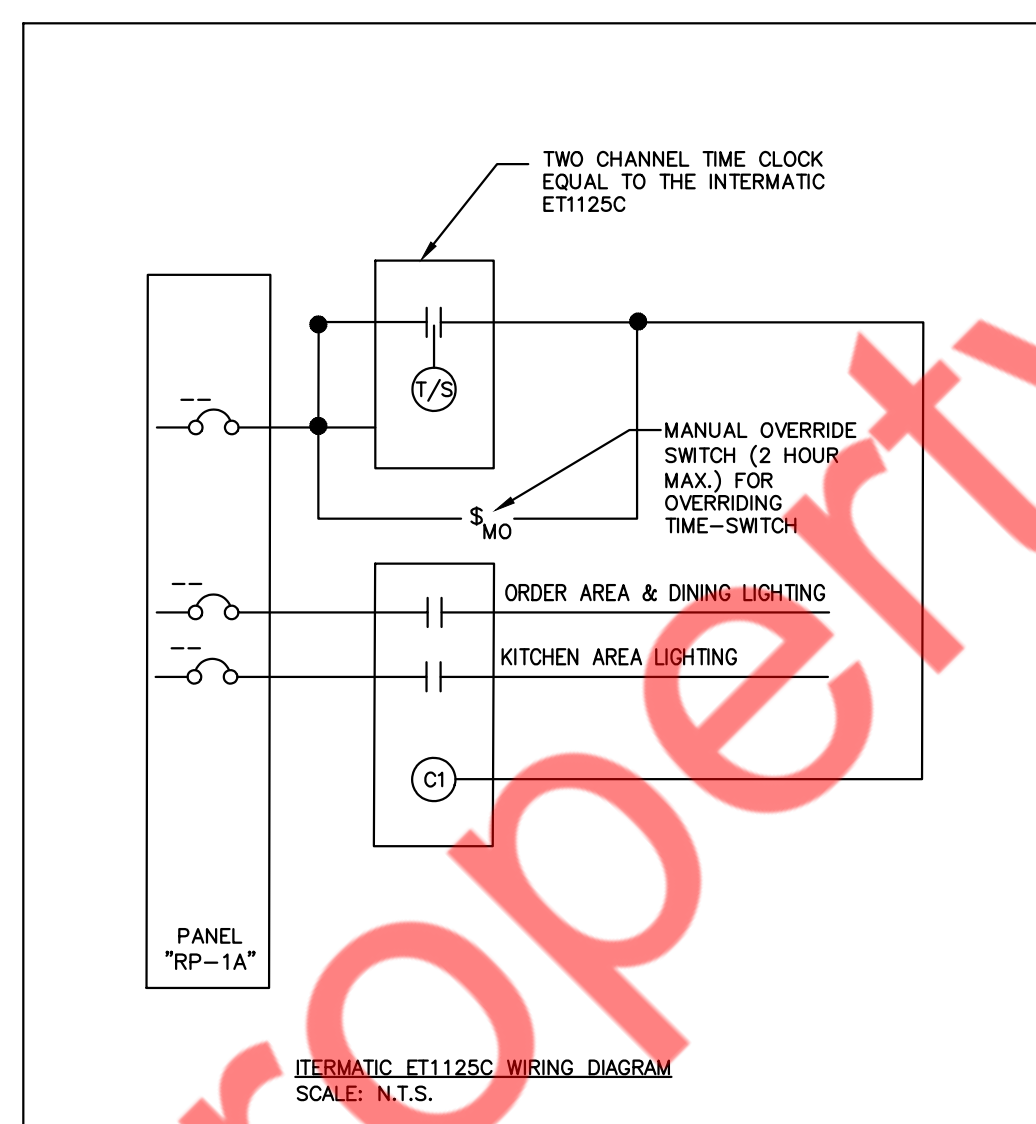
"LCP" SCHEDULE				
RELAY #	ZONE TAG	CONTROL TYPE	CIRCUIT #	DESCRIPTION
1	a	TIMER	RP-1A#3	ORDER AREA & DINING LIGHTING
2	b	TIMER	RP-1A#1	KITCHEN AREA LIGHTING



ITERMATIC ET1125C 24-HOUR ELECTRONIC TIME SWITCH:

**NOTES:**

- ITERMATIC TIMER BOX SHALL BE LOCATED AS CLOSE TO PANELBOARD AS PRACTICAL. PROVIDE WIRING FROM LOW VOLTAGE SWITCH TO RELAY CABINET REQUIRED FOR EACH RELAY AS REQUIRED.
- PROGRAM LIGHTING SCHEDULE AND HOURS OF OPERATION WITH OWNER.
- PROVIDE LOW VOLTAGE OVERRIDE SWITCH AS INDICATED ON DRAWINGS ITERMATIC ET1125C SERIES. LOW-VOLTAGE OVERRIDE SWITCH CONTROLS SHALL INITIATE AN OVERRIDE OF A MAXIMUM TIME OF NO MORE THAN TWO (2) HOURS.
- PROVIDE TWO (2) HOUR TRAINING ON PROGRAMMING OF SYSTEM & SYSTEM OPERATION.



**ELECTRICAL LIGHTING PLAN KEYED WORK NOTES:**

- A** E.C. SHALL COORDINATE EXACT LOCATION OF THE LIGHTING CONTROL PANEL "LCP" WITH ARCHITECT/OWNER.
- B** CONNECT ALL EMERGENCY EGRESS AND NIGHT LIGHTING FIXTURES TO THE NEAREST LIGHTING BRANCH CIRCUIT AHEAD OF ALL SWITCHING AND CONTROLS PER STATE AND LOCAL CODES.
- C** VERIFY THE EXACT LOCATIONS OF SIGNS, AND FASCIA BOXES BEFORE INSTALLATION OF JUNCTION BOXES. E.C. SHALL VERIFY EXACT SIGN(S) WIRING REQUIREMENTS WITH THE SIGN SUPPLIER PRIOR TO SUBMITTING A BID FOR THE ELECTRICAL.
- D** PROVIDE A 30AMP DISCONNECT SWITCH WITH LOCK-OFF CAPABILITY FOR STOREFRONT SIGN. VERIFY EXACT LOCATION AND ELECTRICAL REQUIREMENTS CONNECTION TO STOREFRONT SIGN. VERIFY EXACT LOCATION OF POWER FEED AND PUNCH-THRU WITH SIGNAGE CONTRACTOR TO ENSURE NO EXCESSIVE CONDUIT IS RUN NEITHER INSIDE NOR OUTSIDE. TIE CIRCUIT INTO LIGHTING CONTROL SYSTEM FOR CONTROLS.
- E** JUNCTION BOX ON HOOD FOR RE-WIRED HOOD LIGHTS.
- F** LIGHTING BY W.I.B MANUFACTURER. E.C. TO PROVIDE RACEWAYS, WIRING AND LAMPS FOR ALL LIGHT FIXTURES FURNISHED WITH THE FREEZER/COOLER STORAGE UNIT. COORDINATE THE INSTALLATION OF SWITCHES AND PLATES WITH THE EQUIPMENT SUPPLIER.
- G** TEF-1 SHALL BE CIRCUITED AND CONTROLLED ALONG WITH THE LIGHT FIXTURES IN THE RESTROOM AREA.
- H** LINE VOLTAGE LOW TEMPERATURE WALKIN OCCUPANCY SENSOR EQUAL TO WATT STOP PER CB-100. LOW VOLTAGE OCC SENSOR SHALL BE PROVIDED BY WALKIN BOX SUPPLIER. E.C TO PROVIDE ELECTRICAL CONNECTIONS.

LIGHTING FIXTURE SCHEDULE								
CODE	MANUFACTURER	MODEL	QUANTITY	VOLTS/PHASE	WATTS	LAMP TYPE	MOUNTING	DESCRIPTION
L1	LITHONIA	EPANL 2X4 4000LMHE 80CRI 35K MVOLT SLD	4	120/277V	31	LED	RECESSED	2' X 4' LED FLAT PANEL
L2	LITHONIA	EPANL 2X2 3400LM 80CRI 35K MVOLT SLD	8	120/277V	30	LED	RECESSED	2' X 2' LED FLAT PANEL
L3	LITHONIA	LDN6 35/15 L06BR LSS MVOLT EZ10	15	120/277V	20.5	LED	RECESSED	6" LED DOWNLIGHT
L4	Y LIGHTING - ACCESS LIGHTING	ACC186262-9	3	120V	10	LED	SURFACE	PENDANT LIGHT
W-EBU	EXITRONIX	LED-95-WH	2	120/277V	3	LED	UNIVERSAL	EMERGENCY LED
X1	EXITRONIX	VLED-U-WH-EL90-R	2	120/277V	2.2	LED	WALL	EXIT LED LIGHT

REFER TO REFLECTED CEILING PLAN IN ARCHITECTURAL DRAWINGS FOR MORE INFORMATION ON COLORS AND TRIMS REQUIRED.  
E.C. SHALL RECEIVE APPROVAL FROM ARCHITECT/ OWNER FOR LIGHTING FIXTURE SELECTIONS BEFORE PURCHASE AND INSTALLATION.

ISSUE	DESCRIPTION	DATE

PROJECT INFORMATION:  
**UNCLE WILLIE'S WINGS**

DATE:  
PROJECT NO.:  
DRAWN BY: NYE  
CHECKED BY: NYE  
SCALE: AS NOTED

DRAWING TITLE:  
**ELECTRICAL LIGHTING PLAN**

DRAWING NO.:  
**E1.0**



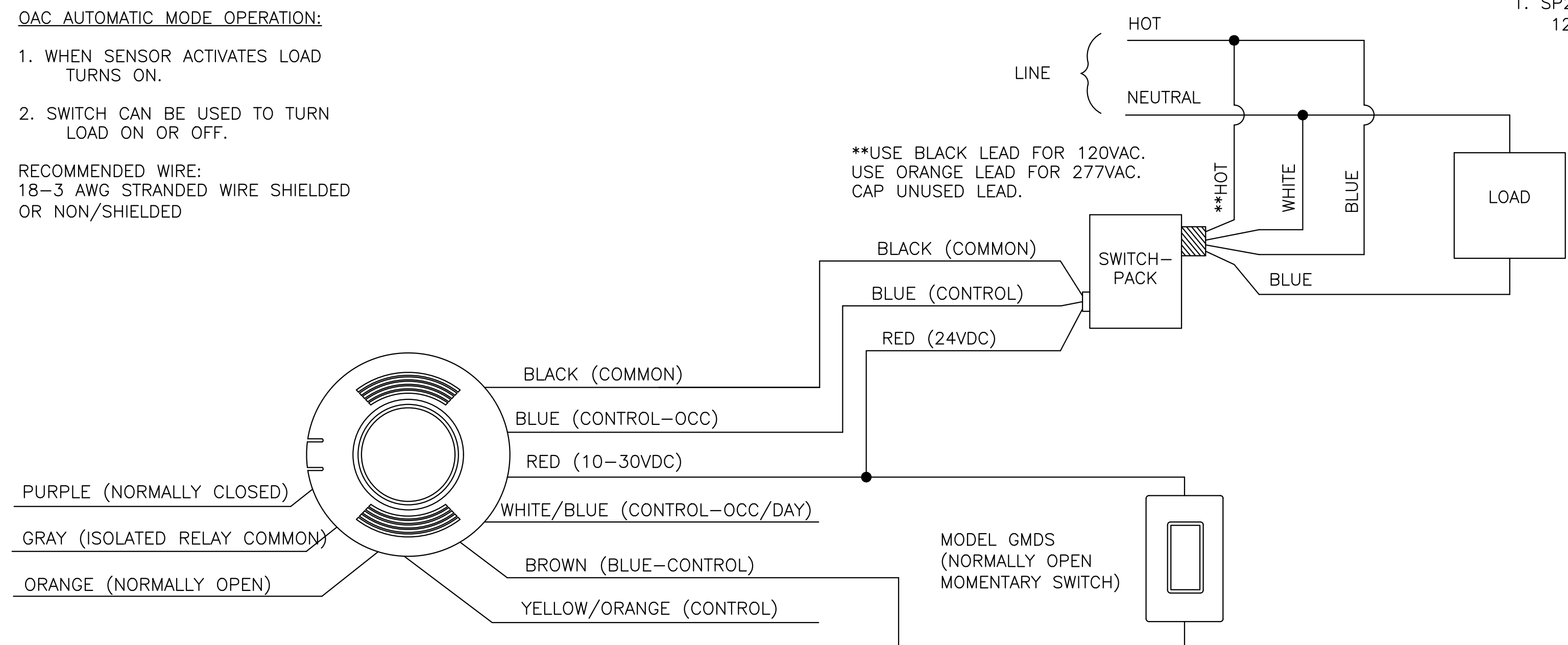
**OAC AND VAC MANUAL MODE OPERATION:**

1. SWITCHES ARE REQUIRED TO TURN LOAD ON.
2. LOAD TURNS OFF WHEN SENSOR TIMES OUT OR WITH SWITCH.

**OAC AUTOMATIC MODE OPERATION:**

1. WHEN SENSOR ACTIVATES LOAD TURNS ON.
2. SWITCH CAN BE USED TO TURN LOAD ON OR OFF.

RECOMMENDED WIRE:  
18-3 AWG STRANDED WIRE SHIELDED OR NON/SHIELDED

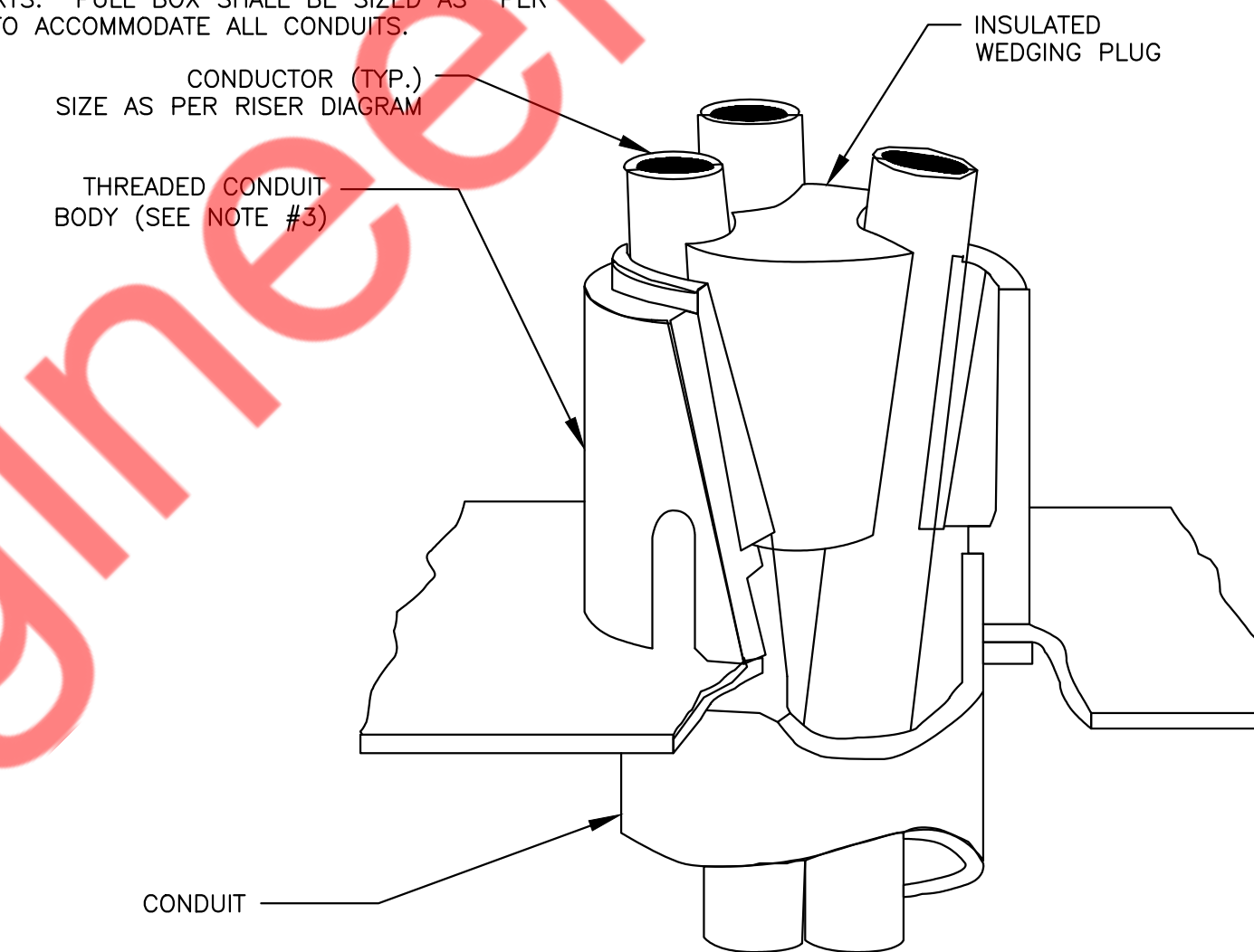


**NOTES:**

1. SP20-RD4 SWITCHPACK SHOWN. 120/277VAC 20AMP RATING.

**NOTES:**

1. ALL CONDUCTORS IN VERTICAL RACEWAYS SHALL BE SUPPORTED IN ACCORDANCE WITH ARTICLE 300.19 OF NEC. CABLE SUPPORTS SHALL BE LOCATED AT THE INTERVALS REQUIRED BY THE NEC.
2. CABLE SUPPORT SYSTEM SHALL BE AS MANUFACTURED BY O-Z GEDNEY WITH pOZI-GRIP "S-STYLE" WEDGING PLUG OR APPROVED EQUAL.
3. FOR THREADLESS CONDUIT (RIGID, IMC OR EMT), ATTACH CONDUIT BODY TO MALE THREADS OF A SET SCREW OR COMPRESSION CONNECT, AS PERMITTED BY SPECIFICATIONS.
4. PROVIDE PULL BOX AT EACH LOCATION OF CABLE SUPPORTS. PULL BOX SHALL BE SIZED AS PER CODE TO ACCOMMODATE ALL CONDUITS.



ISSUE	DESCRIPTION	DATE

**PROJECT INFORMATION:**  
**UNCLE WILLIE'S WINGS**

**DATE:**  
**PROJECT NO.:**  
**DRAWN BY:** NYE  
**CHECKED BY:** NYE  
**SCALE:** AS NOTED

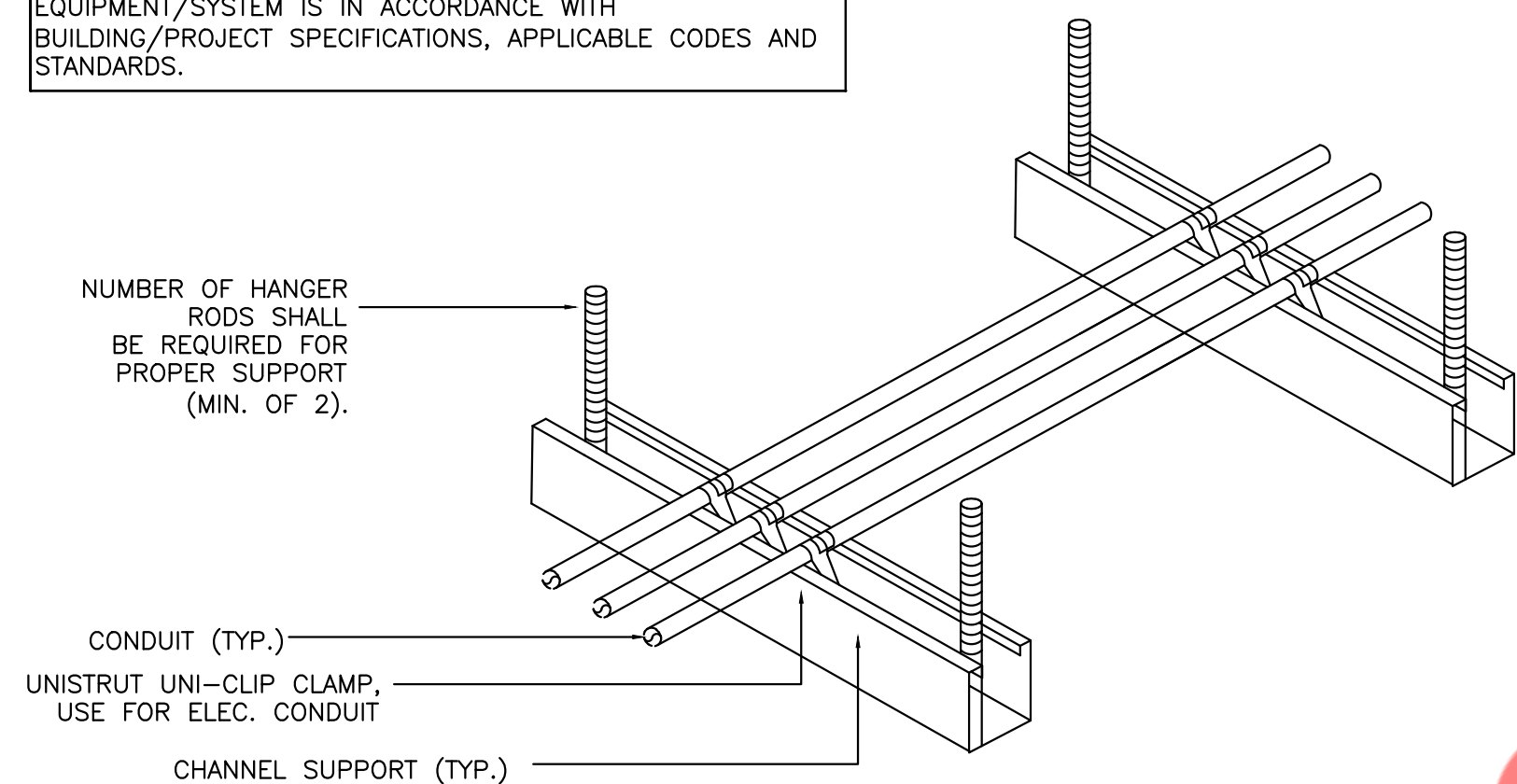
**DRAWING TITLE:**  
**ELECTRICAL DETAILS**

**DRAWING NO.:**  
**E3.0**

**3 OCCUPANCY - AUTO ON/OFF. WIRING DIAGRAM - LOW VOLTAGE CEILING SENSOR**  
E3.0 N.T.S

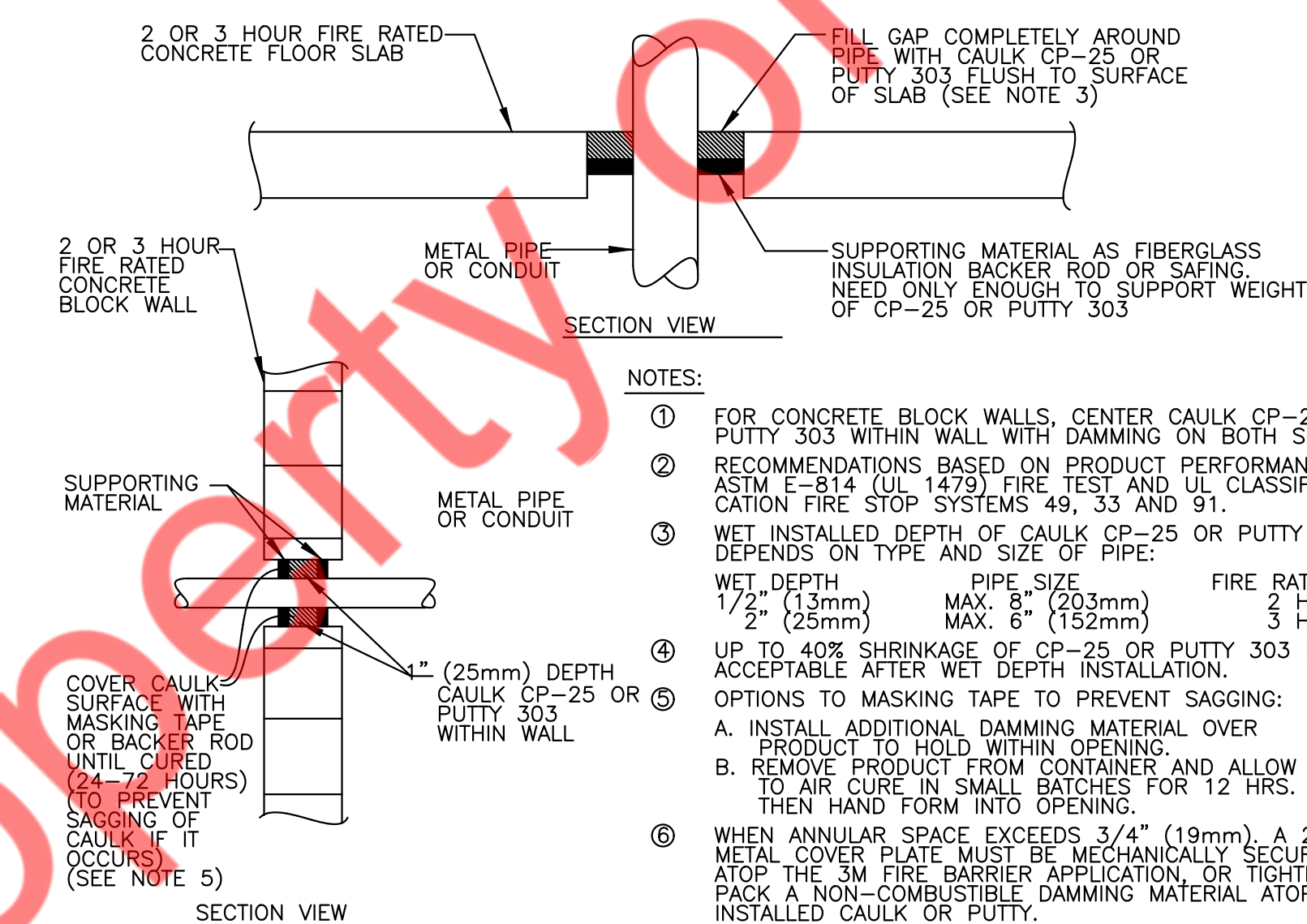
**2 VERTICAL CABLE SUPPORT DETAIL**  
E3.0 N.T.S

**NOTE:**  
THIS INFORMATION MAY NOT CONTAIN ALL DETAILS REQUIRED FOR CONSTRUCTION. APPROPRIATE MODIFICATION MAY BE REQUIRED TO ENSURE SUITABILITY OF THESE DRAWINGS FOR THE SPECIFIC APPLICATION. IT IS THE USER'S RESPONSIBILITY TO ENSURE INSTALLATION OF THE EQUIPMENT/SYSTEM IS IN ACCORDANCE WITH BUILDING/PROJECT SPECIFICATIONS, APPLICABLE CODES AND STANDARDS.



**NOTES:**

1. ALL CONDUIT MAY BE COMBINED ON SAME SUPPORT CHANNEL WHERE PRACTICAL.
2. SUPPORT CHANNEL LENGTH SHALL NOT BE DETERMINED UNTIL ALL PIPING, CONDUIT, ETC. TO BE SUPPORTED IS COORDINATED.
3. SUPPORT CHANNEL SPACING SHALL BE NO MORE THAN 10'-0".
4. UNISTRUT AND CONDUIT INSTALLATION MAY BE REVERSED.

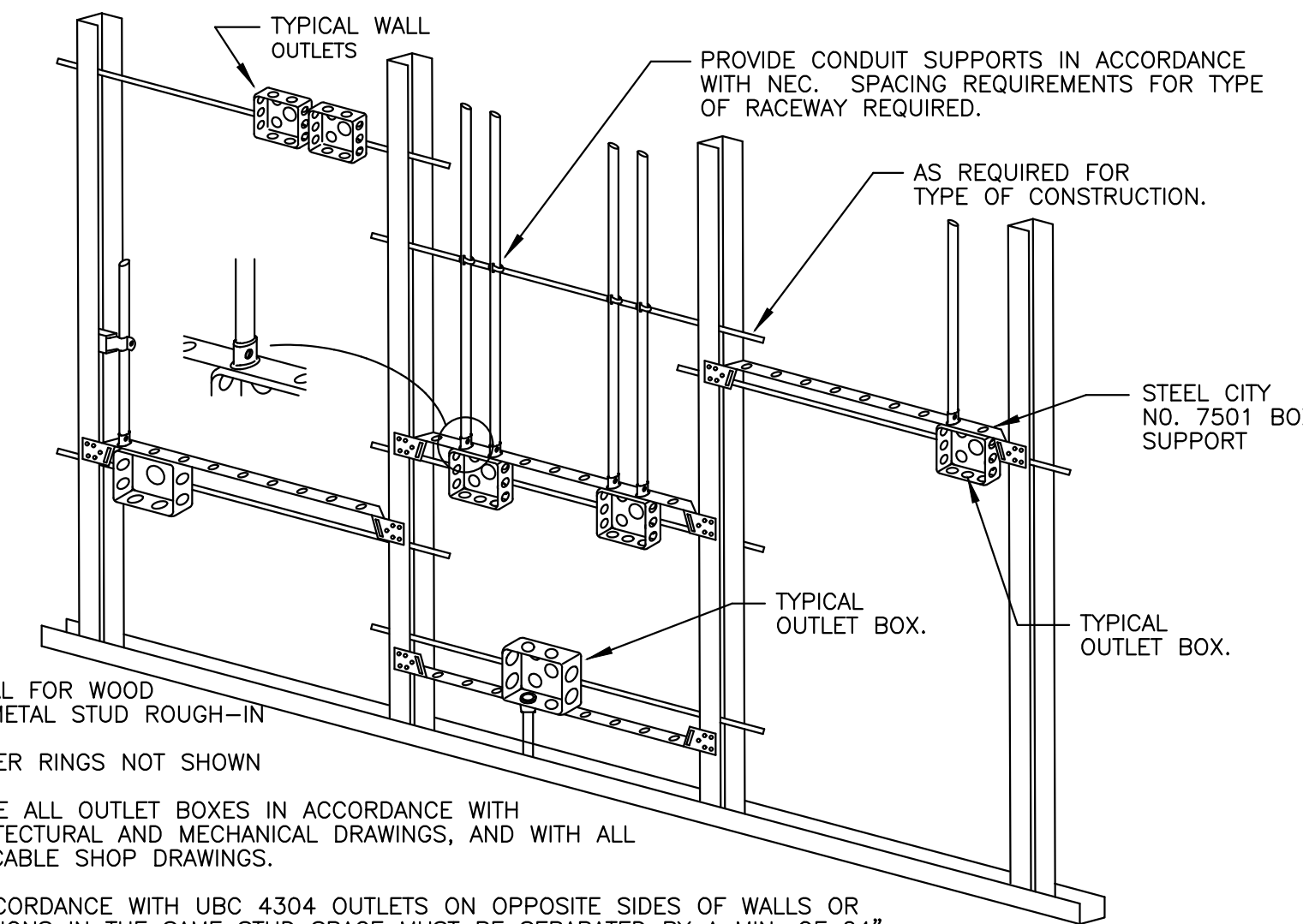


**NOTES:**

- ① FOR CONCRETE BLOCK WALLS, CENTER CAULK CP-25 OR PUTTY 303 WITHIN WALL WITH DAMMING ON BOTH SIDES. RECOMMENDATIONS BASED ON PRODUCT PERFORMANCE PER ASTM E-814 (UL 1479) FIRE TEST AND UL CLASSIFICATION FIRE STOP SYSTEMS 49, 33 AND 91.
- ② WET INSTALLED DEPTH OF CAULK CP-25 OR PUTTY 303 DEPENDS ON TYPE AND SIZE OF PIPE:  
WET DEPTH PIPE SIZE FIRE RATING  
1/2" (13mm) MAX. 8" (203mm) 2 HRS.  
3/4" (19mm) MAX. 6" (152mm) 3 HRS.
- ③ UP TO 40% SHRINKAGE OF CP-25 OR PUTTY 303 IS ACCEPTABLE AFTER WET DEPTH INSTALLATION.
- ④ OPTIONS TO MASKING TAPE TO PREVENT SAGGING:  
A. INSTALL ADDITIONAL DAMMING MATERIAL OVER PRODUCT TO HOLD WITHIN OPENING.  
B. REMOVE PRODUCT FROM CONTAINER AND ALLOW TO AIR CURE IN SMALL BATCHES FOR 12 HRS. THEN HAND FORM INTO OPENING.
- ⑤ WHEN ANNULAR SPACE EXCEEDS 3/4" (19mm), A 28 AWG METAL COVER PLATE MUST BE MECHANICALLY SECURED ATOP THE 3M FIRE BARRIER APPLICATION, OR TIGHTLY PACK A NON-COMBUSTIBLE DAMMING MATERIAL ATOP INSTALLED CAULK OR PUTTY.

**NOTES:**

- ① TYPICAL FOR WOOD AND METAL STUD ROUGH-IN
- ② PLASTER RINGS NOT SHOWN
- ③ LOCATE ALL OUTLET BOXES IN ACCORDANCE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS, AND WITH ALL APPLICABLE SHOP DRAWINGS.
- ④ IN ACCORDANCE WITH UBC 4304 OUTLETS ON OPPOSITE SIDES OF WALLS OR PARTITIONS IN THE SAME STUD SPACE MUST BE SEPARATED BY A MIN. OF 24" HORIZONTAL DISTANCE.



**4 CONDUIT SUPPORT DETAIL**  
E3.0 N.T.S

**5 FIRE STOP DETAIL**  
E3.0 N.T.S

**1 DETAIL TYPICAL ROUGH-IN REQUIREMENTS**  
E3.0 N.T.S







2.03 INSULATION

COVER ALL HOT WATER AND HOT WATER RECIRCULATION PIPE WITH 1" THICK FOR PIPE SIZE UP TO 1½" AND 1½" THICK FOR PIPE SIZE 1½" AND GREATER WITH MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. COVER ALL COLD WATER PIPE WITH ½" THICK FOR PIPE SIZE UP TO 1¼" AND 1" THICK FOR PIPE SIZE 1½" AND GREATER WITH 1" MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. FITTINGS AND VALVES SHALL BE INSULATED WITH MANVILLE ZESTON 2000 PVC INSULATED FITTING COVERS. INSTALL ALL INSULATION AS PER MANUFACTURERS RECOMMENDATIONS. ALL INSULATION MATERIAL SHALL COMPLY WITH THE 2018 INTERNATIONAL BUILDING CODE REQUIREMENT OF A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DEVELOPED RATING NOT TO EXCEED 50. ALL PIPE INSULATION SHALL COMPLY WITH ASHRAE 90.1 2016 STANDARD.

- I. IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.
- J. REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE-PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RISERS.
- K. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.
- L. IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.
- M. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.
- N. PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE.

J. DRAINAGE ACCESSORIES

1. GENERAL:  
 a. INSTALL THE WORK OF THIS SECTION IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, UNLESS OTHERWISE SPECIFIED.

b. SECURE EXTERNAL COMPONENTS IN PLACE WITH VANDAL RESISTANT FASTENERS OR DEVICES WHICH CANNOT BE REMOVED WITHOUT SPECIAL TOOLS.

K. DEVICES:

a. CLEANOUT & CLEANOUT PLUG

- THREADED PIPE FITTING OR CAST IRON FERRULE WITH GAS TIGHT CLEANOUT PLUG

- PLUG SHOULD BE CAST BRASS OR BRONZE, WITH THREADED END, AND RAISED OR COUNTERSUNK HEAD.

- LUBRICATE THREADS OF CLEANOUT PLUG WITH ANTI-SEIZE LUBRICANT BEFORE FINAL INSTALLATION.

b. CLEANOUT WALL PLATE

- IT SHOULD BE ROUND, STAINLESS STEEL OR POLISHED CHROME PLATED BRONZE COVER PLATE WITH STAINLESS STEEL VANDAL RESISTANT FASTENER TO SECURE TO CLEANOUT PLUG.

c. CLEANOUT DECK PLATE

- IT SHOULD BE STANDARD DUTY FLOOR CLEANOUT FITTING WITH COATED CAST IRON BODY; ROUND, POLISHED NICKEL BRONZE SCORIATED TOP SECURED TO CLEANOUT PLUG WITH STAINLESS STEEL VANDAL RESISTANT FASTENER; THREADED HEIGHT ADJUSTMENT, CAST IRON HEAD, GAS TIGHT CLEANOUT PLUG, AND CONNECTION TO MATCH PIPING OPTION SELECTED.

- GRILLE FREE AREA SHOULD BE AT LEAST EQUAL TO CROSS-SECTION AREA OF PIPE TO WHICH CONNECTION MADE AND MADE OF POLISHED NICKEL BRONZE, WITH REMOVABLE GRATE, EITHER PERFORATED OR BAR TYPE. GRATE ATTACHED TO GRILLE BODY WITH VANDAL RESISTANT FASTENER.

L. INDIRECT WASTE FLOOR SINK

a. IT SHOULD BE COMBINATION OF FUNNEL DRAIN AND P TRAP WITH POLISHED CHROME PLATED CAST BRASS CONSTRUCTION WITH 4" TOP DIA., 4" DEEP WITH THREADED OUTLET.

M. INSTALL PIPING TO CONSERVE BUILDING SPACE. DO NOT INTERFERE WITH USE OF BUILDING SPACE AND THE WORK OF OTHER TRADES. ALL PIPING RUN IN CEILING SHALL BE INSTALLED TIGHT TO THE STRUCTURE ABOVE.

N. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS OR CONNECTED EQUIPMENT. PROVIDE PIPE ANCHORS, GUIDES AND EXPANSION JOINTS OR LOOPS IN ALL HOT WATER AND HOT WATER CIRCULATING MAIN SUPPLY PIPING AND SEGMENTS OF SUCH PIPE THAT EXCEED 30'-0" IN LENGTH.

O. IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.

P. REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE-PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RISERS.

Q. VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.

R. IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.

S. PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.

T. PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE.

U. PROVIDE ACCESS DOORS/PANELS FOR SERVICE AND ACCESS TO ALL VALVES AND OTHER SYSTEM COMPONENTS ENCLOSED IN WALLS AND CEILINGS. ACCESS DOORS SHALL BE FURNISHED BY THIS CONTRACTOR, INSTALLED BY THE GENERAL CONTRACTOR.

V. ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.

W. PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE.

X. PROVIDE ACCESS DOORS/PANELS FOR SERVICE AND ACCESS TO ALL VALVES AND OTHER SYSTEM COMPONENTS ENCLOSED IN WALLS AND CEILINGS. ACCESS DOORS SHALL BE FURNISHED BY THIS CONTRACTOR, INSTALLED BY THE GENERAL CONTRACTOR.

Y. ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.

Z. ANY PENETRATIONS THROUGH FIRE RATED PARTITIONS, FLOORS, OR CEILINGS SHALL BE STEEL SLEEVED AND SEALED WITH 3M BRAND UL RATED FIRE BARRIER CAULK OR APPROVED EQUAL.

AA. WHEN THE WATER PIPING SYSTEM IS COMPLETE, THOROUGHLY FLUSH ALL DIRT, SEDIMENT, SOLDER, ETC., OUT OF THE SYSTEM, REMOVING ALL STRAINERS, VALVE STEM SEATS, ETC., REQUIRED TO ACCOMPLISH THE FLUSHING.

AB. AT ALL INDIRECT WASTE DRAINS, MAINTAIN AIR GAP AS REQUIRED BY CODE.

AC. INSTALL SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS, FLOORS, AND CEILINGS WHERE PIPES ARE TO BE INSULATED, THE SLEEVE SHALL BE LARGE ENOUGH TO ACCOMMODATE INSULATION. SLEEVES SHALL BE FLUSH WITH FINISHED SURFACES AT BOTH ENDS. ON FINISHED SURFACES IN EXPOSED AREAS PROVIDE ESCUTCHEONS COMPATIBLE WITH FINISH.

AD. PROVIDE WATER HAMMER ARRESTERS ON SUPPLY PIPING TO ALL FLUSHOMETER VALVES AND QUICK-CLOSING VALVES.

AE. UNLESS OTHERWISE INDICATED, TRAPS SEALS AT ALL FLOOR DRAINS SHALL BE MAINTAINED BY AN APPROVED TRAP PRIMING DEVICE.

AF. MAINTAIN ALL REQUIRED AND RECOMMENDED CLEARANCES FOR ALL PLUMBING SYSTEM COMPONENTS AND EQUIPMENT.

AG. MAINTAIN MINIMUM 10'-0" CLEARANCE BETWEEN ALL PLUMBING V.T.R.S AND ALL OUTDOOR AIR INTAKES. OFFSET VENT STACKS AND STACK VENTS IF AND AS REQUIRED BELOW ROOF TO MAINTAIN SUCH CLEARANCE WHETHER OR NOT SUCH OFFSET IS INDICATED ON THE DRAWINGS. PROVIDE ALL REQUIRED SEISMIC SUPPORTS.

2.01 GENERAL

A. ALL WORK WHICH REQUIRES DISRUPTION OF THE ROOFING SHALL BE DONE BY A CONTRACTOR CERTIFIED BY THE ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ANY EXISTING ROOF WARRANTIES.

B. EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECTS.

C. EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.

D. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.

E. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN AND FERROUS END PIPE.

F. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.

G. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.

H. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.

I. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.

J. PRIOR TO DISCONNECTING AND CONNECTING NEW WORK TO EXISTING SYSTEMS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE PROPERTY MANAGER AND OFFER A PROPOSED SCHEDULE OF WORK. ESB WILL AUTHORIZE CONNECTIONS AND COORDINATE NECESSARY SHUT DOWNS AND DRAIN DOWNS AS REQUIRED. SHUT DOWNS AND DRAIN DOWNS MAY BE PERFORMED BY THE PLUMBING CONTRACTOR ONLY AFTER RECEIVING ESB AUTHORIZATION, AND SHOULD BE PERFORMED UNDER SUPERVISION OF ESB PERSONNEL. THREE (3) DAYS ADVANCE NOTICE TO THE PROPERTY MANAGER IS REQUIRED.

K. THE PLUMBING CONTRACTOR IS ADVISED THAT DUE TO THE NATURE OF THE OPERATIONS AND TENANT REQUIREMENTS, CONNECTIONS TO EXISTING SYSTEMS MAY HAVE TO BE MADE AFTER REGULAR WORKING HOURS. THE PROPERTY MANAGER WILL ADVISE THE PLUMBING CONTRACTOR OF THE TIME CONSTRAINTS UPON RECEIPT AND APPROVAL OF THE PLUMBING CONTRACTOR'S REQUEST FOR SHUT DOWN AND CONNECTION TO EXISTING SYSTEMS.

L. WHEN CONNECTING TO EXISTING STACKS AND RISERS, PROVISION IS TO BE MADE FOR FUTURE CONNECTIONS BY PROVIDING CAPPED AND VALVED OUTLETS ON DOMESTIC WATER RISERS AND PLUGGED OUTLETS ON THE SANITARY AND VENT STACKS.

2.02 ABOVE GRADE

A. INSTALL PLUMBING PIPING IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING COMPLIES WITH REQUIREMENTS AND SERVES INTENDED PURPOSES.

B. ROUTE PIPING IN AN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE. MAINTAIN GRADIENT, SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN IN DOMESTIC WATER SYSTEMS, PROVIDE DRAIN VALVES AT MAIN SHUT-OFF VALVES AND ALL LOW POINTS IN PIPING.

C. USE EXISTING CONNECTIONS AT MAINS WHERE AVAILABLE FOR NEW BRANCH PIPING. LOCATE ALL RISERS AND PIPING BEFORE CONSTRUCTION COMMENCES AND TAKE CARE NOT TO DAMAGE SAME. ANY DAMAGE OCCURRING TO THE EXISTING PIPING WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

2.03 INSULATION (PIPE AND FITTINGS)

A.PIPING

COVER ALL HOT WATER PIPE WITH 1" THICK FOR PIPE SIZE UP TO 1¼" AND 1½" THICK FOR PIPE SIZE 1½" AND GREATER WITH MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. COVER ALL COLD WATER PIPE WITH ½" THICK FOR PIPE SIZE UP TO 1¼" AND 1" THICK FOR PIPE SIZE 1½" AND GREATER WITH 1" MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. FITTINGS AND VALVES SHALL BE INSULATED. INSTALL ALL INSULATION AS PER MANUFACTURERS RECOMMENDATIONS. ALL INSULATION MATERIAL SHALL COMPLY WITH THE 2018 INTERNATIONAL BUILDING CODE REQUIREMENT OF A FLAME SPREAD RATING NOT TO EXCEED 25 AND A SMOKE DEVELOPED RATING NOT TO EXCEED 50. ALL PIPE INSULATION SHALL COMPLY WITH ASHRAE 90.1 2016 STANDARD.

3. TESTING

A. AT THE COMPLETION OF THE PLUMBING WORK, COMPLETELY TEST THE ENTIRE INSTALLATION OF ALL SYSTEMS FOR PROPER OPERATION AND COMPLIANCE WITH APPLICABLE CODES AND LOCAL REQUIREMENTS. CORRECT ALL DEFICIENCIES FOUND.

B. TESTING OF THE INSTALLED SYSTEMS SHALL BE MADE BY THE CONTRACTOR IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER.

C. THE CONTRACTOR SHALL NOT COVER UP OR PERMANENTLY CONCEAL PIPING, DEVICES OR ANY PORTION OF NEWLY CONSTRUCTED PLUMBING SYSTEM(S) UNTIL SUCH SYSTEM OR PORTION OF THE SYSTEM HAS BEEN TESTED IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER AND INSPECTED BY THE LOCAL INSPECTOR AND APPROVED IN WRITING, EXCEPT PIPING PASSING THROUGH FLOORS, WALLS, PARTITIONS, OR BEAMS, FOR DISTANCES EQUAL TO THE THICKNESS OF SUCH FLOOR, WALL, PARTITION OR BEAM.

D. THIS CONTRACTOR SHALL NOTIFY THE VARIOUS DEPARTMENTS, BUREAUS AND INDIVIDUALS AT LEAST TWO WEEKS IN ADVANCE OF THE TIME THAT THE TESTS ARE TO BE CONDUCTED.

E. ALL DEFECTIVE PARTS SHALL BE REPLACED OR CORRECTED BY THIS CONTRACTOR AND AN EXTRA TEST OR TESTS SHALL BE MADE UNTIL THE OPERATION IS SATISFACTORY. ALL ARRANGEMENTS AND EXPENSES NECESSARY TO CONDUCT ALL TESTS REQUIRED BY THESE SPECIFICATIONS AND THE VARIOUS AGENCIES HAVING JURISDICTION OVER THE WORK INSTALLED UNDER THIS CONTRACT SHALL BE MADE BY THE CONTRACTOR. NO EXTRA COMPENSATION WILL BE ALLOWED FOR THESE TESTS, THE COST THEREOF BEING INCLUDED IN THE LUMP SUM BID FOR THIS CONTRACT.

F. WHERE ANY EVIDENCE OF STOPPAGE IS FOUND IN PIPING OR EQUIPMENT, THIS CONTRACTOR SHALL DISCONNECT, CLEAN, REPAIR AND RECONNECT ALL OBSTRUCTED PIPING OR EQUIPMENT AND SHALL ALSO PAY FOR ALL NECESSARY CUTTING AND REPAIRS TO ADJOINING WORK.

G. ALL PIPING AND EQUIPMENT SHALL BE THOROUGHLY CLEANED INSIDE AND OUT, OF DIRT, CUTTINGS, OILS AND OTHER FOREIGN SUBSTANCES AND SHALL BE LEFT CLEAN.

H. ALL REQUIRED TESTS SHALL BE WITNESSED BY LOCAL AUTHORITIES AND THE OWNER'S REPRESENTATIVE.

I. ALL EQUIPMENT WILL BE FACTORY TESTED.

J. CONTRACTOR SHALL IDENTIFY TO THE OWNER'S REPRESENTATIVE ANY LEAKS OR DAMAGE THAT OCCURS AS A RESULT OF SYSTEM TESTING. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO LIMIT ANY POTENTIAL DAMAGE. CORRECTIVE ACTION REQUIRED AS A RESULT OF TESTING SHALL BE PERFORMED IMMEDIATELY AND AT THE CONTRACTOR'S EXPENSE.

K. REPORT IN WRITING TO AUTHORITIES HAVING JURISDICTION, THE ARCHITECT AND THE OWNER THE RESULTS OF ALL TESTING.

L. TESTING REQUIREMENTS

- a. TEST ALL DOMESTIC WATER PIPING HYDROSTATICALLY TO 125 PSIG.
- b. HYDROSTATIC TEST PRESSURES SHALL REMAIN CONSTANT WITH NO VARIATION FOR 120 MINUTES.
- c. TESTS SHALL BE WITNESSED BY THE BUILDING ENGINEER.
- d. THE PLUMBING CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE DUE TO TEST FAILURES AND LEAKAGE IN THE TEST AREA AND ADJACENT TENANT OR ESB SPACES.

M. REFILL ENTIRE POTABLE HOT AND COLD WATER SUPPLY SYSTEM WITH CHLORINE SOLUTION (HTH OLIN CHEMICAL CORP.) AT A STRENGTH TO MEET STANDARDS OF THE DEPARTMENT OF HEALTH, AND FOR A PERIOD OF RETENTION AS STIPULATED.

N. THOROUGHLY FLUSH PIPING SYSTEM WITH FRESH WATER IMMEDIATELY PRIOR TO FINAL ACCEPTANCE.

O. INSPECTION & TESTING SHALL BE AS PER 2018 NATIONAL STANDARD PLUMBING CODE (2018 NSPC).

4. WARRANTY

A. EQUIPMENT, MATERIALS AND WORKMANSHIP FURNISHED UNDER THIS CONTRACT SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. THE CONTRACTOR SHALL KEEP THE WORK IN GOOD REPAIR FOR ONE YEAR AFTER THE DATE OF FINAL APPROVAL. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROMPTLY CORRECT AND REPAIR ANY AND ALL BREAKS, FAILURES OR WEAR DUE TO FAULTY MATERIALS, WORKMANSHIP OR EQUIPMENT. ALL SETTLEMENTS OF SURFACES THAT MAY OCCUR WITHIN THAT PERIOD SHALL ALSO BE PROMPTLY REPAIRED.

A. ALL WORK WHICH REQUIRES DISRUPTION OF THE ROOFING SHALL BE DONE BY A CONTRACTOR CERTIFIED BY THE ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ANY EXISTING ROOF WARRANTIES.

B. EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECTS.

C. EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.

D. COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.

E. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN AND FERROUS END PIPE.

F. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.

G. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.

H. COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.

I. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.

J. PRIOR TO DISCONNECTING AND CONNECTING NEW WORK TO EXISTING SYSTEMS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE PROPERTY MANAGER AND OFFER A PROPOSED SCHEDULE OF WORK. ESB WILL AUTHORIZE CONNECTIONS AND COORDINATE NECESSARY SHUT DOWNS AND DRAIN DOWNS AS REQUIRED. SHUT DOWNS AND DRAIN DOWNS MAY BE PERFORMED BY THE PLUMBING CONTRACTOR ONLY AFTER RECEIVING ESB AUTHORIZATION, AND SHOULD BE PERFORMED UNDER SUPERVISION OF ESB PERSONNEL. THREE (3) DAYS ADVANCE NOTICE TO THE PROPERTY MANAGER IS REQUIRED.

K. THE PLUMBING CONTRACTOR IS ADVISED THAT DUE TO THE NATURE OF THE OPERATIONS AND TENANT REQUIREMENTS, CONNECTIONS TO EXISTING SYSTEMS MAY HAVE TO BE MADE AFTER REGULAR WORKING HOURS. THE PROPERTY MANAGER WILL ADVISE THE PLUMBING CONTRACTOR OF THE TIME CONSTRAINTS UPON RECEIPT AND APPROVAL OF THE PLUMBING CONTRACTOR'S REQUEST FOR SHUT DOWN AND CONNECTION TO EXISTING SYSTEMS.

L. WHEN CONNECTING TO EXISTING STACKS AND RISERS, PROVISION IS TO BE MADE FOR FUTURE CONNECTIONS BY PROVIDING CAPPED AND VALVED OUTLETS ON DOMESTIC WATER RISERS AND PLUGGED OUTLETS ON THE SANITARY AND VENT STACKS.

2.02 ABOVE GRADE

a. INSTALL PLUMBING PIPING IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING COMPLIES WITH REQUIREMENTS AND SERVES INTENDED PURPOSES.

b. ROUTE PIPING IN AN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE. MAINTAIN GRADIENT, SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN. IN DOMESTIC WATER SYSTEMS, PROVIDE DRAIN VALVES AT MAIN SHUT-OFF VALVES AND ALL LOW POINTS IN PIPING.

c. USE EXISTING CONNECTIONS AT MAINS WHERE AVAILABLE FOR NEW BRANCH PIPING. LOCATE ALL RISERS AND PIPING BEFORE CONSTRUCTION COMMENCES AND TAKE CARE NOT TO DAMAGE SAME. ANY DAMAGE OCCURRING TO THE EXISTING PIPING WILL

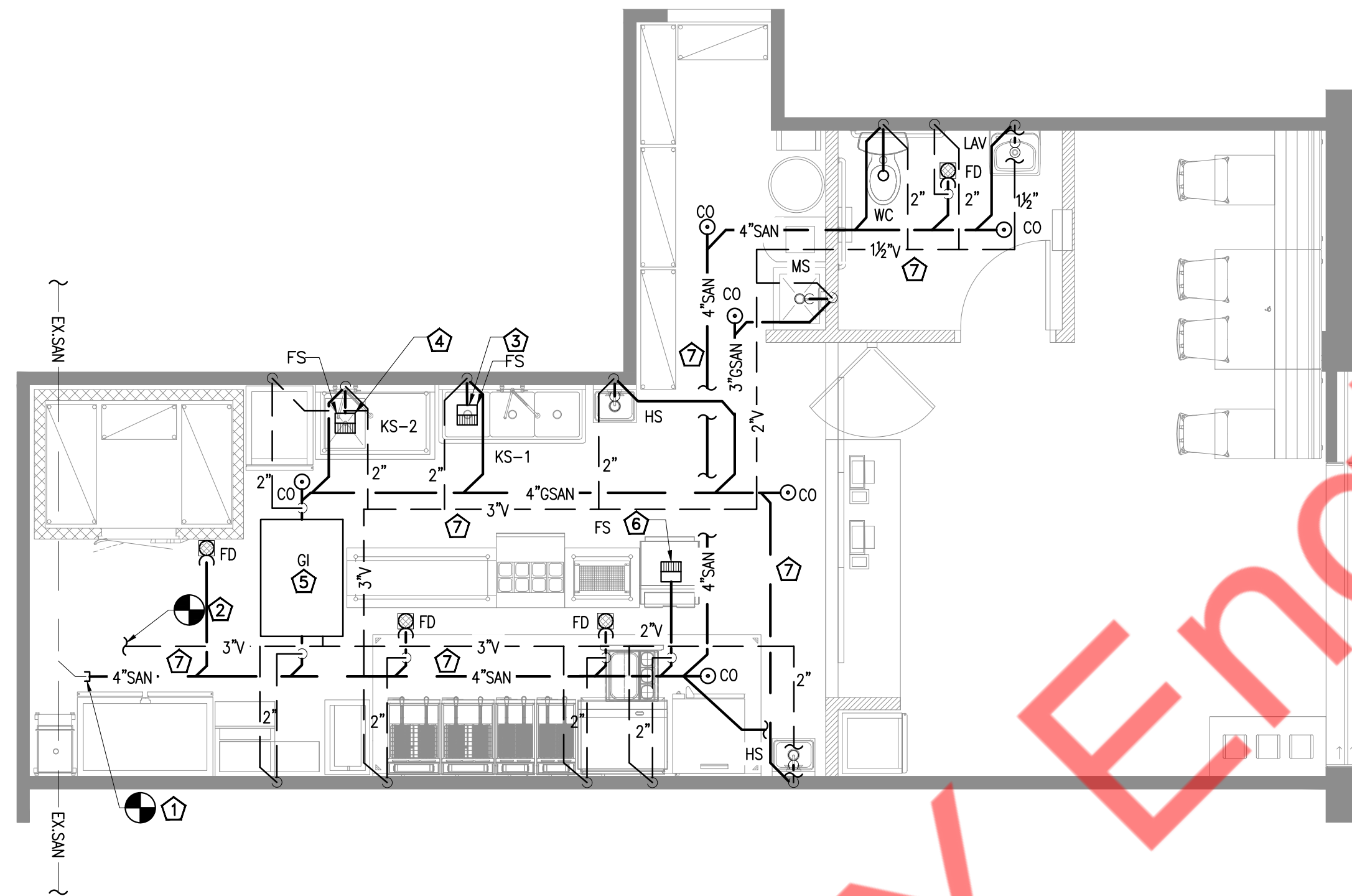
ISSUE	DESCRIPTION	DATE

PROJECT INFORMATION:  
**UNCLE WILLIE'S WINGS**

DATE: \_\_\_\_\_  
 PROJECT NO.: \_\_\_\_\_  
 DRAWN BY: NYE  
 CHECKED BY: NYE  
 SCALE: AS NOTED

DRAWING TITLE:  
**PLUMBING NOTES AND SPECIFICATIONS (2 OF 2)**

DRAWING NO.:  
**P0.2**



**A PLUMBING SANITARY FLOOR PLAN - CONCOURSE LEVEL**  
1/4"=1'-0"

- PLUMBING SANITARY KEYED NOTES:**
- ① CONNECT NEW 4" SANITARY WASTE PIPE TO EXISTING 4" SANITARY STUB-OUT. CONTRACTOR TO VERIFY IN FIELD EXACT SIZE AND LOCATION.
  - ② CONNECT NEW 3" VENT PIPE TO EXISTING SYSTEM. CONTRACTOR TO VERIFY IN FIELD EXACT SIZE AND LOCATION.
  - ③ PROVIDE #3, 2" SEPARATE INDIRECT WASTE LINES FROM 3 COMP SINK TO FLOOR SINK WITH APPROVED AIR GAP.
  - ④ PROVIDE 1-1/2" INDIRECT WASTE FROM 1 COMP SINK TO FLOOR SINK.
  - ⑤ GREASE INTERCEPTOR—SCHIER GB-75 GREASE TRAP FOR INDOOR INSTALLATION, FLOW RATE—75 GPM. CONTRACTOR TO REFER MANUFACTURER GUIDELINES FOR INSTALLATION. COORDINATE LOCATION OF GREASE INTERCEPTOR WITH OWNER AS PER ACTUAL SITE CONDITIONS.
  - ⑥ ROUTE INDIRECT WASTE FROM ICE MAKER MACHINE TO FLOOR SINK WITH APPROVED AIR GAP.
  - ⑦ ALL EXPOSED SANITARY PIPING SHALL BE PROVIDED WITH INSULATION AND HEAT TRACING.

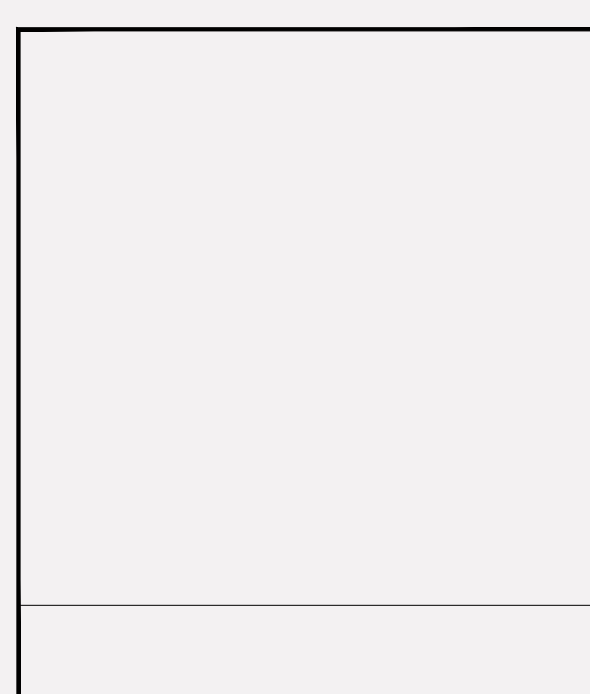
GREASE TRAP SIZING CALCULATION											
FIXTURE	QUANTITY	DIMENSIONS			VOLUME		PERCENTAGE USAGE(%)	ACTUAL USAGE (GALLONS)	FLOW RATE(GPM)		
		LENGTH(IN)	WIDTH(IN)	DEPTH(IN)	CUBIC INCHES	GALLONS			1 MIN.	2 MIN.	
3 COMP. SINK	1	18	18	14	13608	58.9	0.75	44.2	44.2	22.1	
MOP SINK	1	16	20	6	1920	8.3	0.75	6.2	6.2	3.1	
1 COMP SINK	1	16	20	12	3840	16.6	0.75	12.5	12.5	6.2	
HAND SINK	2	14	10	5.5	1540	6.7	0.75	5.0	5.0	2.5	
								<b>TOTAL:</b>	<b>67.9</b>	<b>33.94</b>	
								<b>PROPOSED GREASE TRAP:</b>	<b>GB-75</b>		

SCHIER GREASE INTERCEPTOR DO NOT REQUIRE AN EXTERNAL FLOW CONTROL SYSTEM OF AIR INTAKE. IT HAS BUILT IN FLOW CONTROL VALVE.

PLUMBING FIXTURE SCHEDULE									
MARK	FIXTURE	CONN.			MANUFAC. & MODEL	DESCRIPTION			
		W	CW	HW					
WC	WATER CLOSET	4"	3/4"	-	AM, STD. 3043.102	VITREOUS CHINA, 16-3/4" HIGH ELONGATED BOWL, 1.6 GPF, SIPHON JET; W/ZURN Z-6000-WS1-YBYC FLUSH TANK MOUNTED 11" ABOVE WATER CLOSET; CHURCH 9500CT OPEN FRONT SEAT, WHITE SOLID PLASTIC.			
LAV	LAVATORY	2"	1/2"	1/2"	COMMERCIAL INTERIORS MANUFACTURING MODEL R-2030	WITH AM. STANDARD 6056.205-V10 - INNSBROOK AC VERSION PROXIMITY FAUCET, WITH V10 1.0 GPM VANDAL RESISTANT AERATOR, AND 605XTMV MIXING VALVE, POLISH CHROME FINISH			
FD	FLOOR DRAIN	3"	-	-	ZURN Z-1732-33	ALL TYPE, 304 STAINLESS STEEL HEAVY DUTY ADJUSTABLE FLOOR DRAIN WITH INTEGRAL ANCHOR FLANGE.			
FS	FLOOR SINK	3"	-	-	ZURN Z-1900-2-33 12"x12"x6" A.R.E	3" FLOOR SINK, 12"x12" A.R.E SANI-FLOOR RECEPTOR, ANTI SPLASH STRAINER, ACID RESIST. PORCELAIN ENAMEL INTERIOR AND SQ. TOP			
WH	WATER HEATER	-	3/4"	3/4"	RINNAI CU199i	GAS TYPE TANKLESS WATER HEATER SIMULTANEOUS GPM CAPACITY - 5.5 GPM @ 90°F RISE. DIMENSION 18.5"L X 11.45"B X 26.4"H, BTU CAPACITY -199 MBTUH			
GI	GREASE INTERCEPTOR	4"	-	-	SCHIER GB-75	INDOOR, BELOW GRADE INSTALLATION 75 GPM FLOW RATE, 861 LBS. GREASE CAPACITY. DIM 33"x47"x40"			
RCP	RECIRCULATION PUMP	-	-	-	GRUNDFOS UPS 15-18	2 GPM FLOW RATE, 10 FT TOTAL HEAD, 0.115 HP MOTOR			
ET	EXPANSION TANK	-	-	-	AMTROL ST-5	2 GALLON TANK VOLUME, DIM. DIA 8" X 13" H SHIPPING WEIGHT 5 LBS			

ISSUE	DESCRIPTION	DATE

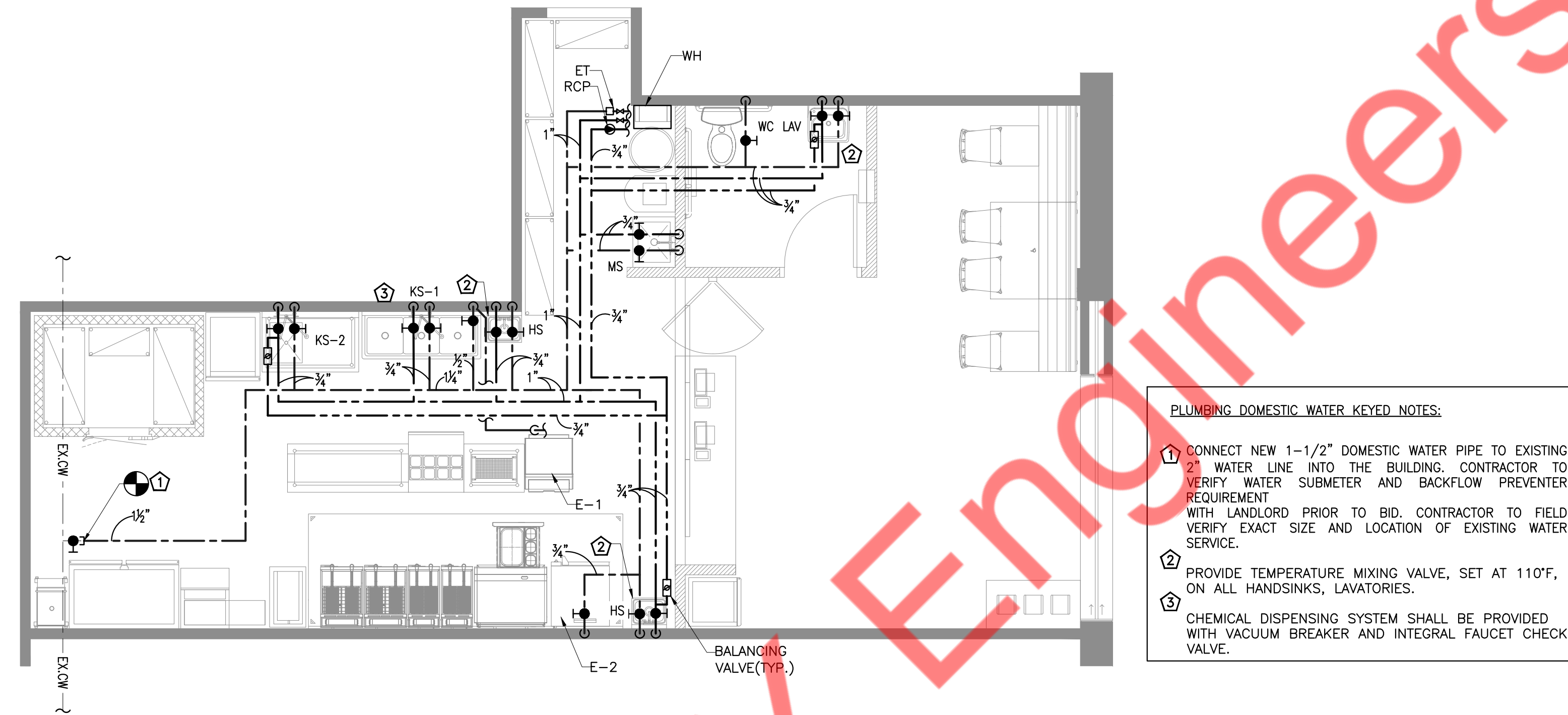
**PROJECT INFORMATION:**  
**UNCLE WILLIE'S WINGS**



DATE: \_\_\_\_\_  
PROJECT NO.: \_\_\_\_\_  
DRAWN BY: NYE  
CHECKED BY: NYE  
SCALE: AS NOTED

DRAWING TITLE:  
PLUMBING SANITARY FLOOR PLAN

DRAWING NO.:  
**P1.0**



**PLUMBING DOMESTIC WATER KEYED NOTES:**

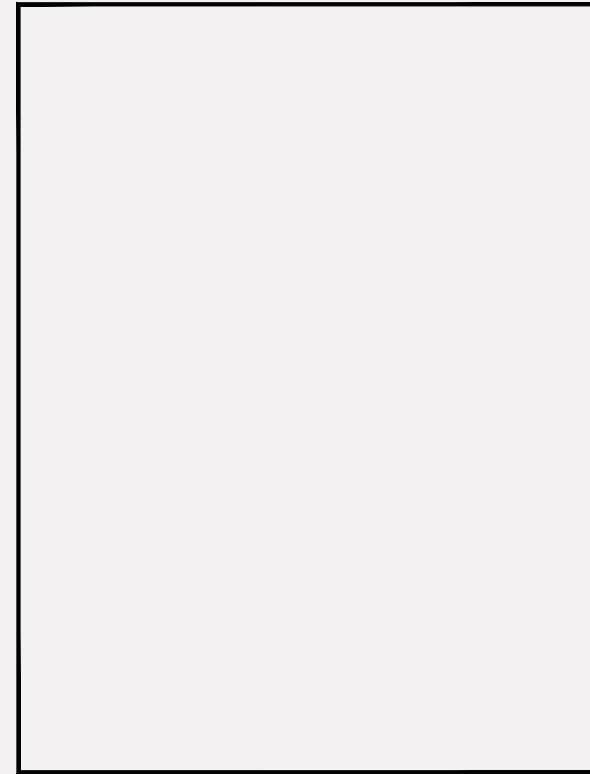
- 1 CONNECT NEW 1-1/2" DOMESTIC WATER PIPE TO EXISTING 2" WATER LINE INTO THE BUILDING. CONTRACTOR TO VERIFY WATER SUBMETER AND BACKFLOW PREVENTER REQUIREMENT WITH LANDLORD PRIOR TO BID. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING WATER SERVICE.
- 2 PROVIDE TEMPERATURE MIXING VALVE, SET AT 110°F, ON ALL HANDSINKS, LAVATORIES.
- 3 CHEMICAL DISPENSING SYSTEM SHALL BE PROVIDED WITH VACUUM BREAKER AND INTEGRAL FAUCET CHECK VALVE.

**A** PLUMBING DOMESTIC WATER FLOOR PLAN - CONCOURSE LEVEL  
1/4"=1'-0"

KITCHEN EQUIPMENT SCHEDULE							
QTY	TAG	DESCRIPTION	WATER		WASTE		REMARKS
			COLD	HOT	DIRECT	INDIRECT	
1	MS	MOP SINK	3/4"	3/4"	3"	-	
1	KS-1	SINK, 3 COMPARTMENT	3/4"	3/4"	-	2"	
2	HS	HAND SINK	1/2"	1/2"	1 1/2"	-	
1	KS-2	SINK, 1 COMPARTMENT	3/4"	3/4"	-	1 1/2"	
1	E-1	ICE MACHINE	1/2"	-	-	1 1/2"	
1	E-2	GAS CONVECTION OVEN	3/4"	-	-	-	

ISSUE	DESCRIPTION	DATE

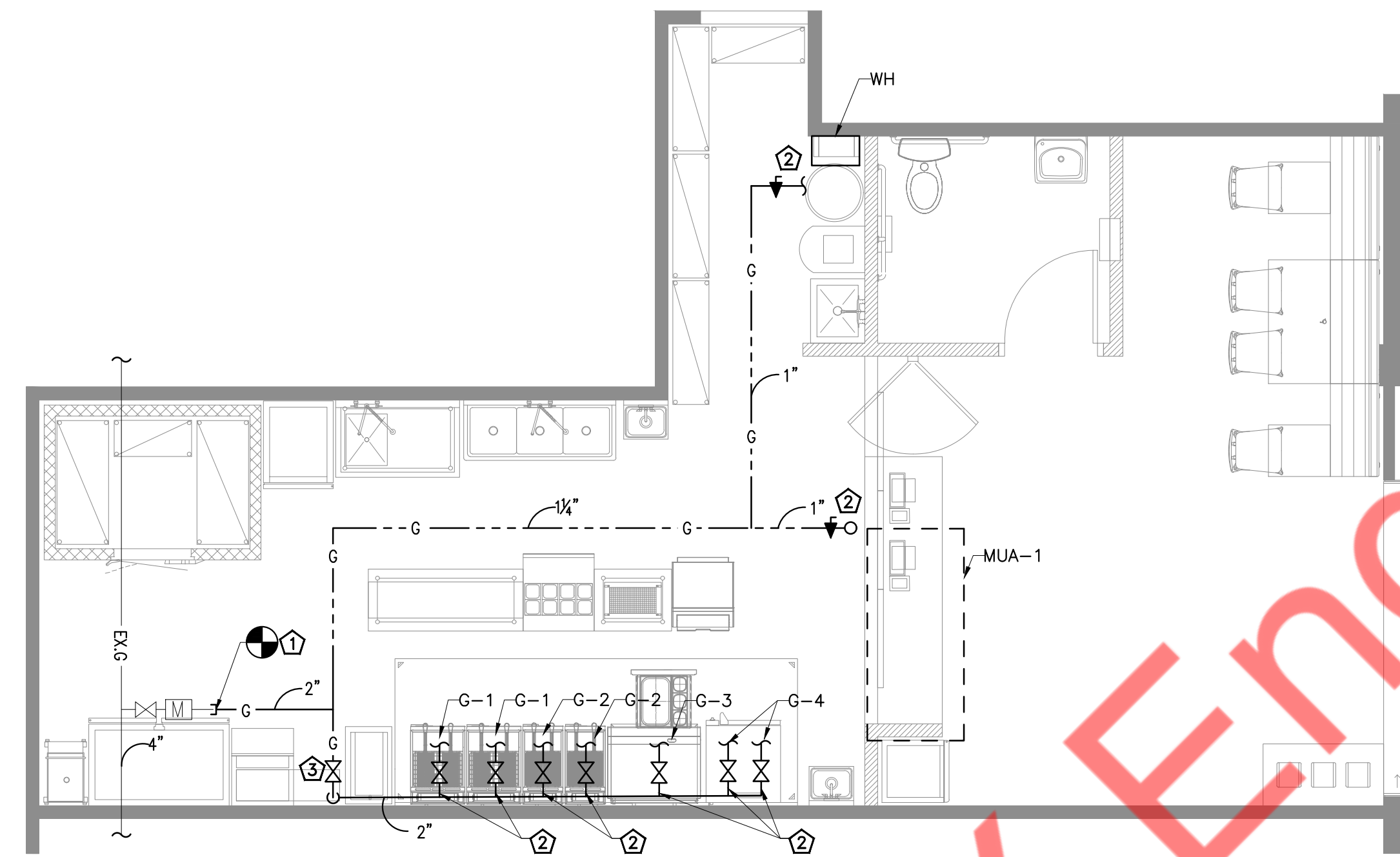
**PROJECT INFORMATION:**  
**UNCLE WILLIE'S WINGS**



DATE: \_\_\_\_\_  
 PROJECT NO.: \_\_\_\_\_  
 DRAWN BY: NYE  
 CHECKED BY: NYE  
 SCALE: AS NOTED

DRAWING TITLE:  
 PLUMBING DOMESTIC WATER  
 FLOOR PLAN

DRAWING NO.:  
**P1.1**



**PLUMBING GAS KEYNOTES:**

- 1. CONNECT NEW 2" GAS PIPING TO EXISTING GAS LINE. CONTRACTOR TO VERIFY LOCATION AND SIZE OF EXISTING GAS PIPING, UPGRADE THE SIZE IF REQUIRED.
- 2. CONTRACTOR TO FIELD VERIFY EXISTING AVAILABLE GAS PRESSURE AND MAKE SURE TO PROVIDE ADEQUATE INLET PRESSURE REQUIRED FOR G-1, G-2, G-3, G-4, MUA-1 AND WH.
- 3. CONTRACTOR TO PROVIDE EMERGENCY GAS SOLENOID SHUT OFF VALVE. COORDINATE WITH KITCHEN HOOD MANUFACTURER, ANSUL SYSTEM CONTROLS AND ELECTRICAL CONTRACTOR FOR LOCATION.

**A PLUMBING GAS PLAN - CONCOURSE LEVEL**  
1/4"=1'-0"

GAS PIPE SIZING PER TABLE 402.4(2),  
INTERNATIONAL FUEL GAS CODE, 2018.  
TOTAL EQUIVALENT LENGTH OF PIPE = 56 FEET

KITCHEN EQUIPMENT SCHEDULE (GAS)				
QTY	TAG	DESCRIPTION	GAS	REMARKS
			MBTUH	
2	G-1	GAS FLOOR FRYER	340	
2	G-2	GAS FLOOR FRYER	272	
1	G-3	GAS GRIDDLE	90	
2	G-4	GAS CONVECTION OVEN	66	
1	WH	WATER HEATER	199	
1	MUA-1	MAKE UP AIR UNIT	224	
		TOTAL	1191	

Property of N.Y. Engineers

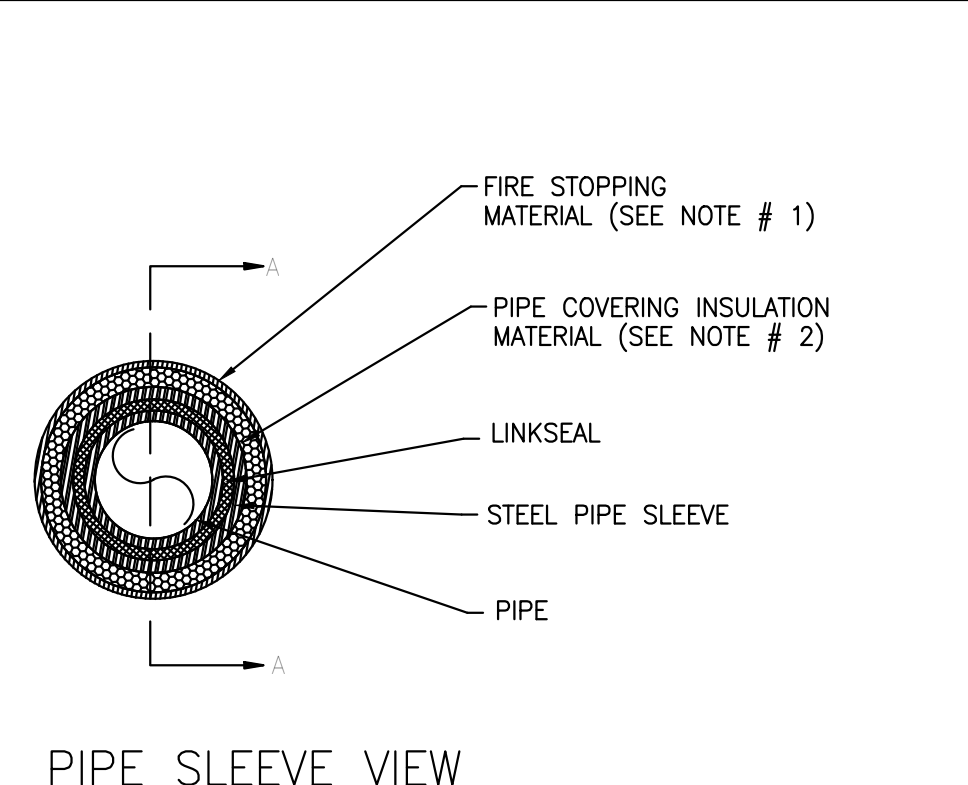
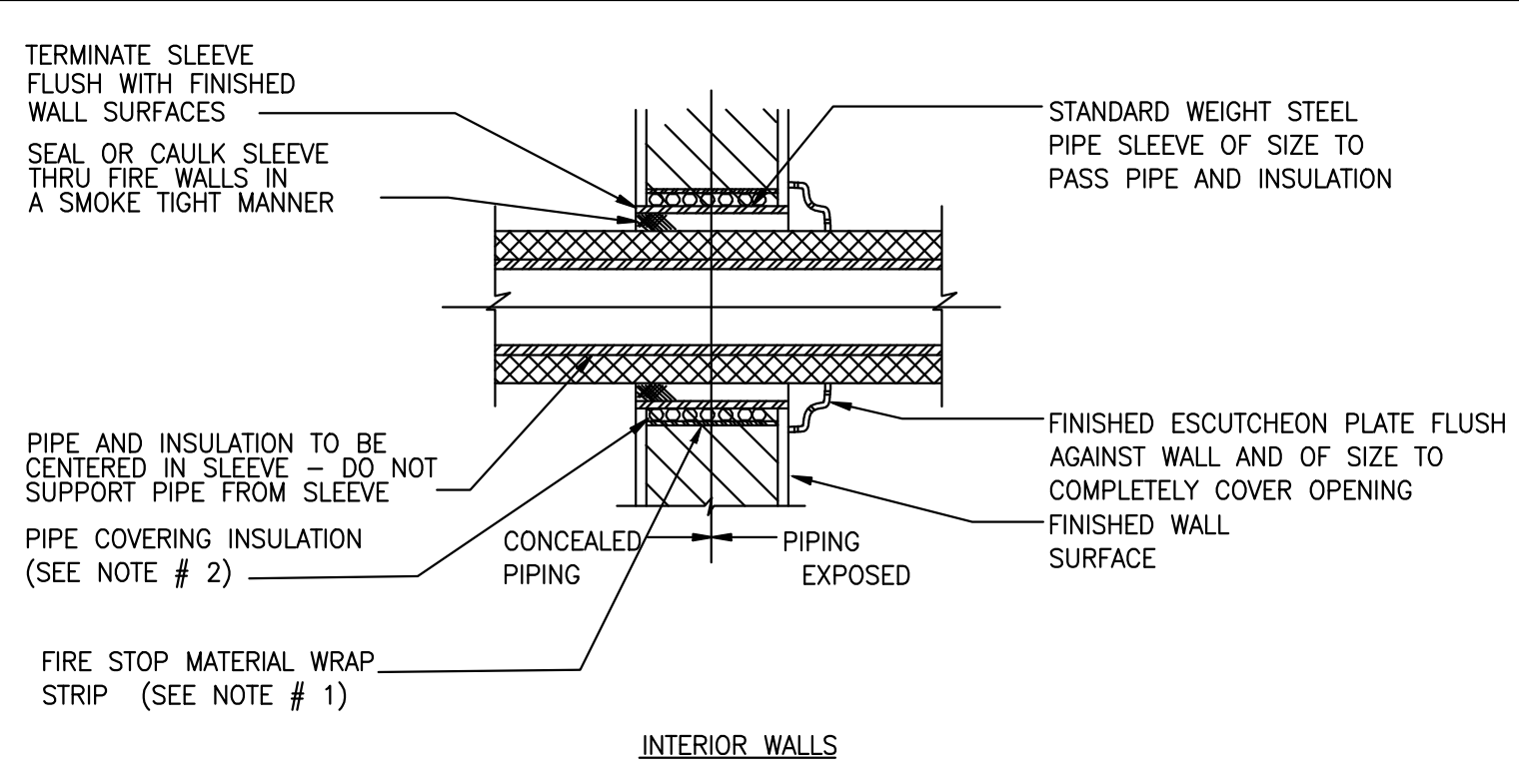
ISSUE	DESCRIPTION	DATE

**PROJECT INFORMATION:**  
**UNCLE WILLIE'S WINGS**

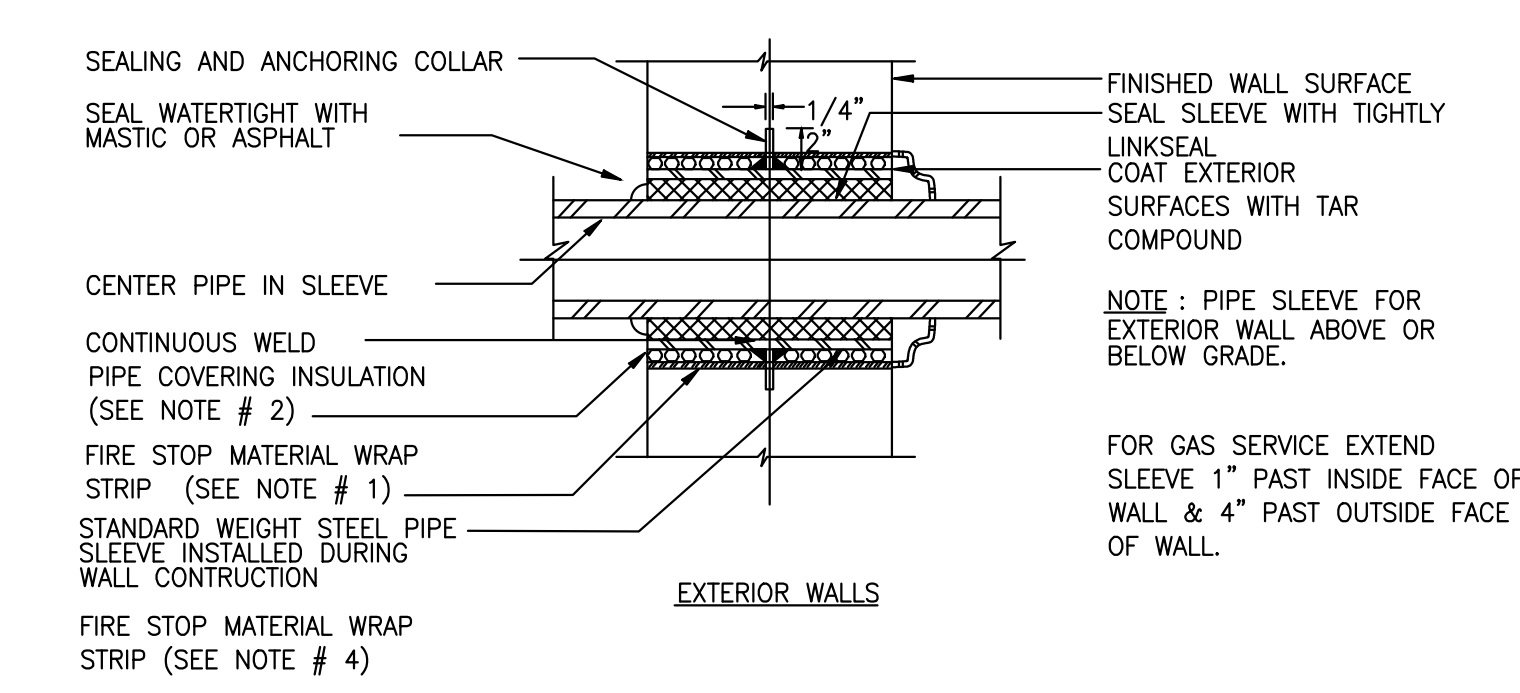
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PLUMBING GAS PLAN

DRAWING NO.:  
**P1.2**

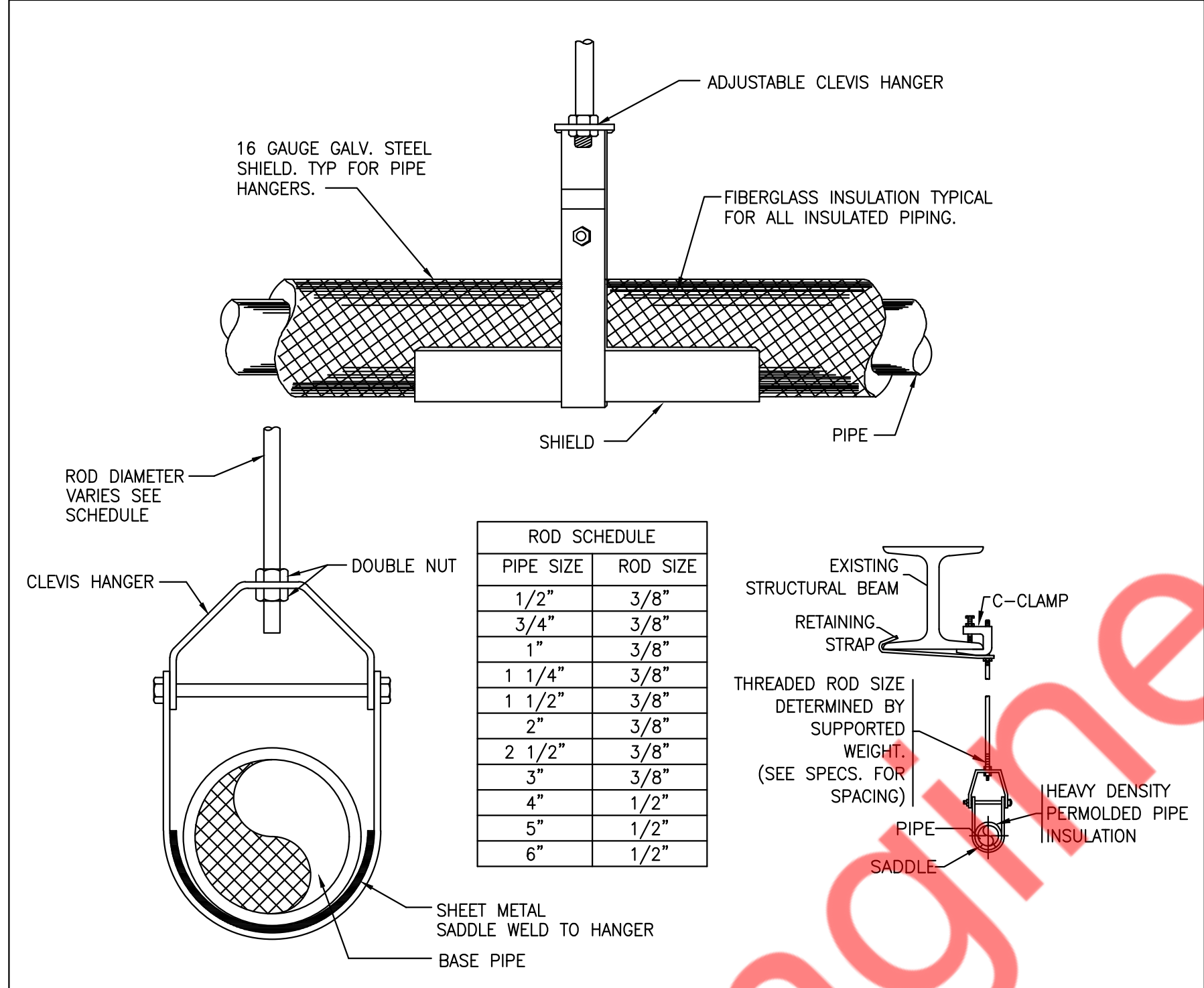


- NOTES:**
- FIRESTOP MATERIAL WRAP STRIP SHALL BE 1/4" THICK INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL SUPPLIED IN 2 IN. WIDE STRIPS AND WRAP AROUND THE PIPE AS PER UL MATERIAL LISTED 3M COMPANY FS-195+ OR FILL CAVITY WITH CAULK OR SEALANT MIN. 1/4" DIA. CONTINUOUS BEAD APPLIED TO THE WRAP STRIP/WALL INTERFACE AND TO THE EXPOSED OF THE WRAP STRIP LAYER APPROX. 3/4" FROM WALL SURFACE. AS PER UL LISTED 3M COMPANY CP25WB+, IC 15WB+, FIRE DAM 150+CAULK.
  - PIPE COVERING INSULATION SHALL BE 2" THICK HOLLOW CYLINDRICAL HEAVY DENSITY GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKETED, AS PER UL CLASSIFICATION AND MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.

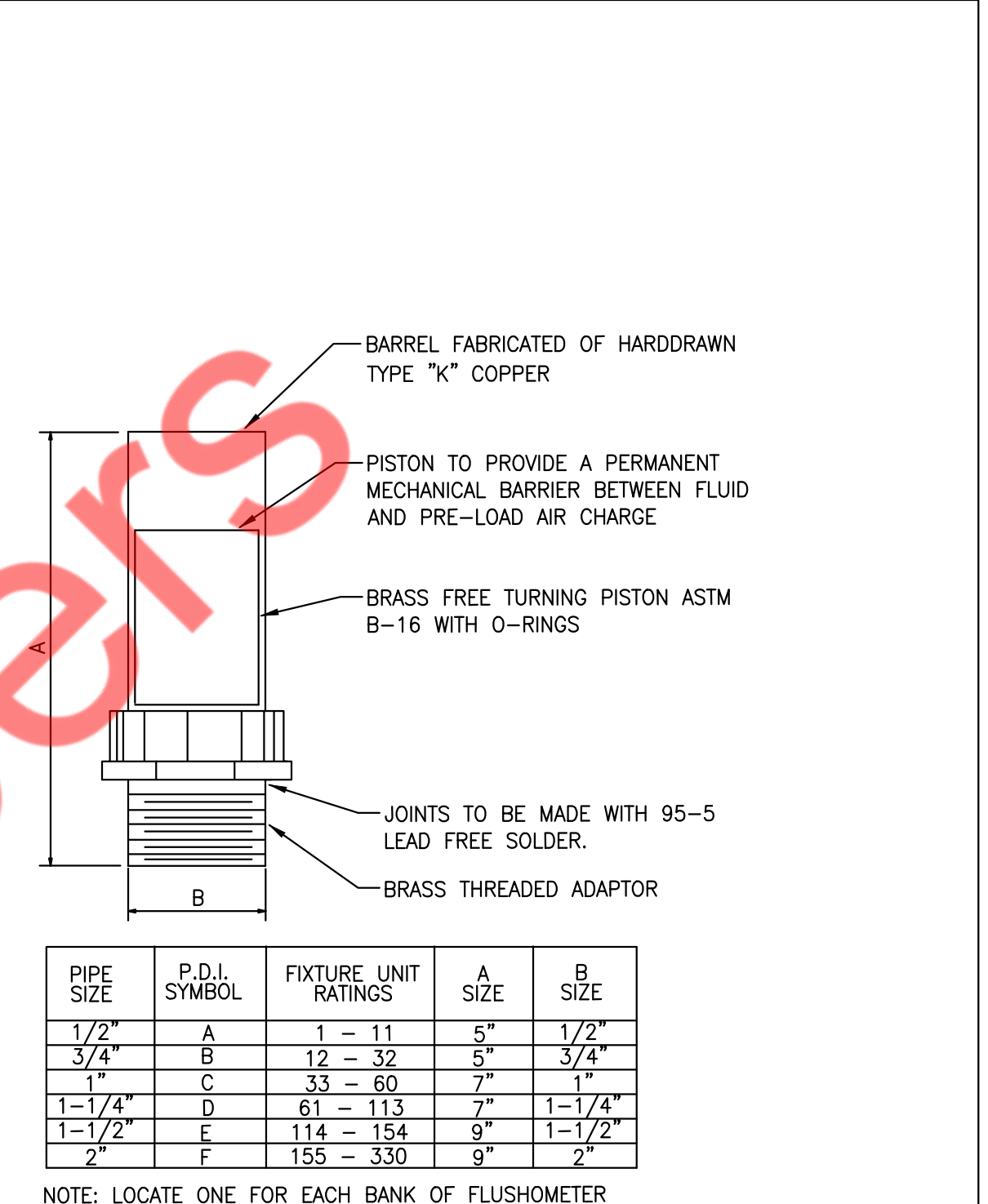


PIPE SLEEVE THRU WALL SECTION

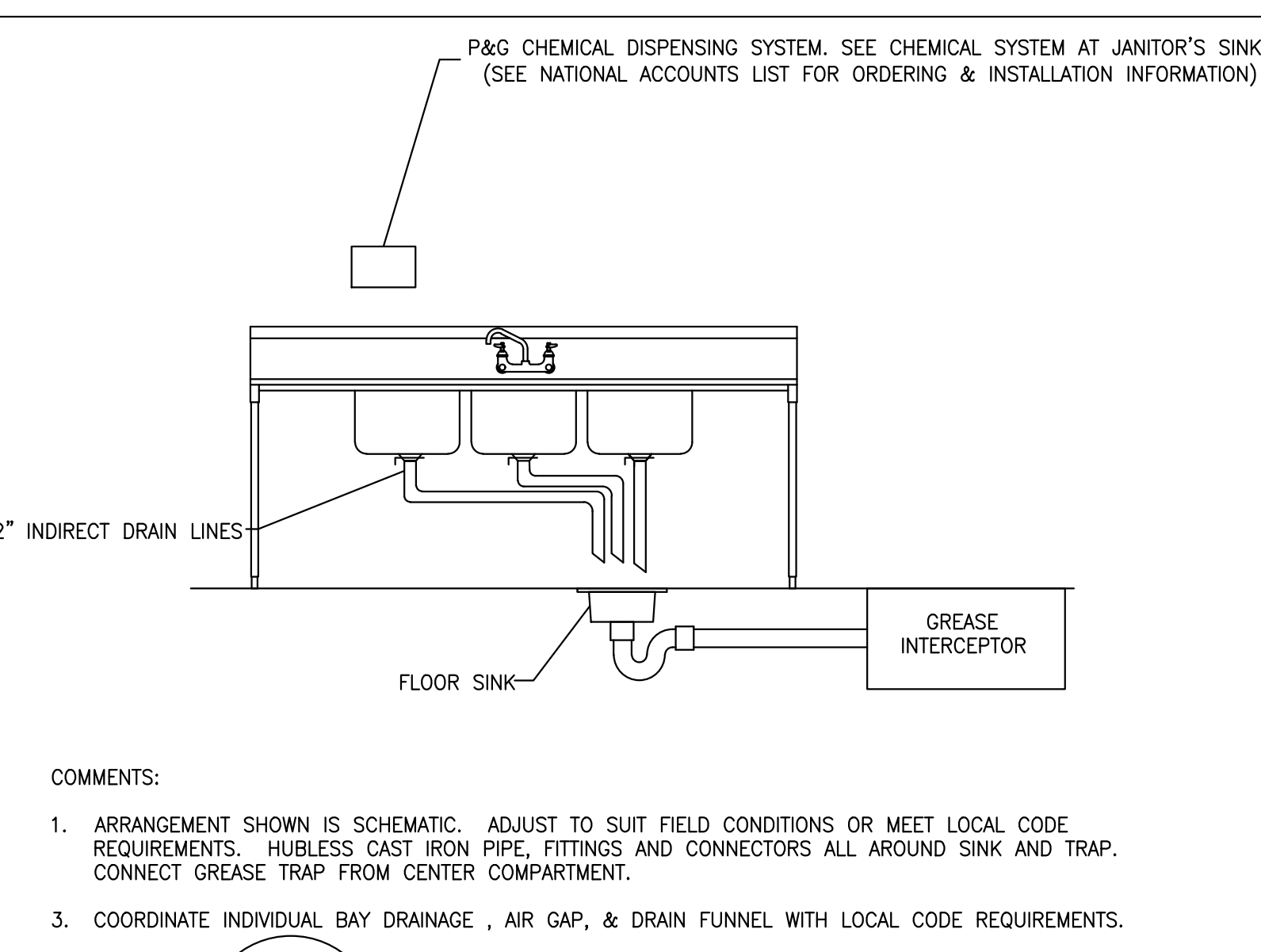
1 PIPE SLEEVE THRU WALL SECTION  
P5.0 N.T.S



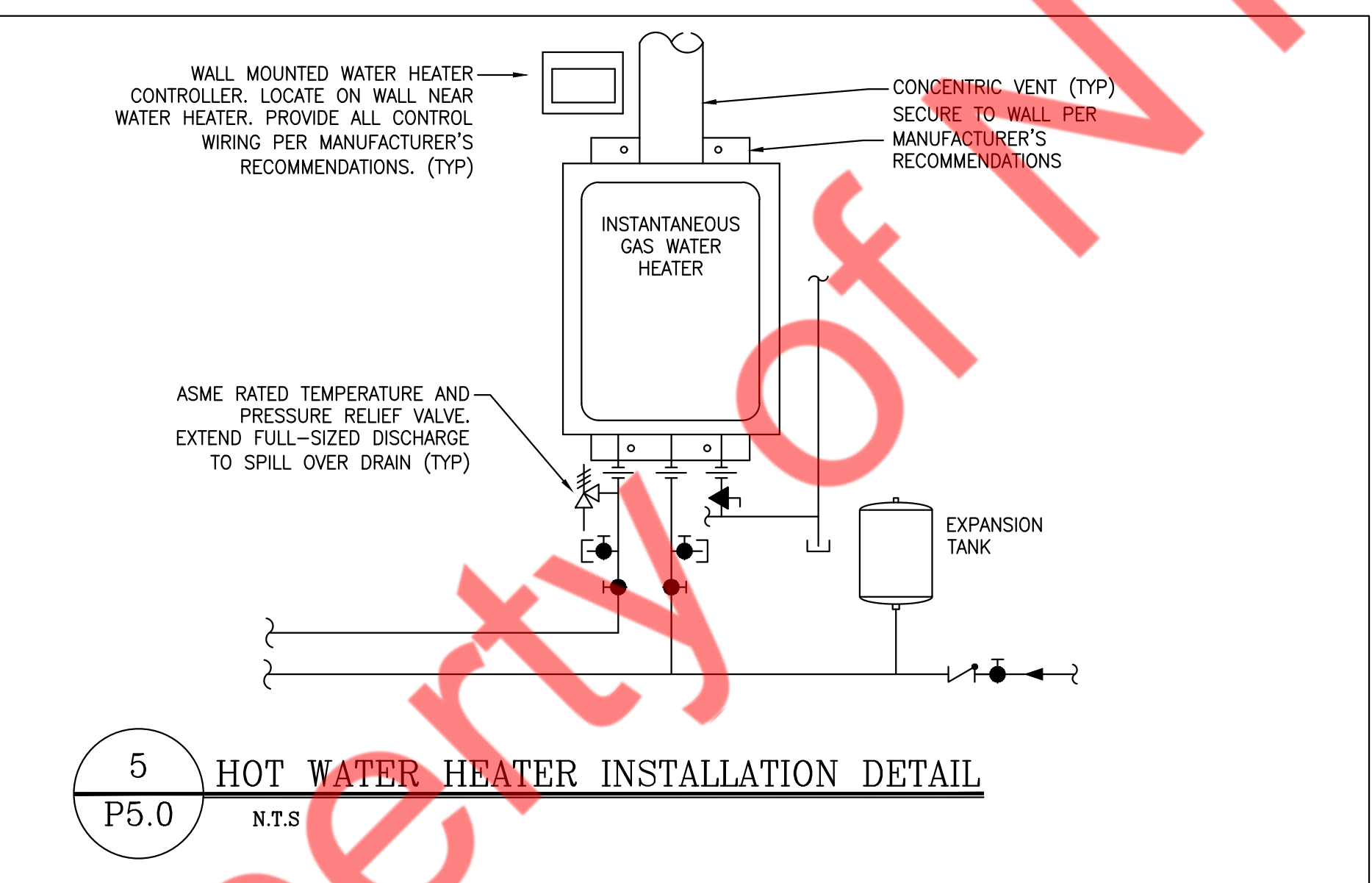
2 HANGER DETAIL  
P5.0 N.T.S



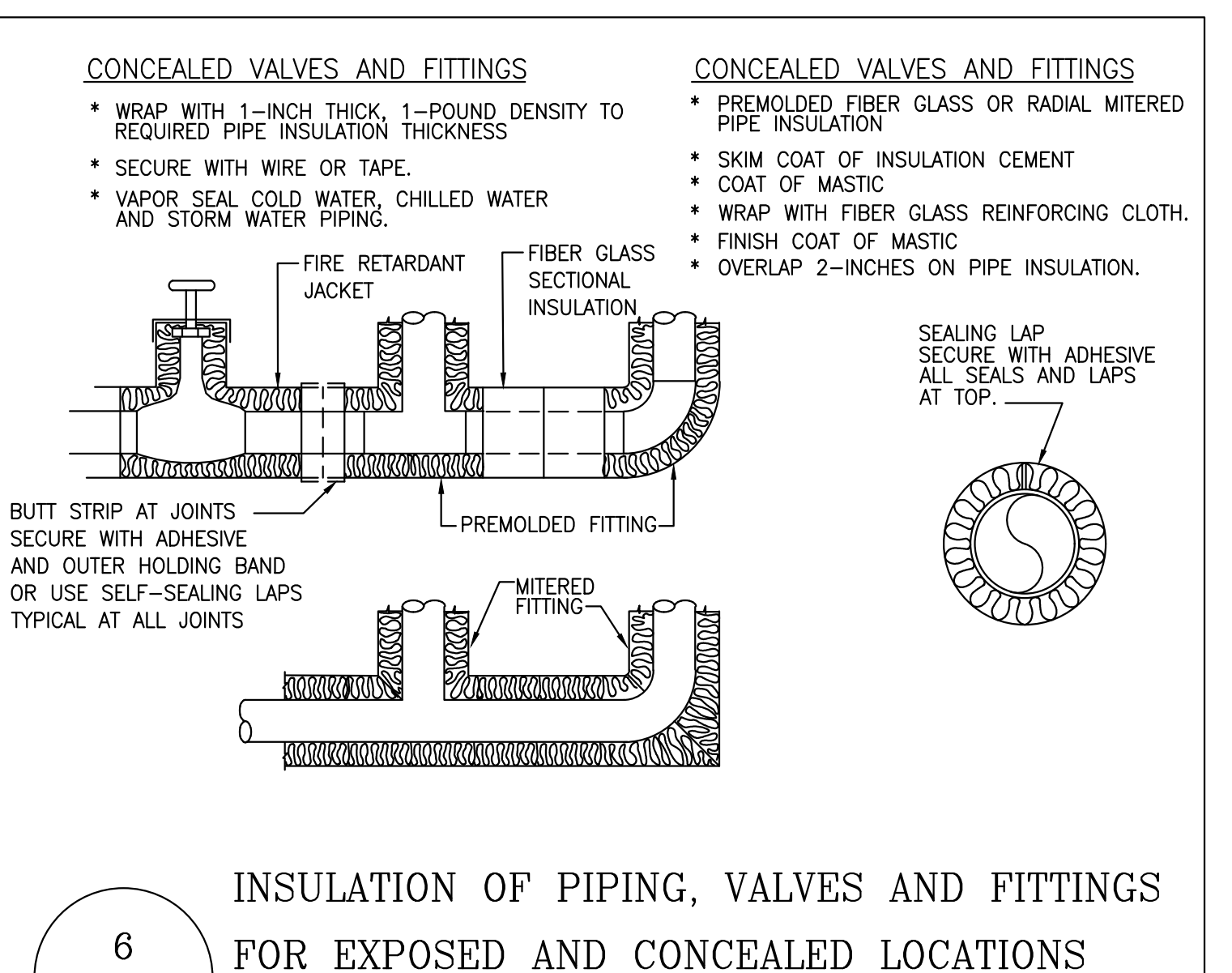
3 WATER HAMMER ARRESTOR DETAILS  
P5.0 N.T.S



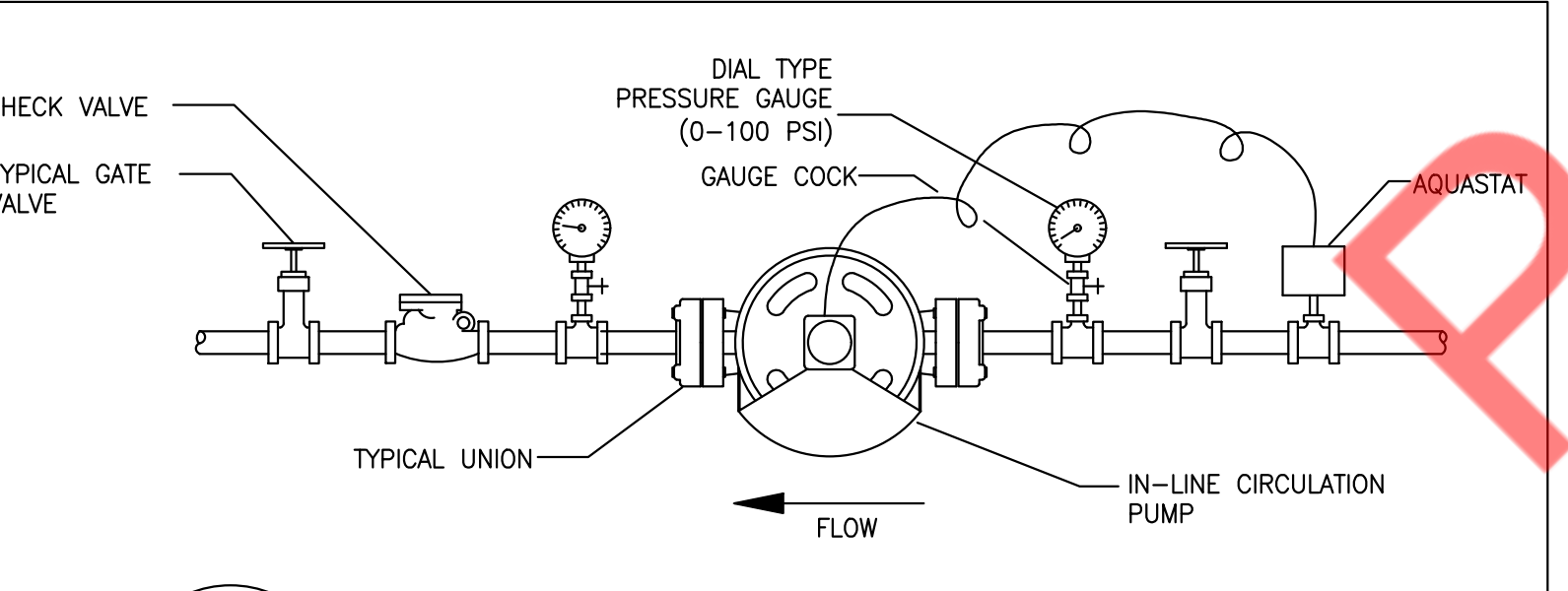
4 3 COMPARTMENT SINK DETAILS  
P5.0 N.T.S



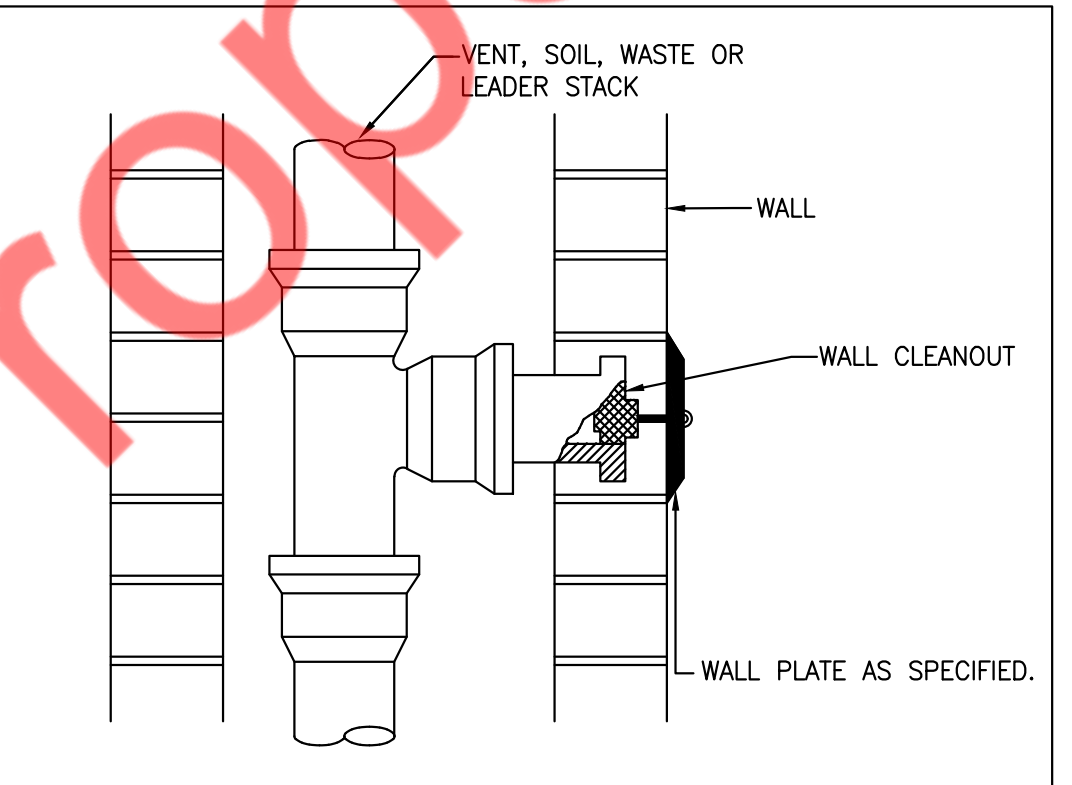
5 HOT WATER HEATER INSTALLATION DETAIL  
P5.0 N.T.S



6 INSULATION OF PIPING, VALVES AND FITTINGS FOR EXPOSED AND CONCEALED LOCATIONS  
P5.0 N.T.S



7 INLINE RECIRCULATING PUMP DETAIL  
P5.0 N.T.S



8 WALL CLEANOUT DETAILS  
P5.0 N.T.S

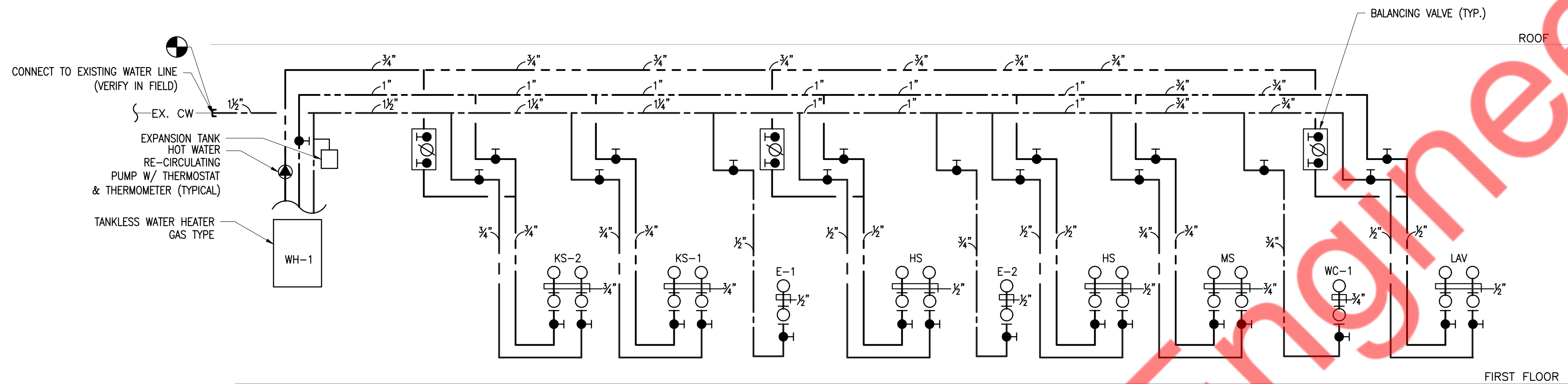
ISSUE	DESCRIPTION	DATE

**PROJECT INFORMATION:**  
**UNCLE WILLIE'S WINGS**

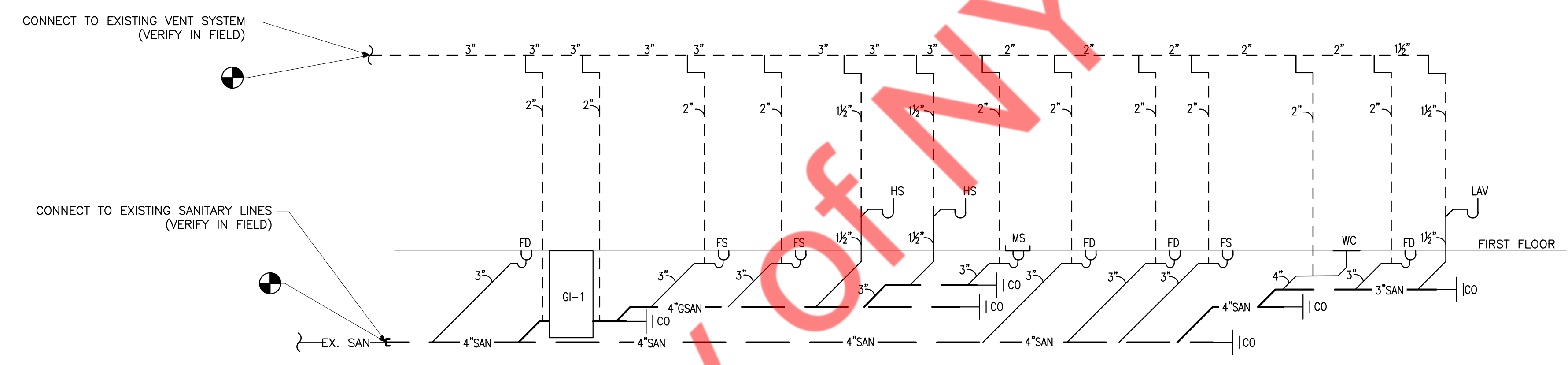
DATE: \_\_\_\_\_  
PROJECT NO.: \_\_\_\_\_  
DRAWN BY: NYE  
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SCALE: AS NOTED

DRAWING TITLE:  
**PLUMBING DETAILS**

DRAWING NO.:  
**P5.0**



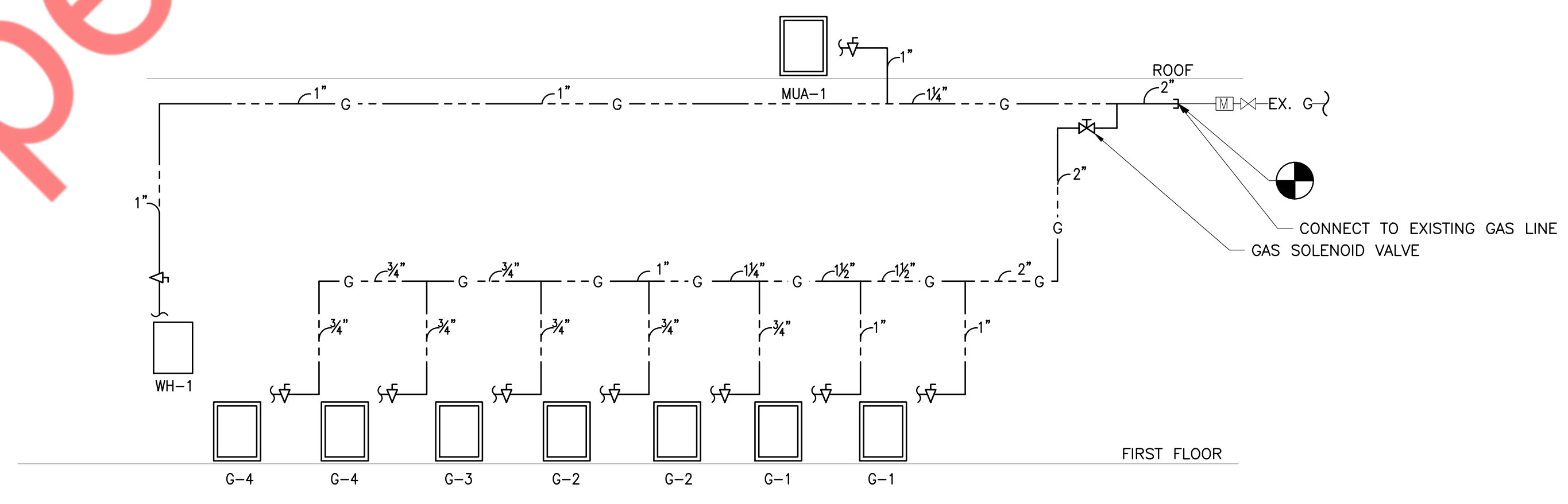
3 PLUMBING DOMESTIC WATER RISER DIAGRAM  
NTS



2 PLUMBING SANITARY RISER DIAGRAM  
NTS

GAS PIPING SIZED AS PER 2018 INTERNATIONAL FUEL GAS CODE TABLE 402.4(2)  
 INLET PRESSURE - LESS THAN 2 PSI  
 PRESSURE DROP - 0.5 IN W.C.  
 SPECIFIC GRAVITY - 0.60  
 TOTAL EQUIVALENT LENGTH OF PIPE - 56 FT

GAS LOAD SUMMARY			
TAG	EQUIPMENT	QTY	MBH LOAD
G-1	GAS FLOOR FRYER	2	340
G-2	GAS FLOOR FRYER	2	272
G-3	GAS GRIDDLE	1	90
G-4	GAS CONVECTION OVEN	2	66
WH	WATER HEATER	1	199
MUA-1	MAKE UP AIR UNIT	1	224
	TOTAL		1191



1 GAS RISER DIAGRAM  
NTS

ISSUE	DESCRIPTION	DATE

PROJECT INFORMATION:  
**UNCLE WILLIE'S WINGS**

DATE: \_\_\_\_\_  
 PROJECT NO.: \_\_\_\_\_  
 DRAWN BY: NYE  
 CHECKED BY: NYE  
 SCALE: AS NOTED

DRAWING TITLE:  
**PLUMBING RISER DIAGRAMS**

DRAWING NO.:  
**P6.0**

PROJECT DATA										
PROJECT DESCRIPTION		BUILDING OCCUPANCY			PROJECT DESCRIPTION				FIRE ALARM SYSTEM FEATURES	
	NEW BUILDING	X	ASSEMBLY GROUP A (A1,A2,A3,A4 AND A5)	RESIDENTIAL GROUP R (R1,R2 AND R3)	1	TOTAL NUMBER OF LEVELS	ATRIUM	STAIR PRESSURIZATION	X	NON-VOICE EVACUATION
	FIRE ALARM SYSTEM UPGRADE		BUSINESS GROUP B	STORAGE GROUP S (S1 AND S2)	1	ABOVE GROUND LEVELS	FIRE DEPARTMENT ACCESS	POST FIRE SMOKE PURGE		VOICE EVACUATION
	LIFE SAFETY SYSTEM UPGRADE		EDUCATIONAL GROUP E	UTILITY AND MISCELLANEOUS GROUP U	0	BELOW GROUND LEVELS	X FULLY SPRINKLERED	GENERATOR		PARTIAL/SELECTIVE EVACUATION
X	RENOVATION		FACTORY INDUSTRIAL GROUP F (F1 AND F2)	OTHER:	0	NUMBER OF ELEVATOR BANKS	PARTIALLY SPRINKLERED	FIRE PUMP		GENERAL EVACUATION
	EMERGENCY REPAIR		HIGH-HAZARD GROUP H (H1,H2,H3,H4 AND H5)		0	NUMBER OF EGRESS STAIRS	NON-SPRINKLERED	OTHER:		DIGITAL ALARM COMMUNICATOR
	TENANT ADDITION		INSTITUTIONAL GROUP I (I1,I2 AND I3)				PRE-ACTION SPRINKLER	OTHER:		PRE-SIGNAL SYSTEM
	OTHER:		MERCANTILE GROUP M							FIRE FIGHTER'S TELEPHONE SYSTEM

SYSTEM INPUTS INITIATING DEVICES	SYSTEM OUTPUTS INDICATING/CONTROLLED DEVICES	CONTROL UNIT ANNUNCIATION				NOTIFICATION								
		A	B	C	D	E	F	G	H	I	J	K	L	
1	MANUAL PULL STATION	●												1
2	TENANT FACP													2
3	AREA SMOKE DETECTOR	●												3
4	SPRINKLER CONTROL VALVE/TAMPER SWITCH		●											4
5	ALARM ACTIVATION OF OTHER SUBSYSTEM	●												5
6	FIRE ALARM AC POWER FAILURE			●	●	●								6
7	FIRE ALARM SYSTEM LOW BATTERY			●	●	●								7
8	OPEN CIRCUIT			●	●	●								8
9	GROUND CIRCUIT			●	●	●								9
10	NOTIFICATION APPLIANCE CIRCUIT SHORT			●	●	●								10
11	HEAT DETECTOR	●												11

**FIRE ALARM NOTES:**

- ALL EQUIPMENT AND WIRING INDICATED ON THESE PLANS IS NEW (U.O.N.).
- PROVIDE WIRING AS REQUIRED BETWEEN ALL DEVICES AND EQUIPMENT AS REQUIRED TO PERFORM FIRE ALARM SYSTEM FUNCTIONS.
- WIRING FOR FIRE ALARM DEVICES IN FINISHED SPACES WITHOUT HUNG CEILING SHALL BE INSTALLED IN EMT CONDUIT.
- ALL STROBES AND HORN/STROBES SHALL BE FLUSH WALL MOUNTED FINISH BY ARCHITECT, APPROVED FOR USE IN AUTHORITY HAVING JURISDICTION (AHJ).
- FOR WALL MOUNTED F.A. DEVICES PROVIDE 3/4" CONDUIT TERMINATED IN NEAREST ACCESSIBLE CEILING.
- WIRING FOR FIRE ALARM DEVICES IN UNFINISHED SPACES SHALL BE INSTALLED IN RGS CONDUIT UP TO 8'-0" AFF AND THEN IN EMT CONDUIT ABOVE 8'-0" AFF.
- CONTRACTOR SHALL VERIFY ALL WIRING WITH FIRE ALARM VENDOR AND OBTAIN WIRING DIAGRAMS BEFORE PROCEEDING WITH THE START OF ANY WORK.
- ALL WIRING SHALL BE IN ACCORDANCE WITH THE AHJ.
- PROVIDE ALL REQUIRED EXPANSION PANELS, PC BOARDS, POWER SUPPLIES, BATTERIES, FUSE CUTOUPS AND BRANCH CIRCUITS, ETC. FOR A COMPLETE AND OPERATIONAL FIRE ALARM SYSTEM.
- STROBES AND HORNS SHALL BE WIRED ON ALTERNATING A-B CIRCUITING IN ALL AREAS, AS INDICATED ON THE RISER DIAGRAM.
- FIRE ALARM DEVICES SHOULD BE COMPATIBLE AND CONNECTED WITH BASE BUILDING FACP.
- CONTRACTOR SHALL PERFORM ALL LOCAL BUILDING DEPT. FILINGS AND OBTAIN ALL APPROVALS. CONTRACTOR SHALL OBTAIN ALL REQUIRED SIGNED & SEALED LOCAL BUILDING DEPT. FORMS AND ALL REQUIRED SETS OF DRAWINGS FROM ENGINEER OF RECORD AND BUILDING DEPT. EXPEDITOR.
- UPON COMPLETION OF INSTALLATION THE SYSTEM SHALL BE 100% PRE-TESTED BY THE FIRE ALARM VENDOR AND THE LICENSED ELECTRICAL CONTRACTOR PRIOR TO LOCAL FIRE DEPARTMENT INSPECTION.

**DIVISION 16 - FIRE ALARM**

**PART 1 - GENERAL**

**1.1 DESCRIPTION OF WORK**

- WORK UNDER THIS SECTION INCLUDES, BUT IS NOT NECESSARILY LIMITED TO, FURNISHING AND INSTALLING THE FOLLOWING:
  - FIRE ALARM PANEL, WIRING AND DEVICES
- ALL WORK SHALL BE COMPLETE AND ITEMS, EQUIPMENT, ETC., SHALL BE ELECTRICALLY CONNECTED FOR PROPER AND CORRECT OPERATION.
- ALL WORK UNDER THIS CONTRACT SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING CODES AND STANDARDS IN SO FAR AS THEY APPLY:
  - NATIONAL ELECTRICAL CODE
  - NFPA 72
  - UNDERWRITER'S LABORATORIES, INC., STANDARDS AND APPROVED LISTINGS
  - ELECTRICAL TESTING LABORATORIES STANDARDS
  - NORTH CAROLINA BUILDING CODE, LATEST EDITION AND REVISIONS.
  - ALL LOCAL CODES AND ORDINANCES.
- THE FIRE ALARM CONTRACTOR SHALL BE LICENSED IN THE STATE OF NORTH CAROLINA AND HAVE ALL LICENSES REQUIRED FOR THE WORK.
- OBTAIN ALL PERMITS, LICENSES, INSPECTIONS, ETC. REQUIRED FOR THE WORK AND PAY FOR THE SAME. FURNISH FINAL CERTIFICATE OF INSPECTION AND APPROVAL FROM THE ELECTRICAL INSPECTOR HAVING JURISDICTION PRIOR TO ACCEPTANCE OF THE WORK.
- ALL WORK SHALL BE DONE BY SKILLED MECHANICS AND SHALL PRESENT A NEAT, TRIM, WORKMANLIKE CONDITION WHEN COMPLETED.

**1.2 INTENT**

- THE INTENT OF THESE SPECIFICATIONS AND ACCOMPANYING DRAWINGS IS TO CONVEY AS REASONABLY AS POSSIBLE THE REQUIREMENTS FOR A COMPLETE JOB READY FOR THE BUILDING TO OPERATE. THE FIRE ALARM CONTRACTOR SHALL TAKE THIS INTO CONSIDERATION AND INCLUDE IN HIS BASE BID ALLOWANCE FOR CONTINGENCIES AS WILL ALLOW HIM TO PROVIDE MINOR PIECES OF EQUIPMENT AND LABOR NOT SPECIFICALLY INDICATED BUT REQUIRED FOR THE JOB TO OPERATE PROPERLY, AT NO ADDITIONAL COST TO THE OWNER.

**1.3 COORDINATION**

- COORDINATE WORK WITH OTHER CONTRACTORS. NOTIFY ARCHITECT OF APPARENT CONFLICT EARLY TO EXPEDITE CONSTRUCTION. IF STRUCTURAL DAMAGE APPEARS IMMINENT, STOP WORK AND NOTIFY ARCHITECT FOR A DECISION BEFORE RESUMING OPERATIONS.

- LOCATIONS SHOWN ARE APPROXIMATE. THE DRAWINGS DO NOT GIVE EXACT DETAILS AS TO ELEVATIONS AND LOCATIONS OF VARIOUS PIPES, FITTINGS, DUCTS, CONDUITS, ETC., AND DO NOT SHOW ALL OFFSETS AND OTHER INSTALLATION DETAILS WHICH MAY BE REQUIRED. COORDINATE ALL LOCATIONS WITH ARCHITECT BEFORE ANY ROUGH-IN.

**1.4 SHOP DRAWINGS**

- PROVIDE COMPLETE SHOP DRAWINGS PER NCSFC SECTION 907.1 TO THE LOCAL FIRE MARSHAL INCLUDING:
  - FLOORPLAN WITH ROOM NAMES
  - LOCATION OF ALL FA DEVICES
  - LOCATION OF PANELS
  - POWER CONNECTIONS
  - BATTERY CALCULATIONS
  - CONDUCTOR TYPES AND SIZES
  - VOLTAGE DROP CALCULATIONS
  - EQUIPMENT CUT-SHEETS, MODEL, NUMBERS, ETC.

**PART 2 - PRODUCTS AND MATERIALS**

**2.1 GENERAL**

- ALL MATERIAL SHOULD BE NEW AND SHALL BEAR THE MANUFACTURER'S NAME TRADE, AND UL LABEL WHERE SUCH STANDARD HAS BEEN ESTABLISHED FOR THE PARTICULAR MATERIAL. MATERIALS SHALL BE STANDARD PRODUCTS OF MANUFACTURER'S REGULARLY ENGAGED IN MANUFACTURE OF THE REQUIRED TYPE OF EQUIPMENT AND THE MANUFACTURER'S LATEST APPROVED DESIGN.

- BOXES INSTALLED IN CONCEALED LOCATIONS SHALL BE SET FLUSH WITH THE FINISHED SURFACES.
- PROVIDE RATED BOXES ON ALL FIRE BARRIERS AND WALLS INSTALLED PER CODE.

**PART 3 - EXECUTION**

**3.1 FIRE ALARM SYSTEM EQUIPMENT**

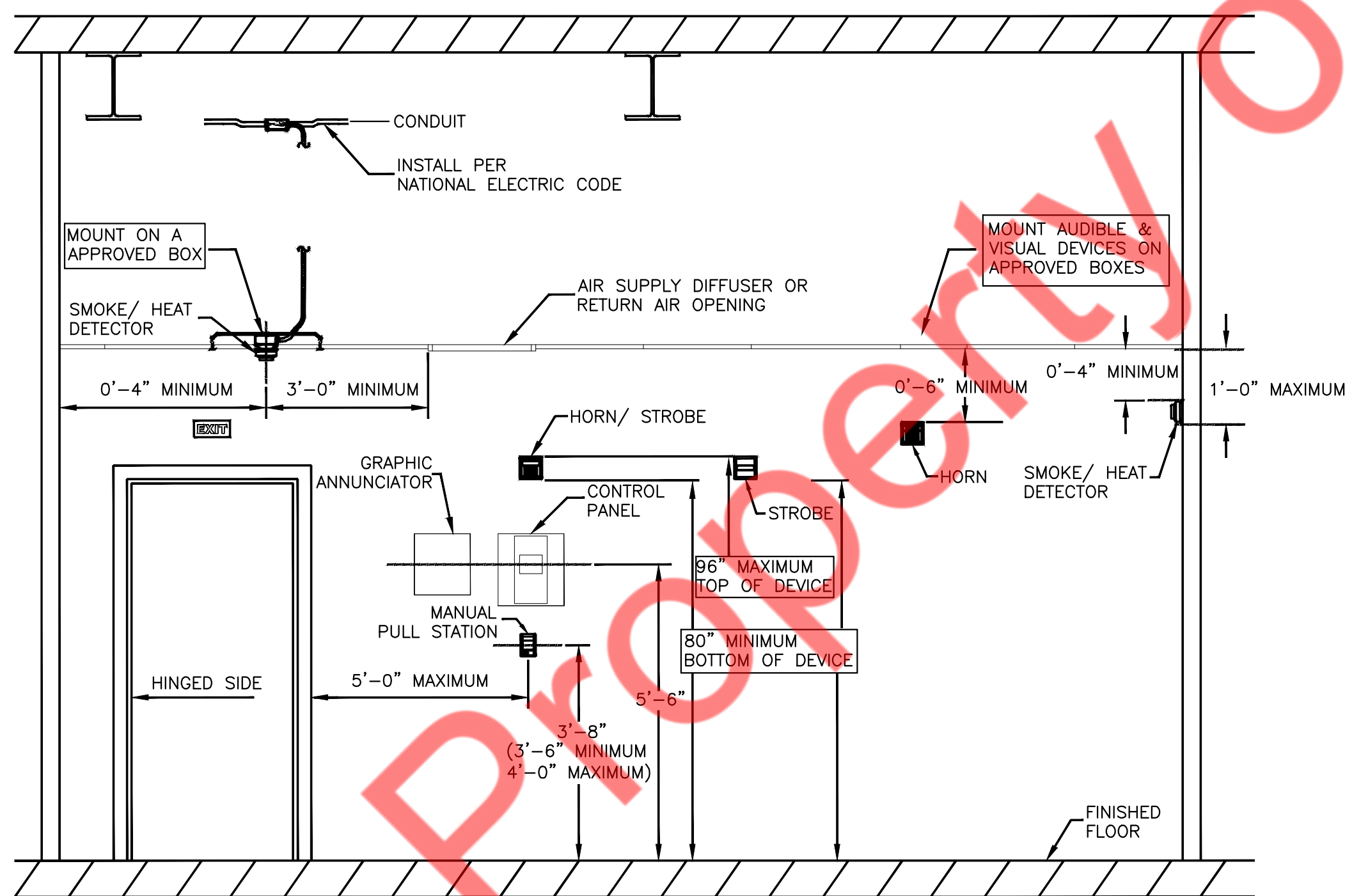
- PROVIDE A COMPLETE OPERABLE FIRE ALARM SYSTEM AS SHOWN ON THE DRAWINGS AND AS REQUIRED BY STATE AND LOCAL CODES.
- ALL FIRE ALARM SYSTEM CABLES SHALL BE INSTALLED IN CONDUIT. SIZE AS REQUIRED BY THE EQUIPMENT SUPPLIER. PROVIDE A SUBMITTAL OF ALL DEVICES AND A RISER DIAGRAM FOR APPROVAL BEFORE INSTALLATION OF ANY EQUIPMENT.

**3.2 CLEAN UP**

- DURING CONSTRUCTION, KEEP THE SITE CLEAN OF DEBRIS. UPON COMPLETION, AND BEFORE FINAL INSPECTION, CLEAN UP THE PREMISES TO REMOVE ALL EVIDENCE OF WORK. IN ADDITION UPON COMPLETION OF CONSTRUCTION LEAVE EQUIPMENT CLEAN.

**3.3 GUARANTEE**

- GUARANTEE ALL MATERIALS AND LABOR INCLUDED IN THE FIRE ALARM WORK FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY THE OWNER. ANY PART OR PARTS OF THE WORK OR EQUIPMENT WHICH PROVE TO BE DEFECTIVE DURING THE GUARANTEE PERIOD SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.



TYPICAL DEVICE MOUNTING DETAIL  
N.T.S

ABBREVIATIONS	
AFF	ABOVE FINISHED FLOOR
C	CONDUIT
E	EXISTING
EL	EXISTING TO BE LOWERED
ELV	ELEVATOR LOBBY
EMT	ELECTRIC METALLIC TUBING
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FDS	FUSED DISCONNECT SWITCH
G	GROUND
N	NEW
NE	NEW TO REPLACE EXISTING
NTS	NOT TO SCALE
R	REMOVE
RE	RELOCATED EXISTING
RGS	RIGID GALVANIZED STEEL
RP	RELOCATED POSITION
UON	UNLESS OTHERWISE NOTED
W	WIRE

FIRE ALARM DRAWING LIST	
F1.0	FIRE ALARM PLAN NOTES AND SPECIFICATIONS
F2.0	FIRE ALARM PLAN AND RISER DIAGRAM

ISSUE	DESCRIPTION	DATE

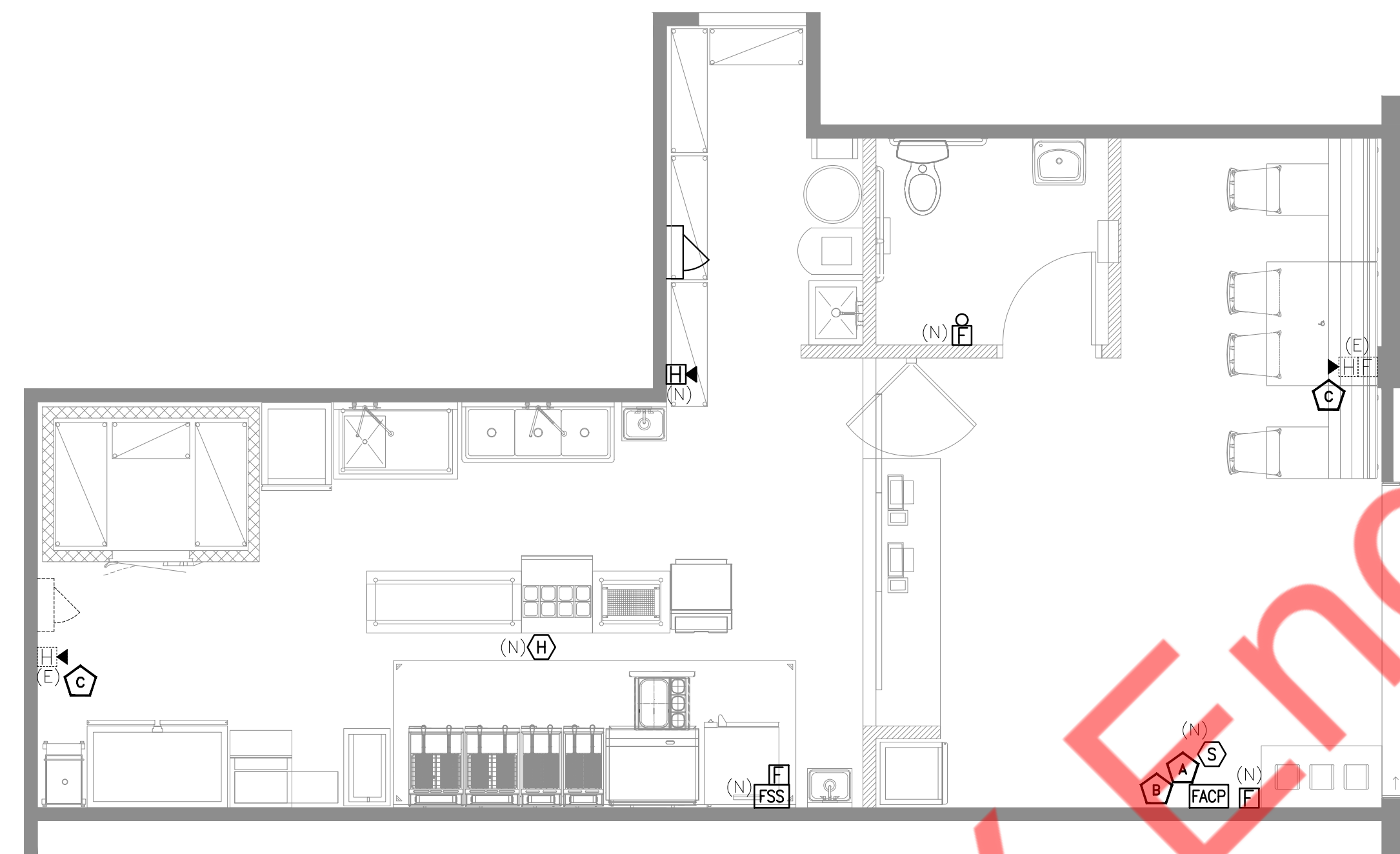
**PROJECT INFORMATION:**  
**UNCLE WILLIE'S WINGS**

DATE: \_\_\_\_\_  
PROJECT NO.: \_\_\_\_\_  
DRAWN BY: NYE  
CHECKED BY: NYE  
SCALE: AS NOTED

DRAWING TITLE:  
**FIRE ALARM PLAN NOTES AND SPECIFICATIONS**

DRAWING NO.:  
**F1.0**



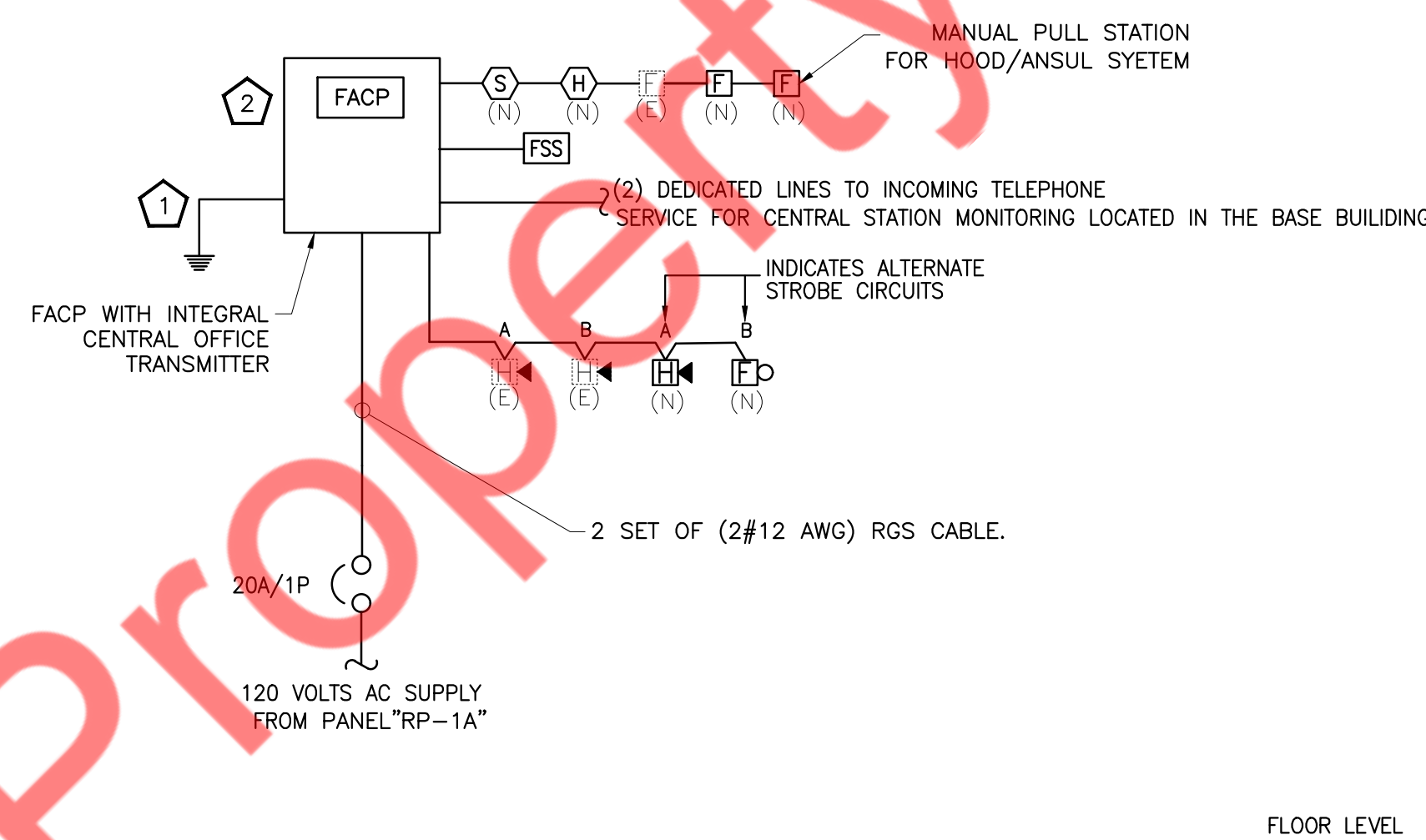


SYMBOL	DESCRIPTION
[D]	STROBE LIGHT DEVICE, WALL MOUNTED (80" AFF)
[H]	WALL MOUNTED HORN/STROBE COMBINATION DEVICE (80" AFF)
[F]	FIRE ALARM MANUAL PULL STATION, WALL MOUNTED (48" AFF)
(S)	CEILING MOUNTED AREA SMOKE DETECTOR
(H)	CEILING MOUNTED HEAT DETECTOR
[FSS]	FIRE SUPPRESSION SYSTEM
[FACP]	FIRE ALARM CONTROL PANEL

**FIRE ALARM PLAN KEYED WORK NOTES:**

- A** E.C. TO COORDINATE WITH LOCAL FIRE OFFICIAL AND FACILITY MANAGER FOR LOCATION OF FACP. FACP SHALL BE LOCATED AS PER THE DIRECTION FROM THE AUTHORITY HAVING JURISDICTION (AHJ) AND LOCAL FIRE DEPARTMENT.
- B** TENANT REQUIRED TO PROVIDE NEW FIRE ALARM PANEL FOR SPACE AND CONNECT TO GATEWAY 1 FIRE ALARM SYSTEM
- C** CONTRACTOR TO COORDINATE WITH ARCHITECT/OWNER FOR EXACT LOCATION OF EXISTING FIRE ALARM DEVICES. REPLACE IF FOUND INOPERABLE.

**A FIRE ALARM PLAN - CONCOURSE LEVEL**  
1/4"=1'-0"



**FIRE ALARM RISER NOTES:**

1. ALL COMPONENTS REQUIRED TO MAKE SYSTEM WORKABLE SHALL BE INCLUDED IN BID PRICE.
2. EACH FA RELAY SHALL HAVE MINIMUM OF THREE SETS OF 2 CONTACT 10A RATED @ 120V (TYPICAL).
3. COORDINATE WIRING DIAGRAM WITH FIRE ALARM VENDOR SHOP DRAWINGS. FOR STROBES MAXIMUM CURRENT PER ZONE SHALL NOT EXCEED 1.5A. ZONES FOR STROBES & STROBE/HORNS AS PER FIRE ALARM VENDOR SHOP DRAWINGS (TYPICAL).
4. ALL FIRE ALARM WIRING SHALL BE INSTALLED IN CONDUIT WHERE REQUIRED BY AHJ.
5. THIS RISER DIAGRAM IS A SCHEMATIC REPRESENTATION OF THE FIRE ALARM SYSTEM. ALL WIRING SHALL BE AS PER APPROVED MANUFACTURER SHOP DRAWINGS.
6. EACH FIRE ALARM INDICATING DEVICES CIRCUIT TO HAVE A MAXIMUM OF 14 DEVICES PER CIRCUIT. CONTRACTOR TO SUPPLY REQUIRING NUMBER OF INDICATING CIRCUIT TO PROVIDE REDUNDANT CIRCUITING (A,B) SCHEME.
7. ALL FIRE ALARM CONDUITS SHALL BE MINIMUM 3/4".
8. ALL WATER FLOW AND TAMPER SWITCH DEVICES SHALL BE CONNECTED TO FIRE ALARM CONTROL PANEL (FACP). COORDINATE EXACT LOCATION AND QUANTITIES WITH FIRE PROTECTION CONTRACTOR.

**KEYED WORK NOTES:**

- 1** THE FIRE ALARM CONTROL PANEL CABINET SHALL BE GROUNDED SECURELY TO EITHER A COLD WATER PIPE OR A GROUNDING ROD.
- 2** TENANT REQUIRED TO PROVIDE NEW FIRE ALARM PANEL FOR SPACE AND CONNECT TO GATEWAY 1 FIRE ALARM SYSTEM.

**B FIRE ALARM SYSTEM RISER DIAGRAM**  
1/4"=1'-0"

ISSUE	DESCRIPTION	DATE

**PROJECT INFORMATION:**  
**UNCLE WILLIE'S WINGS**

DATE: \_\_\_\_\_  
PROJECT NO.: \_\_\_\_\_  
DRAWN BY: NYE  
CHECKED BY: NYE  
SCALE: AS NOTED

**DRAWING TITLE:**  
**FIRE ALARM PLAN AND RISER DIAGRAM**

**DRAWING NO.:**  
**F2.0**

**SPRINKLER GENERAL NOTES**

- ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13-2016 AND ALL LOCAL AUTHORITIES.
- ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
- ALL SPRINKLER HEADS SHALL BE INSTALLED AT CENTER OF TILE IF CEILING IS PROVIDED.
- GENERAL CONTRACTOR SHALL COORDINATE FINAL FURNITURE/EQUIPMENT HEIGHT ELEVATIONS AND LOCATIONS WITH SPRINKLER INSTALLATION. ENGINEER SHALL BE NOTIFIED WHEN FURNITURE/EQUIPMENT IS LESS THAN 18" TO UNDERSIDE OF CEILING.
- THE SPRINKLER SYSTEMS ARE TO BE HYDROSTATIC TESTED FOR A (1) HOUR MINIMUM AT 200 PSI. PRESSURE AND ARE TO BE WITNESSED BY AUTHORIZED BUILDING PERSONNEL. COORDINATE ALL TESTING WITH BUILDING MANAGER.
- PIPES SIZES SHOWN ARE BASED ON DESIGN PIPING LAYOUTS ONLY. ACTUAL PIPE SIZES SHALL BE DETERMINED BY CONTRACTORS HYDRAULIC CALCULATIONS BASED ON HIS INSTALLATION DRAWINGS. CONTRACTOR SHALL ALLOW FOR THIS AND INCLUDE THIS IN HIS CONTRACT PRICE.
- DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
- G.C. SHALL BE RESPONSIBLE FOR ALL FINAL TESTS AND INSPECTIONS OF COMPLETED WORK REQUIRED BY THE BUILDING MANAGEMENT PRIOR TO OCCUPANCY OF SPACE.
- ALL SPRINKLER WORK SHALL BE TESTED AND MADE OPERATIONAL PRIOR TO CARPET AND FURNITURE INSTALLATION. G.C. SHALL REPAIR AND/OR REPLACE ALL FINISHES DAMAGED BY DEFECTIVE SPRINKLER WORK AT HIS EXPENSE.
- ALL BURNING, CUTTING, SOLDERING AND WELDING SHALL BE COORDINATED WITH BUILDING FIRE SYSTEMS WITH BUILDING MANAGEMENT, AS REQUIRED.
- G.C. SHALL BE RESPONSIBLE FOR OBTAINING PERMITS AND APPROVALS REQUIRED BY BUILDING INSPECTOR AND FIRE MARSHALL IN CONJUNCTION WITH CHANGES TO EXISTING SPRINKLER SYSTEM.
- REFER TO ENGINEERING DRAWINGS FOR SPRINKLER HEADS, LIGHT SENSORS AND FIRE DETECTION DEVICES.
- ALL WORK TO BE DONE DURING THE HOURS DESIGNATED BY OWNER.
- UPON COMPLETION OF ALL SPRINKLER WORK, CONTRACTOR SHALL TEST AND INSPECT ENTIRE SPRINKLER SYSTEM. ENTIRE SYSTEM SHALL BE FULLY OPERATIONAL AND APPROVED IN COMPLIANCE WITH ALL AHJ.
- UPON SUCCESSFUL COMPLETION OF ALL TESTING, CONTRACTOR SHALL PRIME AND PAINT ALL EXPOSED SPRINKLER PIPING. COLOR AND FINISH SHALL BE AS PER ARCHITECT.
- CONTRACTOR SHALL INCLUDE IN HIS BID THE COST TO PROVIDE (5) FIVE ADDITIONAL SPRINKLERS INSTALLED. EXACT LOCATIONS OF THESE SPRINKLER HEADS SHALL BE DETERMINED IN FIELD.
- FOR SPRINKLER WORK DONE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.-13-2016, HYDROSTATIC TESTS IN ACCORDANCE WITH REFERENCE STANDARD NFPA 13-2016, AS MODIFIED FOR CITY OF NEWARK, NEW JERSEY, ARE NECESSARY.
- CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND SHALL INSTALL NEW WORK TO CLEAR DUCTWORK AND LIGHTING FIXTURES.
- ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
- DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
- PIPES SIZES SHOWN ARE BASED ON SCHEDULE OF PIPE SIZE PIPING LAYOUTS ONLY. ACTUAL PIPE SIZES SHALL BE DETERMINED BY CONTRACTORS HYDRAULIC CALCULATIONS BASED ON HIS INSTALLATION DRAWINGS. CONTRACTOR SHALL ALLOW FOR THIS AND INCLUDE THIS IN HIS CONTRACT PRICE.
- PROVIDE AUXILIARY DRAINS AT TRAPPED SECTIONS OF PIPING AS REQUIRED BY NFPA.
- GENERAL CONTRACTOR SHALL COORDINATE FINAL FURNITURE/ EQUIPMENT HEIGHT ELEVATIONS AND LOCATIONS WITH SPRINKLER INSTALLATION. ENGINEER SHALL BE NOTIFIED WHEN FURNITURE/EQUIPMENT IS LESS THAN 18" TO UNDERSIDE OF CEILING PRIOR TO INSTALLATION.
- COMPOSITE DRAWINGS  
CONTRACTOR SHALL BE GIVEN A SEPIA TRANSPARENCIES TO IMPOSE THEIR WORK FOR A COORDINATED ALLOCATION OF SPACE. PROCEDURE SHALL INCLUDE HVAC CONTRACTOR TO INDICATE DUCT WORK, PIPING, STRUCTURAL AND ARCHITECTURAL DETAILS. SEPIAS SHALL BE GIVEN TO PLUMBING, SPRINKLER AND ELECTRICAL TRADES WHO WILL DRAW HIS WORK ON DRAWINGS. HVAC CONTRACTORS SHALL HOLD A COORDINATION MEETING WITH ALL CONTRACTORS TO ELIMINATE INTERFERENCE OR CONFLICTS IN INSTALLING WORK. IF UNABLE TO EACH AGREEMENT ISSUE, ARCHITECT SHALL MAKE BINDING DECISION.
- CONTRACTOR SHALL COORDINATE SPRINKLER MAIN AND BRANCHES WITH NEW CONSTRUCTION TO AVOID CONFLICTS WITH CEILING HEIGHTS, DUCTWORK, LIGHTING FIXTURES, BEAMS. CONTRACTOR TO ADJUST PIPING ACCORDINGLY TO ACCOMMODATE NEW CONSTRUCTION.

**BUILDING DEPARTMENT SPRINKLER NOTES**

- THE INSTALLATION, COMPONENTS, SIZING, SPACING, CLEARANCES, POSITION AND TYPE OF SYSTEMS SHALL CONFORM TO THE 2018 INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION SECTION 903.
- ONLY APPROVED MATERIALS SHALL BE USED AS PER INTERNATIONAL FIRE CODE 2018 EDITION SECTION 104.7.
- DIRECT CONNECTION OF SPRINKLERS TO THE PUBLIC WATER SYSTEM SHALL CONFORM TO 2018 INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION SECTION 903.3.5
- SPRINKLER SHALL BE PROTECTED AGAINST FREEZING AND INJURY AS PER NFPA 13-2016 SEC. 8.16.4
- THE OCCUPANCY OF THE AREAS TO BE SPRINKLERED IN ACCORDANCE WITH 2018 INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION SECTION 903.2
- PIPING, FITTINGS, SPECIFICATIONS, PIPE SCHEDULES, SYSTEM TEST PIPES, PROTECTION AGAINST CORROSION, DAMAGE, VALVES, HANGERS, SPRINKLERS GUARDS AND SHIELDS SHALL BE AS PER WITH 2018 INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION, SECTION 903.2
- STOCK OF EXTRA SPRINKLERS WILL BE FURNISHED AS PER NFPA 13-2016 SECTION 6.2.9 (REQUIRED FOR EACH TEMPERATURE RATING).
- SPRINKLER ALARM SHALL BE IN ACCORDANCE WITH 2018 INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION, SECTION 907.
- SPACING, LOCATION AND POSITION OF SPRINKLER WILL BE AS PER 2018 INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION, SECTION 903.3
- ALL BLIND SPACES EXCEEDING 6" IN WIDTH OR DEPTH WHICH CONTAIN COMBUSTIBLE MATERIAL WILL BE SPRINKLERED.
- ALL PIPE PASSING THROUGH WALLS WILL COMPLY WITH SECTION 2018 INTERNATIONAL BUILDING CODE NEW JERSEY EDITION SECTION 714.
- THERE IS NO HIGH PILED STORAGE AS DEFINED IN INTERNATIONAL FIRE CODE 2018 SECTION 3201
- DISTANCE OF SPRINKLERS FROM HEAT SOURCE SHALL BE AS PER NFPA 13-2016 SECTION 8.3.2.5
- ALL PIPES PASSING THROUGH FOUNDATION WALLS SHALL BE PROTECTED AS PROVIDED BY SECTION 2.9.1 OF 2018 NATIONAL STANDARD PLUMBING CODE.
- THIS APPLICATION IS NOT FILED AS A RESULT OF ACTION BY THE FIRE COMMISSIONER AS AUTHORIZED BY BS & A TO MODIFY THE CERTIFICATE OF OCCUPANCY NOR IS SUCH ACTION PENDING.
- ALL VALVES SHALL BE IDENTIFIED AS REQUIRED BY NFPA 13 SECTION 6.6.
- A ONE PIECE REDUCING FITTING OF GOOD DESIGN SHOULD BE USED WHEREVER A CHANGE IS MADE IN THE SIZE OF PIPE, AS PER NFPA 13 SECTION 6.4.7.1
- ALL VALVES ON CONNECTIONS TO WATER SUPPLIES TO SPRINKLER SHALL BE APPROVED O.S. & Y. OR APPROVED INDICATOR TYPE.
- DRAIN VALVES AND TEST VALVES SHALL BE APPROVED TYPE AS PER NFPA-13-2016 SECTION 6.6.3
- HANGERS SHOULD BE SUPPORTED BY WROUGHT IRON U TYPE OR APPROVED ADJUSTABLE HANGERS. HANGERS SHALL BE OF THE TYPE APPROVED FOR USE WITH THE PIPE OR TUBE INVOLVED, AS PER NFPA-13 SECTION 9.1
- TEMPERATURE RATING SHALL COMPLY WITH NFPA-13-2016 SECTION 8.3.2
- 18" MINIMUM CLEARANCE TO BELOW SPRINKLER DEFLECTOR AS PER NFPA-13-2016 SECTION 8.5.6
- AUTOMATIC INTERLOCK CUTOFF SWITCH FOR VENTILATION WILL CONFORM TO CHAPTER 6 OF THE MECHANICAL CODE (APPLICABLE ONLY IF THERE IS AN AIR SYSTEM UTILIZING RECIRCULATED AIR AND REQUIRING A THERMOSTATIC DEVICE).
- MINIMUM BRANCH PIPE SIZE TO BE ONE INCH (1").
- THIS APPLICATION IS MADE ONLY FOR WORK INDICATED ON THE SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
- WET SPRINKLER SYSTEM SUBJECTED TO FREEZING SHOULD COMPLY WITH NFPA 13-2016 SEC. 8.16.4.
- INSPECTION AND TESTS OF SPRINKLERS SHALL BE CONDUCTED AS PER 2018 INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION, SECTION 901.

SPRINKLER DRAWING LIST	
SP0.1	SPRINKLER GENERAL NOTES, SYMBOLS, PLOT PLAN AND RISER DIAGRAM
SP0.2	SPRINKLER NOTES & SPECIFICATIONS
SP1.0	SPRINKLER FLOOR PLAN
SP5.0	SPRINKLER DETAILS

SPACING BETWEEN SPRINKLER HEADS	
LIGHT HAZARD:	15' MAX.
ORDINARY HAZARD:	11.6' MAX
NOTE: MAXIMUM DISTANCE BETWEEN SPRINKLER HEADS & WALLS IS ½ THE DISTANCE BETWEEN HEADS.	

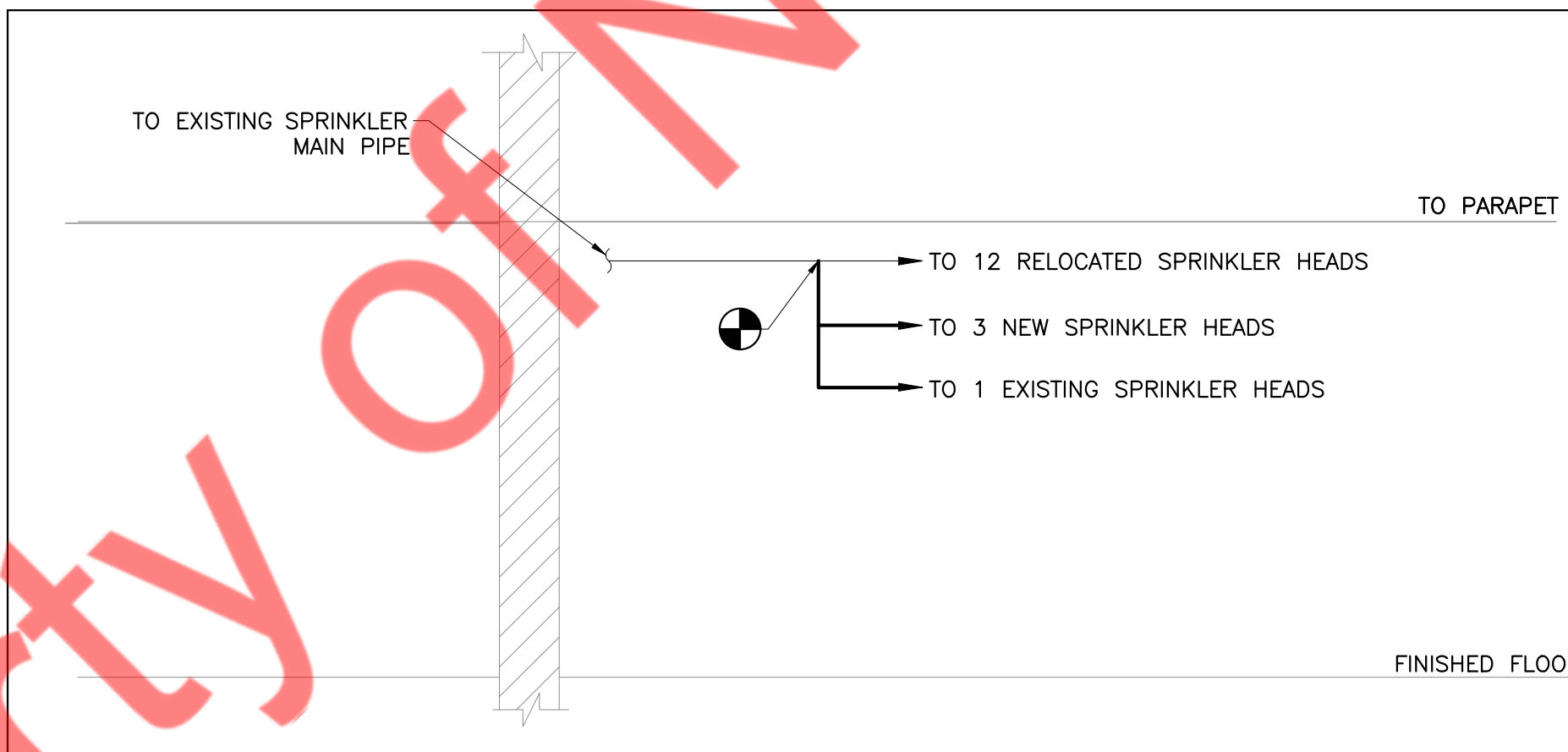
PROTECTION AREA OF SPRINKLER HEADS	
LIGHT HAZARD :	225 SQ. FT.
ORDINARY HAZARD :	130 SQ. FT.

DESIGN CRITERIA SUMMARY:	
HYDRAULIC CALCULATIONS FOR RESTAURANT SERVING AREA BASED ON THE FOLLOWING:	
OCCUPANCY:	ORDINARY I
MINIMUM DESIGN DENSITY:	0.15 GPM/SQ. FT.
DESIGN AREA OF APPLICATION:	1500 SQ. FT.
OCCUPANCY:	LIGHT
MINIMUM DESIGN DENSITY:	0.1 GPM/SQ. FT.
DESIGN AREA OF APPLICATION:	1500 SQ. FT.

GENERAL NOTES:	
1.	FOR SPRINKLER WORK ONLY.
2.	ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.

**SPRINKLER LEGEND**

- EX.SP — EXISTING SPRINKLER PIPING TO REMAIN
- SP — NEW SPRINKLER PIPING
- (N) NEW CONCEALED SPRINKLER HEAD
- (E) EXISTING UPRIGHT SPRINKLER HEAD
- (D) DRY PENDENT SPRINKLER HEAD
- SPRINKLER CAPPED OUTLET
- ⊙ SPRINKLER PIPING POINT OF CONNECTION
- ⊙ SPRINKLER PIPING POINT OF DISCONNECTION
- ⊥ PIPE THRU RATED WALL
- ⊗ EXISTING SPRINKLER VALVE
- ⊕ EXISTING DRAIN VALVE
- ⊗(REL) (N) DISCONNECT AND REMOVE EXISTING UPRIGHT SPRINKLER HEAD WITH BRANCH PIPING AND CAP (TYP.). CONNECT NEW CONCEALED SPRINKLER HEAD WITH BRANCH PIPING AND EXTEND TO NEW LOCATION AS SHOWN ON FLOOR PLAN



**SPRINKLER RISER DIAGRAM**

SPRINKLER SCHEDULE										
SYMBOL	NAME	COVERAGE	AREA	METAL	TEMPERATURE (°F)	K-FACTOR	NPT	MFG	MODEL#	APPROVALS
●	CONCEALED	STANDARD	LH/OH AREAS WITH CEILING	BRASS	155	5.6	½"	TYCO	SERIES RF-II TY3531	UL/FM
○(D)	DRY PENDANT	STANDARD	WALK IN FREEZER/COOLER	BRASS	155	5.6	1"	TYCO	SERIES DS-1 TY3255	UL/FM
○	UPRIGHT	STANDARD	LH/OH OPEN AREAS	BRASS	165	5.6	½"	TYCO	SERIES TY-FRL TY3121	UL/FM

- NOTE: 1. COORDINATE ALL SPRINKLER COLOR FINISHES WITH ARCHITECT.  
2. ALL SPRINKLER SHOULD BE MEA APPROVED

ISSUE	DESCRIPTION	DATE

PROJECT INFORMATION:	
<b>UNCLE WILLIE'S WINGS</b>	

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DATE:	
PROJECT NO.:	
DRAWN BY:	NYE
CHECKED BY:	NYE
SCALE:	AS NOTED

DRAWING TITLE:	SPRINKLER GENERAL NOTES, SYMBOLS, PLOT PLAN AND RISER DIAGRAM
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DRAWING NO.:	<b>SP0.1</b>
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**SPRINKLER SPECIFICATIONS**

PART 1 – GENERAL

1.01 REQUIREMENTS

- A. THE SPRINKLER CONTRACTOR SHALL BE A LICENSED, AUTHORIZED INSTALLER OF SPRINKLER SYSTEMS AND SHALL HAVE HAD A MINIMUM OF FIVE YEARS EXPERIENCE IN THE INSTALLATION OF SPRINKLER SYSTEMS IN THE CITY OF NEWARK, NJ.
- B. BEFORE SUBMITTING HIS BID, THE SPRINKLER CONTRACTOR SHALL VISIT THE SITE AND SHALL FULLY FAMILIARIZE HIMSELF WITH, AND BECOME FAMILIAR WITH THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. CONTRACTOR SHALL PERFORM THIS PRIOR TO SUBMITTING HIS PROPOSAL. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
- C. UPON REVIEW OF THE DRAWINGS AND SPECIFICATIONS, PRIOR TO SUBMITTING HIS PROPOSAL, THE SPRINKLER CONTRACTOR SHALL INFORM ARCHITECT AND/OR ENGINEER OF ANY DISCREPANCIES OR REQUEST CLARIFICATION IN WRITING, IF NECESSARY, CONCERNING THE INTENT OF THE PLANS AND SPECIFICATIONS TO PROVIDE A COMPLETE SPRINKLER SYSTEM INSTALLATION. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OF MATERIALS SHOULD SUCH PROCEDURE NOT BE FOLLOWED.
- D. THE SCHEDULING OF THE SPRINKLER WORK SHALL BE COORDINATED WITH BUILDING MANAGEMENT, WITH OTHER CONTRACTORS AND WITH THE ENGINEER.
- E. NECESSARY SHUT-DOWNS OF BASE BUILDING SPRINKLER SYSTEM MUST BE COORDINATED WITH BUILDING MANAGEMENT. SHUT-DOWNS OF BASE BUILDING SYSTEMS SHALL TAKE PLACE AFTER OR BEFORE NORMAL BUSINESS HOURS AND SHALL BE CONSIDERED OVERTIME WORK. THE CONTRACTOR MUST GIVE BUILDING MANAGEMENT AND CITY OF NEWARK FIRE DEPARTMENT 48 HOURS NOTICE PRIOR TO SHUT-DOWN OF SPRINKLER, OR OTHER SYSTEMS.

1.02 WORK INCLUDED

- A. WORK SHALL INCLUDE ALL SPRINKLER WORK FURNISHED AND INSTALLED AS INDICATED ON THE PLANS AND AS SPECIFIED HEREIN.
  - 1. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE 2018 INTERNATIONAL BUILDING CODE NEW JERSEY EDITION, N.F.P.A. STANDARD 13-2016, INTERNATIONAL FIRE CODE 2015, CITY OF NEWARK FIRE DEPARTMENT AND OWNERS INSURANCE RATING ORGANIZATION.
  - 2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION OF WORK. SCALED DIMENSIONS SHALL NOT BE USED. ANY DIMENSIONS NOT SHOWN SHALL BE OBTAINED FROM FIELD MEASUREMENTS.
  - 3. PROVIDE COMPUTER GENERATED HYDRAULIC CALCULATIONS IN ACCORDANCE WITH CITY OF NEWARK BUILDING DEPARTMENT AND NFPA STANDARDS.

1.03 SHOP DRAWINGS AND SUBMITTALS

- A. THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL, FULLY COORDINATED SHOP DRAWINGS, CAPACITY, DATA, AND CATALOG CUTS OF THE FOLLOWING:
  - 1. PIPE AND FITTINGS
  - 2. VALVES
  - 3. HANGERS AND SUPPORTS
  - 4. SPRINKLER PIPING LAYOUT
  - 5. TESTS
  - 6. SPRINKLER HEADS
  - 7. HYDRAULIC CALCULATIONS
  - 8. SIAMESE CONNECTION
- A. THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY DESIGNED. CONTRACTOR SHALL SUBMIT CALCULATIONS WITH SHOP DRAWINGS. CALCULATIONS SHALL BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS OF NFPA 13-2016, INTERNATIONAL FIRE CODE 2015, AND 2018 INTERNATIONAL BUILDING CODE NEW JERSEY EDITION.

1.04 BUILDING DEPARTMENT FILING, PERMITS AND CERTIFICATES

- A. THE SPRINKLER CONTRACTOR SHALL FILE ALL REQUIRED DRAWINGS AND HYDRAULIC CALCULATIONS WITH THE BUILDING DEPARTMENT AND BE RESPONSIBLE FOR OBTAINING FINAL APPROVAL.
- B. ARRANGE FOR INSPECTION AND TESTS OF ANY AND ALL PARTS OF THE WORK AS REQUIRED BY AUTHORITIES HAVING JURISDICTION AND PAY ALL CHARGES FOR SAME.

1.05 INSPECTION AND TESTING

- A. THE SPRINKLER SYSTEM SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2018 INTERNATIONAL BUILDING CODE NEW JERSEY EDITION FIRE DEPARTMENT INSPECTOR.
- B. THE SPRINKLER SYSTEM SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE TEST FOR A PERIOD OF TWO HOURS AT A PRESSURE OF AT LEAST 200 PSIG OR 50 PSI IN EXCESS OF THE MAXIMUM PRESSURE TO BE MAINTAINED WHEN THE MAXIMUM PRESSURE IN THE SYSTEM IS IN EXCESS OF 150 PSI AS PER NFPA.
- C. THE BUILDING DEPARTMENT SHALL BE NOTIFIED THAT THE SYSTEM IS READY FOR REINSPECTION AND TESTING. THE BUILDING DEPARTMENT INSPECTOR SHALL WITNESS THE TEST. FINAL APPROVAL OF THE SPRINKLER SYSTEM SHALL BE OBTAINED FROM BUILDING DEPARTMENT, AND FIRE DEPARTMENT.

PART 2 – MATERIALS

2.01 GENERAL

- A. THE SPRINKLER SYSTEM SHALL BE COMPLETE WITH ALL PIPE, FITTINGS, VALVES, DRAINAGE SYSTEM AND VALVES, HANGERS AND SUPPORTS, ALSO, MISCELLANEOUS WORK ITEMS, SUCH AS SIGNS AS REQUIRED, VALVE TAGS, ETC., AND ALL OTHER RELATED EQUIPMENT, APPARATUS AND MATERIAL ITEMS NECESSARY FOR COMPLETE, APPROVED TYPE SYSTEM, READY FOR FUTURE EXTENSION.
- B. ALL PIPE, FITTINGS, HANGERS, SUPPORTS, SPRINKLER HEADS, ETC., SHALL CONFORM TO THE 2018 INTERNATIONAL BUILDING CODE AND NATIONAL FIRE PROTECTION ASSOCIATION'S REQUIREMENTS AS TO TYPES OF MATERIALS, ARRANGEMENT, SIZES AND INSTALLATION. PIPING PENETRATING FIRE RATED

PARTITIONS SHALL HAVE OPENING SEALED WITH U.L. APPROVED FIREPROOF SEALANT.

2.02 SPRINKLER PIPING

- A. ALL SPRINKLER PIPING SHALL BE SCHEDULE 40, IN ACCORDANCE WITH NFPA 13-2016. PIPE SHALL BE UL/FM APPROVED.
- B. STEEL PIPE SHALL BE BETHLEHEM STEEL CO., ALLIED TUBE, BERGER INDUSTRIES OR APPROVED.
- C. AS PER NFPA 13-2016 PIPE OR TUBE USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS SPECIFIED IN TABLE 6.3.1.1 OR SHALL BE IN ACCORDANCE WITH 6.3.1.1.
- D. AS PER NFPA 13-2016, FITTINGS USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS LISTED IN TABLE 6.4.1 OR SHALL BE IN ACCORDANCE WITH 6.4.1. FITTING SHALL BE UL/FM APPROVED. CONTRACTOR.

2.03 CUTTING AND PATCHING

- 1. DO ALL CUTTING AND CORE DRILLING NECESSARY FOR THE INSTALLATION OF SPRINKLER WORK. ACCURATELY LAYOUT WORK FOR WHICH CUTTING IS REQUIRED. PATCH AND RESTORE ANY DAMAGE WORK TO LIKE NEW CONDITION.
- 2. FOR REPLACEMENT OF THE WORK REMOVED, MATCH EXISTING IN NATURE, CONSTRUCTION AND FINISH.
- 3. MAINTAIN THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL OR RUBBISH COVERED BY THE WORK. REMOVE ALL SURPLUS MATERIALS, TOOLS ETC. AND LEAVE PREMISES CLEAN.

2.04 FIRE STOPPING

INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURERS PUBLISHED DIRECTIONS AND PER FIRE TESTED DESIGNS THAT HAVE BEEN ACCEPTED BY THE APPROPRIATE CODE AUTHORITY HAVING JURISDICTION.

2.05 PHASING

PHASING SHALL BE COORDINATED BETWEEN THE SPRINKLER CONTRACTOR AND GENERAL CONTRACTOR. SPRINKLER INSTALLATION SHALL BE PHASED IN A MANNER WHICH WILL ALLOW FULL OCCUPANCY OF THE EXISTING FACILITY WHILE THE INSTALLATION IS IN PROGRESS.

2.06 ALTERNATES/SUBSTITUTIONS

CONTRACTOR SHALL STATE IN THEIR PROPOSAL ANY CONTRACTOR PROPOSED SUBSTITUTIONS OF THE MATERIALS OR METHODS OF INSTALLATION FROM THAT SPECIFIED. THESE ALTERATIONS SHALL BE LISTED ON THE PROPOSAL AS CONTRACTOR ALTERNATIVE.

2.07 LEAK DAMAGE

THE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE DURING THE INSTALLATION AND TESTING PERIODS OF THE SPRINKLER SYSTEM FOR ANY LOSS OR DAMAGE TO THE WORK OF OTHERS, TO THE BUILDING, ITS CONTENTS ETC. CAUSED BY LEAKS IN THE EQUIPMENT. BY UNPLUGGED OR DISCONNECTED PIPES, FITTINGS ETC. OR BY OVERFLOW, AND SHALL PAY FOR THE NECESSARY REPLACEMENTS OR REPAIRS TO THE WORK OF OTHERS, DAMAGED BY SUCH LEAKAGE.

2.08 INSERTS, HANGERS, ETC.

A. ALL SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED AND SHALL COMPLY WITH THE STANDARDS FOR THE NATIONAL FIRE PROTECTION ASSOCIATION FOR THE INSTALLATION OF SPRINKLER SYSTEMS AND AS REQUIRED BY THE 2018 INTERNATIONAL BUILDING CODE NEW JERSEY EDITION.

B. HANGERS AND THEIR COMPONENTS SHALL BE FERROUS. HANGERS SHALL BE ADJUSTABLE FLAT IRON TYPE OF CLEVIS TYPE.

C. SPRINKLER PIPING OR HANGERS SHALL NOT BE USED TO SUPPORT NON-SYSTEM COMPONENTS.

D. SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE WHICH MUST SUPPORT THE ADDED LOAD OF THE WATER-FILLED PIPE PLUS A MINIMUM OF 250 LBS. APPLIED AT THE POINT OF HANGING. CONTRACTOR SHALL SUBMIT DETAIL OF SUPPORT FOR REVIEW AND APPROVAL.

E. SPRINKLER PIPING SHALL BE SUPPORTED INDEPENDENTLY OF THE CEILING SHEATHING.

F. WHEN SPRINKLER PIPING IS INSTALLED BELOW DUCTWORK, PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE, NOT FROM THE DUCTWORK.

G. MAXIMUM DISTANCE BETWEEN HANGERS SHALL NOT EXCEED 12 FT. FOR 1 AND 1-1/4" SIZES NOR 15' FOR SIZES 1-1/2" AND LARGER.

H. EXPANSION SHIELDS FOR SUPPORTING PIPES UNDER CONCRETE CONSTRUCTION MAYBE USED IN A HORIZONTAL POSITION IN THE SIDES OF BEAMS. IN CONCRETE HAVING GRAVEL OR CRUSHED STONE AGGREGATE, EXPANSION SHIELDS MAY BE USED IN THE VERTICAL POSITION TO SUPPORT PIPES 4" OR LESS IN DIAMETER.

2.09 ESCUTCHEONS

PROVIDE ESCUTCHEONS ON ALL EXPOSED PIPING PASSING THROUGH WALLS, PARTITIONS, FLOORS AND CEILINGS. ESCUTCHEON SHALL BE HELD IN PLACE BY INTERNAL TENSION OR SET SCREW.

2.10 AS-BUILT DRAWINGS

PREPARE AND SUBMIT "AS BUILT" DRAWINGS AT THE COMPLETION OF THE PROJECT.

2.11 SPRINKLER HEADS

A. SPRINKLERS SHALL BE RATED FOR ORDINARY TEMPERATURES (135/165 DEG. F) EXCEPT AS REQUIRED NEAR HEATERS OR LOCATIONS WHERE ELEVATED

TEMPERATURES MAY NORMALLY BE EXPECTED OR AS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS.

B. SPRINKLER HEADS SHALL BE BY TYCO SPRINKLER CO., INC. MANUFACTURE OR APPROVED EQUAL, UL AND FM APPROVED, AS FOLLOWS:

- 1. SPRINKLER HEADS IN FINISHED CEILINGS WITH CONCEALED PIPING SHALL BE AUTOMATIC TYCO MODEL TY3531.
- 2. UPRIGHT SPRINKLER HEADS SHOULD BE AUTOMATIC TYCO MODEL TY3121.
- 3. DRY PENDENT SPRINKLER HEADS SHOULD BE AUTOMATIC TYCO MODEL TY3255.
- 4. PROVIDE SPARE SPRINKLER EMERGENCY CABINETS CONFORMING TO NFPA 13-2016.
- 5. SPRINKLER EMERGENCY CABINETS SHALL BE OF TYCO SPRINKLER CO., INC. OR APPROVED EQUAL, UL AND FM APPROVED.
- 6. CABINET SHALL BE CONSTRUCTED OF 22 GAUGE STEEL WITH PRIME COAT AND MANUFACTURER'S BAKED ENAMEL FINISH IN COLOR SELECTED BY THE ARCHITECT.
- 7. CABINET SHALL CONTAIN A MINIMUM OF 6 SPRINKLER HEADS OF EACH TYPE EMPLOYED.

2.12 PRESSURE GAUGE

A. ASHCROFT SERIES 1079, OR APPROVED OTHER, 4-1/2" DIAMETER, 0-200 P.S.I. RANGE, 20 P.S.I. INTERVALS.

PART 3 – EXECUTION

3.01 GUARANTEE

A. GUARANTEE FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER, ALL MATERIALS, APPARATUS AND WORKMANSHIP WHETHER FURNISHED BY HIMSELF OR BY HIS SUBCONTRACTORS AND HE SHALL REPLACE OR REPAIR IN A MANNER APPROVED BY THE ARCHITECTS, WITHOUT COST TO THE OWNER, ANY PART OR PARTS OF THE WORK WHICH MAY PROVE DEFECTIVE OR UNSATISFACTORY WITH IN THE PERIOD OF THE GUARANTEE.

3.02 INSTALLATION

A. PIPING

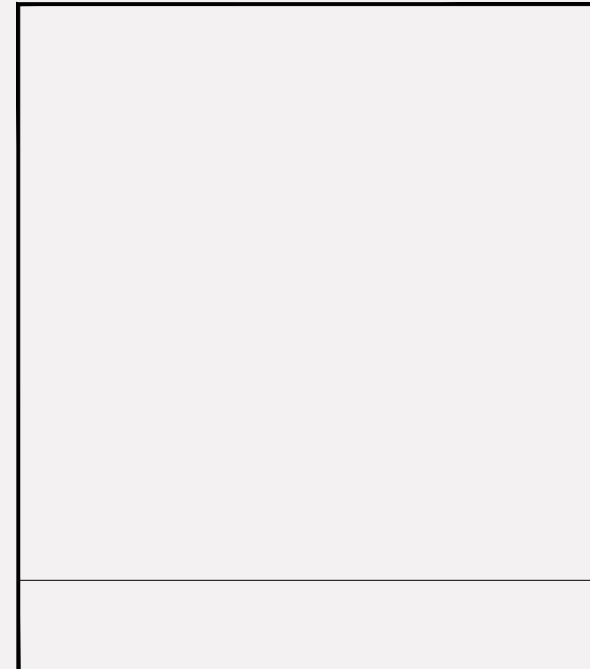
- 1. INSTALL PIPING AS SHOWN ON THE CONTRACT DRAWINGS AND STRAIGHT AND DIRECT AS POSSIBLE, FORMING RIGHT ANGLES OR PARALLEL LINES WITH BUILDING WALLS, NEATLY SPACED, WITH RISERS PLUMB AND TRUE.
- 2. SPRINKLER PIPING SHALL BE INSTALLED SO THAT THE SYSTEM CAN BE DRAINED.
- 3. PIPE SHALL BE REMOVED BY REAMING.
- 4. BEFORE INSTALLING PIPE, THOROUGHLY CLEAN THE INSIDE FREE OF CUTTING AND FOREIGN MATTER. CUT ALL PIPE SQUARE AND SMOOTH AND MAKE UP ALL JOINTS TO REQUIRED LIMITS.

B. PIPE JOINTS

- 1. THREADED JOINTS SHALL BE MADE UP OF TIGHT USING PIPE JOINT TEFLON COMPOUND OR TAPE, APPLIED ON THE MALE THREADS ONLY.

ISSUE	DESCRIPTION	DATE

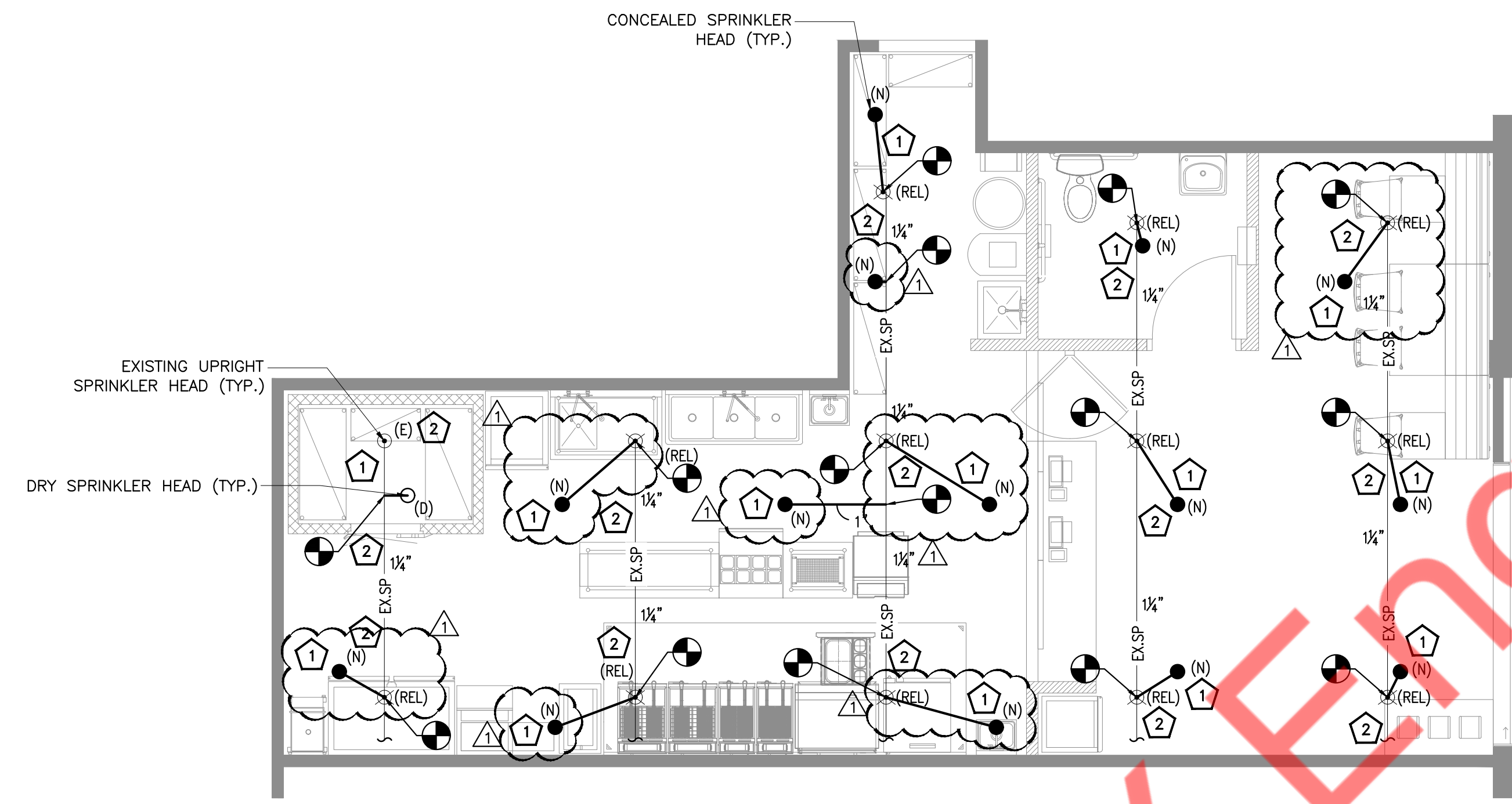
**PROJECT INFORMATION:**  
**UNCLE WILLIE'S WINGS**



DATE: 05/09/2022
PROJECT NO.: 2073-22
DRAWN BY: NYE
CHECKED BY: NYE
SCALE: AS NOTED

**DRAWING TITLE:**  
**SPRINKLER NOTES AND SPECIFICATIONS**

**DRAWING NO.:**  
**SP0.2**



**A** SPRINKLER FLOOR PLAN - CONCOURSE LEVEL  
1/4"=1'-0"

- GENERAL NOTES:**
- CONTRACTOR TO FIELD VERIFY TO INSTALL ALL SPRINKLER HEADS TO BE MAX. 12" FROM CEILING.
  - ALL NEW SPRINKLER HEADS LOCATION TO BE COORDINATED WITH LIGHTING AND DIFFUSERS TO AVOID CONFLICT.
  - ALL SPRINKLER HEADS & PIPING TO BE COORDINATED WITH EXISTING & NEW SERVICES.
  - ANY WORK SHOWN ON THE DRAWINGS AND NOT PARTICULARLY DESCRIBED IN THE SPECIFICATIONS OR DETAILS, OR ANY WORK WHICH MAY BE DEEMED NECESSARY TO COMPLETE THE CONTRACT SHALL BE PROVIDED BY THE CONTRACTOR AS PART OF THIS CONTRACT.
  - FOR PURPOSES OF CLEARNESS AND LEGIBILITY, SPRINKLER DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND SIZE AND LOCATION OF EQUIPMENT ARE DRAWN TO SCALE WHEREVER POSSIBLE. THE DRAWINGS INDICATE SIZE, CONNECTION POINTS, AND ROUTED OF PIPES. IT IS NOT INTENDED, HOWEVER, THAT ALL OFFSETS, RISES AND DROPS ARE SHOWN. PROVIDE PIPING AS REQUIRED TO FIT STRUCTURE, AVOID OBSTRUCTIONS, AND RETAIN CLEARANCES, HEADROOM OPENINGS AND PASSAGEWAYS. ALL SPRINKLER PIPING AT CEILING SHALL BE ROUTED TIGHT TO EXISTING SLAB AS REQUIRED.
  - CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION IF REQUIRED AS PER STRUCTURAL REQUIREMENT.
  - ALL SPRINKLER HEADS & PIPING TO BE COORDINATED WITH EXISTING & NEW SERVICES.
  - CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND SIZE OF EXISTING SYSTEM AND RELOCATE HEADS WHEREVER SHOWN.
  - ALL PENDANT SPRINKLERS MUST BE SPACED AS FOLLOWS -
    - MAXIMUM 7.5' FROM WALL
    - MAXIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 15'.
    - MINIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 6'.
    - COVERAGE AREA PER SPRINKLER SHALL BE MAX. 150 SQ.FT.
  - ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.
  - AUXILIARY DRAIN SHALL BE PROVIDED AT THE TRAPPED SECTIONS.
  - ALL EXISTING SPRINKLER SYSTEM AT THIS FLOOR TO BE DEMOLISHED UNLESS OTHERWISE NOTED.
  - FOR SPRINKLER WORK ONLY.

**SPRINKLER KEYNOTES**

- 1 ALL BRANCH TAKE-OFF FOR EACH SPRINKLER TO BE MIN. 1".
- 2 ALL EXISTING SPRINKLER PIPING AND EXISTING TO REMAIN SPRINKLER HEADS TO BE RAISED AT SUFFICIENT HEIGHT. COORDINATE WITH REFLECTED CEILING PLAN AND STRUCTURAL DRAWINGS FOR RAISING HEIGHT.

SPRINKLERS	
EXISTING UPRIGHT HEADS TO BE RELOCATED	12
NEW CONCEALED HEAD	02
DRY SPRINKLER HEAD	01
EXISTING UPRIGHT SPRINKLER HEAD	01
<b>TOTAL</b>	<b>16</b>

HAZARD CLASSIFICATION AND DESIGN DENSITY:	
AREA : KITCHEN AREA	
OCCUPANCY:	ORDINARY HAZARD
MINIMUM DESIGN DENSITY:	0.15 GPM/SQ. FT.
AREA : HALL AREA	
OCCUPANCY:	LIGHT HAZARD
MINIMUM DESIGN DENSITY:	0.1 GPM/SQ. FT.

ISSUE	DESCRIPTION	DATE
01	HVAC CHANGES	10/17/2022

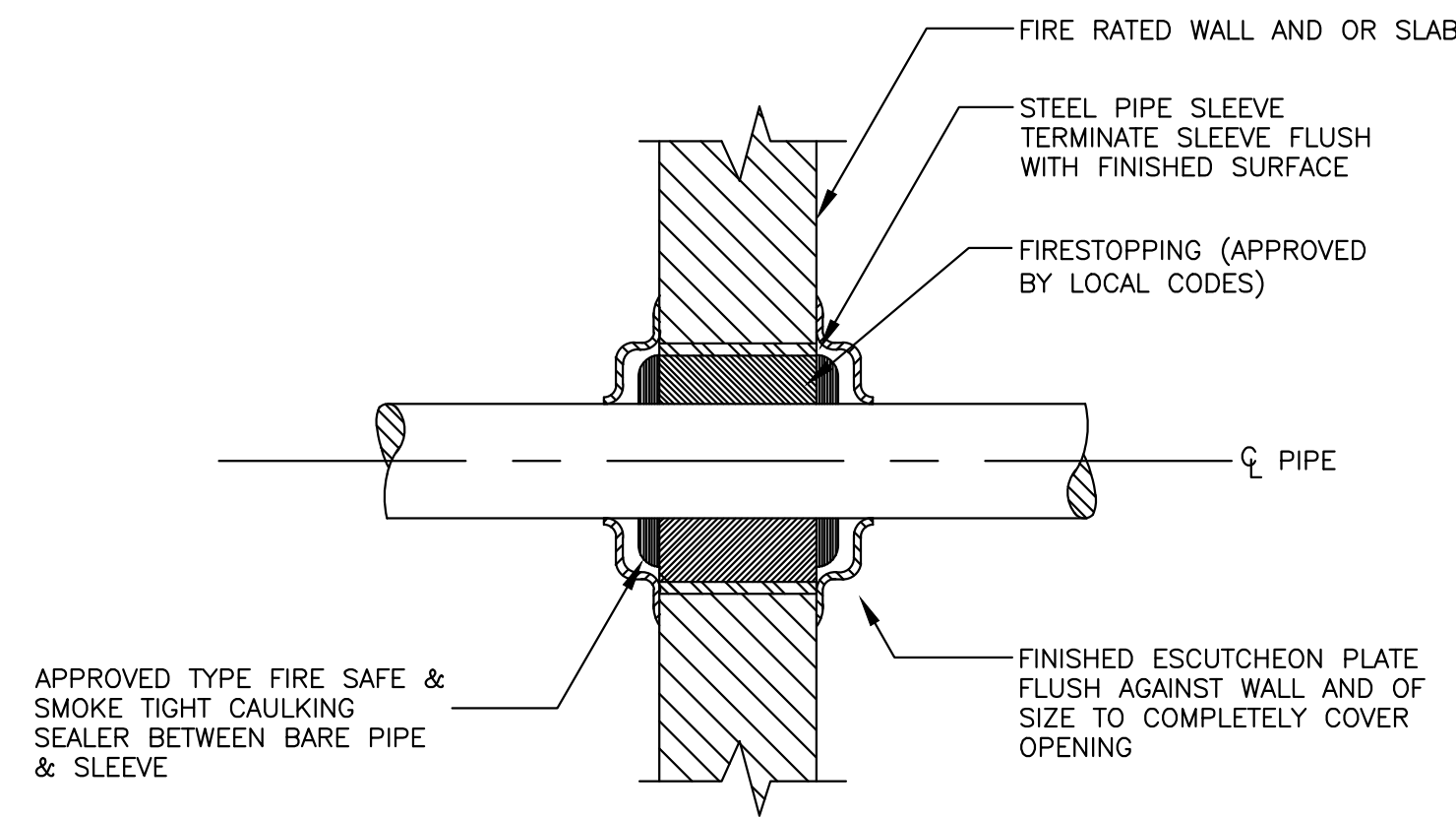
**PROJECT INFORMATION:**

**UNCLE WILLIE'S WINGS**

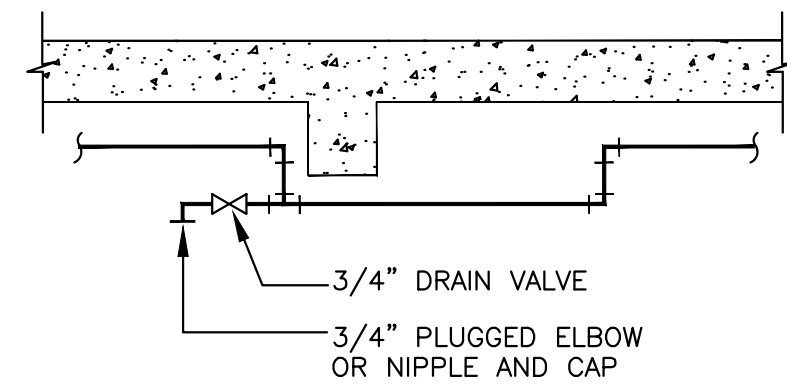
DATE: \_\_\_\_\_  
 PROJECT NO.: \_\_\_\_\_  
 DRAWN BY: NYE  
 CHECKED BY: NYE  
 SCALE: AS NOTED

DRAWING TITLE:  
 SPRINKLER FLOOR PLAN

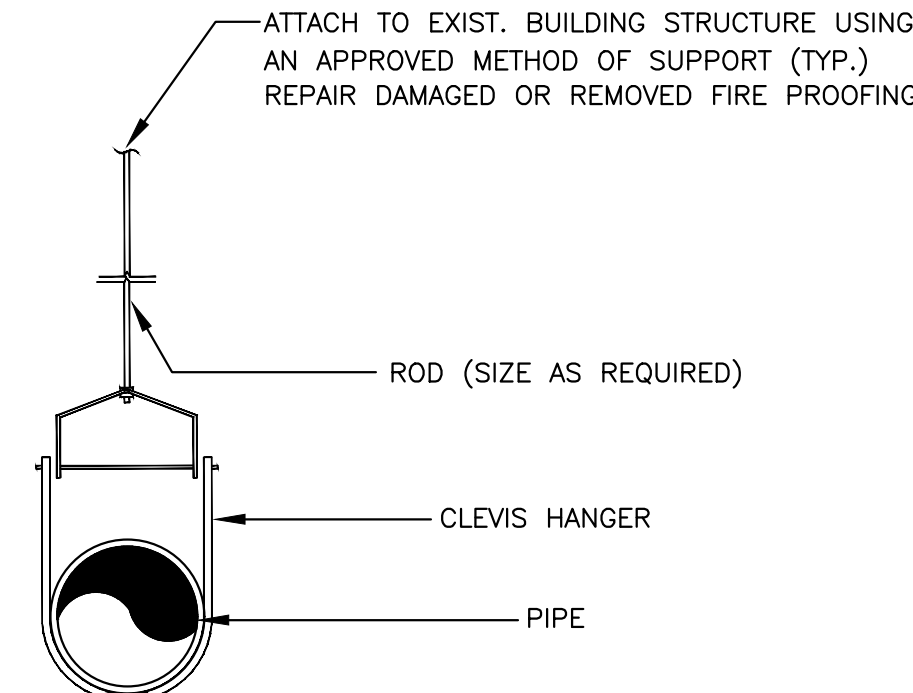
DRAWING NO.:  
**SP1.0**



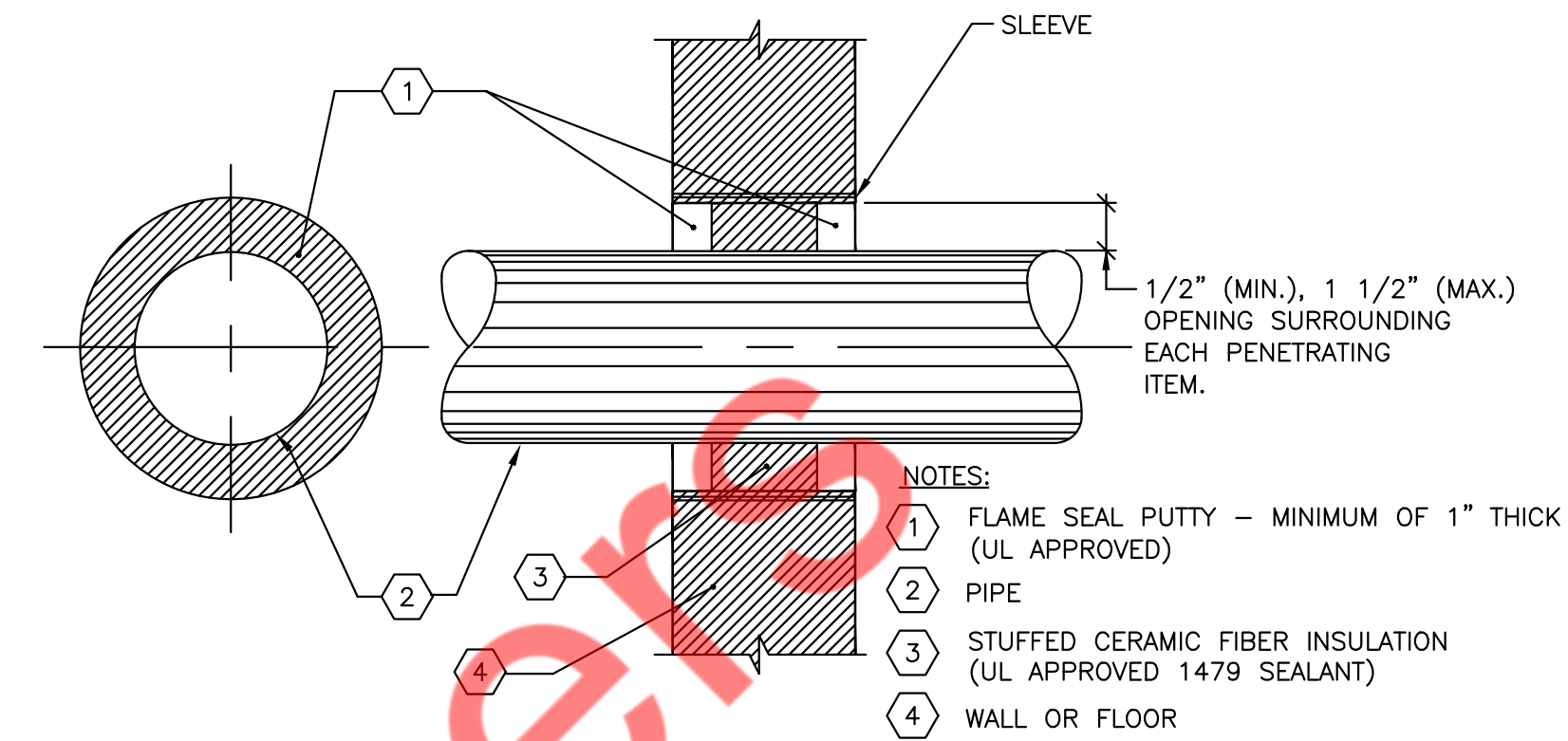
1 PIPE THRU RATED WALL TYPICAL DETAIL  
SP5.0 N.T.S



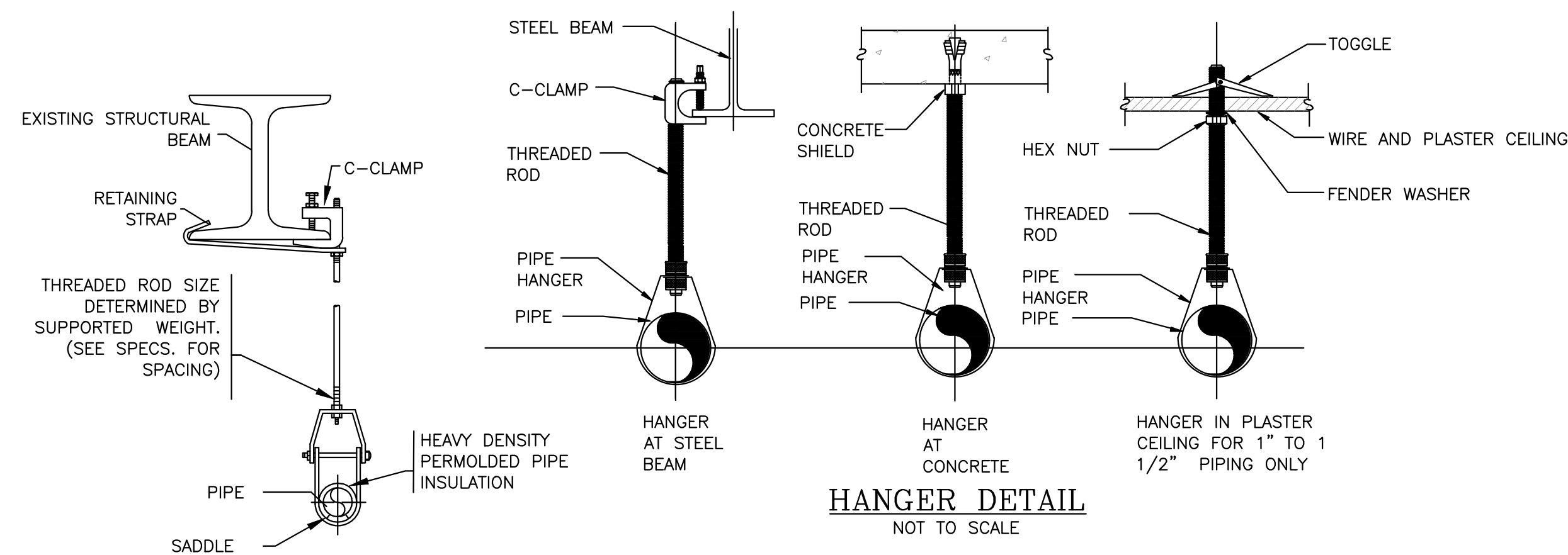
2 TYPICAL DRAIN CONNECTION FOR TRAPPED LINES ON WET PIPE SPRINKLER SYSTEMS  
SP5.0 N.T.S



3 HANGER DETAILS TYPICAL  
SP5.0 N.T.S

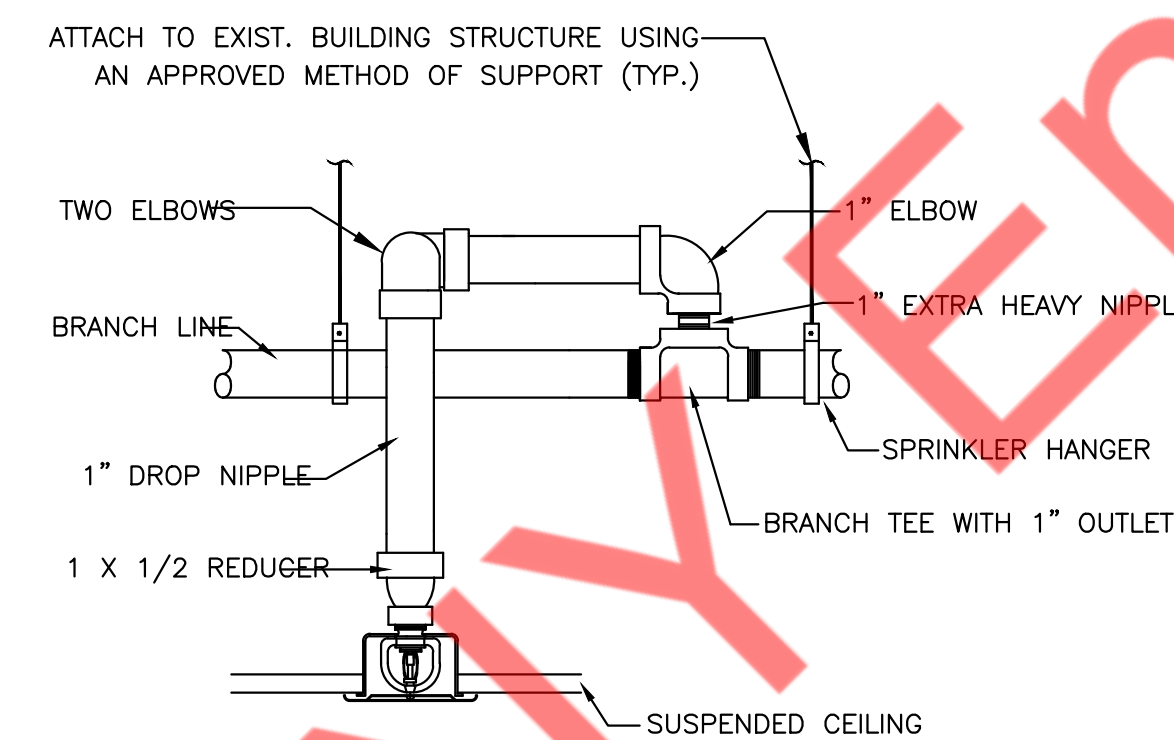


4 FIRE STOPPING DETAIL FOR FIRE/SMOKE RATED WALL/FLOOR OPENINGS  
SP5.0 N.T.S

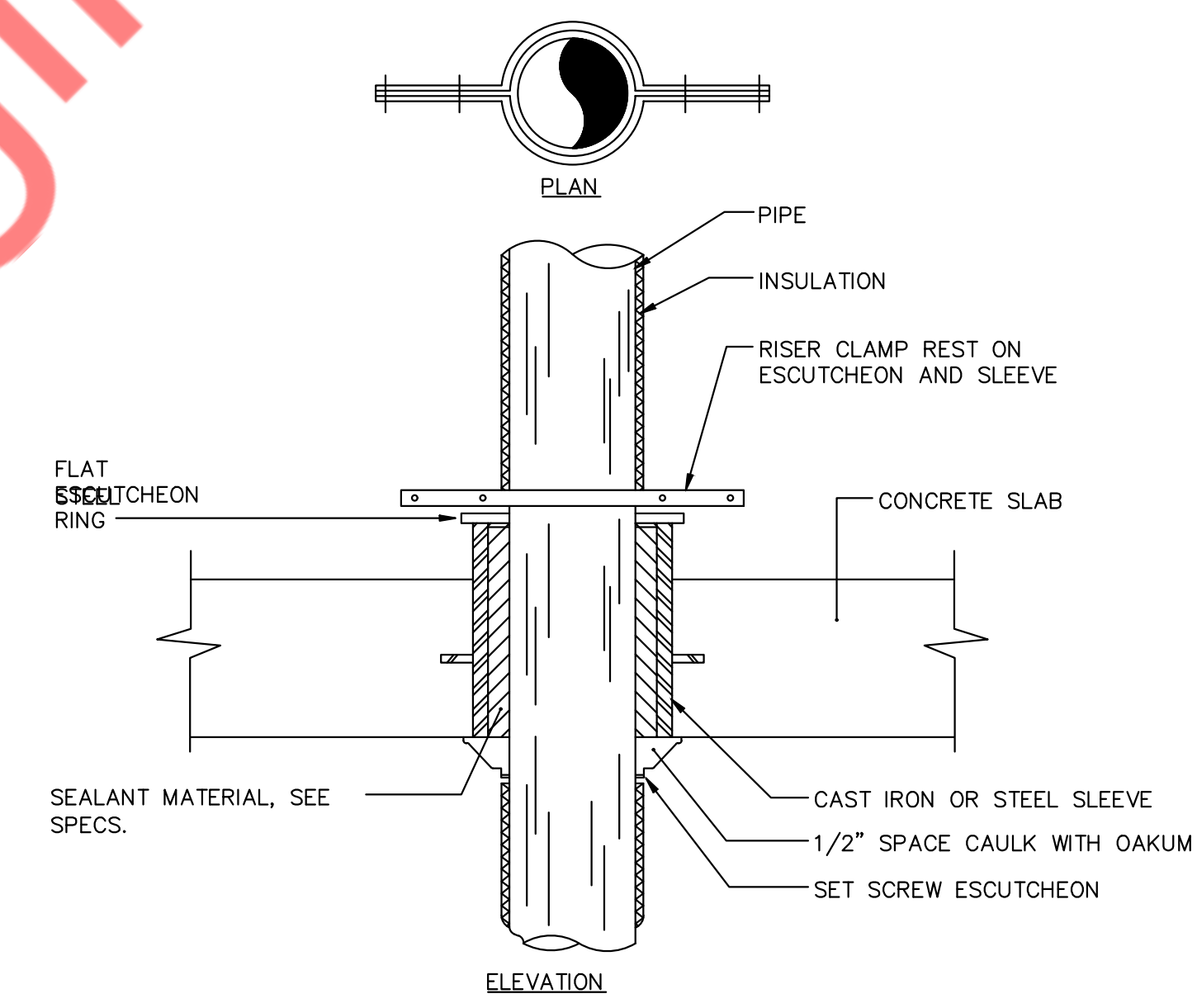


ROD SCHEDULE					
PIPE SIZE	ROD SIZE	SPACING	PIPE SIZE	ROD SIZE	SPACING
1"	3/8"	5'-8'	2 1/2"	1/2"	10'-12'
1 1/4"	3/8"	6'-10'	3"	1/2"	10'-12'
1 1/2"	3/8"	8'-10'			
2"	3/8"	10'-12'			

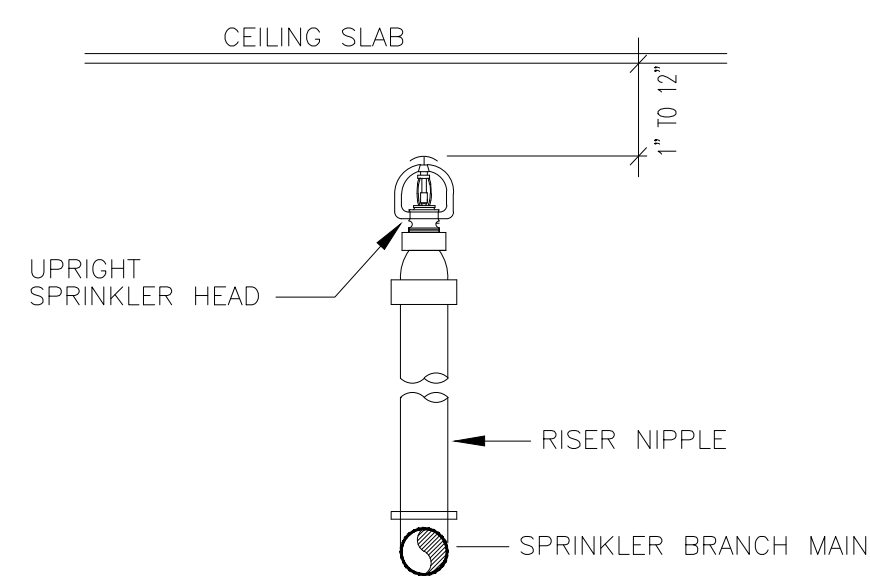
5 TYPICAL HANGER DETAIL AND ROD SCHEDULE  
SP5.0 N.T.S



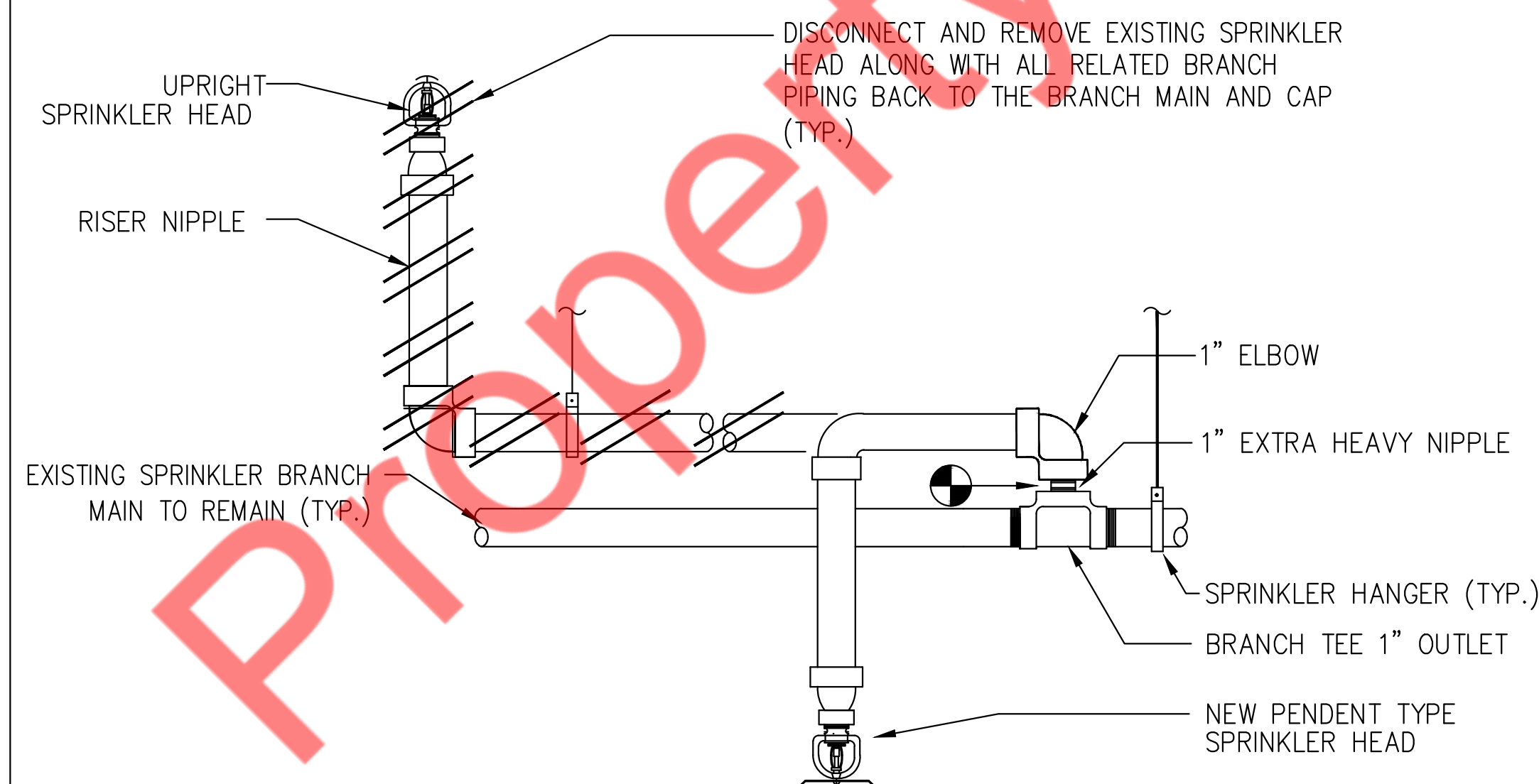
6 SPRINKLER HEAD IN SUSPENDED CEILING DETAIL  
SP5.0 N.T.S



7 SPRINKLER RISER CLAMP DETAIL  
SP5.0 N.T.S



8 SPRINKLER HEAD DETAIL UPRIGHT  
SP5.0 N.T.S



9 UPRIGHT HEAD TO PENDENT HEAD RELOCATION DETAIL  
SP5.0 N.T.S

ISSUE	DESCRIPTION	DATE

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DRAWING TITLE:  
**SPRINKLER DETAILS**

DRAWING NO.:  
**SP5.0**