

MECHANICAL ABBREVIATIONS

GENERAL ABBREVIATIONS:		CONTROLS ABBREVIATIONS:	
AFF	ABOVE FINISH FLOOR	NIC	NOT IN CONTRACT
CDS	CEILING DIFFUSER SUPPLY	No.	NUMBER
CDR	CEILING DIFFUSER RETURN	NTS	NOT TO SCALE
CFM	CUBIC FEET PER MINUTE	OA	OUTSIDE AIR
CD	CONDENSATE DRAIN PIPE	PD	PRESSURE DROP
CP	CONDENSATE PUMP	PH	PHASE
DB	DRY BULB TEMPERATURE	PSI	POUNDS PER SQUARE INCH
DIA	DIAMETER	QTY	QUANTITY
DIFF	DIFFUSER	RTU	ROOF TOP UNIT
DM	DIMENSION	RA	RETURN AIR
DN	DOWN	REG	REGISTER
EA	EACH OR EXHAUST AIR	RET	RETURN
EER	ENERGY EFFICIENCY RATIO	REQD	REQUIRED
EXIST.	EXISTING	RH	RELATIVE HUMIDITY
F	FAHRENHEIT OR FAN	RLA	RUNNING LOAD AMPS
FD	FIRE DAMPER (ACCESS DOOR)	RLS	REFRIGERANT LIQUID LINE
FLA	FULL LOAD AMPS	SA	SUPPLY AIR
FLEX	FLEXIBLE	SEER	SEASONAL EER
HSPF	HEATING SEASONAL PERFORMANCE FACTOR	SP	STATIC PRESSURE
HR	HOUR	S.A.E.	SAME AS EXISTING
HTG	HEATING	SQ	SQUARE
HZ	HERTZ	SF	SQUARE FEET
IN	INCHES	SS	STAINLESS STEEL
IEER	INTEGRATED EER	SUP	SUPPLY
KW	KILOWATT	T	TEMPERATURE
L	LENGTH	TEFC	TOT. ENCLOSED FAN COOLED
LAT	LEAVING AIR TEMPERATURE	TEMP	TEMPERATURE
LB	POUND	TSTAT	THERMOSTAT
LF	LINEAR FEET	TON	12,000 BTH
MAX	MAXIMUM	TOP	TOP OF PIPE
MBH	THOUSAND BTH	TSP	TOTAL STATIC PRESSURE
MCA	MINIMUM CIRCUIT AMPS	TYP	TYPICAL
MFR	MANUFACTURER	V.I.F.	VERIFY IN FIELD
MIN	MINIMUM	W	WIDTH OR WATT
N/A	NOT APPLICABLE	WB	WET BULB TEMPERATURE
NC	NOISE CRITERIA	WG	WATER GAUGE
		W/O	WITHOUT

THERMOSTATIC CONTROLS

C403.2.4.1 THERMOSTATIC CONTROLS
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE, WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, NOT FEWER THAN ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.

EXCEPTION: INDEPENDENT PERIMETER SYSTEMS THAT ARE DESIGNED TO OFFSET ONLY BUILDING ENVELOPE HEAT LOSSES, GAINS OR BOTH SERVING ONE OR MORE PERIMETER ZONES ALSO SERVED BY AN INTERIOR SYSTEM PROVIDED THAT BOTH OF THE FOLLOWING CONDITIONS ARE MET:
THE PERIMETER SYSTEM INCLUDES NOT FEWER THAN ONE THERMOSTATIC CONTROL ZONE FOR EACH BUILDING EXPOSURE HAVING EXTERIOR WALLS FACING ONLY ONE ORIENTATION (WITHIN ± 45 DEGREES) (0.8 RAD) FOR MORE THAN 50 CONTIGUOUS FEET (15 240 MM).
THE PERIMETER SYSTEM HEATING AND COOLING SUPPLY IS CONTROLLED BY THERMOSTATS LOCATED WITHIN THE ZONES SERVED BY THE SYSTEM.

C403.2.4.1.1 HEAT PUMP SUPPLEMENTARY
HEAT PUMP 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.

C403.2.4.1.2 DEADBAND
WHERE USED TO CONTROL BOTH HEATING AND COOLING, ZONE THERMOSTATIC CONTROLS SHALL BE CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEADBAND OF NOT LESS THAN 5°F (2.8°C) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.

EXCEPTIONS:
THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES,
OCCUPANCIES OR APPLICATIONS REQUIRING PRECISION IN INDOOR TEMPERATURE CONTROL AS APPROVED BY THE BUILDING OFFICIAL.

C403.2.4.1.3 SETPOINT OVERLAP RESTRICTION (MANDATORY)
WHERE A ZONE HAS A SEPARATE HEATING AND A SEPARATE COOLING THERMOSTATIC CONTROL LOCATED WITHIN THE ZONE, A LIMIT SWITCH, MECHANICAL STOP OR DIRECT DIGITAL CONTROL SYSTEM WITH SOFTWARE PROGRAMMING SHALL BE CONFIGURED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT AND TO MAINTAIN A DEADBAND IN ACCORDANCE WITH SECTION C403.2.4.1.2.

C403.2.4.2 OFF-HOUR CONTROLS
EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.

EXCEPTIONS:
ZONES THAT WILL BE OPERATED CONTINUOUSLY,
ZONES WITH A FULL HVAC LOAD DEMAND NOT EXCEEDING 6,800 BTU/H (2 KW) AND HAVING A MANUAL SHUTOFF SWITCH LOCATED WITH READY ACCESS.

C403.2.4.2.1 THERMOSTATIC SETBACK CAPABILITIES
THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).

C403.2.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN CAPABILITIES
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR NOT FEWER THAN 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED SWITCH CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.

C403.2.4.2.3 AUTOMATIC START
AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROLS SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.

GENERAL CONSTRUCTION NOTES

1. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
2. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
3. THIS CONTRACTOR, PRIOR TO SUBMITTING HIS BID, SHALL VISIT THE PROJECT SITE TO FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS. REQUESTS FOR COMPENSATION FOR EXTRA WORK, WHICH WOULD HAVE BEEN EVIDENT BY COMPLIANCE WITH THE PREVIOUS STATEMENT, WILL NOT BE CONSIDERED. THE CONTRACTOR SHALL CONDUCT A THOROUGH FIELD INVESTIGATION TO VERIFY WORK SHOWN ON THE DRAWINGS. THE DRAWINGS REFLECT THE BEST AVAILABLE INFORMATION FROM EXISTING PLANS AND SITE INVESTIGATIONS. NOTIFY THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.
4. THE MECHANICAL PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURER'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW THE EXACT ROUTING OF SYSTEMS OR LOCATION OF COMPONENTS, THE EXACT LOCATIONS, DIMENSIONS AND ALL OTHER DETAILS OF EQUIPMENT ARE THE RESPONSIBILITY OF THIS CONTRACTOR. THIS CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT IN THE AVAILABLE SPACE. PROVIDE ALL DUCT AND PIPE TRANSITIONS REQUIRED FOR:
5. THIS CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONNECTION TO EQUIPMENT. CONDITIONS PRIOR TO PROCEEDING WITH ANY WORK, WHERE DISCREPANCIES OCCUR BETWEEN THESE DOCUMENTS AND EXISTING CONDITIONS, THE DISCREPANCY SHALL BE REPORTED TO THE OWNER AND/OR ENGINEER FOR EXPEDITING AND RESOLVE.
6. ALL WORK SHALL BE PERFORMED IN A CLEAN AND WORKMANLIKE MANNER. CARE SHALL BE EXERCISED TO MINIMIZE ANY INCONVENIENCE OR DISTURBANCE TO OTHER AREAS OF THE BUILDING WHICH ARE TO REMAIN IN OPERATION. ISOLATE WORK AREAS BY MEANS OF TEMPORARY PARTITIONS AND/OR TAPES TO KEEP DUST AND DEBRIS WITHIN THE CONSTRUCTION AREA.
7. CLEAN THE JOB SITE DAILY AND REMOVE FROM THE PREMISES ANY DIRT AND DEBRIS CAUSED BY THE PERFORMANCE OF THE WORK INCLUDED IN THIS CONTRACT.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFEKEEPING OF HIS OWN PROPERTY ON THE JOB SITE. OWNER ASSUMES NO RESPONSIBILITY FOR PROTECTION OF PROPERTIES AGAINST FIRE, THEFT, AND ENVIRONMENTAL CONDITIONS.
9. THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES PRIOR TO FABRICATION, PURCHASE AND/OR INSTALLATION OF ALL WORK. CONTRACTOR SHALL REFER TO THE COMPLETE SET OF CONTRACT DOCUMENTS INCLUDING SPECIFICATIONS AND OTHER TRADES FOR A FULL UNDERSTANDING OF ALL WORK REQUIRED.

BIDDEFORD, MAINE BUILDING DEPARTMENT NOTES

ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF MAINE STATE BUILDING CODE; BASE CODE IBC 2015, AND ALL RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.

1. ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
2. VENTILATION FOR ALL AREA SHALL COMPLY WITH MAINE STATE BUILDING CODE; BASE CODE IMC 2015, CHAPTER 4.
3. AS PER C408.2.5 OF MAINE STATE BUILDING CODE; BASE CODE IECC 2015, CONSTRUCTION DOCUMENT SHALL REQUIRE THAT, WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION BE PROVIDED TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER.
4. AS PER C408.3.2 OF MAINE STATE BUILDING CODE; BASE CODE IECC 2015, CONSTRUCTION DOCUMENT SHALL REQUIRE THAT AN OPERATING MANUAL AND A MAINTAINED MANUAL BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE THE CONTRACTOR SHALL ENGAGE THE SERVICES OF A PROFESSIONAL ENGINEER TO PROVIDE THE REQUIRED SPECIAL INSPECTIONS AND TESTS.
5. TESTS WILL BE CONDUCTED UNDER DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS. THE TESTS WILL SHOW COMPLIANCE WITH MAINE STATE BUILDING CODE; BASE CODE IBC 2015, REQUIREMENTS AS OUTLINED IN SECTION.
6. THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
7. TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF MAINE STATE BUILDING CODE; BASE CODE IMC 2015 CHAPTER 4 AND CHAPTER 5:
A. MECHANICAL VENTILATION - SECTION 403.
B. SMOKE CONTROL SYSTEMS - SECTION 513.
8. THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
A. STANDARDS OF HEATING - SECTION 309 OF MAINE STATE BUILDING CODE; BASE CODE IMC 2015.
B. DUCT CONSTRUCTION AND INSTALLATION - SECTION 603 OF MAINE STATE BUILDING CODE; BASE CODE IMC 2015.
C. AIR INTAKES, EXHAUSTS AND RELIEF - SECTION 401 OF MAINE STATE BUILDING CODE; BASE CODE IMC 2015.
D. AIR FILTERS - SECTION 605 OF MAINE STATE BUILDING CODE; BASE CODE IMC 2015.
E. MANUAL AND AUTOMATIC FIRE AND SMOKE CONTROLS FOR AIR DISTRIBUTION SYSTEMS - SECTION 513 OF MAINE STATE BUILDING CODE; BASE CODE IMC 2015.
9. MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
10. A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY MAINE STATE BUILDING CODE; BASE CODE IMC 2015 CHAPTER 4 SECTION 403.3. HVAC SYSTEM SHALL BE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS AS REQUIRED BY MAINE STATE BUILDING CODE; BASE CODE IMC 2015 SECTION 403.3.1.5.
11. SMOKE DETECTION SYSTEMS SHALL BE INSTALLED AND SEQUENCED TO FOLLOW CONTROLS OPERATIONS WITH THE REQUIREMENTS OF SECTION 606 MAINE STATE BUILDING CODE; BASE CODE IMC 2015, TO CLOSE DAMPERS AND AUTOMATICALLY STOP THE FAN.
12. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
13. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION 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.
14. 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-12
OUTSIDE OF BUILDING: R-12

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

- 1.1 SUMMARY
A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:
 1. AIR SYSTEMS: CONSTANT-VOLUME.
 2. CONDENSING UNITS.
 - 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 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

PIPING INSULATION

A. PIPING SERVING AS PART OF A HEATING OR COOLING SYSTEM SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH IECC 2015 TABLE C403.2.10.

B. PIPING, VALVES AND FITTINGS TO BE INSULATED:

FLUID OPERATING TEMP. RANGE & USAGE (°F)	MINIMUM PIPE INSULATION THICKNESS (IN.)				
	INSULATION CONDUCTIVITY BTU·IN/(H·FT²·F)	MEAN RATING TEMP., °F	MEAN RATING <1	1-1/2 TO <4	4 TO >8
105 - 140	0.21 - 0.28	100	1.0	1.0	1.5
40 - 60	0.21 - 0.27	75	0.5	0.5	1.0
< 40	0.20 - 0.26	50	0.5	1.0	1.0

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

SERVICE	INSULATION SCHEDULE - PIPING SIZE	THICKNESS	MATERIAL FINISH
REFRIGERANT PIPING		1.5"	P-6
CONDENSATE 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.

b. HIGH DENSITY RUBBER CLADDING OF THE ARMA-CHEK 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.

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 FOL-SKRM-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 EPOLOX 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 ZESTRON 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.

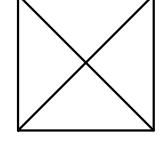
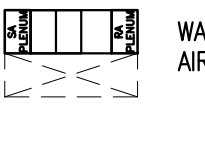
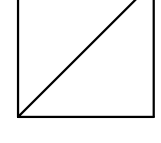
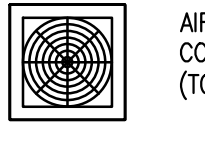
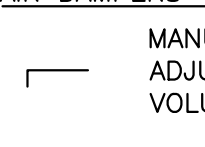
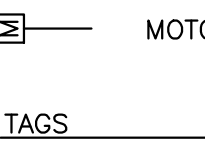
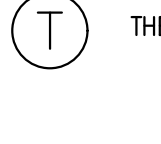
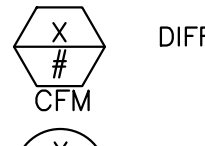

D. FINISH:

- 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 .51 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.

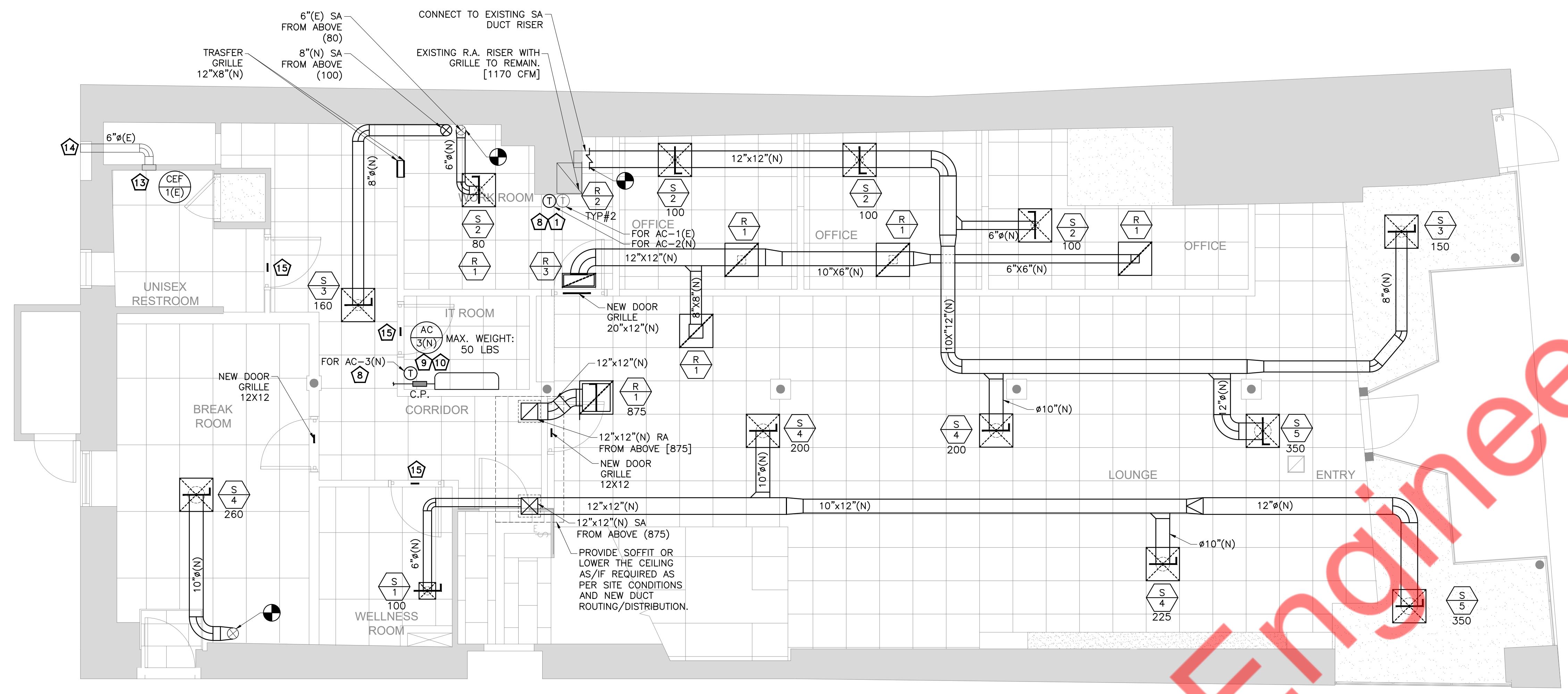
E. INSTALLATION:

- 1) BEFORE APPLYING INSULATION ALL PRESSURE AND LEAK TESTS SHALL BE COMPLETED AND APPROVED.
- 2) ALL INSULATION SHALL BE BUTTED FIRMLY TOGETHER. PROVIDE 2 IN. LAMP STRIPS AT ALL SEAMS SECURED WITH ADHESIVE. USE VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE WHERE REQUIRED. STAPLES NOT PERMITTED. REFRIGERANT PIPING INSULATION SHALL HAVE MITERED FITTINGS.
- 3) ALL INSULATION AND VAPOR BARRIERS SHALL BE CONTINUOUS PASSING THROUGH SLEEVES, HANGERS, ETC., OR OTHER OPENINGS. PROVIDE SADDLES OR SHIELDS FOR PROTECTION AT ALL HANGINGS.
- 4) INSULATION FOR STRAINERS OR OTHER FITTINGS OR ACCESSORIES REQUIRING SERVICING OR INSPECTION SHALL HAVE INSULATION REMOVABLE AND REPLACEABLE WITHOUT DAMAGE.

MECHANICAL SYMBOL LEGEND

AIR DEVICES	EQUIPMENTS
 4-WAY SUPPLY DIFFUSER	 WALL MOUNTED AIR HANDLING UNIT
 RETURN DIFFUSER	 AIR COOLED CONDENSING UNIT (TOP DISCHARGE)
	AIR DAMPERS
	 MANUALLY ADJUSTABLE VOLUME DAMPER
CONTROLS	 MOTORIZED DAMPER
 THERMOSTAT	TAGS
	 DIFFUSER TAG
	 EQUIPMENT TAG

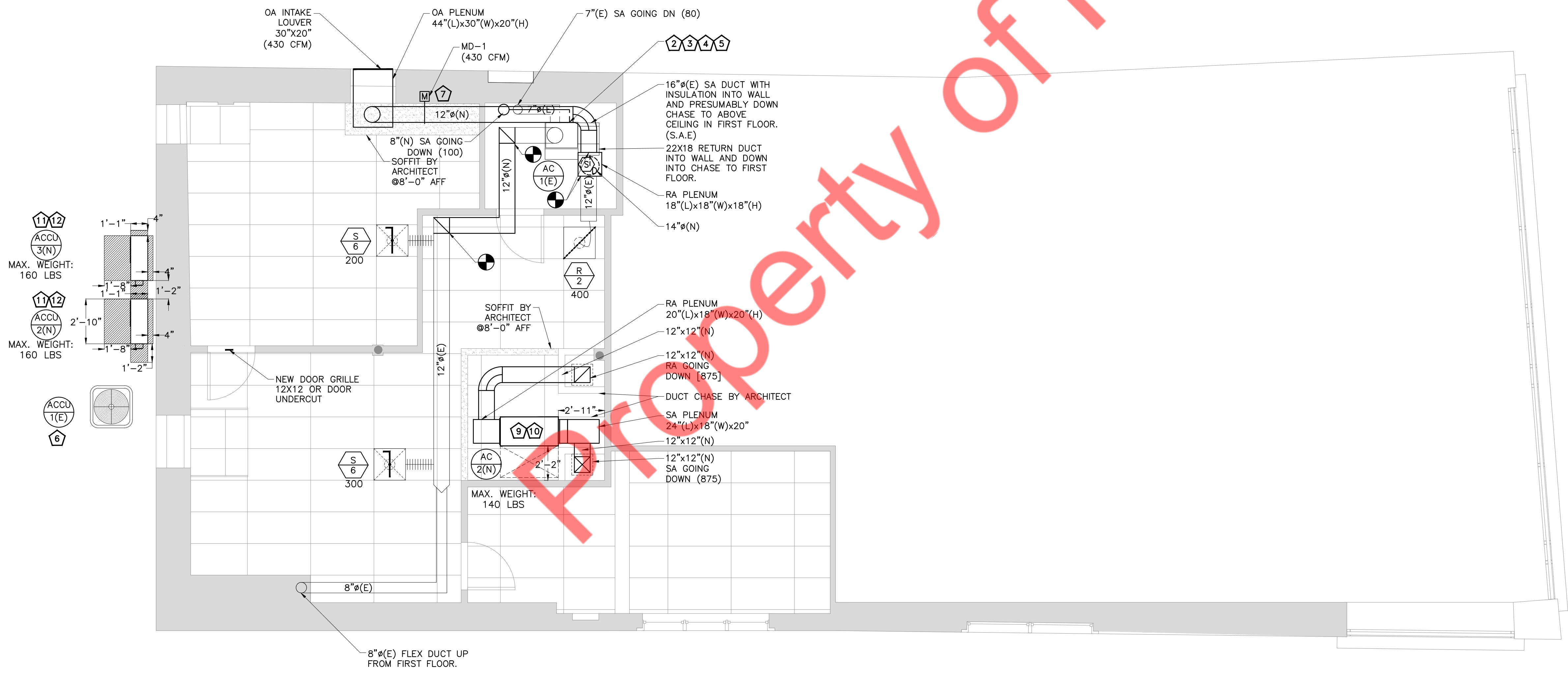
LEGEND NOTE:
NOT ALL SYMBOLS ARE NECESSARILY USED. ABSENCE OF A SYMBOL ON THE DRAWINGS DOES NOT NECESSARILY MEAN IT IS NOT REQUIRED. REFER TO DETAILS & SPECIFICATIONS FOR A COMPLETE UNDERSTANDING OF WORK REQUIRED.



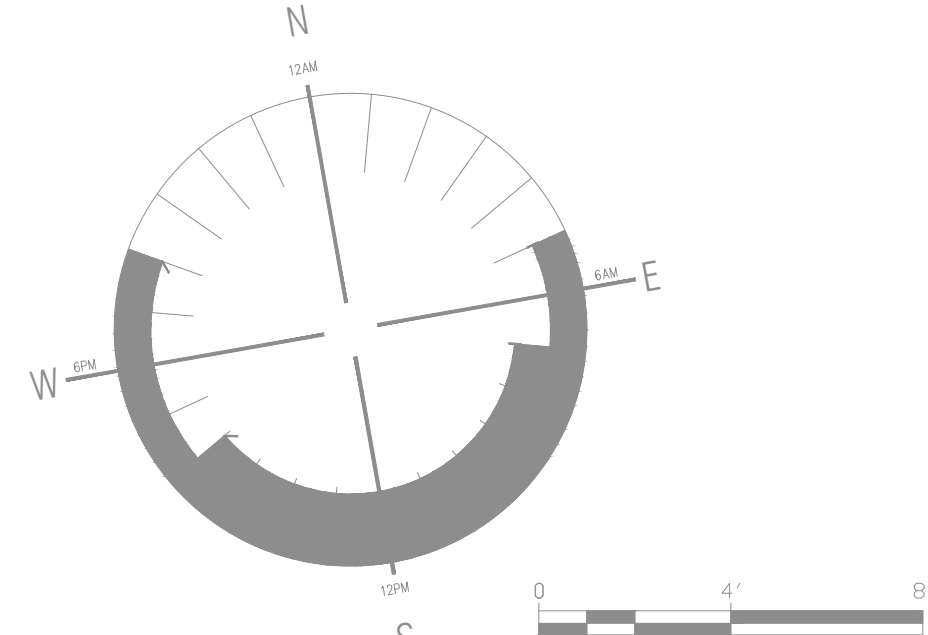
① FIRST FLOOR MECHANICAL PLAN
SCALE: 1/4" = 1'-0"

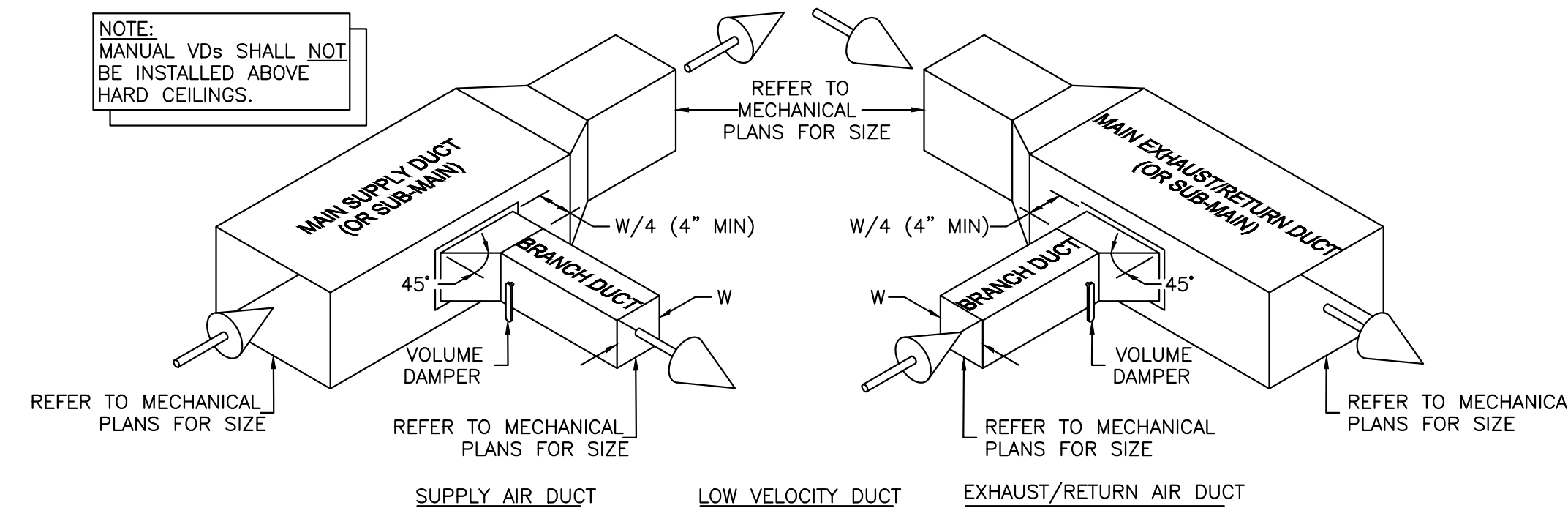
- MECHANICAL GENERAL NOTES:**
- ① EXACT LOCATION OF TEMPERATURE SENSORS TO BE COORDINATED IN FIELD. COORDINATE WITH ELECTRICAL/CONTROLS CONTRACTOR.
 - ② ALL HVAC EQUIPMENT SHALL BE COORDINATED WITH ELECTRICAL/CONTROLS CONTRACTOR.
- GENERAL NOTES:**
1. PROVIDE NECESSARY PROTECTIVE DEVICES WHERE REQUIRED AND IN STRICT ACCORDANCE WITH OSHA AND ICRA REGULATIONS.
 2. AVOID FREE DUST MOVEMENT AND DIRT MIGRATING TO OCCUPIED AREAS OF THE BUILDING. BLANK OFF ANY RETURN AIR GRILLES/DUCTS IN THE WORK AREA. PROVIDE TEMPORARY EXHAUST FANS, DUCTED DIRECTLY TO OUTDOORS, TO MAINTAIN NEGATIVE PRESSURE WITHIN THE WORK AREA.
 3. KEEP ALL ADJOINING AREAS ADJACENT TO THE WORK AREAS CLEAN AND FREE OF DEBRIS.
 4. ALL EQUIPMENT, DUCTING, ELECTRICAL WIRING, CONDUITS & PLUMBING/MECHANICAL PIPING RUNNING ABOVE THE DROPPED CEILING SHOULD BE PLENUM RATED.
 5. PROVIDE FIRE DAMPERS/SMOKE DAMPERS/COMBINATION FIRE/SMOKE DAMPERS AS AND IF REQUIRED. COORDINATE WITH ARCHITECT FOR FIRE AND SMOKE RATINGS OF THE DUCT PENETRATING WALLS.
 6. ALL DUCTWORK TO BE INSULATED WITH FSK INSULATION. FSK INSULATION TO BE A MINIMUM THICKNESS OF 1.5" OR MUST MEET THE CODE REQUIREMENT WHICHEVER IS GREATER.
 7. REMOTE SENSOR BOXES SHOULD BE INSTALLED BY THE ELECTRICAL CONTRACTOR DURING ROUGH-IN. MECHANICAL & ELECTRICAL DRAWINGS SHOULD INDICATE INTENDED LOCATIONS AS PER THE EARLIER DRAWINGS.

- FLOOR PLAN KEY NOTES:**
- ① REUSE & RELOCATE EXISTING THERMOSTAT IF IT IS IN GOOD CONDITION. IF EXISTING THERMOSTAT IS NOT IN CONDITION TO REUSE, THEN INSTALL & WIRE A NEW 7-DAY PROGRAMMABLE THERMOSTAT. COORDINATE EXACT LOCATION WITH ARCHITECT & OWNER PRIOR TO ROUGH-IN.
 - ② REUSE EXISTING REMOTE TEMP. SENSORS MOUNTED IN RETURN AIR DUCT. PROVIDE NEW, IF EXISTING TEMP. SENSORS ARE DAMAGED OR NOT WORKING PROPERLY.
 - ③ EXISTING AIR HANDLING UNIT & GAS FURNACE ALONG WITH ALL ASSOCIATED PIPING & ACCESSORIES TO REUSE. CONTRACTOR TO RELOCATE THE UNIT. CLEAN AND REFRUBISH TO "LIKE-NEW" CONDITION. REPAIR/REPLACE ANY ACCESSORIES AS REQUIRED TO PROVIDE A FULLY FUNCTIONING UNIT. VERIFY IN FIELD PRIOR TO BID ENSURE UNIT IS BALANCED TO 2000 CFM PER EXISTING AS-BUILT CONDITIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES PRIOR TO BID AND START OF WORK.
 - ④ EXISTING REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNIT TO REMAIN. IF INSULATION IS DAMAGED, PROVIDE INSULATION TO REFRIGERANT PIPING AS PER ENERGY CONSERVATION CODE.
 - ⑤ EXISTING CONDENSATE DRAIN TO REMAIN & TO BE REUSED. CONTRACTOR TO FLUSH EXISTING DRAIN LINE.
 - ⑥ CONTRACTOR TO VERIFY EXACT LOCATION OF CONDENSING UNIT ACCU-1(E) IN FIELD PRIOR TO BID. CLEAN AND REFRUBISH TO "LIKE-NEW" CONDITION. REPAIR/REPLACE ANY ACCESSORIES AS REQUIRED TO PROVIDE A FULLY FUNCTIONING. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES PRIOR TO BID AND START OF WORK.
 - ⑦ MOTORIZED DAMPER TO BE INTERLOCKED WITH THE AC-1(E).
 - ⑧ PROVIDE NEW THERMOSTAT. COORDINATE FINAL LOCATION OF THERMOSTAT FOR ALL ACs WITH ARCHITECT/ADRENALINE. COORDINATE WITH ELECTRICAL/CONTROLS CONTRACTOR.
 - ⑨ CONDENSATE DRAIN TO NEAREST PLUMBING DRAIN W/ AIR GAP FITTING. COORDINATE W/PLUMBING CONTRACTOR. PROVIDE CONDENSATE PUMP IF REQUIRED. PROVIDE SECONDARY DRAIN PAN WITH WATER LEAKAGE SENSOR FOR AC-2(N).
 - ⑩ INSTALL NEW REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNIT AS PER MANUFACTURERS RECOMMENDATIONS. PROVIDE INSULATION TO REF PIPING AS PER ENERGY CONSERVATION CODE. COORDINATE WITH BASE BUILDING ENGINEER FOR PIPE ROUTING AND RISER LOCATION. NOTIFY THE ENGINEER OF ANY DISCREPANCY BEFORE COMMENCING BID.
 - ⑪ INSTALL NEW CONDENSING UNIT NEAR EXISTING ONE. CONTRACTOR TO VERIFY EXACT LOCATION ON FIELD. INSTALL CONDENSING UNITS ON THE SIDE-WALL BRACKETS.
 - ⑫ CONTRACTOR TO INSTALL OUTDOOR UNIT AS PER MANUFACTURER'S RECOMMENDATIONS.
 - ⑬ EXISTING TOILET EXHAUST SYSTEM TO REMAIN AS IS.
 - ⑭ 6"Ø TOILET EXHAUST AIR DUCT TERMINATE ON SIDE WALL WITH NEW VENT CAP.
 - ⑮ PROVIDE 1" DOOR UNDERCUT OR 6"X6" TRANSFER GRILLE.



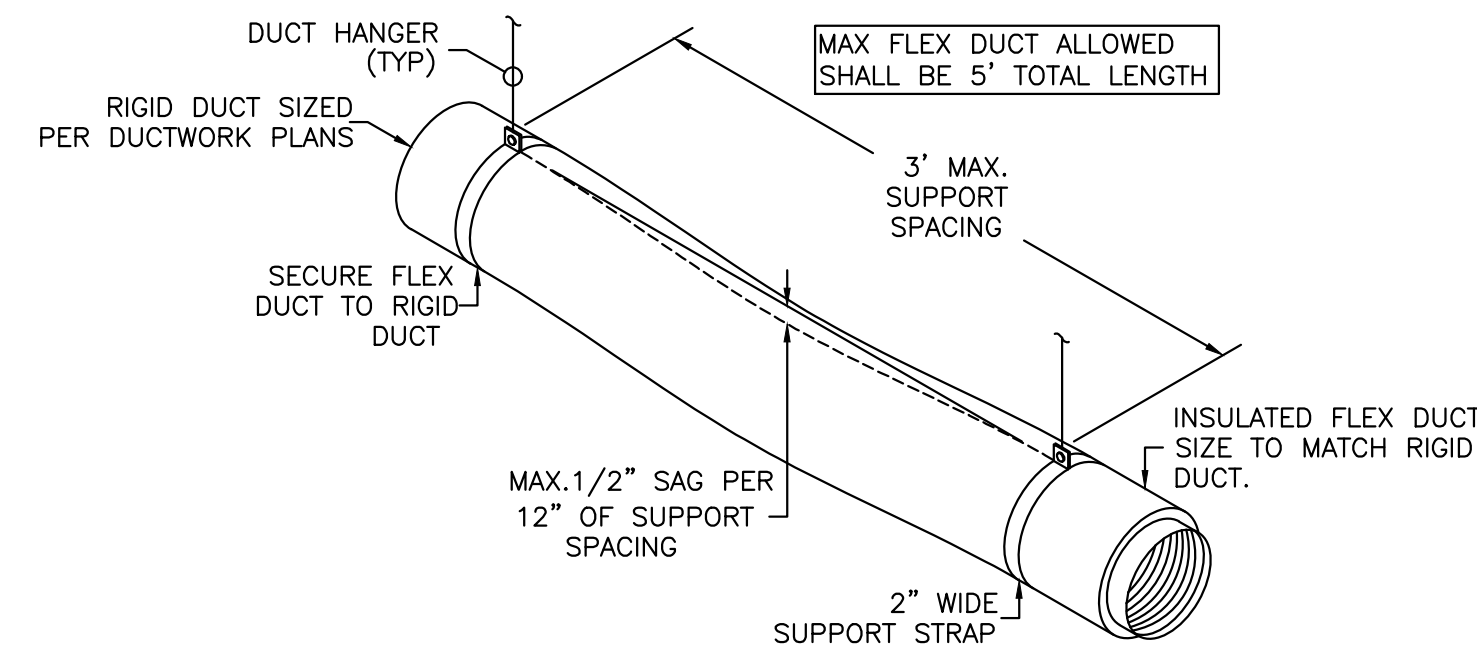
② SECOND FLOOR MECHANICAL PLAN
SCALE: 1/4" = 1'-0"





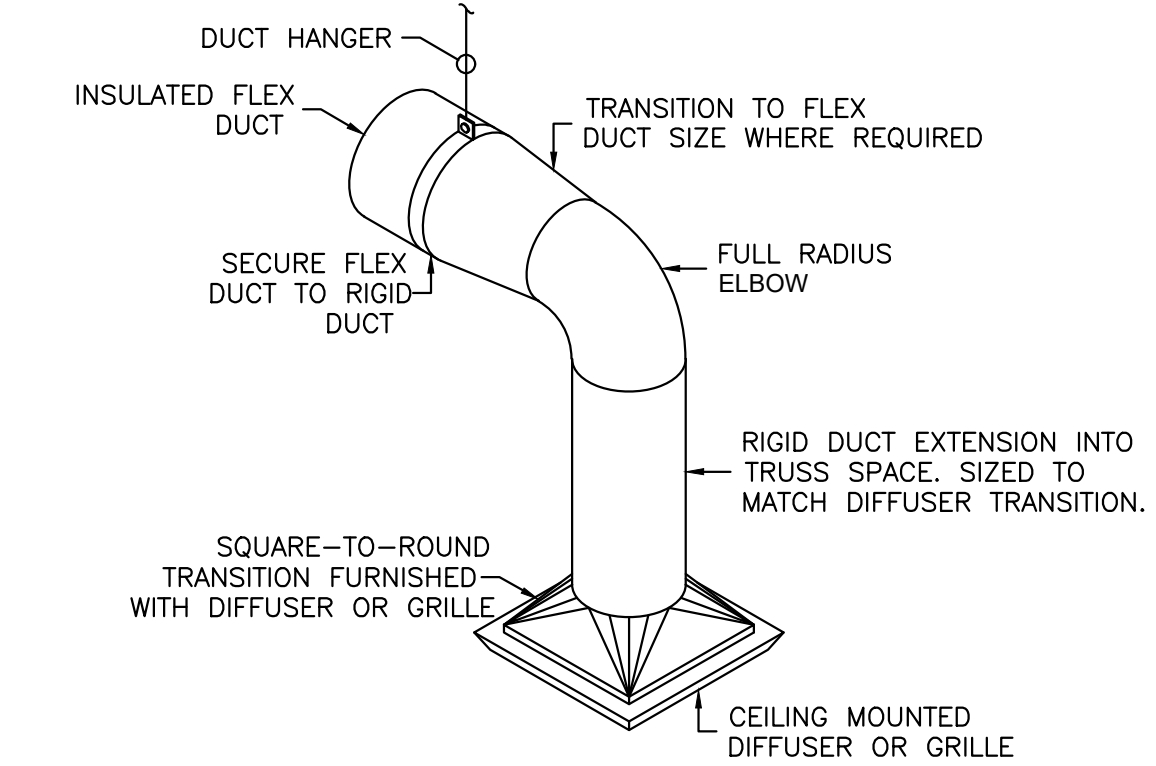
BRANCH DUCT CONNECTIONS

N.T.S.



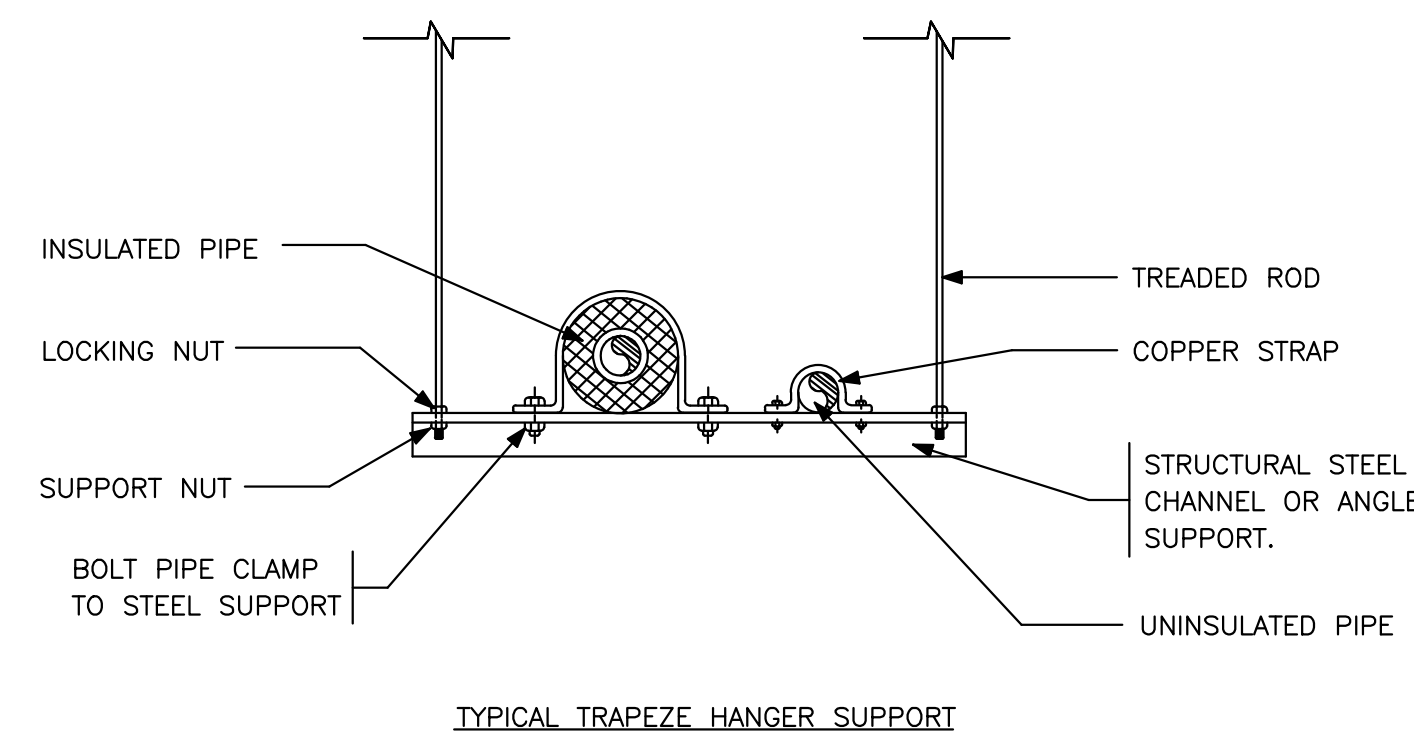
FLEX DUCT SUPPORT DETAIL

N.T.S.



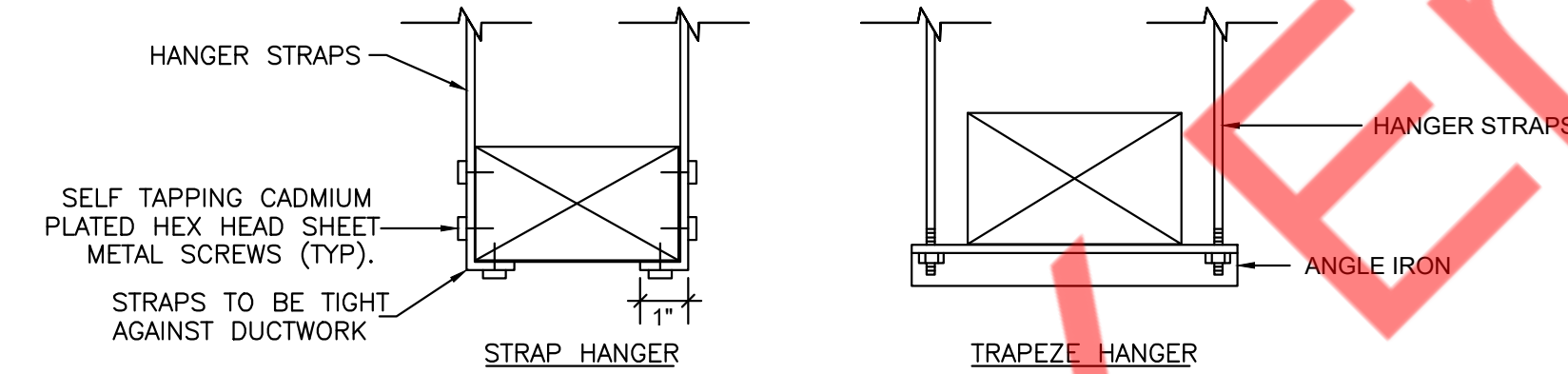
DIFFUSER CONNECTION DETAIL

N.T.S.



PIPE HANGER ROD AND SPACING SCHEDULE							
NOMINAL PIPE OR TUBE SIZE - INCHES	5/8	3/4	7/8	1	1 1/2	2	2 1/2
HANGER ROD SIZES INCHES	3/8	3/8	3/8	3/8	3/8	3/8	3/8
MAX. SPACING BETWEEN PIPE SUPPORTS - FEET	-	6	-	7	9	10	11
MAX. SPACING BETWEEN CU. TUBE SUPPORTS-FT.	6	6	6	6	8	9	10

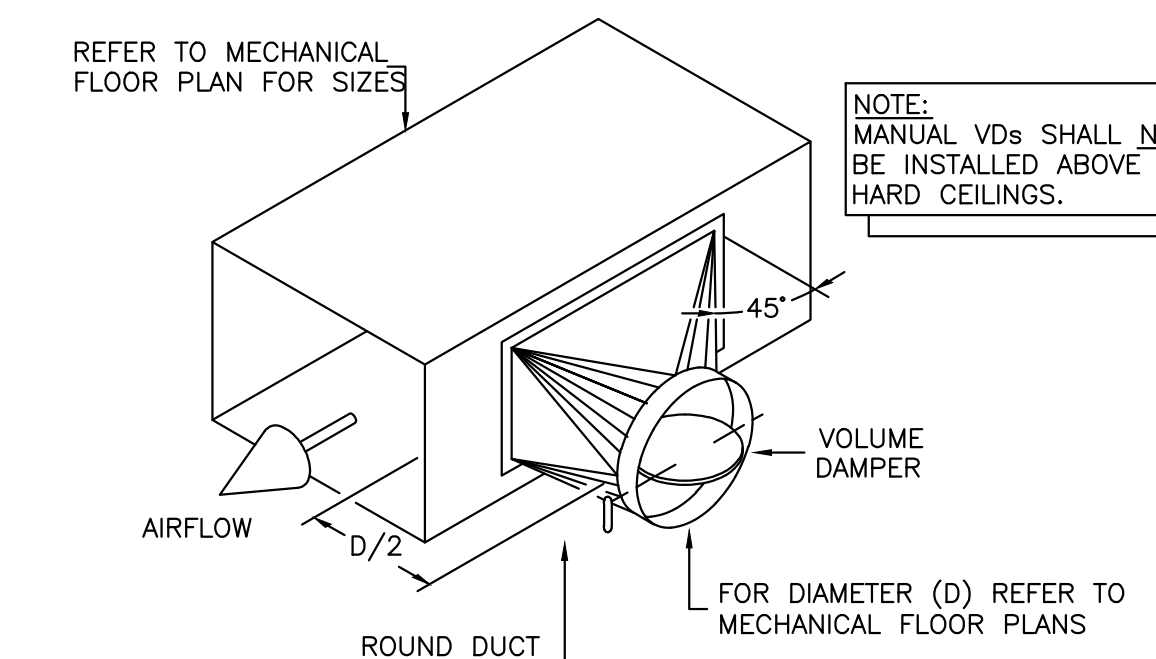
NOTES : TRAPEZE HANGER SPACING SHALL BE BASED ON SPACING OF SMALLEST PIPE ON TRAPEZE. TRAPEZE SHALL BE DESIGNED WITH A FACTOR OF SAFETY OF 5 FOR CENTER OF SPAN CONCENTRATED LOAD.



NOTE: NO POP RIVETS ALLOWED, USE SELF-TAPPING SHEETMETAL SCREWS ONLY.

HANGER SIZES*			
MAX. SIDE	HANGER	HORIZONTAL SUPPORT ANGLE	MAXIMUM SPACING
30"	1"x1/8" GAUGE STRAP	NONE REQUIRED	10'-0"
36"	1/4" ROD	1-1/2°x1-1/2°x1/8"	8'-0"
48"	1/4" ROD	2°x2°x1/8"	8'-0"
60"	5/16" ROD	2°x2°x1/8"	8'-0"
84"	3/8" ROD	2°x2°x1/8"	8'-0"

* FOR RECTANGULAR DUCTS



REFRIGERANT PIPING HANGING DETAIL

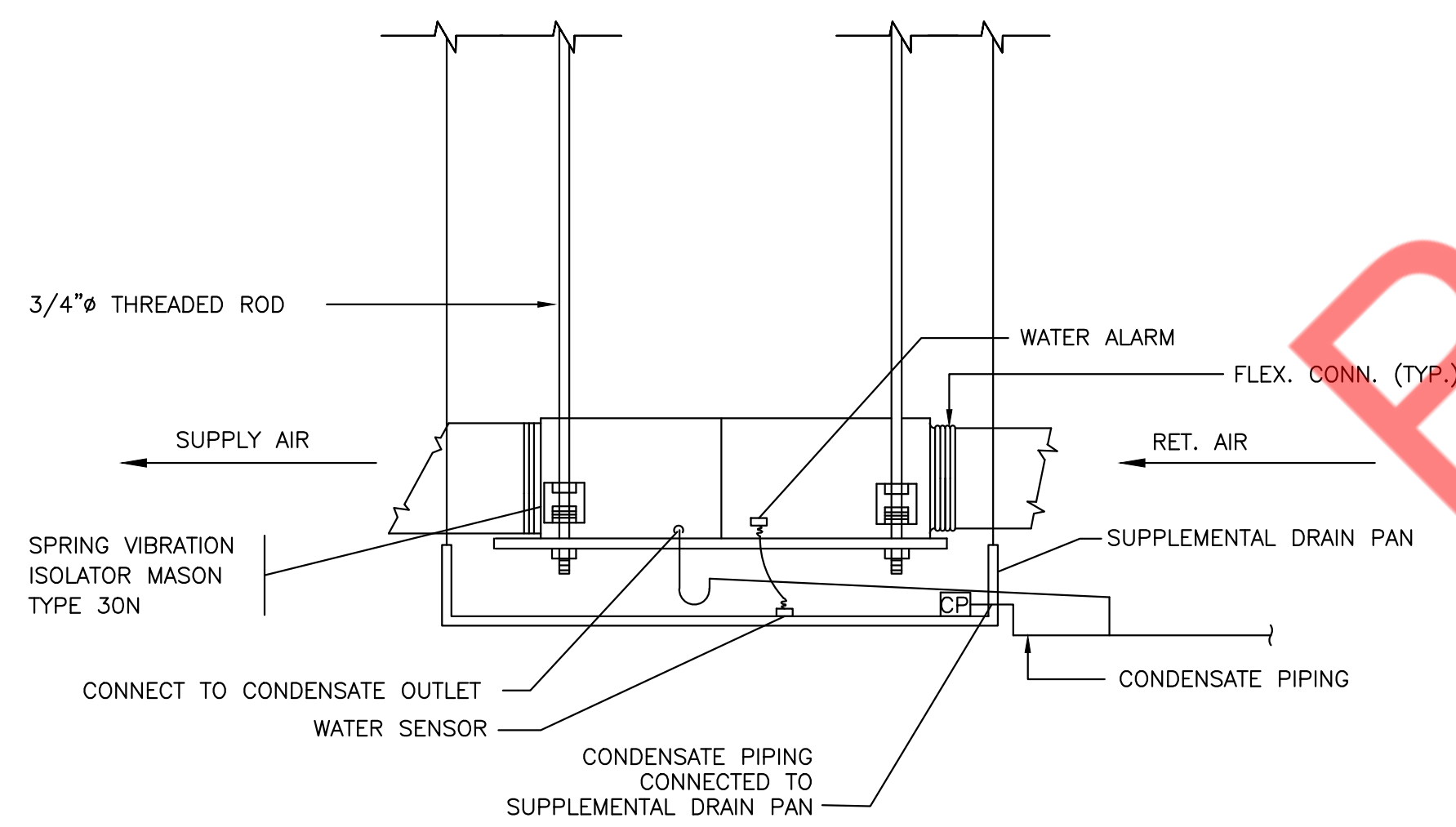
N.T.S.

DUCT HANGER DETAIL

N.T.S.

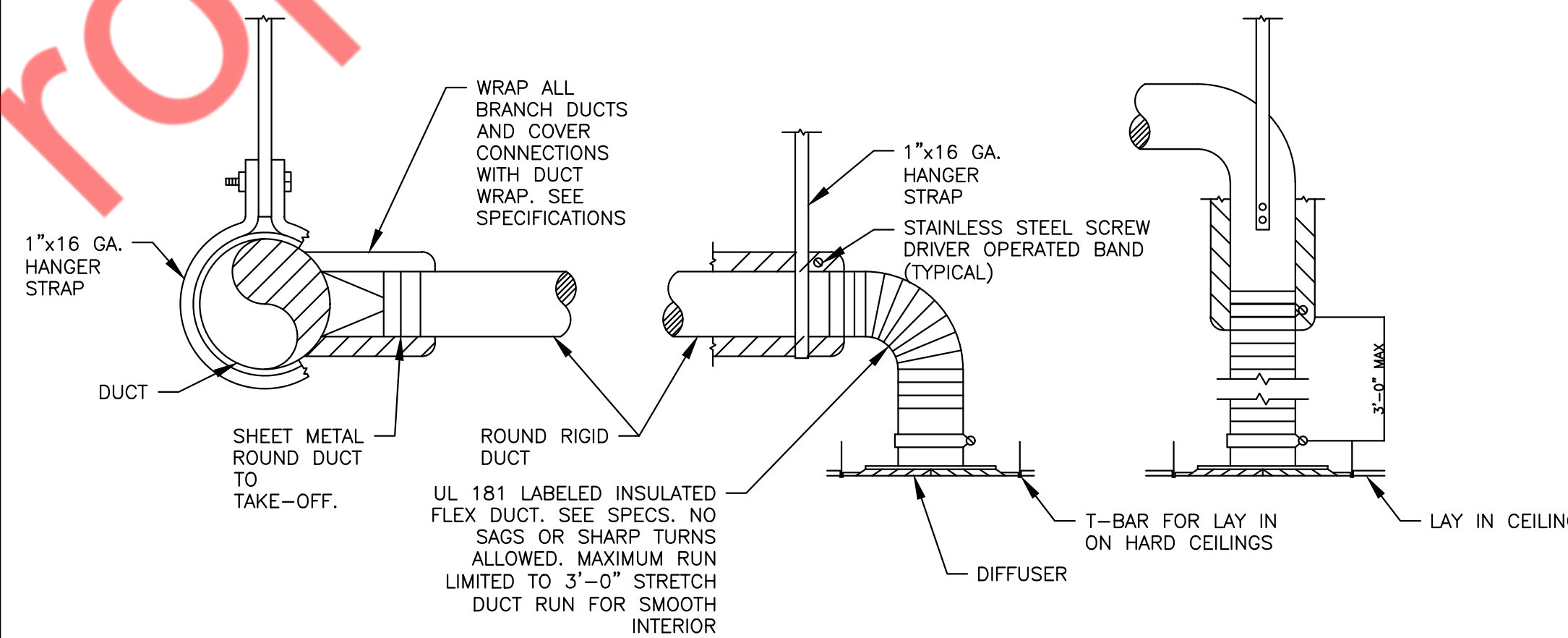
ROUND DUCT TAKE OFF DETAIL

N.T.S.



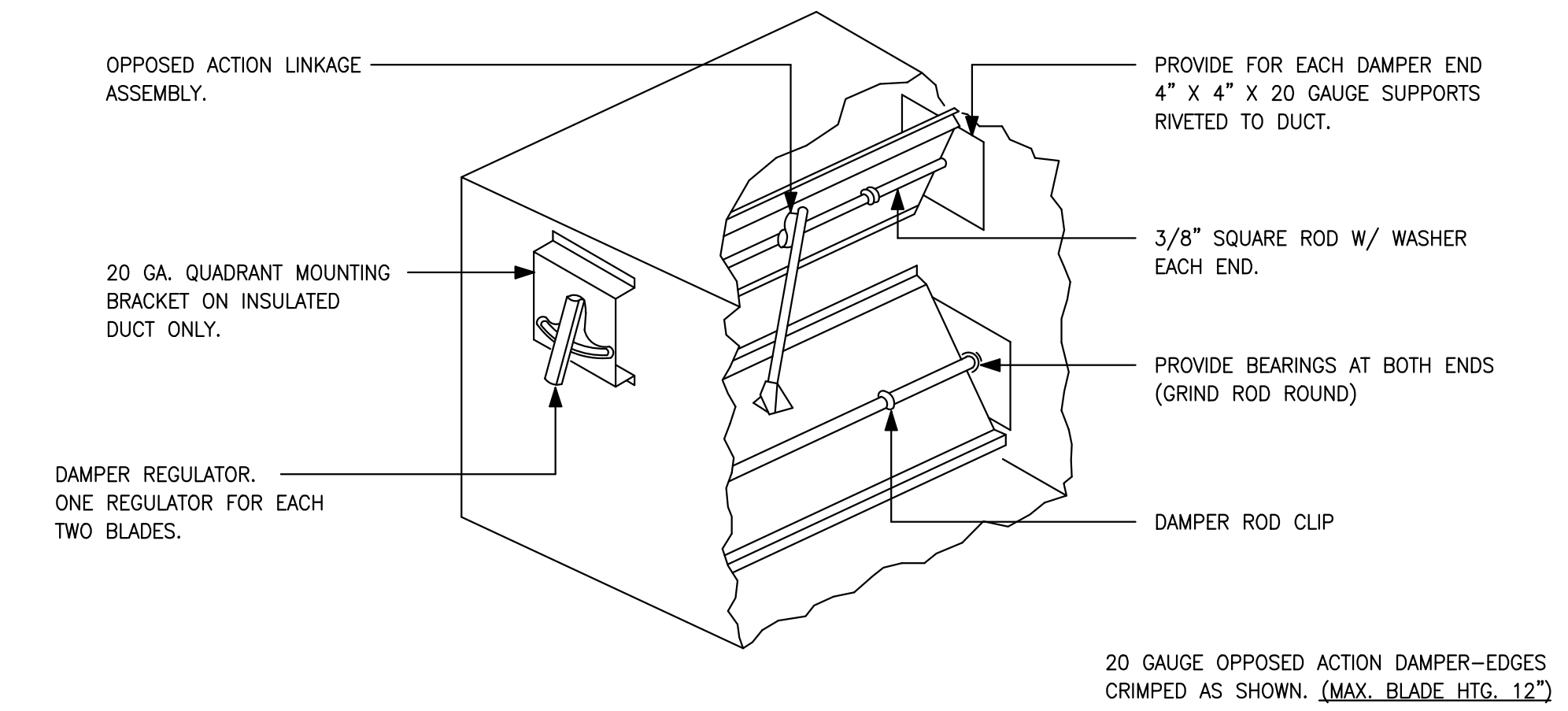
AIR HANDLING UNIT DETAILS

N.T.S.



TYPICAL DIFFUSER CONNECTION DETAIL

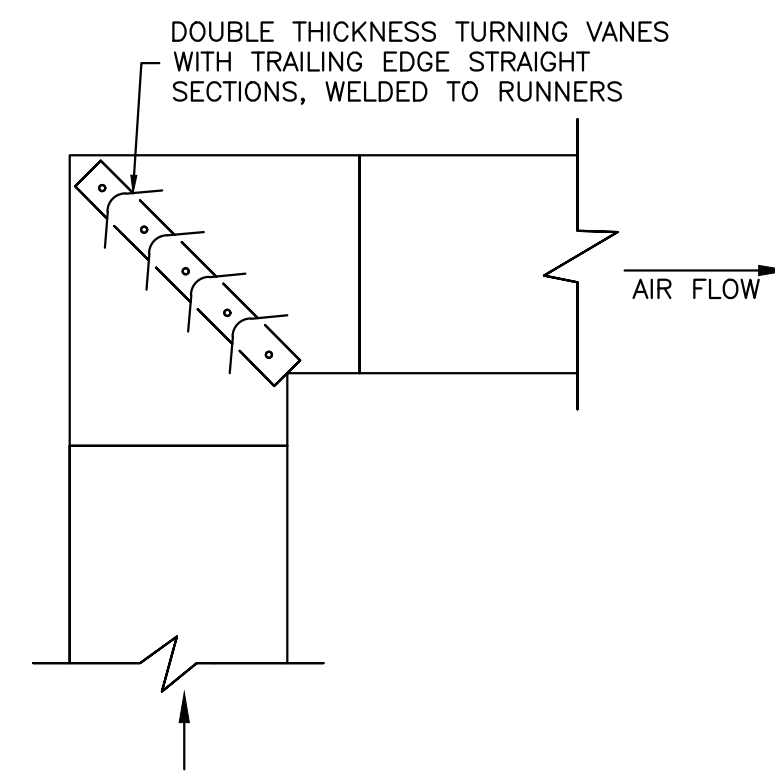
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NOTE: 1. FOR DUCTS OVER 29" WIDE AND/OR OVER 12" HIGH.

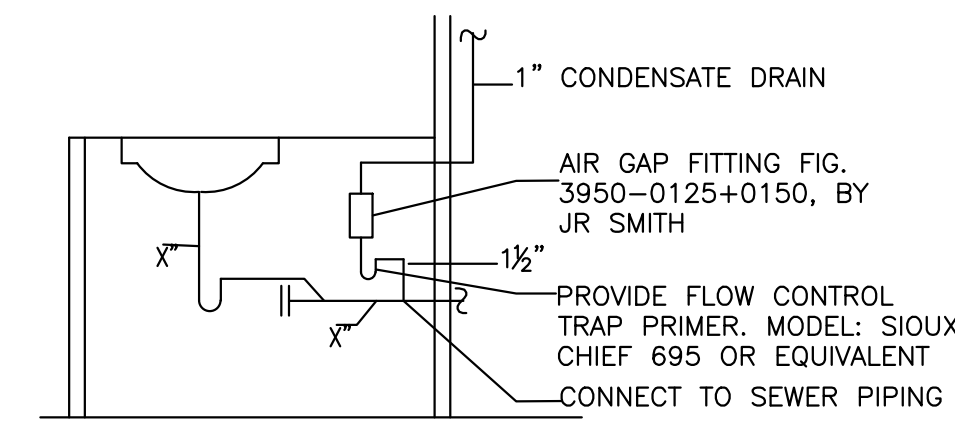
LOW PRESSURE CONTROL DAMPER

N.T.S.



TYPICAL SQUARE ELBOW

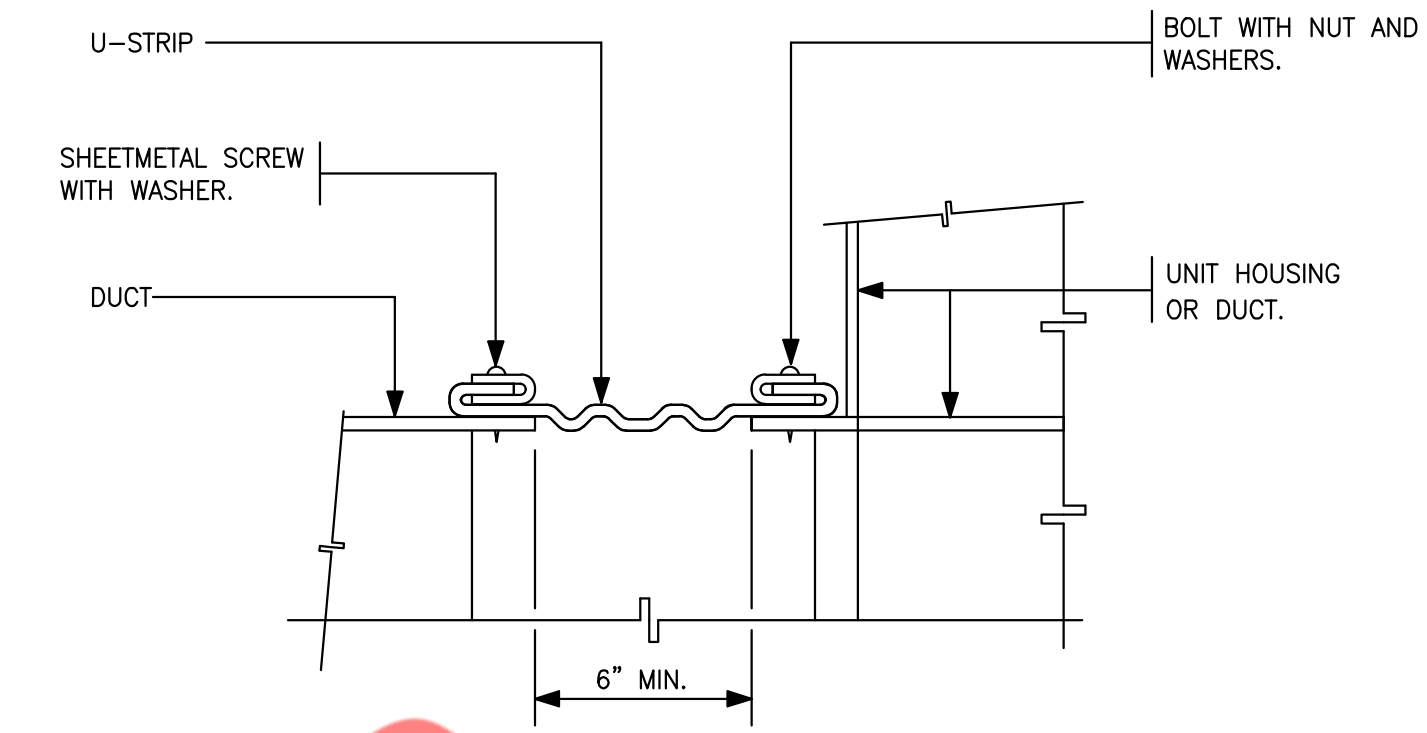
N.T.S.



NOTE:
LOCATE AIR GAP FITTING AND PIPING WITHIN SINK/LAVATORY ENCLOSURE.

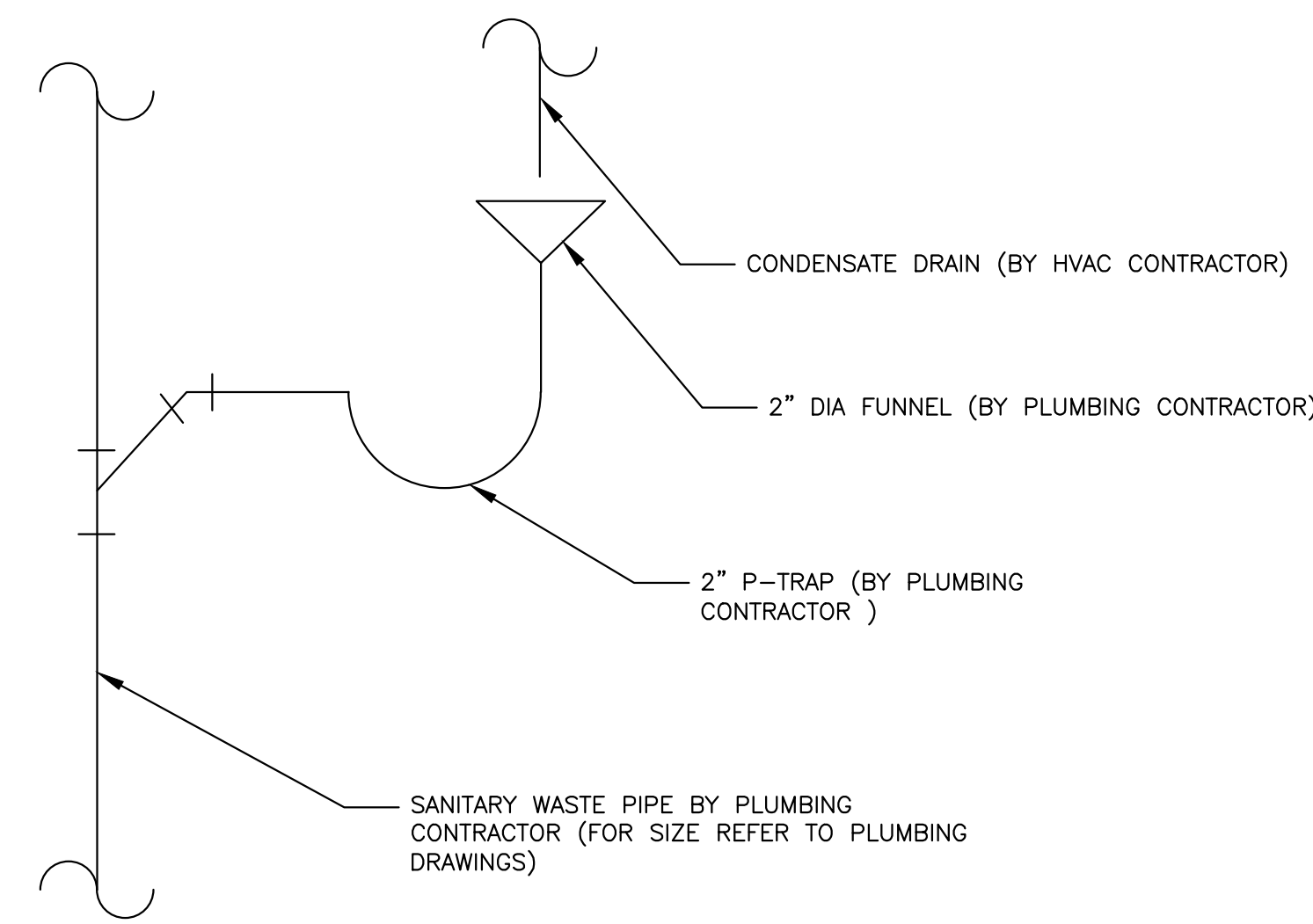
AIR GAP FITTING DETAIL

N.T.S.



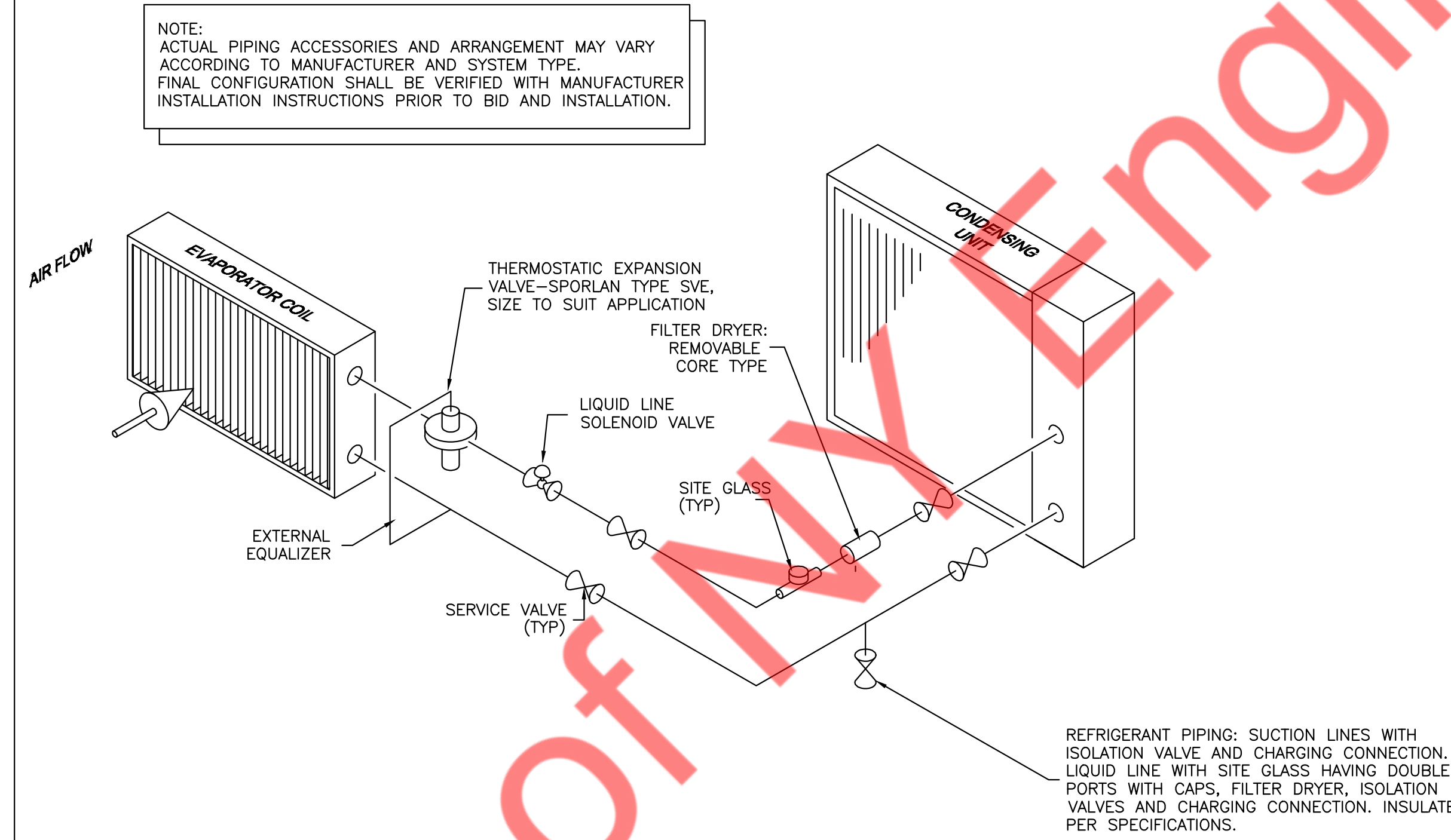
FLEXIBLE CONNECTION DETAIL

N.T.S.



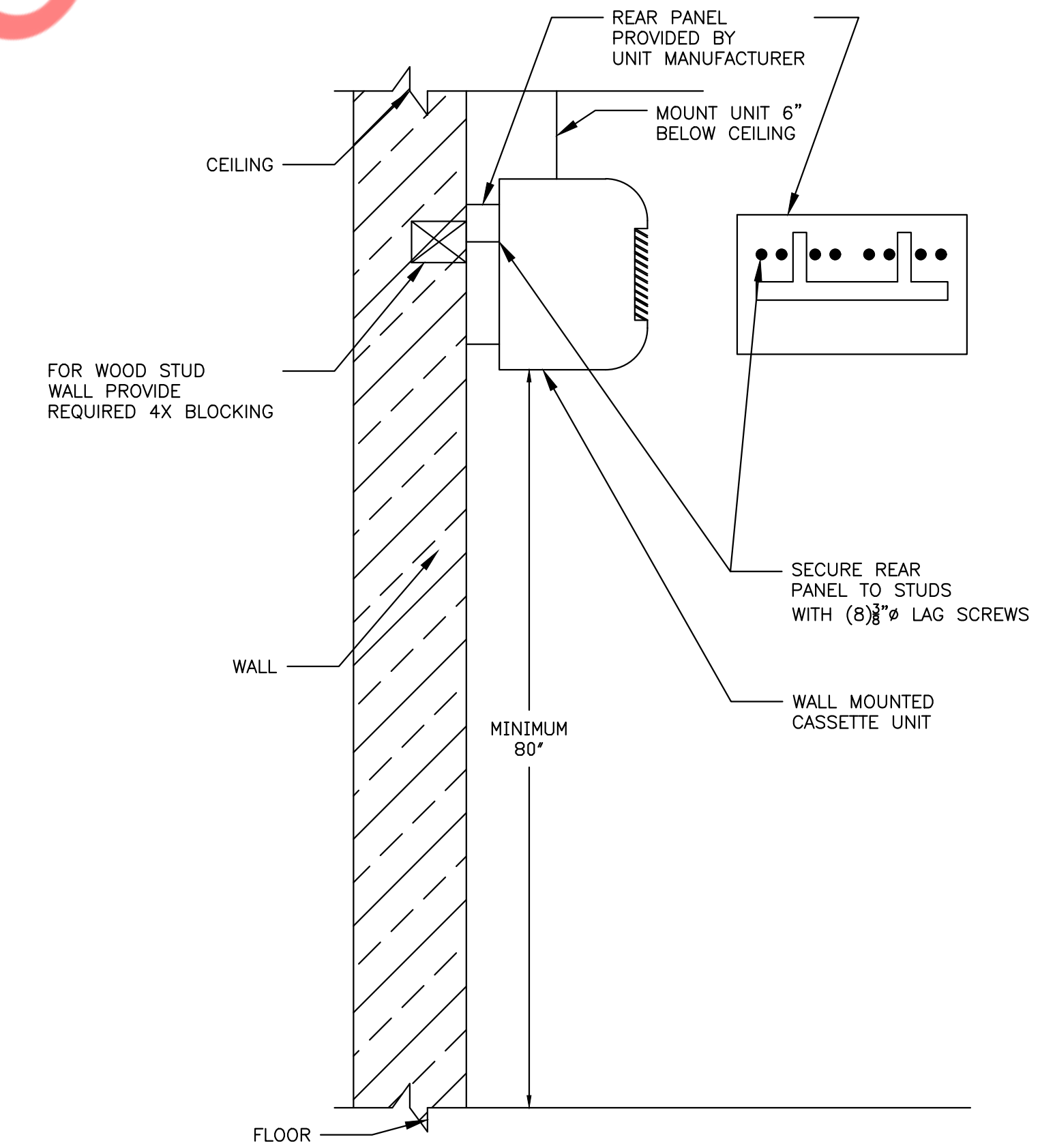
FUNNEL DRAIN INSTALLATION DETAIL

N.T.S.



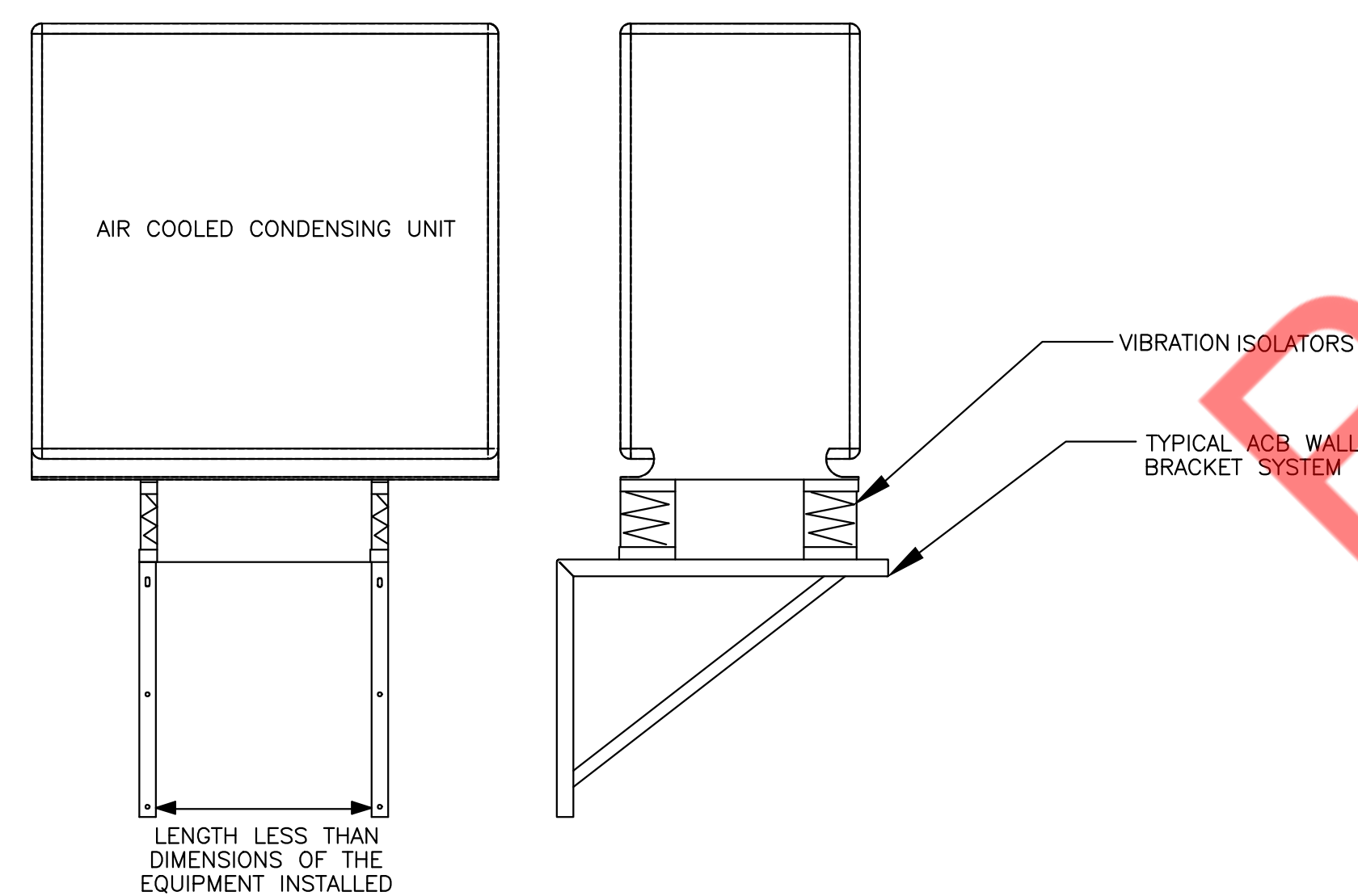
REFRIGERANT PIPING DIAGRAM

N.T.S.



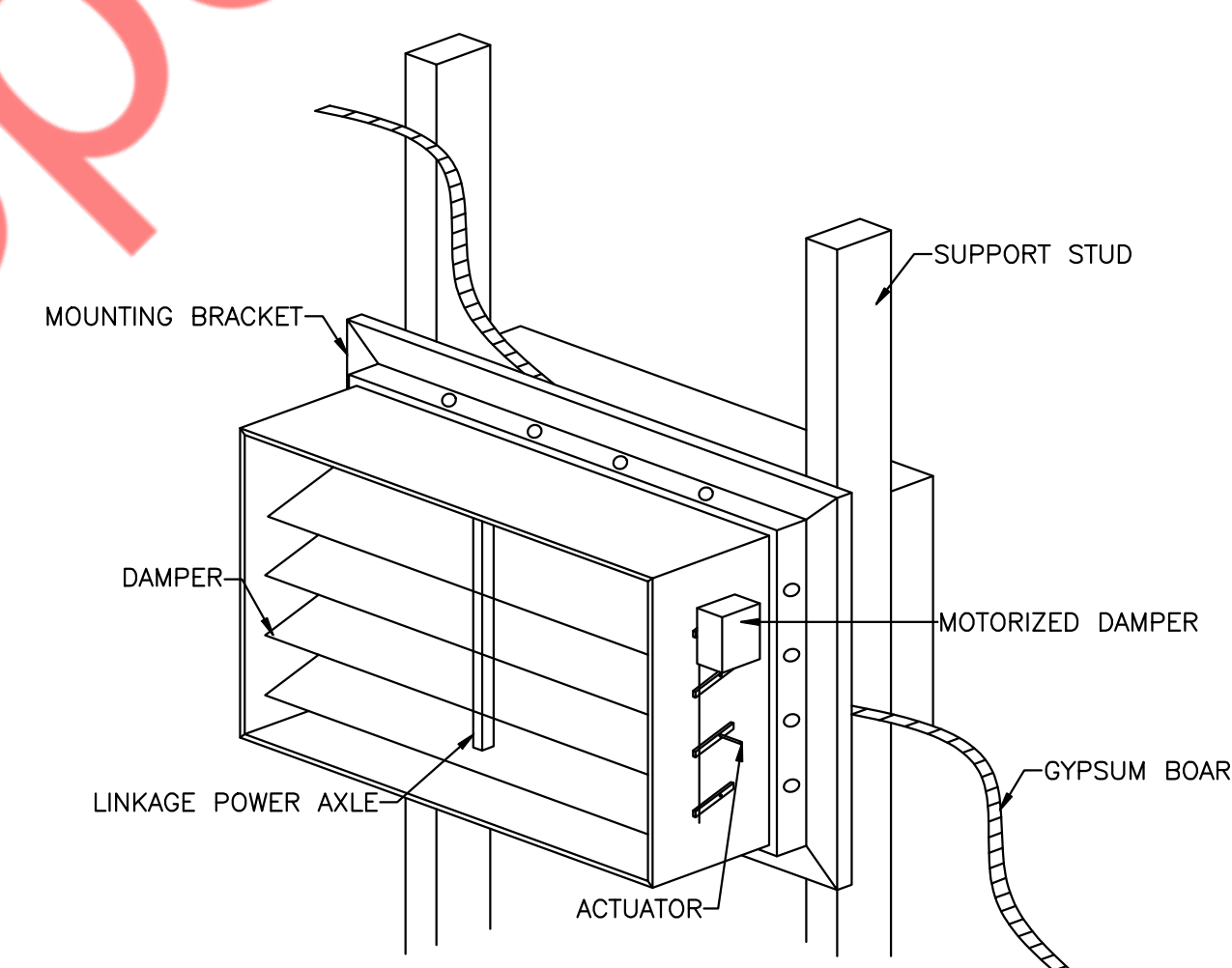
WALL MOUNTED UNIT DETAIL

N.T.S.



CONDENSING UNIT MOUNTING DETAIL

N.T.S.



MOTORIZED DAMPER DETAIL

N.T.S.

EXISTING AIR HANDLING UNIT SCHEDULE (BASIS OF DESIGN: NORDYNE & WESTINGHOUSE)																				
SYMBOL	MODEL NO. (DX-COIL / FURNACE)	CAPACITY TON	TOTAL SA CFM	O.A. CFM	MIN. ESP (IN. WG.)	DIMENSIONS (IN.) (WXHXD)	WEIGHT (LBS)	AMBIENT TEMP (DEG F)	COOLING DATA				GAS HEAT		ELECTRICAL DATA			AFUE %	NOTES	REMARK
									EDB'F	EWB'F	TOTAL MBH	SENSIBLE MBH	INPUT MBH	OUTPUT MBH	MCA (A)	MOC (A)	V/PHHZ			
AC-1(E)	C68A-X60C-D/FG7TC120D-VD (V.I.F.)	5.0 (V.I.F.)	2000	430	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	60.0 (V.I.F.)	S.A.E.	120	114	S.A.E.	S.A.E.	115/160(V.I.F.)	95%	1-8	EXISTING TO REMAINS

NOTES:
1. S.A.E. - SAME AS EXISTING. V.I.F. - VERIFY IN FIELD.
2. EXISTING COOLING COIL AND GAS FURNANCE WITH ALL ACCESSORIES TO REMAIN SAME AND TO BE REUSED.
3. CONTRACTOR TO CONFIRM IF EXISTING UNITS ARE WORKING IS AT ITS 100% RATED CAPACITY.
4. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND CONFIGURATION OF UNITS ON SITE.
5. PROVIDE CONDENSATE PUMP IF REQUIRED.
6. IF REQUIRED PROVIDE NEW THERMOSTAT AND TEMPERATURE SENSOR COMPATIBLE WITH EXSITING AHU. COORDINATE FINAL LOCATION OF T-SENSOR WITH ARCHITECT/OWNER.
7. CONTRACTOR TO REBALANCE OUTSIDE AIR & RETURN AIR DAMPERS ON EXISTING AHU TO MATCH VALUES MENTIONED IN ABOVE TABLE.
8. REPLACE FILTERS, IF REQUIRED.

EXISTING HEAT PUMP CONDENSING UNIT (OUTDOOR) SCHEDULE (BASED ON PAYNE)																	
SYMBOL	EVAPORATOR SYMBOL	MODEL	NOMINAL CAPACITY	COOLING MBH	COMPRESSOR DATA				ELECTRICAL DATA			EER	SEER	HSPF	WEIGHT (LBS)	NOTES	REMARK
					No.	RLA(A)	LRA(A)	V/PH.HZ	MCA(A)	MCB(A)	V/PHHZ						
ACCU-1(E)	AC-1(E)	PAS3AN060-B (V.I.F.)	5.0-TONS	60.00 (V.I.F.)	1	26.40 (V.I.F.)	134.0 (V.I.F.)	208-230/160 (V.I.F.)	34.2 (V.I.F.)	50 (V.I.F.)	208-230/160 (V.I.F.)	S.A.E.	S.A.E.	S.A.E.	S.A.E.	1-4	EXISTING

NOTES:
1. S.A.E. - SAME AS EXISTING. V.I.F. - VERIFY IN FIELD.
2. EXISTING UNIT WITH ALL ACCESSORIES TO REMAIN SAME AND TO BE REUSED.
3. CONTRACTOR TO CONFIRM IF EXISTING CONDENSING UNIT IS WORKING AT ITS 100% RATED CAPACITY. REPAIR AS NEEDED.
4. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND CONFIGURATION ON SITE.

NEW AIR HANDLING UNIT SCHEDULE (BASED ON TRANE OR EQUAL)																				
SYMBOL	MODEL DX COIL	CAPACITY TON	TOTAL SA CFM	O.A. CFM	ESP (IN. WG.)	DIMENSIONS (IN.) (LXWXH)	WEIGHT (LBS)	COOLING DATA				ELECTRIC HEATER DATA			EER	SEER	HSPF	WEIGHT (LBS)	NOTES	REMARK
								EDB'F	EWB'F	TOTAL MBH	KW	HEATING MBH	V/PHHZ	MCA (A)						
AC-2(N)	NTXAMT30A112AA/EH05-SVZ-M	2.5	875	00	0.8	43 3/4X21X21 5/8	140	80	67	27.0	3.8/5.0	17.3	208-240/160	29.0	30.0	208/160	1-7	PROVIDE SAME OR EQUIVALENT MAKE		

NOTES:
1. PROVIDE UNIT MOUNTED DISCONNECT SWITCH.
2. PROVIDE SINGLE POINT CONNECTION.
3. PROVIDE SECONDARY DRAIN PAN AND WATER LEAK SENSOR.
4. PROVIDE CONDENSATE PUMP IF REQUIRED.
5. ALL REFRIGERANT PIPING TO BE SIZED PER MANUFACTURERS RECOMMENDATIONS.
6. CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEEDS THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
7. PROVIDE ALL ASSOCIATED ACCESSORIES.

NEW HEAT PUMP CONDENSING UNIT (OUTDOOR) SCHEDULE (BASED ON TRANE OR EQUAL)																			
SYMBOL	EVAPORATOR SYMBOL	MODEL	NOMINAL CAPACITY	COOLING MBH	HEATING MBH	COMPRESSOR DATA				ELECTRICAL DATA			EER	SEER	HSPF	WEIGHT (LBS)	NOTES	REMARK	
						No.	RLA(A)	LRA(A)	V/PH.HZ	MCA(A)	MCB(A)	V/PHHZ							
ACCU-2(N)	AC-2(N)	NTXSKS30A112AA	2.5-TONS	27.0	30.0	1	13.0	18.0	208-230/160	17	31	208-230/160	33 1/8X13X34 5/8	12.5	18.0	13.6	160	1-7	PROVIDE SAME OR EQUIVALENT MAKE

NOTES:
1. VERIFY ALL DATA WITH MANUFACTURER PRIOR TO ORDERING EQUIPMENT.
2. UNIT SHALL HAVE TEN YEAR EXTENDED WARRANTY FOR COMPRESSORS/PARTS.
3. PROVIDE LOW AMBIENT CONTROL FOR CONDENSING UNIT OPERATION DOWN TO -4'F.
4. PROVIDE COMPRESSOR CYCLE PROTECTOR.
5. CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEED THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
6. ALL CONDENSING UNITS TO BE MOUNTED ON WALL WITH VIBRATION ISOLATORS.
7. REFRIGERANT LINE SET PENETRATION THROUGH BUILDING EXTERIOR TO BE PROPERLY SEALED WITH FIRE RESISTANT SEALANT DEPENDING UPON WALL CONSTRUCTION.

DUCTLESS MINI SPLIT SYSTEM A/C UNIT SCHEDULE (COOLING ONLY) (BASED ON MITSUBISHI OR EQUAL)														
SYMBOL	MODEL DX COIL	CAPACITY TON	TOTAL SA CFM	DIMENSIONS (IN.) (LXWXH)	WEIGHT (LBS)	COOLING DATA				ELECTRICAL DATA			SEER	REMARK
						TOTAL MBH	SENSIBLE MBH	MCA (A)	MOC (A)	V/PHHZ				
AC-3(N)	PKA-A24KA7	2.0	775	46 3/8X46 1/16X11 5/8	50	24.0	19.2	19	26	208/160	21.4	PROVIDE SAME OR EQUIVALENT MAKE		
ACCU-3(N)	PUY-A24NH7	2.0	-	37 13/32X13X37 1/8	160	24.0	19.2	19	26	208/160	21.4	PROVIDE SAME OR EQUIVALENT MAKE		

NOTES:
1. INDOOR UNIT IS POWERED FROM OUTDOOR UNIT.
2. PROVIDE WITH WATER LEVEL MONITORING DEVICE (FLOAT SWITCH). DEVICE SHALL BE INSTALLED INSIDE THE PRIMARY DRAIN PAN AND SHALL BE INTERLOCKED TO SHUT DOWN UNIT.
3. PROVIDE CONDENSATE PUMP IF REQUIRED.
4. PROVIDE WITH THERMAL OVERLOAD PROTECTION.
5. ALL REFRIGERANT PIPING TO BE SIZED PER MANUFACTURERS RECOMMENDATIONS.
6. VERIFY ALL DATA WITH MANUFACTURER PRIOR TO ORDERING EQUIPMENT.
7. UNIT SHALL HAVE TEN YEAR EXTENDED WARRANTY FOR COMPRESSORS/PARTS.
8. PROVIDE LOW AMBIENT CONTROL FOR CONDENSING UNIT OPERATION DOWN TO -4'F.
9. PROVIDE COMPRESSOR CYCLE PROTECTOR.
10. CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEED THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
11. ALL CONDENSING UNITS TO BE MOUNTED ON WALL WITH VIBRATION ISOLATORS.
12. REFRIGERANT LINE SET PENETRATION THROUGH BUILDING EXTERIOR TO BE PROPERLY SEALED WITH FIRE RESISTANT SEALANT DEPENDING UPON WALL CONSTRUCTION.

FAN SCHEDULE									
SYMBOL	MODEL	TYPE	DRIVE	CFM	ESP (IN. WG.)	FAN RPM	MOTOR DATA		NOTES
							POWER	V/PHHZ	
CEF-1(E)	S.A.E.	CEILING	DIRECT	70 (V.I.F.)	S.A.E.	S.A.E.	S.A.E.	S.A.E.	1

NOTES / ACCESSORIES:
1. S.A.E. - SAME AS EXISTING. V.I.F. - VERIFY IN FIELD.

AIR DEVICE SCHEDULE (BASED ON KRUEGER)						
SYMBOL	MODEL	TYPE	THROW	CFM	SIZE	NOTES
S-1	PLQ	LAY-IN	RADIAL	0-100	60	2.3.4
S-2	PLQ	LAY-IN	RADIAL	0-100	60	1.2.4
S-3	PLQ	LAY-IN	RADIAL	101-175	80	1.2.4
S-4	PLQ	LAY-IN	RADIAL	176-275	100	1.2.4
S-5	PLQ	LAY-IN	RADIAL	276-400	120	1.2.4
S-6	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	5
R-1	EGC5	LAY-IN	RADIAL	-	-	1.2.4
R-2	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	5
R-3	EGC5	LAY-IN	RADIAL	-	-	2.4.6

NOTES:
1. BASED ON 24X24 FACE SIZE.
2. CONFIRM FINAL PAINT/FINISH WITH THE ARCHITECT/OWNER.
3. BASED ON 12X12 FACE SIZE.
4. FLUSH THE DIFFUSER WITH THE FRAME OF THE GRID CEILING.
5. PROVIDE PLENUM BOX OR NECK EXTENSION AS/IF REQUIRED.
6. S.A.E. - SAME AS EXISTING.
7. BASED ON FACE SIZE 24X10.

ROOM NAME	AREA (SQ.FT.)	NUMBER OF PEOPLE/1000sq.ft AS PER IMC 2015	NUMBER OF PEOPLE AS PER IMC 2015	NUMBER OF CHAIR	FINAL PEOPLE NO.	MIN OUTSIDE AIR AS PER IMC 2015		REQ. OA (CFM)	PROVIDED OA (CFM)	EXHAUST AIRFLOW RATE (CFM/SQ.FT OR /FXT.)	TOTAL EXHAUST (CFM)	PROVIDED EXHAUST (CFM)
						CFM/PEOPLE	CFM/SQ.FT					
						101-ENTRY	166					
102-LOUNGE	945	30	29	11	11	5	0.06	112	115	-	-	-
103-OFFICE	130	5	1	3	3	5	0.06	23	25	-	-	-
104-OFFICE	101	5	1	3	3	5	0.06	21	25	-	-	-
105-OFFICE	99	5	1	3	3	5	0.06	21	25	-	-	-
106-WORKROOM	107	5	1	3	3	5	0.06	21	25	-	-	-
107-CORRIDOR	208	0	0	0	0	0	0.06	12	15	-	-	-
108-WELLNESS ROOM	78	5	1	1	1	5	0.06	10	10	-	-	-
109-BREAK ROOM	230	70	17	4	4	7.5	0.18	71	75	-	-	-
110-RESTROOM	52	0	0	0	0	0	0	0	0	70	70	70
111-IT ROOM	43	4	1	0	0	0	0	0	0	-	-	-
201-STORE 1	249	0	0	0	0	0	0.12	30	30	-	-	-
202-STORE 2	430	0	0	0	0	0	0.12	52	55	-	-	-
TOTAL	2838	-	54	32	32	-	-	403	430	-	70	70

AIR BALANCE TABLE					
UNIT	AREA SERVED	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	RETURN AIR (CFM)	EXHAUST AIR (CFM)
AC-1(E)	SEE PLAN	2000 CFM	430 CFM	1570 CFM	0 CFM
AC-2(N)	SEE PLAN	875 CFM	0 CFM	875 CFM	0 CFM
AC-3(N)	IT ROOM	775 CFM	0 CFM	775 CFM	0 CFM
CEF-1(E)	RESTROOM	-	-	-	70 CFM
TOTAL:		3650 CFM	430 CFM	3220 CFM	70 CFM
BUILDING PRESSURE:		360 CFM		POSITIVE	

NOTES:
1. CONTRACTOR TO BALANCE OUTSIDE AIR & RETURN AIR DAMPER ON AC UNITS TO MATCH VALUES MENTIONED IN ABOVE TABLE.

LEGEND

- * MOUNTING HEIGHTS SHALL BE AS INDICATED UNLESS SHOWN OTHERWISE ON ELECTRICAL DRAWINGS OR ARCHITECTURAL ELEVATIONS
- * ALL SYMBOLS MAY NOT BE SHOWN ON PLANS

RACEWAYS AND WIRING

- P4-1,3,5 SINGLE PHASE HOMERUNS TO PANELBOARD. "A" DENOTES PANEL, "1,3,5" DENOTES CIRCUIT NUMBERS, ((3) 20A, 1P CIRCUITS) NUMBER OF SLASH MARKS DENOTES NUMBER OF #12AWG CONDUCTORS IN MINIMUM 3/4" C. NO SLASH MARKS INDICATE 2#12 & 1#12G-3/4" C UNLESS INDICATED OTHERWISE.
- P4-2 MULTI-POLE HOMERUN TO PANELBOARD. "A" DENOTES PANEL, "2" DENOTES CIRCUIT NUMBER, 20 AMP 3 POLE C/B. NUMBER OF SLASH MARKS DENOTES NUMBER OF #12AWG CONDUCTORS IN MINIMUM 3/4" C.

NOTES:

- GREEN GROUND CONDUCTOR NOT INDICATED BUT SHALL BE INCLUDED IN EACH RACEWAY. SIZE SHALL BE #12AWG UNLESS INDICATED OTHERWISE.
- E 2#10,#10G EMERGENCY ONLY WIRING
 - CT CABLE TRAY - REFER TO SPECIFICATIONS FOR REQUIREMENTS
 - J J HOOKS 3'-0" ON CENTER
 - P PRIMARY CONDUIT DUCT BANK
 - S SECONDARY CONDUIT DUCT BANK
 - T TELEPHONE SERVICE CONDUIT DUCT BANK
 - CATV CABLE TELEVISION CONDUIT DUCT BANK

MISCELLANEOUS

- JUNCTION BOX WITH FLEXIBLE CONNECTION TO EQUIPMENT
- TIME CLOCK

MECHANICAL EQUIPMENT TAG ABBREVIATIONS

- AH DENOTES EQUIPMENT TYPE
- 1 DENOTES UNIT NUMBER

- ACC AIR-COOLED CONDENSER
- AHU AIR HANDLING UNIT
- B BOILER
- CH CHILLER
- CUH CABINET UNIT HEATER
- EBB ELECTRIC BASEBOARD
- EF EXHAUST FAN
- EH EXHAUST HOOD
- EWH ELECTRIC WALL HEATER
- FC FAN COIL
- HP HEAT PUMP
- MAU MAKE-UP AIR UNIT
- P PUMP
- RTU ROOF TOP UNIT
- UH UNIT HEATER
- VAV VARIABLE AIR VOLUME BOX
- WH ELECTRIC WATER HEATER

POWER DISTRIBUTION EQUIPMENT

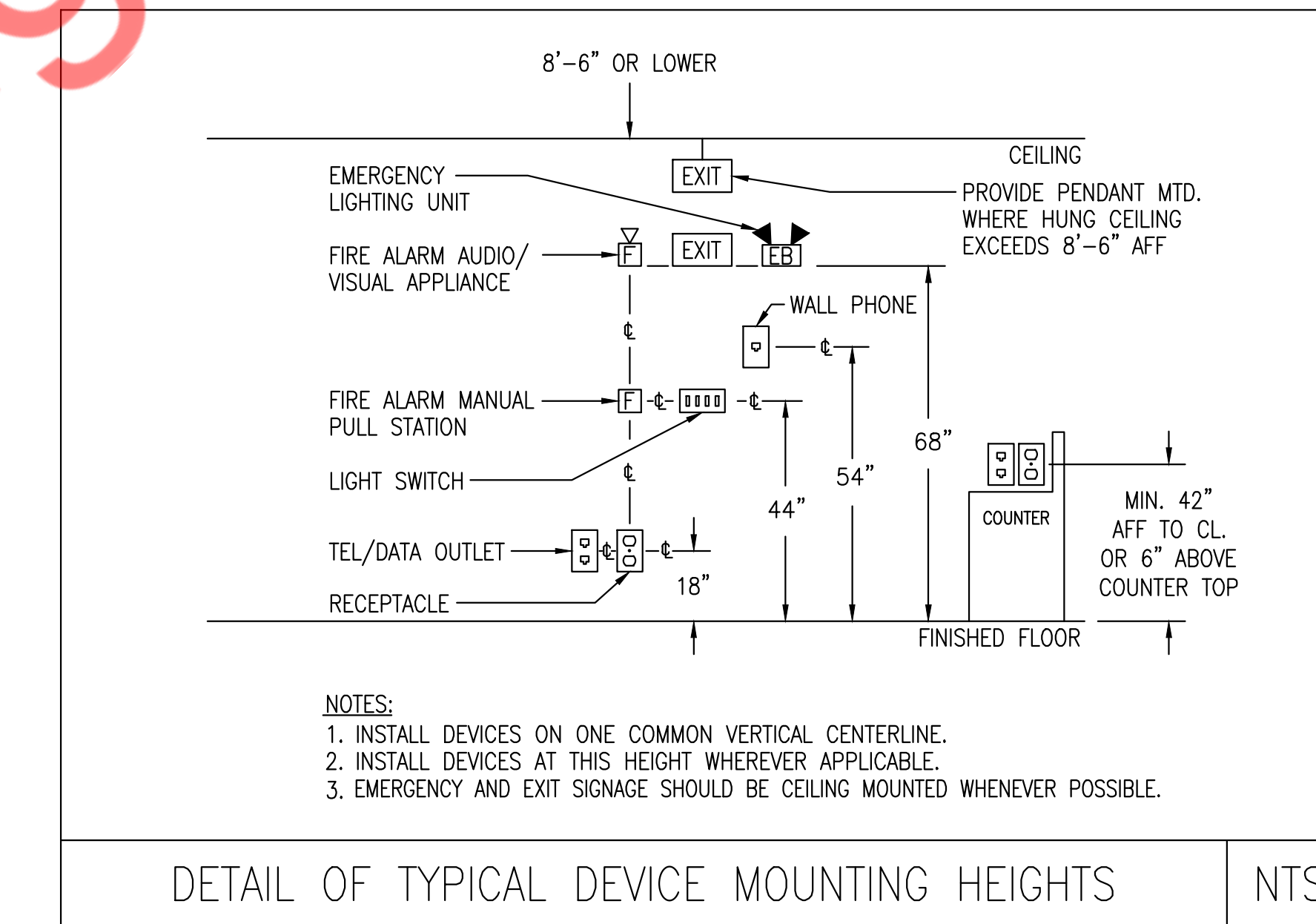
- DISTRIBUTION PANEL
- PANELBOARD, SURFACE MOUNTED
- PANELBOARD, FLUSH MOUNTED
- JUNCTION BOX, SIZED PER NEC
- MANUAL MOTOR STARTER WITH THERMAL OVERLOAD. "P" DENOTES PILOT LIGHT
- FUSED DISCONNECT SWITCH: "30/20/3" DENOTES 30 AMP/3 POLE SWITCH, 20 AMP FUSES
- GROUND ROD, REFER TO PLANS FOR EXACT SIZE
- 30A/240V NON FUSED DISCONNECT SWITCH
- 60A/240V NON FUSED DISCONNECT SWITCH

ABBREVIATIONS

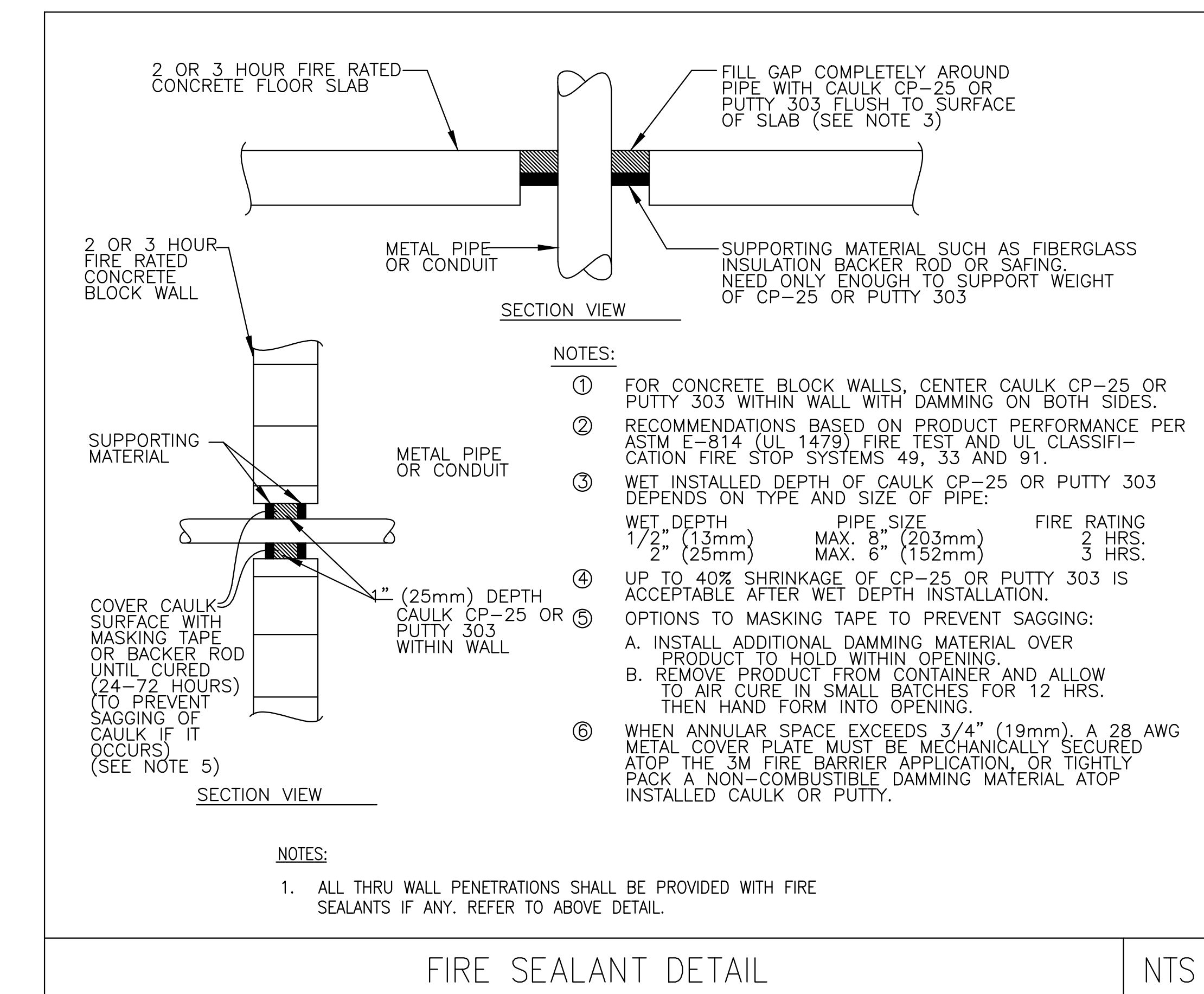
- 3R NEMA 3R RATING
- 4X NEMA 4X RATING
- A AMPERES
- AFF ABOVE FINISHED FLOOR
- AFG ABOVE FINISHED GRADE
- AIC AMPERE INTERRUPTING CAPACITY
- ARCH ARCHITECT
- ATS AUTOMATIC TRANSFER SWITCH
- AWG AMERICAN WIRE GAUGE
- C CONDUIT
- C/B CIRCUIT BREAKER
- C.T. CURRENT TRANSFORMER
- CAT CATALOG
- CKT CIRCUIT
- CU COPPER
- DWG DRAWING
- E WIRED ON EMERGENCY CIRCUIT
- EC ELECTRICAL CONTRACTOR
- EM EMERGENCY
- ETD EXISTING TO BE DEMOLISHED
- ETR EXISTING TO REMAIN
- ETRL EXISTING TO BE RELOCATED
- ETRP EXISTING TO BE REPLACED
- G GROUND
- GC GENERAL CONTRACTOR
- GFI GROUND FAULT INTERRUPTER
- HVAC HEATING, VENTILATION, AIR CONDITIONING CONTRACTOR
- IG ISOLATED GROUND
- KCMIL ONE THOUSAND CIRCULAR MILS
- KVA KILOVOLT-AMPERES
- KVAR KILOVOLT-AMPERES REACTIVE
- KW KILOWATTS
- MCB MAIN CIRCUIT BREAKER
- MCC MOTOR CONTROL CENTER
- MLO MAIN LUGS ONLY
- NC NORMALLY CLOSED
- NEC NATIONAL ELECTRICAL CODE
- NL NIGHT LIGHT
- NO NORMALLY OPEN
- NTS NOT TO SCALE
- PH PHASE
- P POLE
- PC PLUMBING CONTRACTOR
- P.T. POTENTIAL TRANSFORMER
- PVC POLYVINYL CHLORIDE
- RL NEW LOCATION OF RELOCATED DEVICE
- SM SURFACE MOUNT
- ST SHUNT TRIP
- T/D TEL/DATA
- TEL TELEPHONE
- UG UNDERGROUND
- UNO UNLESS NOTED OTHERWISE
- V VOLT
- VIF VERIFY IN FIELD
- W WATT
- WP WEATHERPROOF
- XFMR TRANSFORMER

BRANCH CIRCUIT WIRING NOTES:

- WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
- WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
- ALL SWITCH CONTROLS SHALL BE PROVIDED WITH WIRING AND CONDUIT AS REQUIRED.
- ALTHOUGH ALL BRANCH CIRCUIT WIRING AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
- A GREEN GROUNDING CONDUCTOR SHALL BE RUN WITH ALL CIRCUITS. VERIFY CONDUIT SIZE TO ENSURE IT CAN ACCOMMODATE ALL PHASE, NEUTRAL AND GROUND CONDUCTORS.
- PROVIDE A NEUTRAL CONDUCTOR TO ALL NEW DWELLING TYPE SWITCH BOXES PER NEC ARTICLE 404.2.
- ALL 15A AND 20A, 125V RECEPTACLES IN NON-DWELLING TYPE OCCUPANCIES SHALL BE GFCI PROTECTED PER NEC ARTICLE 210.8(B).
- WHERE EXISTING SWITCHES AND RECEPTACLES ARE INDICATED TO REMAIN, CONTRACTOR SHALL REPLACE SAID DEVICE(S) AND DEVICE PLATE(S) WITH NEW TO MATCH THE NEW CONSTRUCTION. WHERE THEY ARE INDICATED AS RELOCATED, EXTEND BRANCH CIRCUIT WIRING TO NEW LOCATION AND PROVIDE NEW DEVICE AND DEVICE PLATE TO MATCH NEW CONSTRUCTION.
- ALL SELF CONTAINED EMERGENCY LIGHTING UNITS AND EXIT LIGHTING SHALL BE CONNECTED TO THE NEAREST UNSWITCHED LIGHTING CIRCUIT IN THE BUILDING WITH 2 #12, #12G, 3/4" CONDUIT.
- LABEL ALL OUTLETS WITH CIRCUIT NUMBERS.
- ALL FIRE & LIFE SAFETY FIXTURES TO BE WHITE WITH RED LETTERING UNLESS LOCAL CODE DICTATES OTHERWISE. INFORM ARCHITECT OF SWITCH IF REQUIRED.
- GENERAL CONTRACTOR TO COORDINATE WITH CITIZENS PROJECT MANAGER ON SCOPE OF WORK RELATIVE TO SECURITY ELEMENTS INCLUDING BUT NOT LIMITED TO, CABLING, CONNECTION POINTS, GENERAL REQUIREMENTS, ETC.
- CONTROL FOR ALL EXTERIOR LIGHTING, SIGNAGE AND ILLUMINATED AWNINGS TO BE CONNECTED TO CITIZENS' BUILDING MANAGEMENT SYSTEM (BMS).



DETAIL OF TYPICAL DEVICE MOUNTING HEIGHTS NTS



FIRE SEALANT DETAIL NTS



ELECTRICAL SYMBOLS, ABBREVIATIONS & NOTES

ELECTRICAL SPECIFICATIONS

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

- A. THESE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS UPON WHICH THE CONTRACTOR SHALL SUBMIT A PRICE FOR MATERIAL AND LABOR PROVISIONS.
 - B. IT IS NOT INTENDED THAT THE PLANS OR SPECIFICATION SHOW OR STATE EVERY DETAILED REQUIREMENT OF THE WORK, BUT RATHER THAT THEY FURNISH ADEQUATE INFORMATION FOR AN EXPERIENCED CONTRACTOR TO PROVIDE A COMPLETELY ACCEPTABLE INSTALLATION. THE GENERAL CONDITIONS FORM A PART OF THESE SPECIFICATIONS WHETHER ATTACHED HERETO OR NOT, SHALL BE CAREFULLY EXAMINED BEFORE SUBMITTING A PROPOSAL. WHERE GENERAL CONDITIONS CLAUSES ARE REPEATED IN THIS SECTION, IT SHALL BE UNDERSTOOD AS CALLING SPECIAL ATTENTION TO THEM, OR AS A FURTHER QUALIFICATION, AND SHALL NOT BE ASSUMED AS OMITTING ANY OTHER CLAUSES. NO GENERAL CONDITIONS REFERRING TO THE WORK INCLUDED HEREIN SHALL BE CONSIDERED AS WAIVED UNLESS SPECIFICALLY STATED HEREIN.
 - C. BEFORE SUBMITTING PROPOSAL, EXAMINE ALL PLANS RELATING TO THIS WORK, VERIFY ALL GOVERNING CONDITIONS AT THE SITE, BECOME FULLY INFORMED AS TO THE EXTENT AND CHARACTER OF THE WORK REQUIRED AND ITS RELATION TO THE WORK OF OTHER TRADES. SUBMISSION OF A COST PROPOSAL (BID) WILL BE JUDGED AS EVIDENCE THAT THE SITE EXAMINATION HAS BEEN MADE, NO CONSIDERATION WILL BE GRANTED FOR ANY ALLEGED MISUNDERSTANDING OF THE MATERIALS TO BE FURNISHED FOR WORK TO BE DONE, IT BEING UNDERSTOOD THAT THE SUBMISSION OF A PROPOSAL IS AN AGREEMENT TO ALL CONDITIONS REFERRED TO HEREIN OR INDICATED ON THE PLANS.
 - D. PROPOSAL MUST INCLUDE EVERYTHING REQUIRED TO PROVIDE A COMPLETE INSTALLATION AS CONTEMPLATED IN A SPECIFICATIONS AND PLANS, WHETHER SPECIFICALLY SHOWN OR SPECIFIED OR NOT, INCLUDED ARE LABOR, MATERIALS, EQUIPMENT, LIGHTS, TOOLS, SCAFFOLDING, ETC. NECESSARY TO COMPLETE INSTALLATION OF EVERYTHING DESCRIBED, SHOWN OR REASONABLY IMPLIED.
 - E. ANY DISCREPANCIES BETWEEN THESE SPECIFICATIONS AND THE ACCOMPANYING PLANS, OR THESE SPECIFICATIONS AND PLANS AND THE SPECIFICATIONS OF OTHER TRADES, SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE SUBMISSION OF THE BID. FAILURE TO COMPLY WITH THE ABOVE SHALL ALLOW THE ARCHITECT TO MAKE A FINAL AND BINDING DECISION AT A LATER DATE AND NO ALLOWANCE WILL BE GIVEN IF THE MORE EXPENSIVE OF THE ITEM IN QUESTION IS SELECTED.
 - F. THE WORK CALLED FOR IN THESE PLANS AND SPECIFICATIONS SHALL BE COORDINATED WITH THE STRUCTURE, WORK OF ALL RELATED TRADES, AND SHALL BE SO ARRANGED THAT THERE WILL BE NO DELAY IN THE PROPER INSTALLATION AND COMPLETION OF ANY PART OF EACH RESPECTIVE WORK, WHEREIN IT MAY BE INTERRELATED WITH THIS CONTRACT ALL WORK CAN PROCEED IN ITS NATURAL SEQUENCE WITHOUT UNNECESSARY DELAY. THE CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL COST AND DELAYS IN THE WORK RESULTING FROM SUBSTITUTION UNDER THIS DIVISION: INCLUDING, BUT NOT LIMITED TO, ANY CHANGES, INDECISION, INSTALLATION OR THE WORK OF OTHER TRADES.
 - G. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC (EXCEPT WHERE DIMENSIONED) AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEM AND WORK. FOLLOW ARCHITECTURAL, STRUCTURAL, AND MANUFACTURER'S SHOP DRAWINGS FOR GREATER ACCURACY. CONSULT ENGINEER IN CASE OF DOUBT OR CONFLICT, UNLESS, NOTED, FIXED DIMENSIONS ARE BASED ON THE PRODUCT OF ONE MANUFACTURER, VERIFY DIMENSIONS WITH THE SHOP DRAWINGS OF THE MATERIAL ACTUALLY APPROVED OR PURCHASED.
 - H. EXACT LOCATION OF ALL EQUIPMENT, PANELS, PULL BOXES, FEEDERS, FIXTURES, ETC., SHALL BE APPROVED BY THE ARCHITECT, AND OWNER PRIOR TO THE INSTALLATION OF THE SAME.
 - I. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS, AND ACCESSORIES TO FULFILL APPLICABLE CODES, REGULATIONS, AND THE BEST PRACTICES OF THE TRADE FOR INSTALLATION OF ALL ELECTRICAL WORK.
 - J. ANY NECESSARY ELECTRICAL SERVICE INTERRUPTIONS SHALL BE AT A TIME CONVENIENT TO THE BUILDING OWNER.
 - K. ALL PENETRATIONS THROUGH SLABS AND FIRE RATED PARTITIONS SHALL BE FIRE STOPPED USING APPROVED METHOD TO MAINTAIN THE FIRE RESISTANCE RATING.
 - L. THE E.C. SHALL CALL FOR A FINAL PUNCH-LIST WHEN ALL ELECTRICAL WORK IS COMPLETE. IN THE EVENT REPRESENTATIVES OF THIS OFFICE ARRIVE AT THE SITE AND DEEM WORK IS NOT SUFFICIENTLY COMPLETE, NO REVIEW/PUNCH-LIST WILL OCCUR. THE E.C. WILL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH RESCHEDULING THE PUNCH-LIST.
- 1.02 SCOPE OF WORK
- A. WITHOUT INTENDING TO LIMIT AND/OR RESTRICT THE SCOPE OF WORK REQUIRED AND SOLELY FOR THE CONVENIENCE OF THE CONTRACTOR, THE WORK OF THIS DIVISION SHALL, IN GENERAL COMPRISE THE FOLLOWING:
 - 1. INSTALLATION OF NEW ELECTRICAL DISTRIBUTION SYSTEM AND PANELS.
 - 2. FURNISHING AND INSTALLING NEW LIGHTING FIXTURES AND LAMPS.
 - 3. FURNISHING AND INSTALLING NEW FEEDERS, CONDUITS, BRANCH CIRCUIT WIRING, ETC.
 - 4. FURNISHING AND INSTALLING NEW RACEWAYS, OUTLET BOXES, WIRING AND CONNECTIONS FOR LIGHTING FIXTURES, SWITCHES, AND RECEPTACLES.
 - 5. PROVIDE CONNECTIONS TO ALL ELECTRICAL EQUIPMENT FURNISHED BY OTHER TRADES OR BY THE OWNER.
 - 6. POWER WIRING FOR ALL MOTORS, INCLUDING INSTALLING ALL REQUIRED DISCONNECT SWITCHES AND MOUNTING OF STARTERS.
 - 7. FURNISHING AND INSTALLING ALL TELEPHONE/DATA SYSTEM CONDUITS, SLEEVES AND BOXES.
 - 8. TEMPORARY LIGHT AND POWER.
 - 9. GROUNDING.
 - 10. CUTTING, CHANNELING, AND PATCHING.
 - 11. FIRE ALARM SYSTEM.
 - 12. REMOVAL OF ELECTRICAL SYSTEM AS REQUIRED AND AS INDICATED ON PLANS.

1.03 WORK NOT INCLUDED

- A. FURNISHING MOTORS, MOTOR STARTER AND CONTROL DEVICES CONNECTED TO EQUIPMENT FURNISHED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS. HOWEVER, ELECTRICAL CONTRACTOR WILL ERECT AND WIRE SAME, FURNISH AUXILIARY MOTOR DISCONNECTS AS REQUIRED BY DRAWINGS OR CODE.
 - B. FINISH PAINTING.
 - C. TELEPHONE/DATA WIRING AND DEVICES.
- 1.04 CODES, PERMITS, AND INSPECTIONS
- A. ELECTRICAL WORK SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE STATE ELECTRICAL CODE, LOCAL ORDINANCES, AND OTHER AUTHORITIES EXERCISING JURISDICTION OVER ALL ELECTRICAL CONSTRUCTION WORK AND THE PROJECT.
 - B. NOTHING CONTAINED IN THESE SPECIFICATIONS OR PLANS SHALL BE SO CONSTRUED AS TO CONFLICT WITH ANY LOCAL, MUNICIPAL, AND NATIONAL BOARD OF THE FIRE UNDERWRITERS REGULATIONS GOVERNING THE INSTALLATION OF WORK SPECIFIED HEREIN. ALL SUCH LAWS, ORDINANCES, AND REGULATIONS, WHERE THEY APPLY TO THIS WORK, ARE HEREBY INCORPORATED INTO AND MADE A PART OF THE SPECIFICATIONS. ALL SUCH REQUIREMENTS SHALL BE SATISFIED AT NO ADDITIONAL EXPENSE TO THE OWNER.
 - C. ALL REQUIRED PERMITS AND INSPECTION CERTIFICATES SHALL BE OBTAINED, PAID FOR, AND MADE AVAILABLE AT THE COMPLETION OF THE WORK.
 - D. COORDINATE ALL SERVICE WORK WITH THE LOCAL UTILITY COMPANIES. ALL WORK INCLUDING BUT NOT LIMITED TO, PRIMARY ELECTRIC DUCT BANKS, TRANSFORMER PADS, MANHOLES/ PULL BOXES, METERING, PROTECTION BOLLARDS AND TELEPHONE/CABLE TV SERVICE DUCT BANKS SHALL BE PROVIDED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE LOCAL UTILITY COMPANIES.
- 1.05 GUARANTEES AND CERTIFICATIONS
- A. ALL WORK SHALL BE GUARANTEED TO BE FREE FROM DEFECTS, DEFECTIVE MATERIALS OR WORKMANSHIP, AS WELL AS DAMAGE TO THE WORK OF ANY/ALL TRADES RESULTING FROM THE SAME, SHALL BE REPLACED OR REPAIRED AS DIRECTED FOR DURATION OF ONE YEAR, FROM THE DATE OF ACCEPTANCE.
 - B. THE DATE OF ACCEPTANCE SHALL BE THE DATE OF THE FINAL PAYMENT FOR THE WORK OR THE DATE OF A FORMAL NOTICE OF ACCEPTANCE, WHATEVER IS EARLIER.
 - C. NON-DURABLE ITEMS, SUCH AS ELECTRIC LAMPS, SHALL BE REPLACED UP TO THE DATE OF ACCEPTANCE, SUCH THAT THEY SHALL HAVE HAD NO MORE THAN 100 HOURS USE PRIOR TO THIS DATE.

1.06 SHOP DRAWINGS AND EQUIPMENT SUBMISSIONS

- A. PRIOR TO PURCHASING ANY EQUIPMENT OR MATERIAL, A LIST OF THEIR MANUFACTURERS SHALL BE SUBMITTED FOR APPROVAL.
- B. PRIOR TO ASSEMBLING OR INSTALLING THE WORK, CATALOG INFORMATION AND FACTORY ASSEMBLY DRAWINGS, AS REQUIRED FOR A COMPLETE EXPLANATION AND DESCRIPTION OF ALL FIXTURES, DEVICES, DEVICES AND ITEMS OF EQUIPMENT, SHALL BE SUBMITTED FOR APPROVAL.
- C. FIELD INSTALLATION DRAWINGS AS REQUIRED TO EXPLAIN FULLY ALL PROCEDURES INVOLVED IN ERECTING, MOUNTING AND CONNECTING ALL ITEMS OF EQUIPMENT.
- D. NO EQUIPMENT SHALL BE FABRICATED, DELIVERED, ERECTED, OR RECONNECTED THAN FROM DRAWINGS APPROVED BY THE ENGINEER. SHOP DRAWING IN THE NUMBER DIRECTED SHALL BE SUBMITTED FOR THE FOLLOWING:

1. LIGHTING FIXTURES.	5. PANEL BOARDS AND CIRCUIT BREAKERS
2. WIRING DEVICES AND PLATES.	6. SAFETY SWITCHES AND MOTOR STARTERS
3. CONDUIT, BOXES, AND FITTINGS.	7. FIRE ALARM SYSTEM INCLUDING BATTERY CALCULATIONS AND WIRING DIAGRAMS.
- E. IT SHALL BE UNDERSTOOD THAT APPROVAL OF DRAWINGS WILL NOT BIND THE ENGINEER OR THE OWNER TO THE FINAL ACCEPTANCE OF SUCH EQUIPMENT AS THE COMPLETED INSTALLATION AND TEST OF EQUIPMENT AS A WHOLE MUST BE PROVIDED AND GUARANTEED HEREIN AS SPECIFIED.

1.07 SAMPLES

- A. UPON REQUEST BY ARCHITECT OR OWNER, SUBMIT FOR APPROVAL ONE SAMPLE OF EACH OF THE FOLLOWING:
 - 1. EACH TYPE OF LIGHTING FIXTURE.
 - 2. EACH TYPE OF WIRING DEVICE.
 - 3. EACH TYPE OF WIRING DEVICE PLATE.

1.08 AS-BUILT DRAWINGS

- A. THE CONTRACTOR SHALL, WITHIN 15 DAYS OF THE COMPLETION OF THE PROJECT AND PRIOR TO REQUESTING FINAL PAYMENT, SUBMIT AS-BUILT DRAWINGS OF THE ACTUAL INSTALLATION OF THE ELECTRICAL WORK. THREE (3) PAPER SETS OF DRAWINGS, SAME SCALE AS THE DESIGN SET UNLESS OTHERWISE INDICATED IN THE SPECIFICATIONS, AND THREE (3) CD DISKS WITH AutoCAD 2007 OR LATER VERSIONS OF THE AS-BUILTS ARE REQUIRED FOR SUBMISSION TO THE ARCHITECT ENGINEER.

1.09 TESTS

- A. BEFORE AN APPLICATION FOR THE FINAL ACCEPTANCE OF THE WORK WILL BE CONSIDERED, ALL TESTS DEEMED NECESSARY BY THE ARCHITECT TO SHOW PROPER EXECUTION OF THE WORK SHALL HAVE BEEN PERFORMED AND COMPLETED IN THE PRESENCE OF AN ARCHITECT'S REPRESENTATIVE. SCHEDULE OF ALL TESTING PROCEDURES SHALL BE ARRANGED TO SUIT THE CONVENIENCE OF THE ARCHITECT.
 - B. ANY DEFECTS OR DEFICIENCIES DISCOVERED IN ANY OF THE ELECTRICAL WORK SHALL BE CORRECTED.
- 1.10 IDENTIFICATION
- A. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL TYPEWRITTEN DIRECTORIES BEHIND TRANSPARENT PLASTIC COVERS IN METAL FRAMES, IN ALL NEW AND EXISTING PANELS INDICATING TYPE AND LOCATION OF LOAD BEING SERVED BY INDIVIDUAL CIRCUIT BREAKERS.
 - B. ALL PARTS OF EQUIPMENT, SUCH AS PANELS, JUNCTION BOXES, SAFETY SWITCHES, MOTOR STARTER, CIRCUIT BREAKERS, CONDUCTORS AND SIMILAR ITEMS SHALL BE IDENTIFIED BY NAME, AT SUPPLY END, "LOAD SUPPLIED", AND AT LOAD END "LOAD SUPPLIED FROM".

PART 2 – PRODUCTS

2.01 EQUIPMENT AND MATERIALS

- A. ALL EQUIPMENT AND MATERIALS FOR PERMANENT INSTALLATION SHALL BE THE PRODUCTS OF RECOGNIZED MANUFACTURERS AND SHALL BE NEW.
- B. NEW EQUIPMENT AND MATERIALS SHALL:
 - 1. WHERE NORMALLY SUBJECT TO UNDERWRITER'S LABORATORY INC. LISTING OR LABELING SERVICES, BE SO LISTED OR LABELED.
 - 2. BE WITHOUT BLEMISH OR DEFECT.
 - 3. NOT TO BE USED FOR TEMPORARY LIGHT AND POWER PURPOSES WITHOUT ARCHITECT'S AUTHORIZATION.
 - 4. BE IN ACCORDANCE WITH THE LATEST APPLICABLE N.E.M.A. STANDARD.
 - 5. BE APPROVED BY BUILDING MANAGER OR OWNER.
- C. FOR ITEMS WHICH ARE TO BE INSTALLED BUT NOT PURCHASED AS PART OF THE ELECTRICAL WORK, THE ELECTRICAL WORK SHALL INCLUDE:
 - 1. THE COORDINATION OF THEIR DELIVERY.
 - 2. THEIR FIELD MAKE-UP AND INTERNAL WIRING AS MAY BE NECESSARY FOR THEIR OPERATION.
- D. ELECTRICAL RACEWAY AND SUPPORTING SYSTEMS SHALL BE FURNISHED AND INSTALLED COMPLETELY WITH ALL MATERIALS, FITTINGS, CONNECTIONS AND ACCESSORIES NECESSARY TO PROVIDE IN EACH INSTANCE A COMPLETE OPERATING INSTALLATION, AS DESCRIBED HEREIN, AS INDICATED ON THE DRAWINGS, AND/OR AS APPROVED BY THE BUILDING MANAGER OR OWNER.
- E. THE DRAWINGS ARE DIAGRAMMATIC AND GENERALLY INDICATIVE OF THE WORK TO BE INSTALLED, BUT DO NOT SHOW ALL BENDS, FITTINGS, AND BOXES WHICH MAY BE REQUIRED. THE CONTRACTOR SHALL CAREFULLY INVESTIGATE THE JOB CONDITIONS INCLUDING STRUCTURAL AND FINISH CONDITIONS AFFECTING ALL HIS WORK AND ARRANGE THE SAME ACCORDINGLY, FURNISHING SUCH FITTINGS, BOXES AND SIMILAR ITEMS AS MAY BE REQUIRED TO MEET SUCH CONDITIONS.

2.02 WIRING MATERIALS

- A. WIRE AND CABLE SHALL BE COPPER, RATED FOR 600 VOLTS, TYPE THHN FOR BRANCH CIRCUITS AND XHHW FOR FEEDERS.
- B. WIRE #10 AWG AND SMALLER SHALL BE SOLID, WIRE #8 AWG AND LARGER SHALL BE STRANDED.
- C. WIRING SHALL BE CONSISTENTLY COLOR CODED THROUGHOUT. FOR 120/208 VOLT SYSTEMS, UTILIZE RED, BLUE, BLACK FOR LINE (PHASE) CONDUCTORS AND WHITE FOR NEUTRAL CONDUCTOR, SWITCH LEG SHALL BE SEPARATELY IDENTIFIED. GROUND CONDUCTOR SHALL BE GREEN. FOR 277/480V SYSTEMS, UTILIZE BROWN, ORANGE, YELLOW FOR LINE (PHASE) CONDUCTORS, AND GREY FOR NEUTRAL CONDUCTOR. GROUND CONDUCTOR SHALL BE GREEN WITH YELLOW TRACER.
- D. MINIMUM SIZE:
 - 1. LIGHTING AND POWER: #12 AWG, UNLESS OTHERWISE INDICATED.
 - 2. CONTROL: #14 AWG.
 - 3. 120 VOLT CIRCUITS OVER 100 FEET IN LENGTH AND 277 VOLT CIRCUITS OVER 200 FEET IN LENGTH FROM THE POINT OF SUPPLY TO THE FIRST OUTLET SHALL BE #10 AWG.
- E. SPLICES IN BRANCH CIRCUIT WORK SHALL BE MADE BY MEANS OF TYPE "R" "SCOTCHLOCK" ELECTRICAL TYPE.
- F. ELECTRICAL INSULATION TAPE SHALL BE VINYL PLASTIC TYPE WITH PRESSURE ADHESIVE "SCOTCH" ELECTRICAL TYPE.
- G. BRANCH CIRCUITRY NUMBERS INDICATED ON THE DRAWINGS ON MULTI-CIRCUIT HOMERUNS ARE FOR IDENTIFICATION OF DEVICES OR EQUIPMENT THEY ARE CONNECTED TO AND DO NOT NECESSARILY REFER TO PANELBOARD CIRCUIT NUMBERS. ASSIGNMENT OF BRANCH CIRCUIT NUMBERS SHALL BE PART OF THIS WORK AND INDICATED ON PANEL DIRECTORIES. BRANCH CIRCUITS SHALL BE CONNECTED TO CIRCUITS ON PANELBOARDS SO AS TO SECURE A REASONABLE BALANCE ON THE THREE PHASES. WHERE MORE THAN ONE CIRCUIT WITH A COMMON NEUTRAL IS INSTALLED IN THE SAME CONDUIT, EACH PHASE WIRE SHALL BE CONNECTED TO A DIFFERENT LEG OF THE SYSTEM.
- H. ALL CONDUCTORS SHALL BE COLOR CODED THROUGHOUT AND NUMBERED AND TAGGED AT EACH JUNCTION BOX, PULL BOX, PANEL, AND DEVICE WITH SUITABLE FIREPROOF TAGS OR ADHESIVE IDENTIFICATION BANDS.

2.03 CONDUITS AND RACEWAYS

- A. LIQUID TIGHT FLEXIBLE, GALVANIZED STEEL CONDUIT WITH CONTINUOUS COPPER BONDING CONDUCTOR, SHALL BE USED FOR CONNECTIONS TO MOTORS AND AT OTHER LOCATIONS WHERE VIBRATION MOVEMENT IS ENCOUNTERED.
 - B. UNLESS OTHERWISE INDICATED OR SPECIFIED ALL WIRING SHALL BE INSTALLED CONCEALED IN CEILINGS, WALLS, SLABS, PIPE CHASES AND FURRED SPACES WHENEVER POSSIBLE.
 - C. CONDUIT AND FITTINGS SHALL CONFORM TO LATEST ACCEPTABLE STATE CODE AND ALL OTHER CODES HAVING JURISDICTION.
 - D. CONDUIT SHALL BE 3/4" TRADE SIZE MINIMUM. UNLESS OTHERWISE INDICATED OR SPECIFIED.
 - E. ALL CONDUITS WHICH ARE TO REMAIN EMPTY FOR FUTURE INTRODUCTION OF CONDUCTORS SHALL BE PROVIDED WITH A PULL LINE WITH IDENTIFICATION BAND AT BOTH ENDS.
 - F. STEEL JACKETED METAL CLAD CABLE CAN BE USED FOR LIGHTING AND APPLIANCE BRANCH CIRCUITRY IN VOIDS OF CEILING AND PARTITIONS, PROVIDED THAT THIS TYPE OF WIRING IS ACCEPTABLE TO THE LOCAL BUILDING OFFICIAL OR HIS REPRESENTATIVE.
 - G. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL CONFORM TO UL 6. FITTINGS SHALL BE THREADED.
 - H. INTERMEDIATE METALLIC CONDUIT (IMC) SHALL CONFORM TO UL 1242. FITTINGS SHALL BE THREADED.
 - I. ELECTRICAL METALLIC TUBING (EMT) SHALL CONFORM TO UL 797. FITTINGS SHALL BE GLAND AND RING COMPRESSION TYPE.
 - J. FLEXIBLE METALLIC CONDUIT SHALL CONFORM TO UL1. LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL CONFORM TO UL 360.
 - K. ALL CONDUIT FITTINGS AND CONNECTORS SHALL BE STEEL WITH INSULATED THROATS. DIE-FORMED ZINC FITTINGS ARE NOT ACCEPTABLE. BUSHINGS SHALL BE PROVIDED AT ALL CONDUIT TERMINATIONS. BUSHINGS LARGER THAN 1" SHALL BE GROUNDING TYPE. PVC BUSHINGS MAY BE UTILIZED ONLY FOR 3/4" BRANCH CIRCUIT CONDUITS TERMINATING AT PANELBOARDS.
- 2.04 JUNCTION BOXES
- A. JUNCTION BOX AND PULL BOXES SHALL BE PROVIDED WHERE INDICATED OR SPECIFIED AND WHERE NECESSARY TO FACILITATE THE INSTALLATION OF EQUIPMENT OR WIRING.
 - B. ALL BOXES SHALL BE SIZED IN ACCORDANCE WITH NATIONAL ELECTRIC CODE.

2.05 OUTLET BOXES

- A. OUTLET, PULL AND JUNCTION BOXES SHALL BE FABRICATED FROM STEEL AND CONFORM TO UL 50, UL 514, AND NEMA 051. BOXES FOR INTERIOR LOCATIONS SHALL BE CODE GAUGE, GALVANIZED SHEET STEEL.
 - B. BOXES SHALL CONTAIN SUITABLE KNOCKOUTS. BARRIERS SHALL BE FURNISHED AS REQUIRED BY CODE.
 - C. BOXES SHALL BE SIZED AS REQUIRED BY CODE FOR NUMBER AND GAUGE OF CONDUCTORS THEREIN, EXCEPT WHERE NOTED TO BE LARGER, THE MINIMUM BOX SIZE SHALL BE 4" SQUARE BE 1 1/2" DEEP. COVERS GREATER THAN SOLBS. SHALL BE DIVIDED INTO MULTIPLE SECTIONS.
 - D. WHERE REQUIRED AND APPROVED BY THE ENGINEER, EXTRA DEEP OR EXTRA SHALLOW OUTLET BOXES SHALL BE USED TO FACILITATE THE INSTALLATION OF THE CONDUIT SYSTEM.
- 2.06 FASTENINGS, SUPPORTS, AND HANGERS
- A. ALL PARTS OF THE ELECTRICAL INSTALLATION SHALL BE ADEQUATELY SUPPORTED FROM THE BUILDING CONSTRUCTION USING APPROVED CLAMP SCREWS WITH THE INSERTS OF EXPANSION ANCHORS, EXPANSION BOLTS AND TOGGLE BOLTS. "IN NO CASE SHALL THE HUNG CEILING MEMBERS OR WIRES BE USED TO SUPPORT CONDUIT".
 - B. ALL FASTENING, SUPPORTS, CLAMPS, ANCHORS, AND SIMILAR ITEMS SHALL BE OF TYPE SUITABLE FOR THE PURPOSE.

2.07 WIRING DEVICES

- A. ALL DEVICES SHALL BE SPECIFICATION GRADE, U.L. APPROVED.
- B. RECEPTACLE, 20 AMP, 2 POLE, 3 WIRE DUPLEX, 125 VOLT, GROUND TYPE. DECORA STYLE.
- C. COLOR AND TYPE OF ALL DEVICE PLATES SHALL BE APPROVED BY ARCHITECT PRIOR TO PURCHASE/INSTALLATION.
- D. THE E.C. SHALL PROGRAM ALL OCCUPANCY SENSORS TO THE SATISFACTION OF THE TENANT. AS A MINIMUM, THE E.C. SHALL PROVIDE (4) HOURS OF TRAINING TO THE TENANT. ALL OCCUPANCY SENSORS SHALL BE FULLY PROGRAMMED AT TIME OF FINAL PUNCH-LIST.

2.08 GROUNDING

- A. ALL ENCLOSURES AND NON CURRENT CARRYING METALLIC PARTS OF ELECTRICAL EQUIPMENT, RACEWAY SYSTEMS AND EQUIPMENT GROUND BUSES SHALL BE EFFECTIVELY GROUNDED TO THE BUILDING GROUNDING SYSTEMS THROUGH THE SYSTEM GROUND CONDUCTORS. METALLIC CONDUITS AND OTHER RACEWAYS AND ENCLOSURES FOR CONDUCTORS SHALL BE METALLIC ALLOY JOINED TOGETHER INTO A CONTINUOUS ELECTRICAL CONDUCTOR, AS TO PROVIDE EFFECTIVE ELECTRICAL CONTINUITY.
- B. GROUND CONTINUITY SHALL BE MAINTAINED THROUGHOUT.

2.09 LIGHTING FIXTURES

- A. ALL LIGHTING FIXTURES SHALL COMPLY WITH THE STATE ELECTRIC CODE AND SHALL BE U.L. APPROVED.
- B. ALL LIGHTING FIXTURES SHALL BE APPROVED PRIOR TO PURCHASE.
- C. ALL LIGHTING FIXTURES SHALL BE FURNISHED AND INSTALLED COMPLETE WITH NECESSARY COMPONENTS, ACCESSORIES, AND LAMPS OF CORRECT TYPE AND RATING AS INDICATED ON ELECTRICAL DRAWINGS.
- D. FIXTURES SHALL BE CAREFULLY SUPPORTED AND ALIGNED WITH NECESSARY HANGERS, SUPPORTING MEMBERS, AND FRAMES FOR PROPER INSTALLATION, ALL AS REQUIRED AND AS APPROVED.
- E. ALL FIXTURES SHALL BE PROPERLY WIRED AND CONNECTED TO BRANCH CIRCUITS, TESTED AND LEFT READY FOR OPERATION.
- F. FOR TYPE, MAKE, AND QUANTITIES OF LIGHTING FIXTURES REQUIRED, SEE ELECTRICAL DRAWINGS AND SPECIFICATIONS.
- G. FIXTURES AND/OR FIXTURE OUTLET BOXES SHALL BE PROVIDED WITH HANGERS TO ADEQUATELY SUPPORT THE COMPLETE WEIGHT OF THE FIXTURE. PROVIDE SUPPLEMENTAL SUPPORTS PER ALL LOCAL AND STATE CODES.
- H. ALL FLUORESCENT LIGHTING FIXTURES SHALL HAVE ENERGY SAVING LAMPS AND SOLID STATE ELECTRONIC ENERGY SAVING CLASS "P" BALLASTS.

2.10 TELEPHONE SYSTEM

- A. PROVIDE EMPTY CONDUIT WITH PULL LINE 3/4" MINIMUM AT EACH TEL/DATA OUTLET LOCATION. EXTEND IT UP TO 12" ABOVE HUNG CEILING AND TERMINATE WITH PLASTIC BUSHING.
- B. PROVIDE 5/8" THICK, 4'-0" WIDE AND 8'-0" HIGH FIRE RETARDANT PLYWOOD BACKBOARD IN TELEPHONE CLOSET. COORDINATE SIZE WITH OWNER'S TELEPHONE SYSTEM VENDOR.
- C. ALL TELEPHONE/DATA WIRING, JACKS, COVERPLATES, PUNCH DOWN BLOCKS, ETC., ARE FURNISHED AND INSTALLED BY OWNER'S PRIVATE VENDOR.

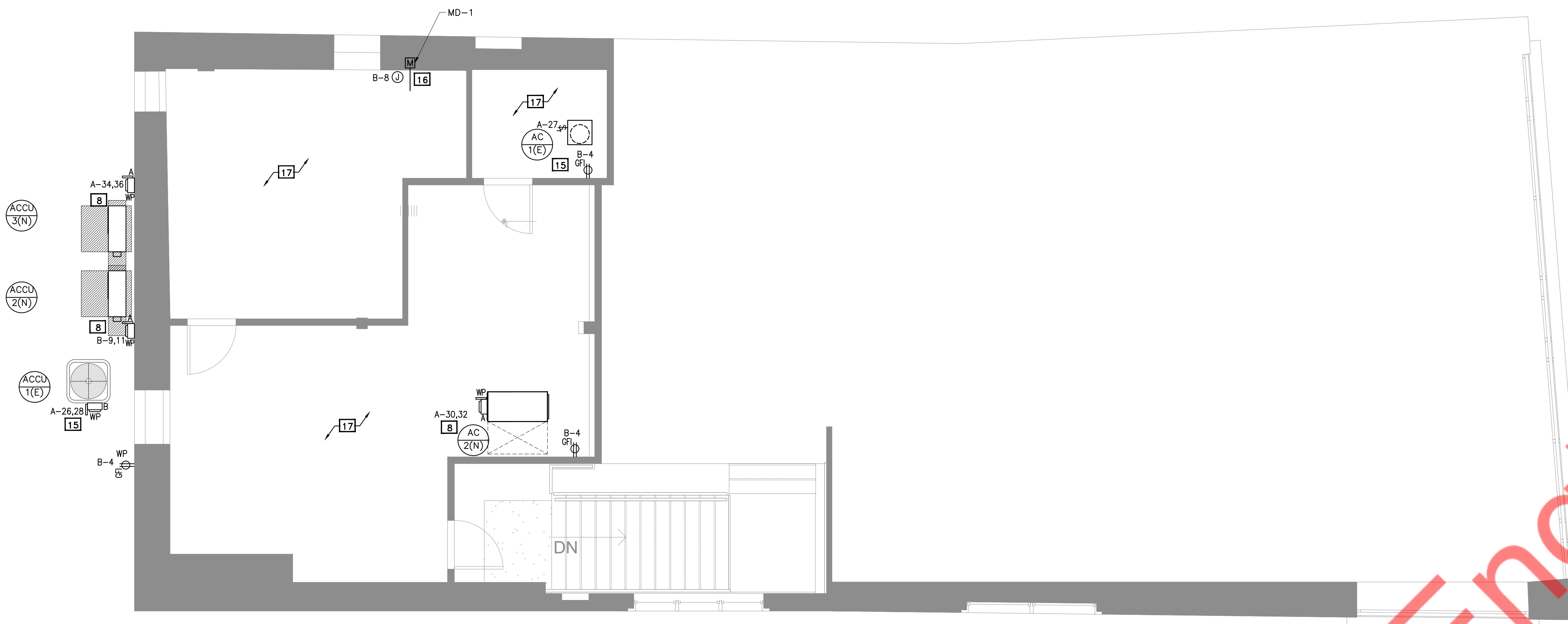
2.11 PANEL BOARDS

- A. PANEL BOARDS SHALL CONSIST OF FACTORY COMPLETED DEADFRONT ASSEMBLIES OF BACK PANS, MAIN BUSES, OVER CURRENT AND SWITCHING UNITS, SHEET METAL CABINETS AND TRIMS. THEY SHALL BE SO DESIGNED THAT SWITCHING AND OVER CURRENT DEVICES CAN BE REPLACED WITHOUT DISTURBING ADJACENT UNITS AND WITHOUT REMOVING THE MAIN BUS CONNECTORS, SO THAT CIRCUITS MAY BE CHANGED WITHOUT MACHINING, DRILLING, OR TAPPING.
- B. BUS BARS FOR THEIR MAINS SHALL BE OF COPPER HAVING CURRENT CAPACITIES AS INDICATED AND SIZED FOR SUCH CAPACITIES IN ACCORDANCE WITH UNDERWRITER LABORATORY STANDARDS. UNLESS OTHERWISE NOTED, FULL SIZE NEUTRAL BARS SHALL BE INCLUDED. BUS BAR TAPS FOR PANELS WITH SINGLE POLE BRANCHES SHALL BE ARRANGED FOR SEQUENCE PHASING OF THE BRANCH CIRCUIT DEVICES. BUSSING SHALL BE BRACED THROUGHOUT TO CONFORM TO INDUSTRY STANDARD PRACTICE GOVERNING SHORT CIRCUIT STRESSES IN PANELBOARDS. PHASE BUSSING SHALL BE FULL HEIGHT WITHOUT REDUCTION.
- C. A GROUND BUS SHALL BE PROVIDED FOR EACH PANEL. EACH GROUND BUS SHALL BE OF THE SAME MATERIAL AS THE PHASE AND NEUTRAL BUSES.
- D. PANEL BOARDS SHALL COMPLY WITH THE FOLLOWING INDUSTRY STANDARDS:
 - 1. UL STANDARDS
 - a. PANEL BOARDS – UL67
 - b. CABINET & BOXES – UL50
 - 2. NEMA STANDARD – PB1
- E. CIRCUIT BREAKERS FOR PANEL OR INDIVIDUAL MOUNTING SHALL BE MOLDED CASE TYPE, QUICK-MAKE, QUICK-BREAK, OR MANUAL OR AUTOMATIC OPERATION.
- F. AMPERE RATING AND NUMBER OF POLES SHALL BE AS INDICATED ON THE DRAWINGS.
- G. BREAKERS SHALL BE TYPE AS MANUFACTURED BY SQUARE D OR APPROVED EQUAL. MINIMUM CIRCUIT BREAKER INTERRUPTING CAPACITY SHALL MATCH EXISTING SYSTEM, BUT IN NO CASE SHALL BE LESS THAN 22,000 SYM RMS AMPERES.

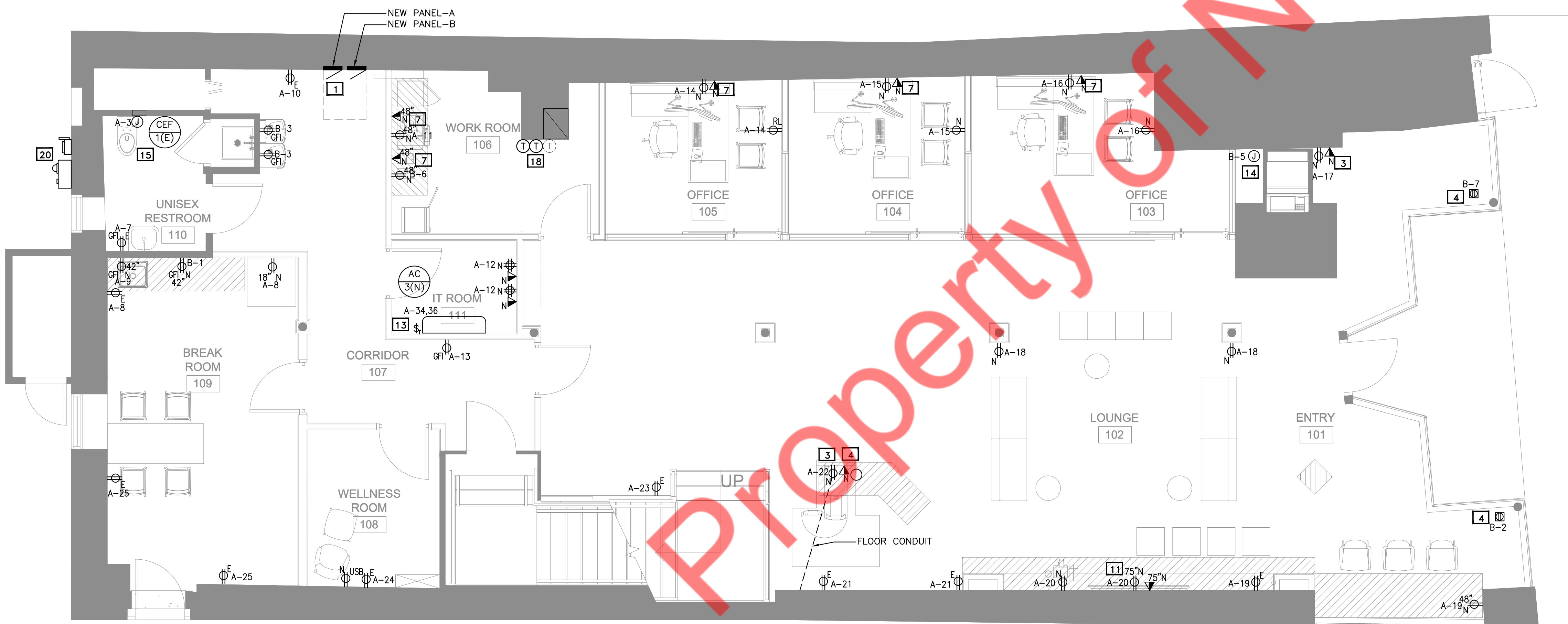
2.12 FIRESTOPPING, SMOKEPROOFING AND WATERPROOFING

- A. PROVIDE FIRESTOP OR SMOKESTOP BETWEEN SLEEVES AND CONDUIT MANUFACTURED BY BIO FIRE SHIELD, INC., OR DOW CORNING CORP. AS FOLLOWS:
 - 1. DOW CORNING SILICONE RTV FOAM.
 - 2. DOW CORNING 96-081 RTV SILICONE ADHESIVE SEALANT.
 - 3. MINERAL FIBER BOARD, MATING AND PUTTY.
- B. PROVIDE WATERPROOFING OF ALL MATERIALS WHICH PENETRATE A FLOOR, EXTERIOR WALL, SLAB OR ROOF. ALL SLEEVES SHALL EXTEND A MINIMUM OF 3 INCHES ABOVE FLOOR OR ROOF.





1 FIRST FLOOR POWER PLAN
SCALE: 1/4" = 1'-0"

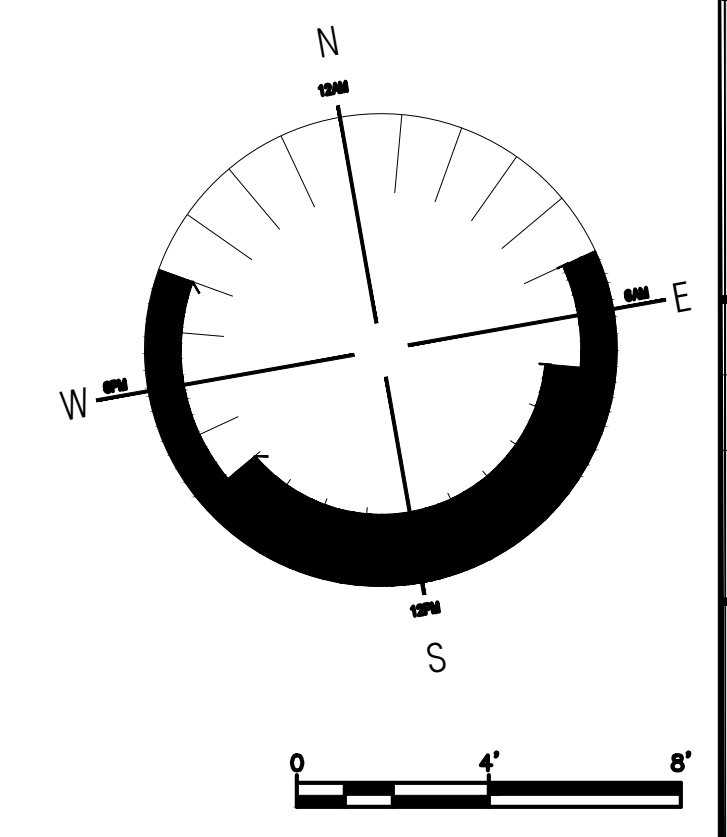


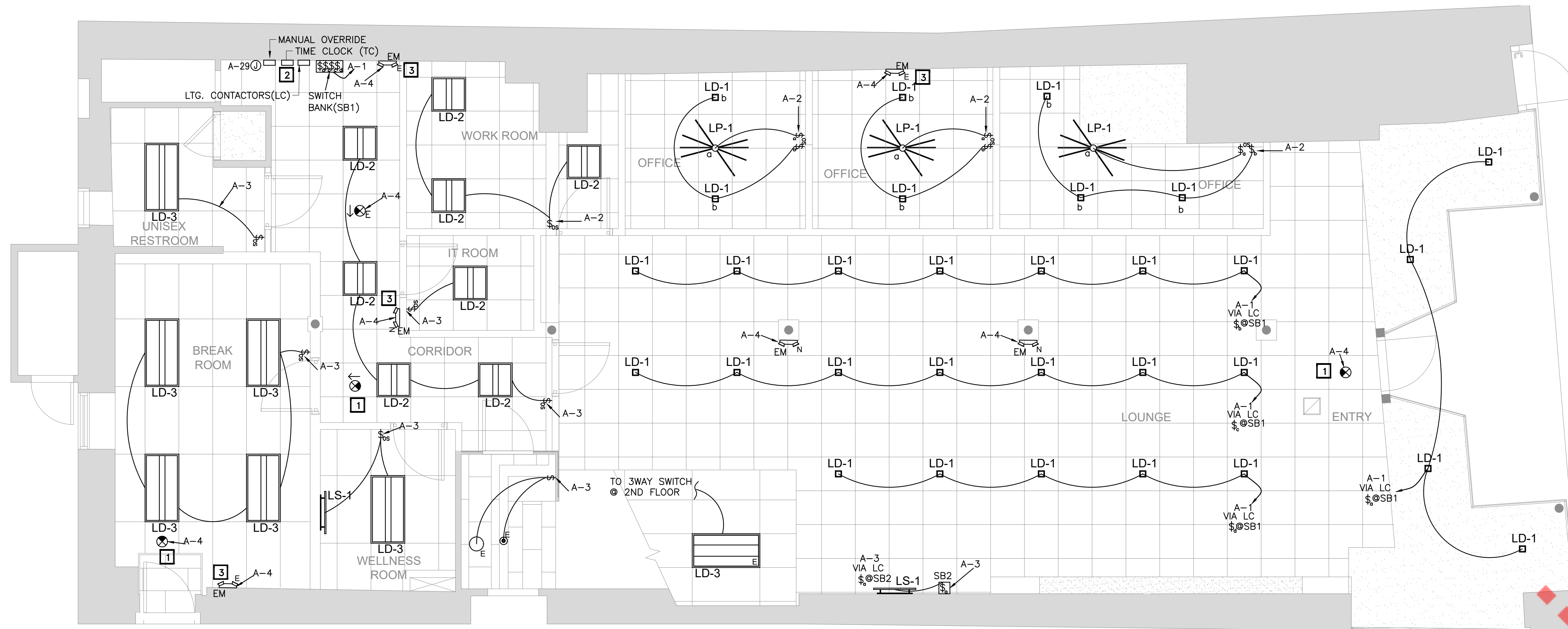
2 SECOND FLOOR POWER PLAN
SCALE: 1/4" = 1'-0"

- ### POWER PLAN GENERAL NOTES
- A. E.C. SHALL COORDINATE WITH THE ARCHITECT/OWNER/LV VENDOR FOR EXACT LOCATION OF THE LV DEVICES. PROVIDE CIRCUIT CONTROL AS REQUIRED.
 - B. E.C. SHALL COORDINATE WITH THE OWNER FOR EXACT LOCATION OF SECURITY CAMERA, CARD READER ETC. AND PROVIDE CIRCUITING AS REQUIRED.
 - C. E.C. SHALL COORDINATE WITH THE ARCHITECT/OWNER/VENDOR FOR POWER REQUIREMENT OF THE VACP, BACP, NVR, AND OTHER PANELS IN FIELD. PROVIDE OUTLETS AND CIRCUIT AS REQUIRED.
 - D. ALL SECURITY ITEMS AND ASSOCIATED WIRING TO BE PROVIDED BY OTHERS. GC TO COORDINATE WITH SECURITY AND FURNITURE PLANS.
 - E. ALL POWER, DATA AND WATER LOCATIONS TO BE COORDINATED WITH FINAL MILLWORK SHOP DRAWINGS AND FURNITURE PLANS.
 - F. PROTECT EXISTING FIRE ALARM SPEAKER/STROBES, PULL STATIONS, SPEAKERS, SMOKE DETECTORS, HEAT DETECTORS, ETC. THROUGHOUT AREA OF WORK. REFER TO ARCHITECTURAL DEMOLITION DRAWINGS FOR MORE INFORMATION.
 - G. WHERE NEW FLOOR/DATA/AV BOXES ARE INDICATED, G.C. TO TRENCH CONCRETE SLAB ON GRADE FOR RECESSED FLOOR BOX OR CORE 6" DIA. HOLE THROUGH CONCRETE FLOOR SLAB FOR RECESSED POSE-THRU FLOOR BOX. COORDINATE WITH SPECIFIED FLOOR BOX LISTED ON A03.01 FOR INSTALLATION REQUIREMENTS.
 - H. PROVIDE HDMI CABLES WHERE EVER REQUIRED.
 - I. COORDINATE EXACT LOCATION OF THE THERMOSTATS WITH THE MECHANICAL DRAWINGS. PROVIDE WIRING AS REQUIRED.
 - J. COORDINATE LOCATION OF THE ELECTRIC DAMPERS WITH THE MECHANICAL DRAWINGS. PROVIDE CIRCUITING AS REQUIRED.

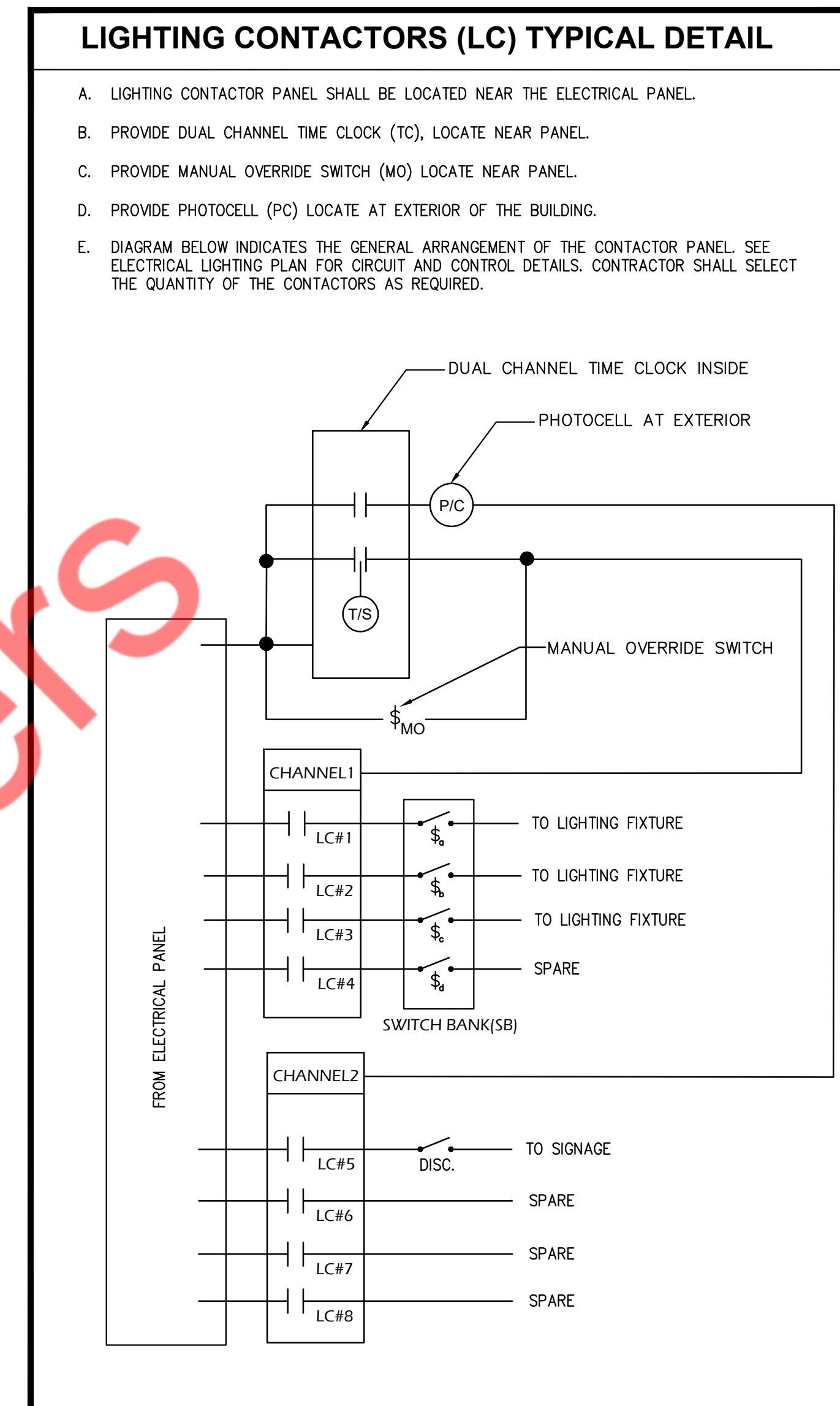
- ### POWER PLAN KEYED WORK NOTES
1. ELECTRICAL PANEL. COORDINATE WITH THE ARCHITECT/OWNER FOR EXACT LOCATION IN FIELD. ENSURE A CLEAR WORKING AND DEDICATED SPACE FOR THE PANELS AS PER NEC 110.26.
 2. NOT IN USE.
 3. PROVIDE POWER AND DATA FOR BANKING EQUIPMENT. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT OUTSHEETS AND OWNER/VENDOR.
 4. CEILING MOUNTED RECEPTACLES FOR SHOW WINDOW.
 5. PROVIDE POWER AND DATA WHIP IN FLOOR FOR POWERED FURNITURE PANEL. FLOOR TRENCHING SHOWN DASHED.
 6. E.C. SHALL COORDINATE WITH THE FURNITURE VENDOR IF THE POWER + DATA WILL BE INTEGRATED INTO PANELS. ELSE PROVIDE NEW POWER AND DATA OUTLET FOR THE FURNITURE. BASE BID ACCORDINGLY.
 7. COORDINATE WITH ARCHITECT/OWNER/LV VENDOR FOR EXACT REQUIREMENT OF THE LV EQUIPMENTS. PROVIDE ELECTRICAL CONNECTION AS REQUIRED.
 8. E.C. SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT LOCATION AND POWER REQUIREMENT OF THE MECHANICAL UNITS IN FIELD. PROVIDE CIRCUIT AND CONTROLS AS REQUIRED.
 9. E.C. SHALL COORDINATE WITH THE PLUMBING CONTRACTOR FOR EXACT LOCATION AND POWER REQUIREMENT OF THE PLUMBING UNITS IN FIELD. PROVIDE CIRCUIT AND CONTROLS AS REQUIRED.
 10. COORDINATE WITH THE ARCHITECT/OWNER/UTILITY FOR EXACT LOCATION OF THE METER AND DISCONNECT IN FIELD. ENSURE A CLEAR WORKING AND DEDICATED SPACE FOR AS PER NEC 110.26.
 11. OUTLETS BEHIND TV TO BE MOUNTED HORIZONTALLY. REFER ELEVATION SHEETS BY ARCHITECT.
 12. REFER WORK ROOM ELEVATION IN ARCHITECTURAL DRAWING.
 13. INDOOR UNIT FEED FROM OUTDOOR UNIT.
 14. FOR ILLUMINATE SIGN.
 15. EXISTING MECHANICAL/ PLUMBING EQUIPMENT TO REMAIN. E.C. SHALL REROUTE THE EXISTING WIRING AND CONNECT TO THE INDICATED CIRCUIT.
 16. TO BE INTERLOCKED WITH AC-1(E).
 17. REUSE EXISTING ELECTRICAL DATA/TEL. OUTLET IN COORDINATION WITH ARCHITECT/OWNER, REPLACE IF FOUND INOPERABLE. CONNECT TO THE NEW PANEL.
 18. E.C. SHALL COORDINATE WITH THE MECHANICAL DRAWINGS FOR THE EXACT LOCATION OF THE THERMOSTAT IN THE FIELD. PROVIDE WIRING AS REQUIRED.
 19. EXISTING EXHAUST FAN SHALL REMAIN CONNECTED TO THE EXISTING CIRCUIT AND CONTROL. VERIFY OPERABLE CONDITION IN FIELD. PROVIDE NEW CONNECTION IF REQUIRED.
 20. E.C. SHALL COORDINATE WITH THE ARCHITECT/OWNER/UTILITY FOR EXACT LOCATION OF THE ELECTRICAL METER BOX AND DISCONNECT SWITCH IN FIELD.

- ### POWER/DATA LEGEND
- ⊕ WALL MOUNTED DUPLEX
 - ⊕-G WALL MOUNTED DUPLEX, ISOLATED GROUND
 - ⊕-GFI WALL MOUNTED DUPLEX, GFI
 - ⊕-D WALL MOUNTED DUPLEX, DEDICATED
 - ⊕-S WALL MOUNTED DUPLEX, SEPARATE
 - ⊕-4 WALL MOUNTED FOURPLEX
 - ⊕-4-G WALL MOUNTED FOURPLEX, ISOLATED GROUND
 - ⊕-4-D WALL MOUNTED FOURPLEX, DEDICATED
 - ⊕-4-H WALL MOUNTED FOURPLEX, DEDICATED, HALF
 - ⊕-C WALL MOUNTED DUPLEX, CEILING
 - ⊕-S WALL MOUNTED OUTLET, SPECIAL
 - ▲ WALL MOUNTED TELE/DATA RECEPTACLE, SINGLE DROP
 - ▲-D WALL MOUNTED TELE/DATA RECEPTACLE, DUAL DROP
 - ▲-P WALL MOUNTED PHONE RECEPTACLE
 - ⊕-F WALL MOUNTED TELE/DATA, SINGLE DROP
 - ⊕-F-D WALL MOUNTED TELE/DATA, DUAL DROP
 - ⊕-F WALL MOUNTED DUPLEX
 - ⊕-F-D WALL MOUNTED DUPLEX, DEDICATED
 - ⊕-F-J WALL MOUNTED POWER JUNCTION BOX WITH HARDWIRE CONNECTION
 - ⊕-F-M WALL MOUNTED HDMI RECEPTACLE WITH HARDWIRE CONNECTION TO SPECIFIED MONITOR
 - ⊕-S-C SECURITY COMPONENT CONNECTION POINT, REFER TO A03.03
 - ⊕-BMS BUILDING MANAGEMENT SYSTEM (BMS) TEMPERATURE SENSOR





1 FIRST FLOOR LIGHTING PLAN
SCALE: 1/4" = 1'-0"

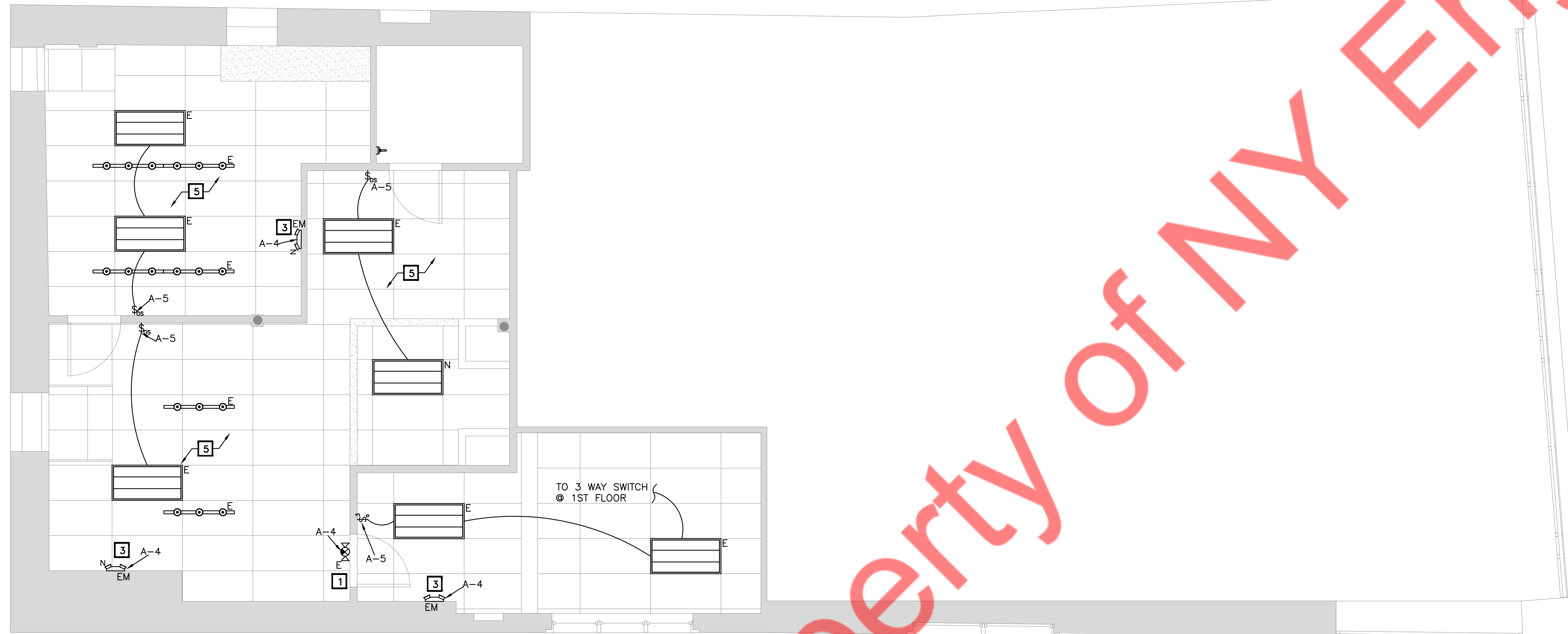


LIGHTING PLAN GENERAL NOTES

- A. COORDINATE ALL DIMMER SWITCHES WITH ARCHITECT. SWITCHES AND CONTROLS TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.
- B. ALL THE CABLES, WIRES, CONDUITS, EQUIPMENTS AND ACCESSORIES GOING THROUGH THE CEILING SHALL BE PLENUM RATED.
- C. ADDITIONS TO EXISTING BUILDING MUST COMPLY WITH THE NYSECC WITH RESPECT TO NEW CONSTRUCTION.
- D. ALTERATIONS MUST COMPLY WITH THE ENERGY CODE WHERE ANY BUILDING SYSTEM OR SUBSYSTEM IS BEING EXCEPT WHERE EXCLUDED BY THE CODE.
- E. CONNECT ALL EMERGENCY LIGHTS AND EXIT SIGNS TO THE INDICATED CIRCUIT AHEAD OF SWITCHING FOR CONTINUOUS OPERATION.

LIGHTING FIXTURE SCHEDULE NOTES

- A. PROVIDE ACCESSORIES AND MOUNTING HARDWARE FOR ALL FIXTURES.
- B. COLORS SHALL BE AS SELECTED BY ARCHITECT.
- C. COORDINATE EXACT LOCATION WITH THE ARCHITECT PRIOR TO ROUGH-IN.
- D. ALL LIGHT FIXTURES SHALL BE LED.

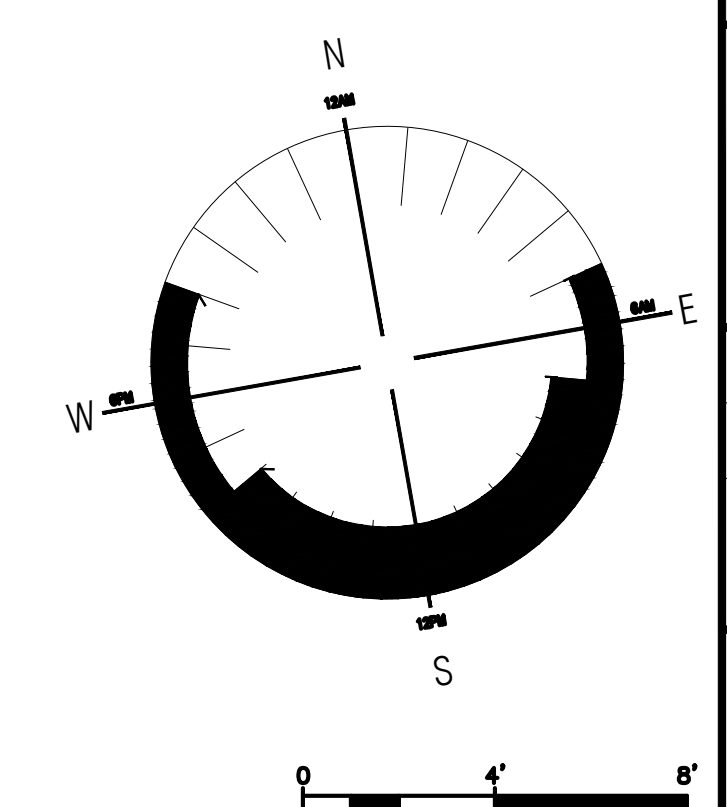


2 SECOND FLOOR LIGHTING PLAN
SCALE: 1/4" = 1'-0"

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL NO/COLOR/FINISH	LAMP	REMARKS
DOWNLIGHTS					
LD-1	3" SQUARE RECESSED LIGHT	LIGHTOLIER BY SIGNIFY	LYTE PROFILE 3" FRAME MODEL: 35-N-S ENGINE/TRIM MODEL: P35-DL-15-930-CD--Z10-U WHITE FLANGE / FIXTURE BODY LIGHT COLOR TEMPERATURE: 3000K	3000K, 90 CRI	LOCATION: FRONT OF HOUSE SPACES AS SHOWN ON REFLECTED CEILING PLAN
LD-2	2x2 IN-LAY TROFFER	LITHONIA	LITHONIA VT SERIES MODEL: 2VTL2--20L-ADP--G21-LP830 WHITE FLANGE / FIXTURE BODY LIGHT COLOR TEMPERATURE: 3000K	3000K, 80 CRI	LOCATION: BACK OF HOUSE SPACES AS SHOWN ON REFLECTED CEILING PLAN
LD-3	2x4 IN-LAY TROFFER	LITHONIA	LITHONIA VT SERIES MODEL: 2VTL4--30L-ADP--G21-LP830 WHITE FLANGE / FIXTURE BODY LIGHT COLOR TEMPERATURE: 3000K	3000K, 80 CRI	LOCATION: BACK OF HOUSE SPACES AS SHOWN ON REFLECTED CEILING PLAN
PENDANTS					
LP-1	LED DECORATIVE CHANDELIER	ELK HOME	LIGHT STREAK 8-LIGHT CHANDELIER SKU-85037/LED 48.5"W x 48.5"D x 7"H COLOR: MATTE BLACK LIGHT COLOR TEMPERATURE: 3000K	3000K, 90 CRI	LOCATION: ABOVE DESKS IN OFFICES NOTE: REFER TO INTERIOR ELEVATIONS FOR MOUNTING HEIGHTS
SCUNCES					
LS-1	LED ART SCNCE	VISUAL COMFORT	ROUSSEAU LARGE BRACKETED SCNCE ITEM NO: KW 22868Z-EC COLOR: ANTIQUE BURNISHED BRASS 30" x 2.5"W x 4"D LIGHT COLOR TEMPERATURE: 1500K	1500K	LOCATION: AS SHOWN IN REFLECTED CEILING PLAN NOTES: REFER TO INTERIOR ELEVATIONS FOR MOUNTING HEIGHTS

EMERGENCY LIGHTING					
EM-1	COMPACT DUAL HEAD LED EMERGENCY LIGHT	EXITRONIX	MODEL: LED 95 WH G2 INSTALLATION PREFERENCE: CEILING	-	-
EXIT SIGNS					
EX-1	EDGE-LIT EXIT SIGN	EXITRONIX	MODEL NO.: SR02 WB SR GC G WH G2 LETTER COLOR: GREEN	-	-

- LIGHTING PLAN KEY NOTES**
- ELECTRICAL CONTRACTOR (EC) SHALL COORDINATE WITH THE ARCHITECT/OWNER FOR EXACT LOCATION OF THE SIGNAGE IN FIELD. PROVIDE DISCONNECT AND CIRCUIT AS REQUIRED.
 - COORDINATE EXACT LOCATION OF THE TIME CLOCK, LIGHTING CONTACTORS AND MANUAL OVERRIDE SWITCH IN FIELD. REFER LIGHTING CONTACTORS TYPICAL DETAILS FOR DETAILED INFORMATION.
 - LOOP ALL EMERGENCY LIGHT FIXTURES, AND EXIT SIGNS AND WIRE THEM BACK TO THE EMERGENCY LIGHTING CIRCUIT. THE CIRCUIT BREAKER SHALL HAVE A LOCKOUT BREAKER.
 - THE EXHAUST FAN IN THE ROOM SHALL BE CIRCUITED AND CONTROLLED ALONG WITH THE LIGHTING FIXTURES IN THE SAME ROOM.
 - ALL LIGHTING FIXTURES DENOTED BY "E" ARE EXISTING IN THE FIELD SHALL REMAIN CONNECTED TO THE EXISTING CIRCUIT AND CONTROL. VERIFY OPERABLE CONDITION IN FIELD. PROVIDE NEW CONNECTION IF REQUIRED.

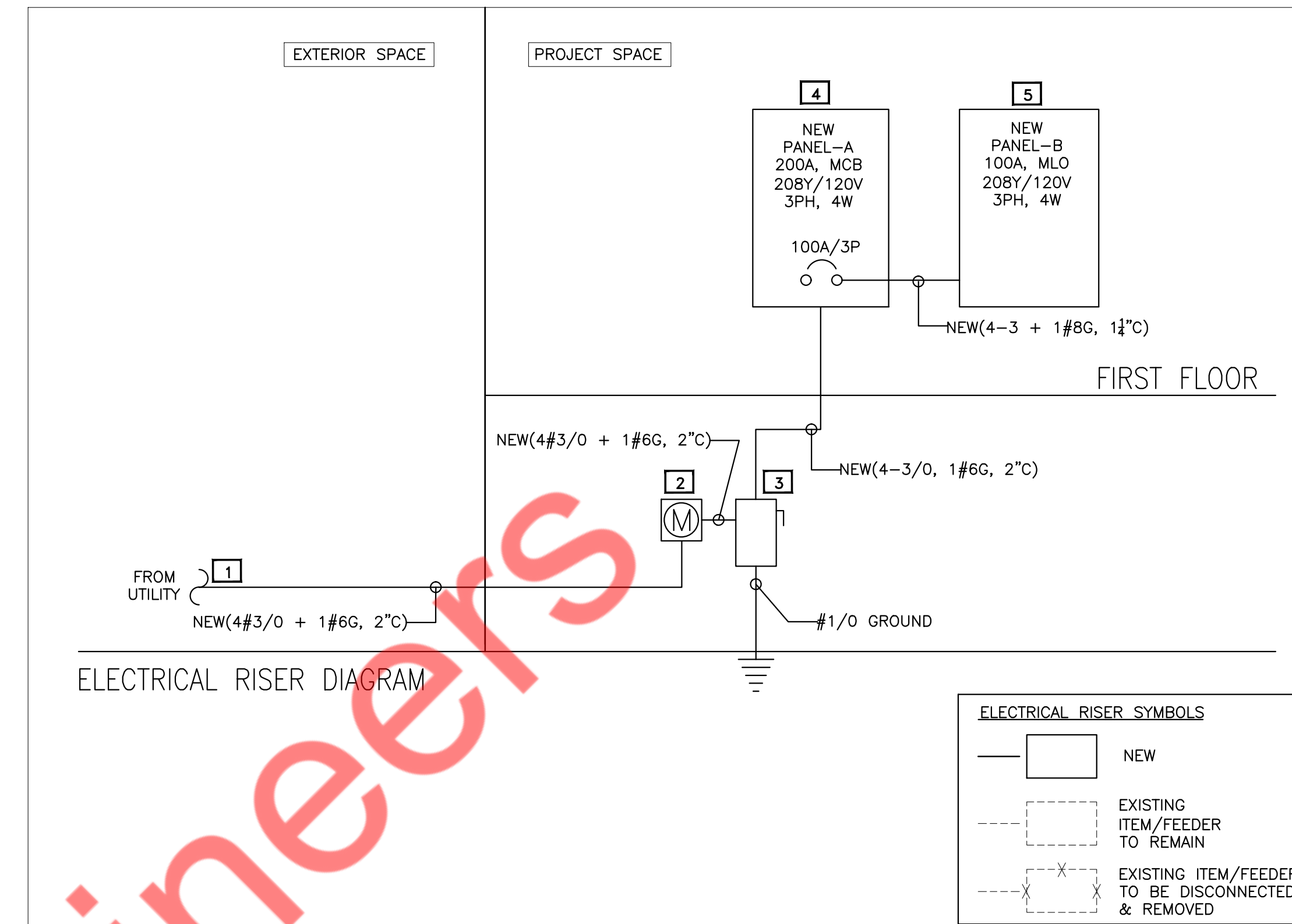


ELECTRICAL FIRST FLOOR LIGHTING PLAN



ELECTRICAL FIRST FLOOR LIGHTING PLAN

PANEL: A (NEW)												MOUNTING: SURFACE		
208Y/120V												PANEL LOCATION: FIRST FLOOR		
MCB 200A		3 PHASE			4 PHASE			WIRE				FED FROM: ELECTRICAL METER		
NOTE:														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	20	LIGHTING	L	0.35	2-12 + 1#12G, 3/4"C.	0.72			2-12 + 1#12G, 3/4"C.	0.37	L	LIGHTING	20	2
3	20	LIGHTING & CEF-1 (N)	L	0.36	2-12 + 1#12G, 3/4"C.		0.36		2-12 + 1#12G, 3/4"C.	0.00	L	EM LIGHTING	20	4
5	20	LIGHTING	L	0.20	2-12 + 1#12G, 3/4"C.			0.40	2-12 + 1#12G, 3/4"C.	0.20	L	EXTERNAL SIGNAGE	20	6
7	20	RESTROOM RECEPTACLE	R	0.18	2-12 + 1#12G, 3/4"C.	0.54			2-12 + 1#12G, 3/4"C.	0.36	R	BREAKROOM RECEPTACLE	20	8
9	20	BREAKROOM RECEPTACLE	R	0.18	2-12 + 1#12G, 3/4"C.		0.36		2-12 + 1#12G, 3/4"C.	0.18	R	NEAR PANEL RECEPT.	20	10
11	20	WORK ROOM EQUIPMENT	E	0.30	2-12 + 1#12G, 3/4"C.			0.90	2-12 + 1#12G, 3/4"C.	0.60	R	IT ROOM RECEPTACLES	20	12
13	20	GENERAL RECEPTACLE	R	0.18	2-12 + 1#12G, 3/4"C.	0.56			2-12 + 1#12G, 3/4"C.	0.38	E	OFFICE 105 WORKSTATION	20	14
15	20	OFFICE 104 WORKSTATION	E	0.30	2-12 + 1#12G, 3/4"C.		0.60		2-12 + 1#12G, 3/4"C.	0.30	E	OFFICE 103 WORKSTATION	20	16
17	20	PRINTER EQUIPMENT	E	0.30	2-12 + 1#12G, 3/4"C.			0.66	2-12 + 1#12G, 3/4"C.	0.36	R	GENERAL RECEPTACLE	20	18
19	20	GENERAL RECEPTACLE	R	0.36	2-12 + 1#12G, 3/4"C.	0.86			2-12 + 1#12G, 3/4"C.	0.50	O	LOUNGE TV & OTHER	20	20
21	20	GENERAL RECEPTACLE	R	0.36	2-12 + 1#12G, 3/4"C.		0.86		2-12 + 1#12G, 3/4"C.	0.50	E	BANKING EQUIPMENT	20	22
23	20	GENERAL RECEPTACLE	R	0.18	2-12 + 1#12G, 3/4"C.			0.36	2-12 + 1#12G, 3/4"C.	0.18	R	WELLNESS ROOM RECEPT.	20	24
25	20	BREAKROOM RECEPTACLE	R	0.36	2-12 + 1#12G, 3/4"C.	8.23			2-8 + 1#10G, 3/4"C.	7.87	H	ACCU-1(E)	50/2P	26
27	20	AC-1(E)	H	1.20	2-12 + 1#12G, 3/4"C.		9.07			7.87	H			28
29	20	LCC PANEL	L	0.18	2-12 + 1#12G, 3/4"C.			6.85	2-10 + 1#10G, 3/4"C.	6.67	H	AC-2(N)	30/2P	30
31			O	3.29				6.85		6.67	H			32
33	100/3P	PANEL-B	O	3.29				8.28	2-10 + 1#10G, 3/4"C.	4.37	H	AC-3(N) & ACCU-3(N)	30/2P	34
35			O	3.29				8.28		4.37	H			36
37		SPARE						0.00				SPARE		38
39		SPARE						0.00				SPARE		40
41		SPARE						0.00				SPARE		42
						17.75	19.53	17.45						



- ELECTRICAL RISER DIAGRAM KEYED NOTES:**
- NEW 200A, 208Y/120V 3PHASE 4W SERVICE FEEDER FROM UTILITY FOR PROJECT SPACE. E.C. SHALL COORDINATE WITH THE LANDLORD/OWNER/UTILITY FOR EXACT LOCATION IN THE FIELD.
 - NEW 200A, 208Y/120V 3 PHASE ELECTRICAL METER IN THE BASEMENT FOR THE PROJECT SPACE. E.C. SHALL COORDINATE WITH THE LANDLORD/OWNER FOR EXACT LOCATION OF THE ELECTRICAL METER IN THE FIELD.
 - PROVIDE NEW 200A, 208Y/120V 3 PHASE SERVICE DISCONNECT SWITCH IN BASEMENT FLOOR FOR THE PROJECT SPACE. E.C. SHALL COORDINATE WITH THE LANDLORD/OWNER FOR EXACT LOCATION OF THE ELECTRICAL DISCONNECT IN THE FIELD.
 - PROVIDE NEW 200A, 208Y/120V, 3 PHASE, 4 WIRE ELECTRICAL "PANEL-A" FOR THE PROJECT SPACE. E.C. SHALL COORDINATE WITH THE ARCHITECT/OWNER FOR EXACT LOCATION OF THE ELECTRICAL PANEL IN THE FIELD.
 - PROVIDE NEW 100A, 208Y/120V, 3 PHASE, 4 WIRE ELECTRICAL "PANEL-B" FOR THE PROJECT SPACE. E.C. SHALL COORDINATE WITH THE ARCHITECT/OWNER FOR EXACT LOCATION OF THE ELECTRICAL PANEL IN THE FIELD.

- ELECTRICAL RISER DIAGRAM GENERAL NOTE:**
- E.C. SHALL VERIFY/COORDINATE THE FOLLOWING INFORMATION IN THE FIELD WITH THE UTILITY/LANDLORD/OWNER AND INFORM THE ENGINEER ON RECORD OF ANY DISCREPANCY.
 - THE EXACT POWER DISTRIBUTION AND SCOPE OF WORK WITH THE LANDLORD/OWNER BEFORE BID.
 - THE ELECTRICAL WORK SHALL BE PERFORMED IN COMPLIANCE WITH THE NEC, LOCAL CODES AND AHJ.
 - COORDINATE THE EXACT LOCATION OF ALL THE NEW ELECTRICAL COMPONENTS SHOWN ON THE RISER. AND ENSURE THE CLEAR WORKING AND DEDICATED SPACE HAS BEEN PROVIDED AS PER NEC 110.26.
 - COORDINATE AVAILABLE FAULT CURRENT (AIC RATING) WITH UTILITY/LANDLORD/OWNER.
 - ENSURE THE COMBINED VOLTAGE DROP OF THE FEEDER AND BRANCH CIRCUIT SHALL NOT EXCEED 5% PER CODE.
 - PROVIDE GEC AND EGC AS PER 250.66 & 250.122 RESPECTIVELY, AS NEEDED. PROVIDE SEPARATE GROUND CONDUCTORS IN ALL CONDUITS.

- PANEL SCHEDULE GENERAL NOTE:**
- E.C. SHALL VERIFY BREAKER AND BRANCH CIRCUIT REQUIREMENTS FOR THE EQUIPMENT IN THE FIELD.
 - THE ELECTRICAL LOAD IS BALANCED WITHIN 10% FOR ALL 3 PHASES.
 - THE VOLTAGE DROP FOR THE BRANCH CIRCUIT SHALL NOT EXCEED 3%.
 - GFI MARKED ON THE PLAN INDICATES THAT THE CIRCUIT SHALL BE GFI PROTECTED. E.C. SHALL PROVIDE A GFCI BREAKER IN THE PANEL FOR THE INDICATED CIRCUIT IF EITHER THE RECEPTACLE IS NOT AVAILABLE OR NOT READILY ACCESSIBLE.
 - PROVIDE BREAKER LOCKING DEVICES IN THE PANELS, WHERE EVER REQUIRED BY CODE. INCLUDING BUT NOT LIMITED TO EMERGENCY LIGHTING AND FIRE ALARM CIRCUIT.
 - THE BREAKER FEEDING HVAC UNITS SHALL BE HACR TYPE.
 - E.C. SHALL MODIFY THE BREAKERS OF THE EXISTING PANEL (WHEREVER REQUIRED) TO BE IN LINE WITH THE PANEL SCHEDULE.
 - ALL EXISTING CIRCUITS SHOWN ON THE EXISTING ELECTRICAL PANELS ARE FOR REFERENCE PURPOSE. E.C. TO FIELD VERIFY AND INFORM ENGINEER OF RECORD PRIOR TO BID.

- PANEL SCHEDULE KEYED NOTES:**
- FOR ALL EXISTING TO REMAIN ELECTRICAL EQUIPMENT THAT ARE LOCATED IN THE PROJECT SPACE BUT ARE BEING FED FROM OLD EXISTING PANEL LOCATED IN THE BASEMENT. E.C. TO REMOVE ALL SUCH LOADS FROM THERE AND CONNECT TO NEW PANEL B. THE BREAKER RATINGS AND WIRE SIZE SHALL BE SAME. COORDINATE EXACT LOCATION OF THE EXISTING PANEL WITH THE ARCHITECT/OWNER PRIOR TO BID, BASE BID ACCORDINGLY.

PANEL: B (NEW)												MOUNTING: SURFACE		
208Y/120V												PANEL LOCATION: FIRST FLOOR		
MLO 100A		3 PHASE			4 PHASE			WIRE				FED FROM: PANEL A		
NOTE:														
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	20	BREAKROOM RECEPTACLE	R	0.18	2-12 + 1#12G, 3/4"C.	0.36			2-12 + 1#12G, 3/4"C.	0.18	L	SHOW WINDOW RECEPTACLE	20	2
3	20	NEAR REST ROOM RECEPTACLES	R	0.36	2-12 + 1#12G, 3/4"C.		0.72		2-12 + 1#12G, 3/4"C.	0.36	R	SERVICE RECEPTACLE	20	4
5	20	ILLUMINATE SIGN	L	0.18	2-12 + 1#12G, 3/4"C.			0.48	2-12 + 1#12G, 3/4"C.	0.30	E	WORK ROOM EQUIPMENT	20	6
7	20	SHOW WINDOW RECEPTACLE	L	0.18	2-12 + 1#12G, 3/4"C.	0.36			2-12 + 1#12G, 3/4"C.	0.18	H	MECHANICAL DAMPER (MD-1)	20	8
9			H	3.91	2-10 + 1#10G, 3/4"C.		3.91					SPARE	20	10
11	30/2P	ACCU 2(N)	H	3.91								SPARE	20	12
13	20	SPARE				0.00						SPARE	20	14
15	20	SPARE				0.00						SPARE	20	16
17	20	SPARE					0.00					SPARE	20	18
19	20	SPARE				0.00						SPARE	20	20
21	20	SPARE					0.00					SPARE	20	22
23	20	SPARE						0.00				SPARE	20	24
25	20	SPARE				0.00						SPARE	20	26
27	20	SPARE					0.00					SPARE	20	28
29	20	SPARE						0.00				SPARE	20	30
31	20	SPARE				0.00						SPARE	20	32
33	20	SPARE					0.00					SPARE	20	34
35	20	SPARE						0.00				SPARE	20	36
37	20	SPARE				0.00						SPARE	20	38
39	20	SPARE					0.00					SPARE	20	40
41	20	SPARE						0.00				SPARE	20	42
						0.72	4.63	4.39						

PANEL SCHEDULE ABBREVIATIONS:

L = LIGHTING
R = RECEPTACLE
H = HVAC
E = EQUIPMENT
M = MOTOR
O = OTHER

* = NEW BREAKER IN EXISTING PANEL
** = SHUNT TRIP BREAKER
*** = GFI BREAKER
**** = LOCKOUT BREAKER



MANUAL MODE OPERATION:

1. PUSHBUTTON PRESS IS REQUIRED TO TURN LOAD ON.
2. LOAD TURNS OFF WHEN SENSOR TIMES OUT OR BY PRESSING PUSH BUTTON.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

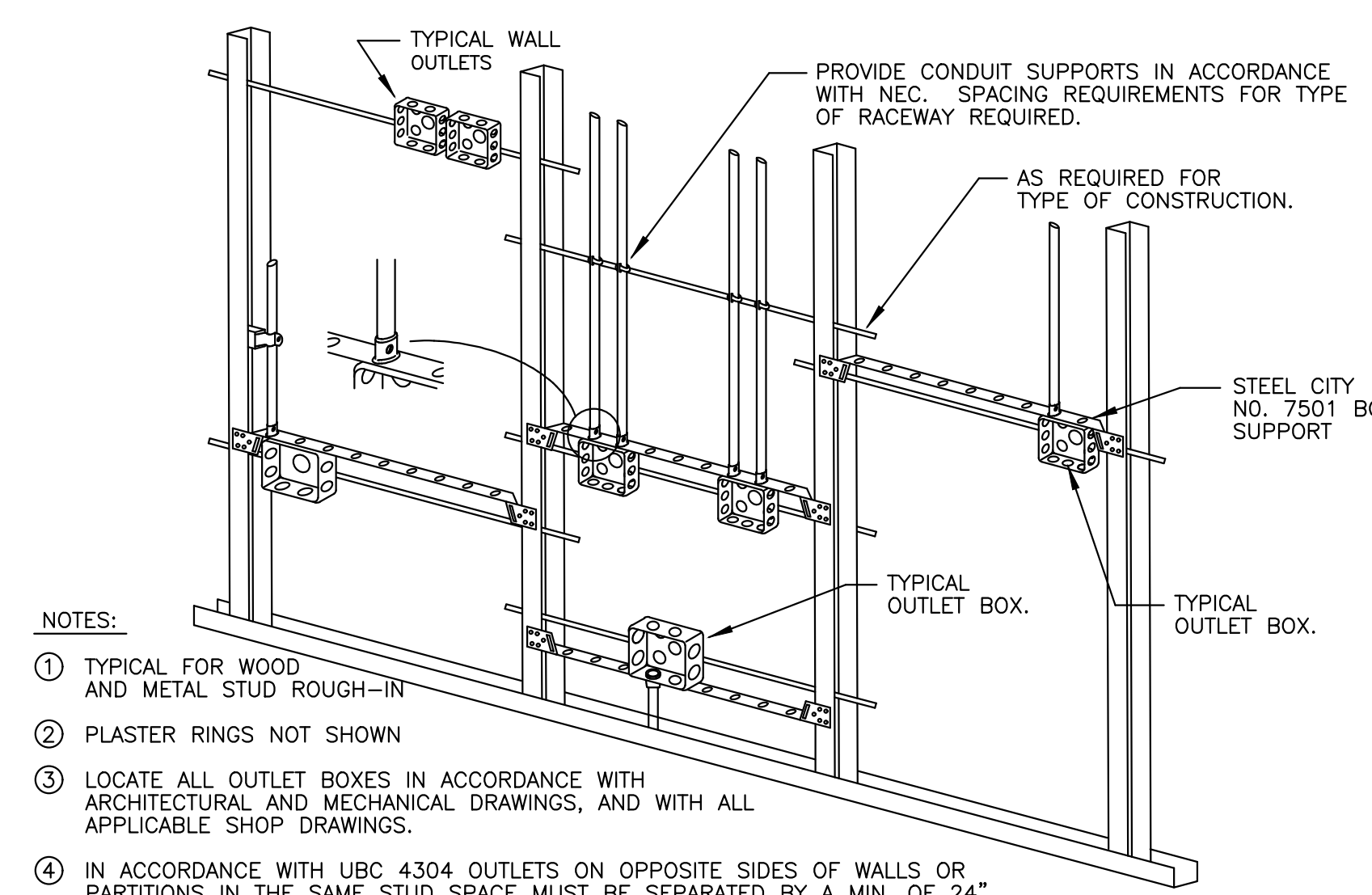
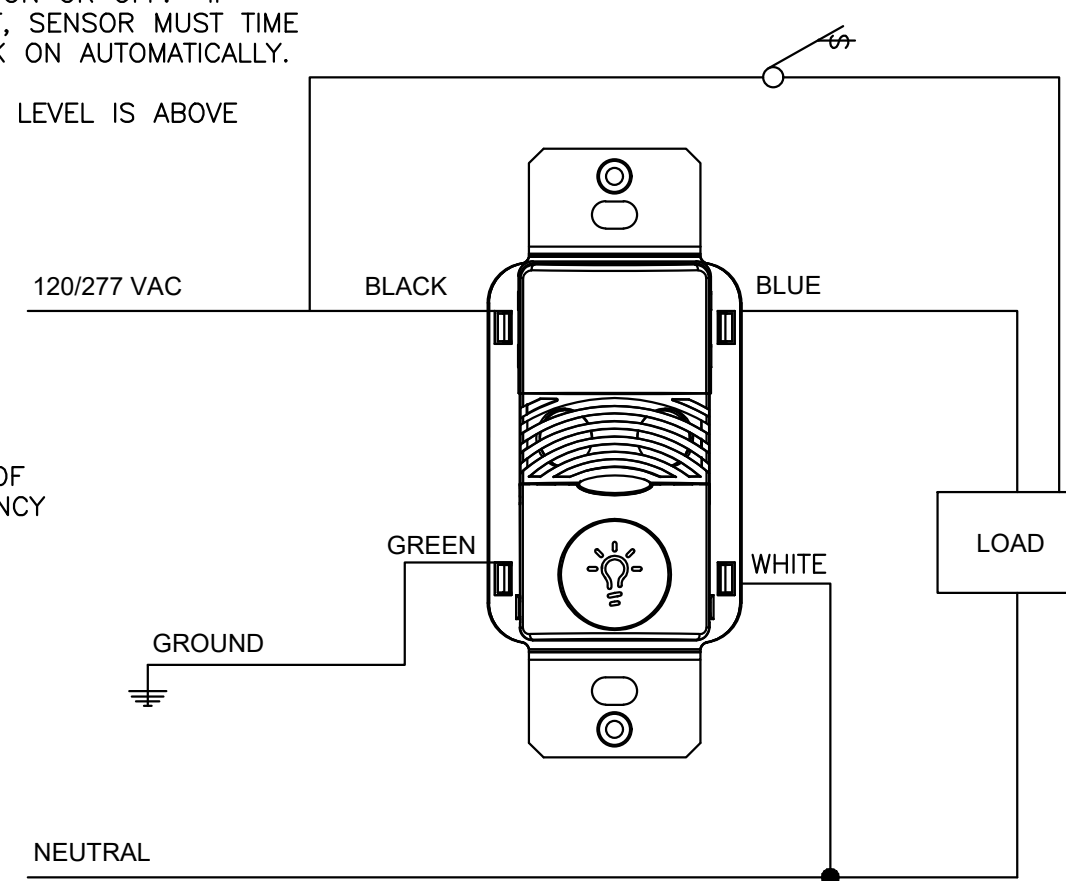
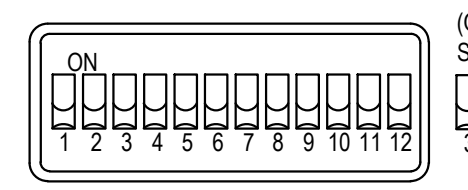
AUTOMATIC MODE OPERATION:

1. WHEN SENSOR ACTIVATES LOAD TURNS ON.
2. PUSHBUTTON CAN BE USED TO TURN LOAD ON OR OFF. IF PUSHBUTTON IS USED TO TURN LOAD OFF, SENSOR MUST TIME OUT FIRST, BEFORE LOAD CAN TURN BACK ON AUTOMATICALLY.
3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

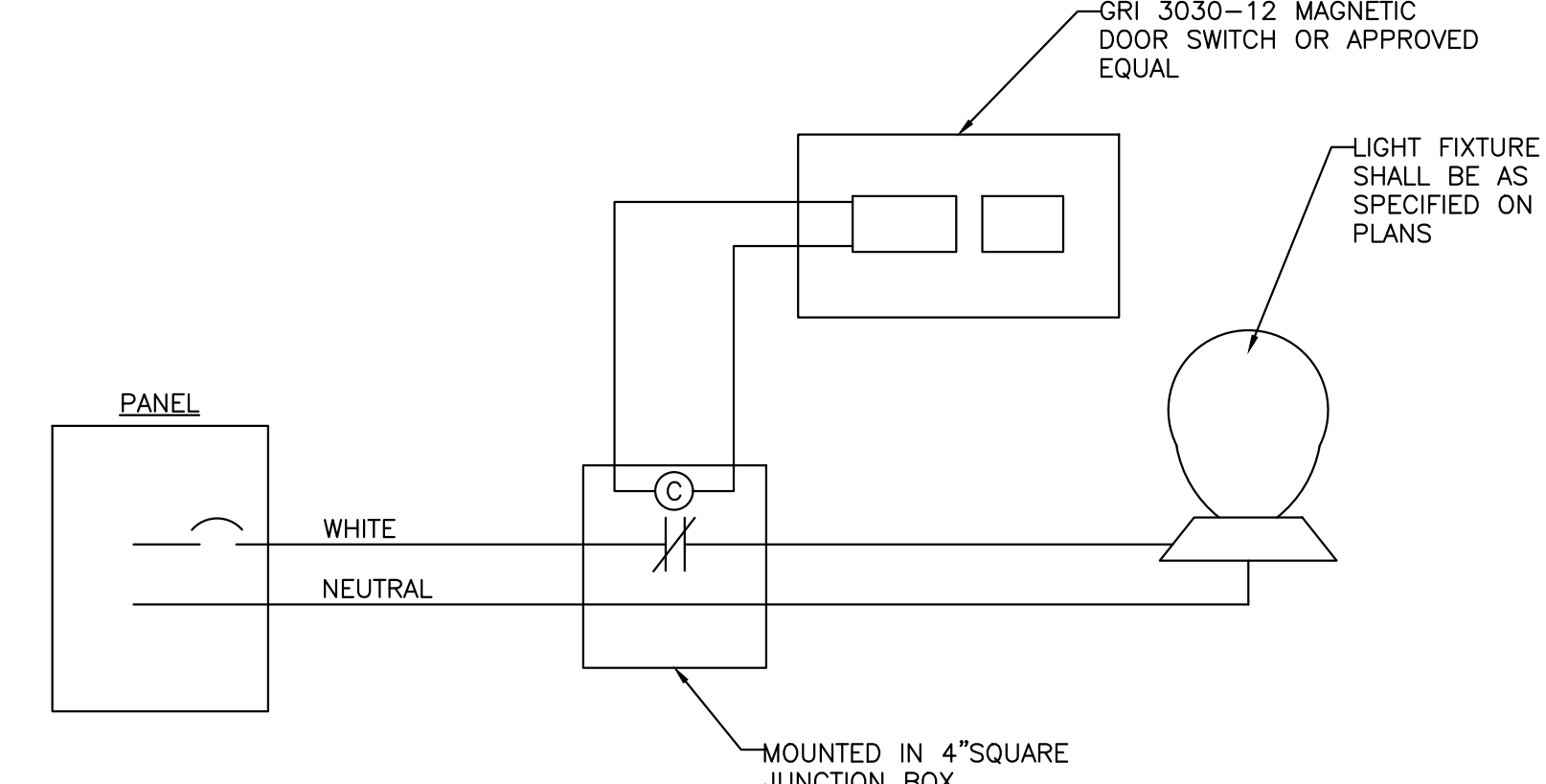
SENSOR TYPES INCLUDE:

ONW-D-1001-MV-N
(COOPER LIGHTING SOLUTIONS)

PROVIDE SENSING CONDUCTOR TAPPED AHEAD OF ANY SWITCHES WHERE SWITCH SERVES EMERGENCY FIXTURES.



- 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.

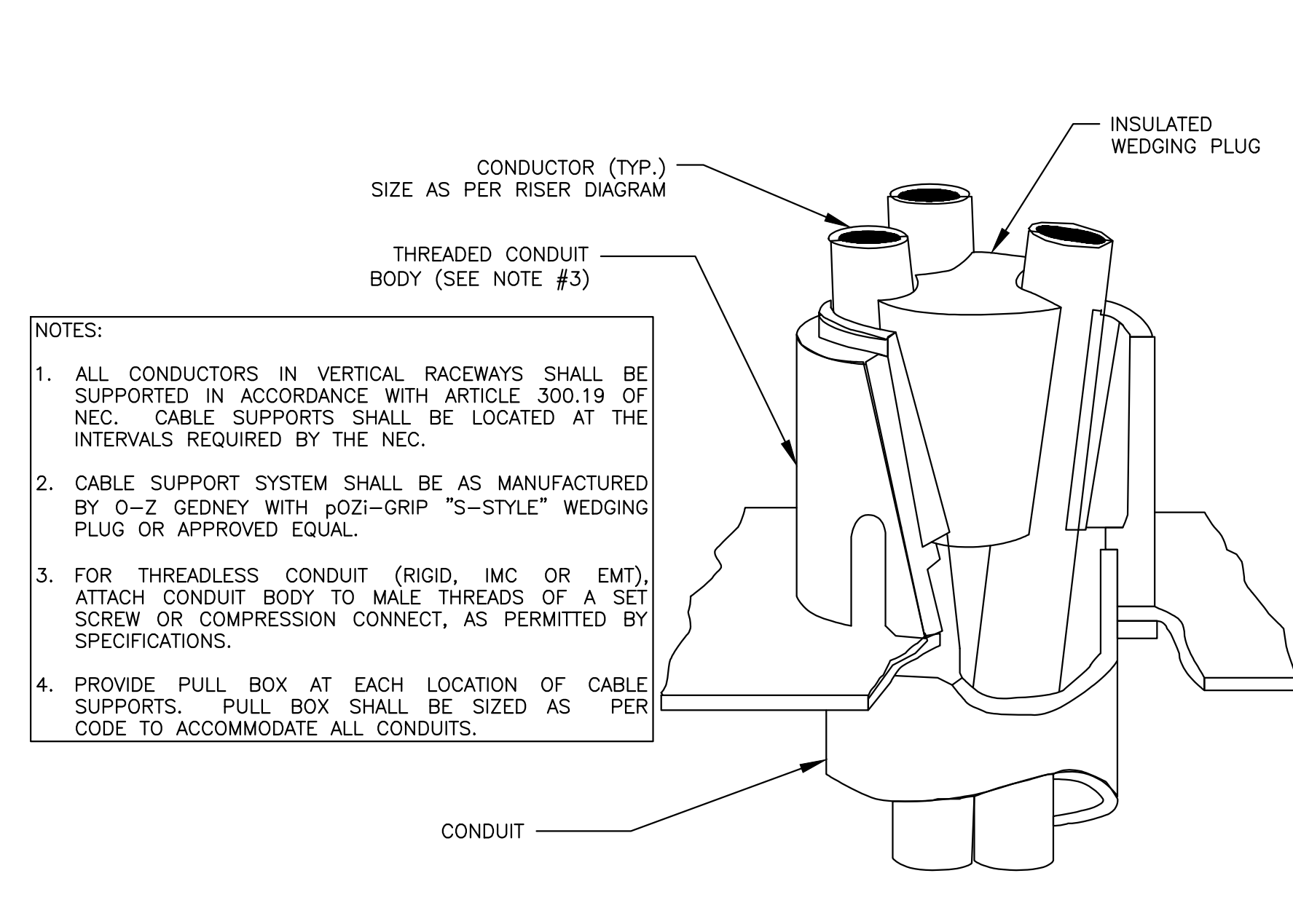


- NOTES:**
1. RELAY SHALL BE AMPROBE MODEL RC-120S, 110V NORMALLY CLOSED RELAY OR APPROVED EQUAL.
 2. ELECTRICAL CONTRACTOR SHALL COORDINATE INSTALLATION OF DOOR SWITCH WITH GENERAL CONTRACTOR

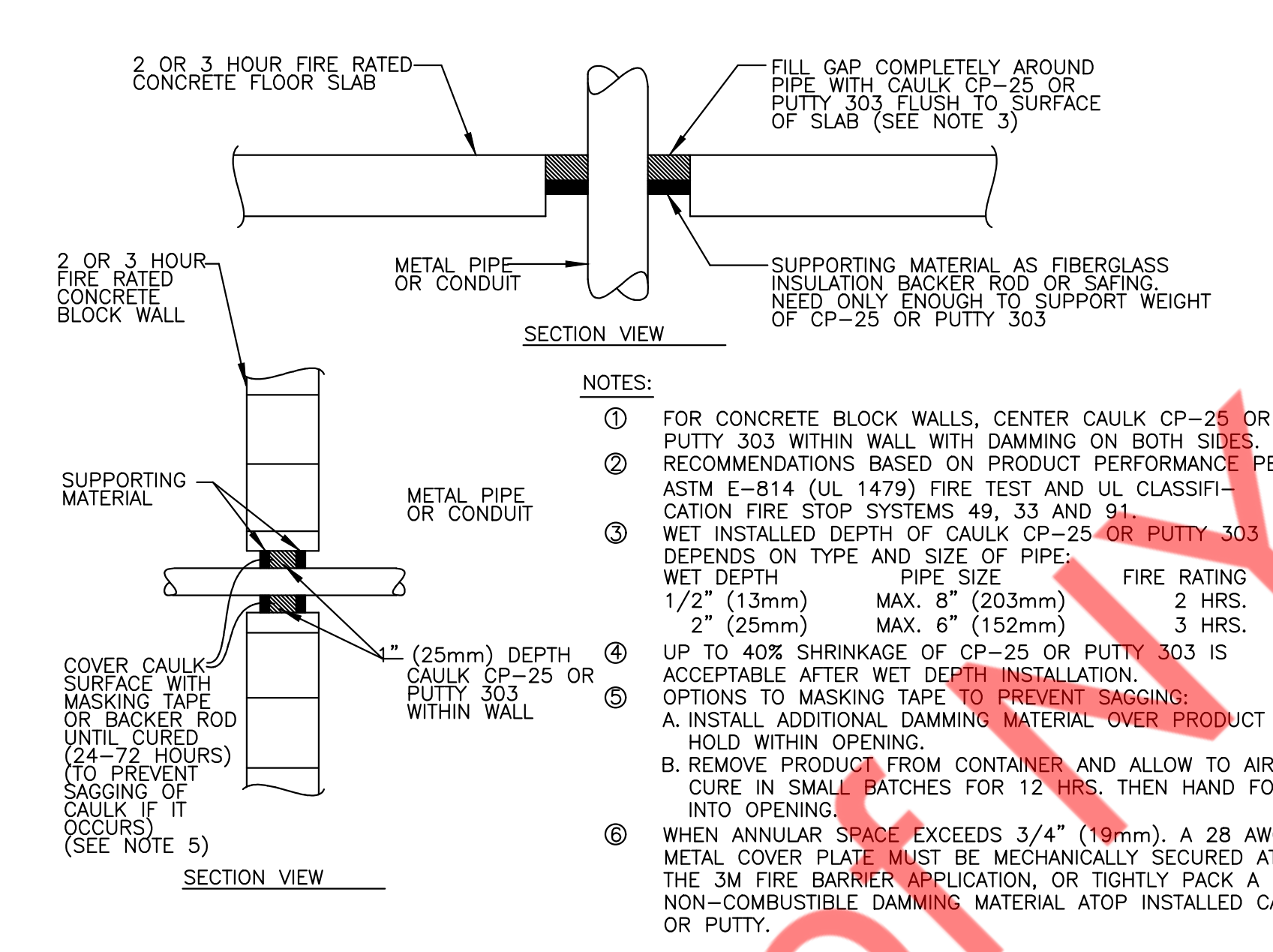
1 CONNECTION) OCCUPANCY/VACANCY-SINGLE LEVEL WIRING DIAGRAM-LOW VOLTAGE WALL SWITCH SENSOR(NEUTRAL)
E05.02 N.T.S

2 DETAIL TYPICAL ROUGH-IN REQUIREMENTS
E05.02 N.T.S

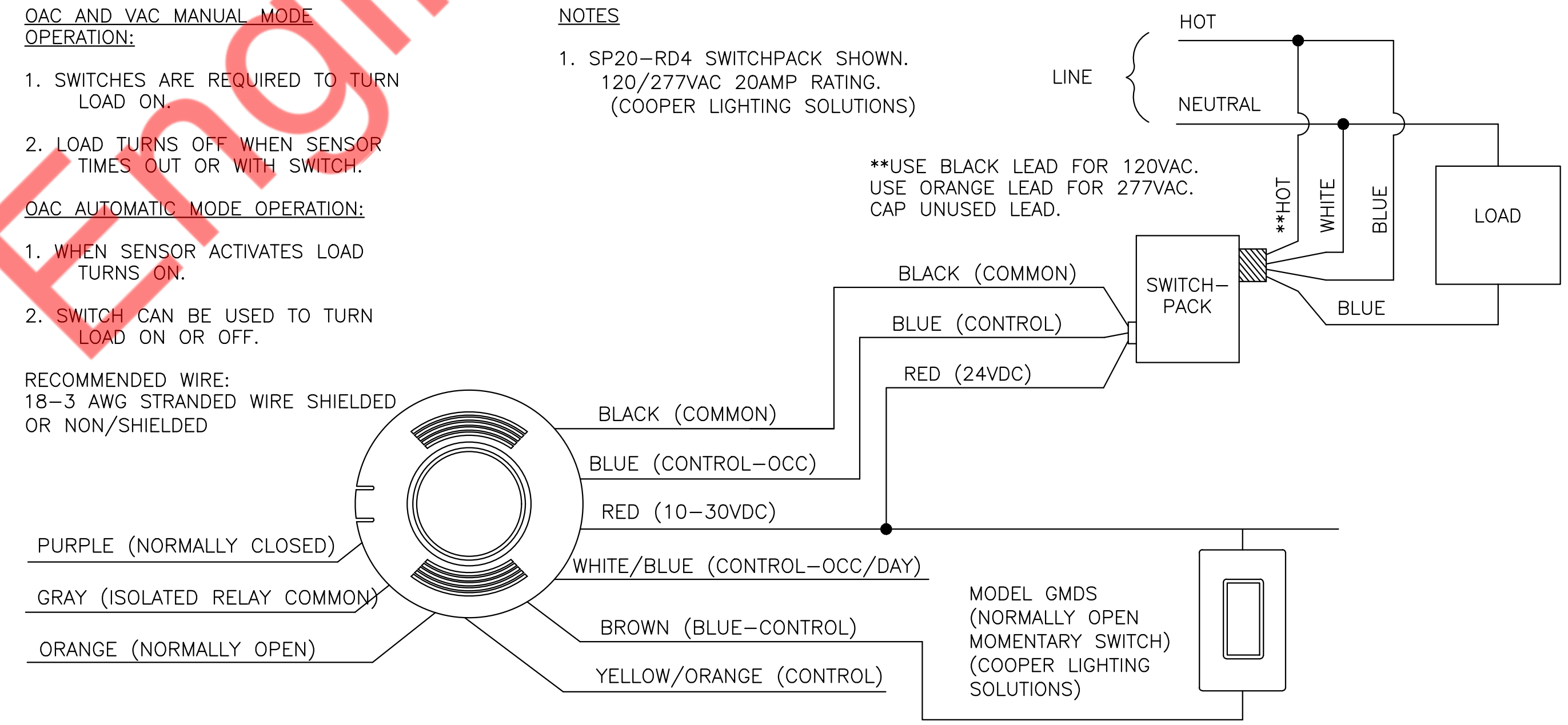
3 CLOSET DOOR SWITCH WIRING DIAGRAM
E05.02 N.T.S



- 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.



- 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 48, 53 AND 54.
 2. WET INSTALLED DEPTH OF CAULK CP-25 OR PUTTY 303 DEPENDS ON TYPE AND SIZE OF PIPE.
 3. PIPE SIZE FIRE RATING: 1/2" (13mm) Max. 8" (203mm) 2 HRS.; 2" (25mm) Max. 6" (152mm) 3 HRS.
 4. UP TO 40% SHRINKAGE OF CP-25 OR PUTTY 303 IS ACCEPTABLE AFTER WET DEPTH INSTALLATION. 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.



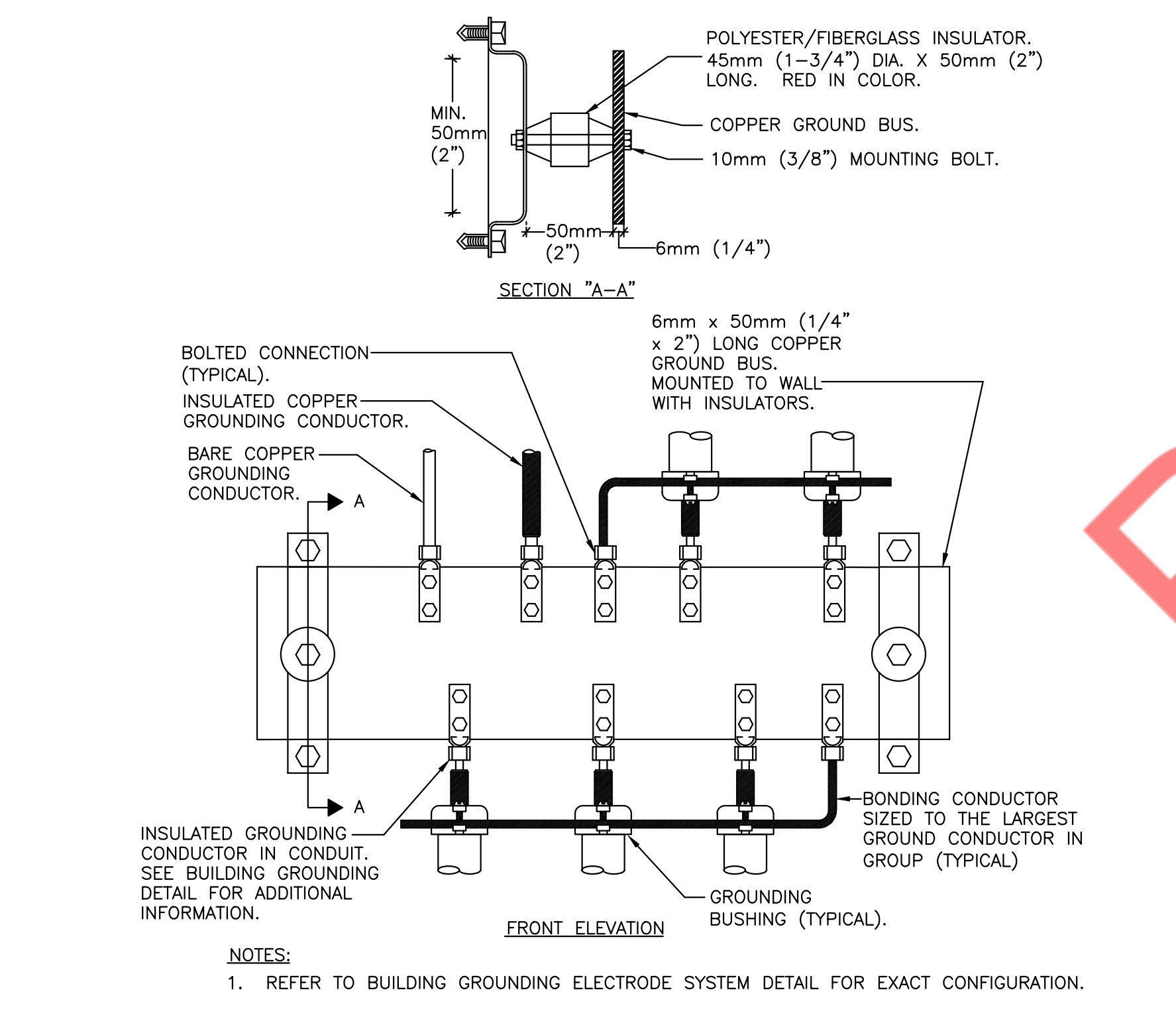
- OAC AND VAC MANUAL MODE OPERATION:**
1. SWITCHES ARE REQUIRED TO TURN LOAD ON.
 2. LOAD TURNS OFF WHEN SENSOR TIMES OUT OR WITH SWITCH.
- OAC AUTOMATIC MODE OPERATION:**
1. WHEN SENSOR ACTIVATES LOAD TURNS ON.
 2. SWITCH CAN BE USED TO TURN LOAD ON OR OFF.

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

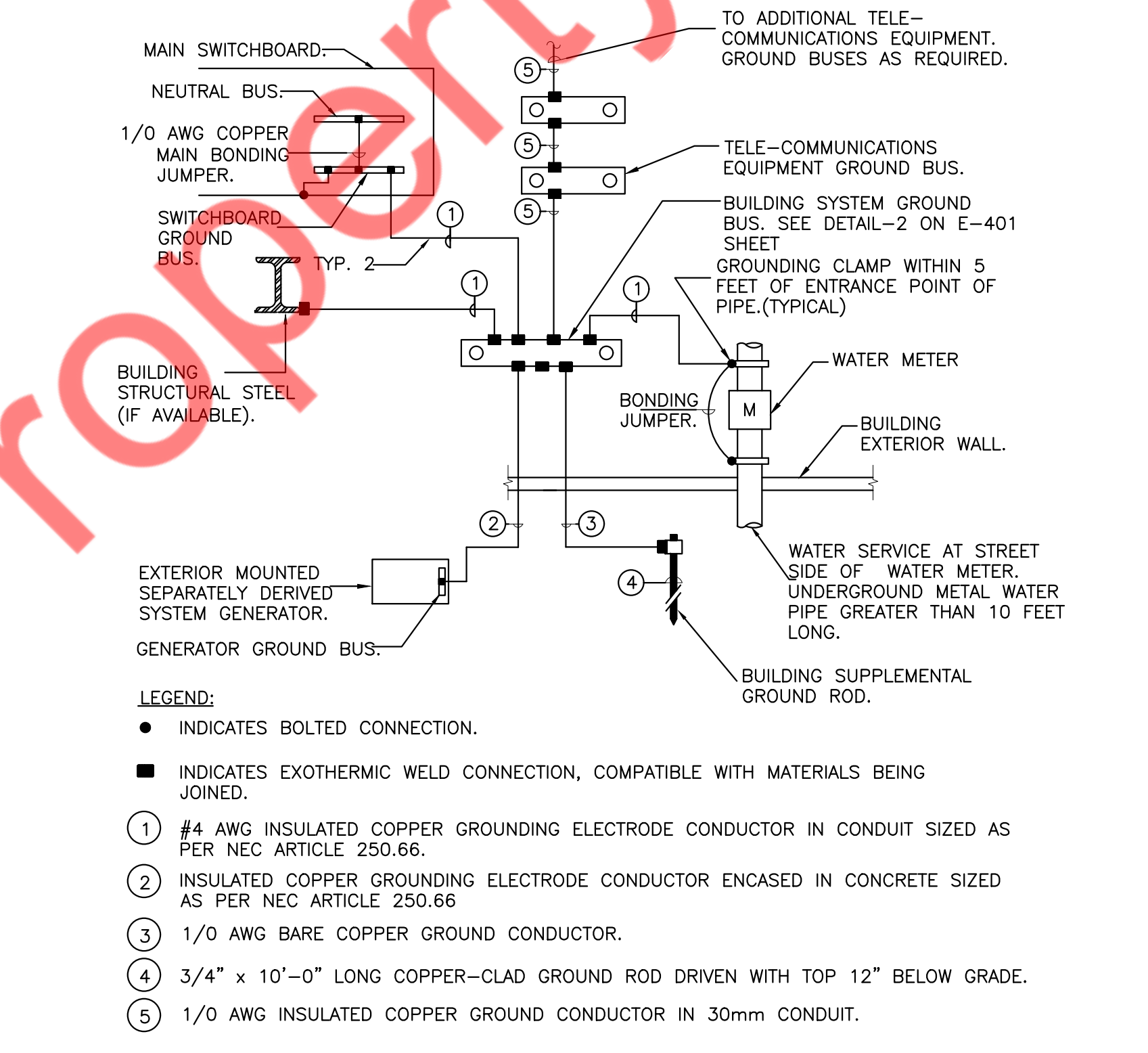
4 VERTICAL CABLE SUPPORT DETAIL
E05.02 N.T.S

5 FIRE STOP DETAIL
E05.02 N.T.S

6 OCCUPANCY - AUTO ON/OFF. WIRING DIAGRAM - LOW VOLTAGE CEILING SENSOR
E05.02 N.T.S



- NOTES:**
1. REFER TO BUILDING GROUNDING ELECTRODE SYSTEM DETAIL FOR EXACT CONFIGURATION.



- LEGEND:**
- INDICATES BOLTED CONNECTION.
 - INDICATES EXOTHERMIC WELD CONNECTION, COMPATIBLE WITH MATERIALS BEING JOINED.
- 1 #4 AWG INSULATED COPPER GROUNDING ELECTRODE CONDUCTOR IN CONDUIT SIZED AS PER NEC ARTICLE 250.66.
 - 2 INSULATED COPPER GROUNDING ELECTRODE CONDUCTOR ENCASED IN CONCRETE SIZED AS PER NEC ARTICLE 250.66
 - 3 1/0 AWG BARE COPPER GROUND CONDUCTOR.
 - 4 3/4" x 10'-0" LONG COPPER-CLAD GROUND ROD DRIVEN WITH TOP 12" BELOW GRADE.
 - 5 1/0 AWG INSULATED COPPER GROUND CONDUCTOR IN 30mm CONDUIT.

1 BUILDING ELECTRICAL SYSTEMS GROUND BUS
E05.02 N.T.S

8 BUILDING GROUNDING ELECTRODE SYSTEM
E05.02 N.T.S

—SAN—	SANITARY SEWER (UNDERFLOOR)
—	VENT PIPING
---	COLD WATER PIPING
---	HOT WATER PIPING
---	HOT WATER RETURN PIPING
⊖	P-TRAP
⊙	PIPE UP
⊙	PIPE DROP
⊖	CLEANOUT
⊖	PLUGGED OUTLET/CLEANOUT
●	POINT OF CONNECTION

CO	CLEANOUT
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
SAN	SANITARY
V	VENT
W	WASTE
LAV	LAVATORY
WC	WATER CLOSET
TYP.	TYPICAL
DN	DOWN
SK	SINK
AFF	ABOVE FINISH FLOOR
FD	FLOOR DRAIN
SQ. FT.	SQUARE FEET
BFP	BACK FLOW PREVENTER
WH	WATER HEATER
N.I.C.	NOT IN SCOPE

P00.01	PLUMBING SYMBOLS, ABBREVIATIONS, NOTES & SPECIFICATIONS
P01.01	PLUMBING FLOOR PLANS
P01.02	PLUMBING GAS PLAN
P02.01	PLUMBING DETAILS
P02.02	PLUMBING SCHEDULES AND RISERS

BUILDING DEPARTMENT PLUMBING NOTES

- ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT, WATER, STORM) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2021 MAINE PLUMBING CODE (UPC 2021).
- INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 701
- PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER SECTION PC 312.
- TRENCHING, EXCAVATION AND BACKFILL AS PER SECTION PC 314.
- RODENT PROOFING AS PER PC 312.12
- MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 312, PC 604, PC 701, PC 903, PC 1102.
- EQUIPMENT CONNECTIONS AND JOINING OF PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTERS 4, 5, 6, 7 AND 9.
- DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER PC 1002, AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 708
- DRAINAGE PIPE CLEANOUTS AS PER SECTION PC 719.
- VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION PC 313
- WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 6 SECTION PC 601-603, 604, 606, 607, 608, 610
- THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 7 SECTION PC 701, 704, 705, 706, 707, 708, 711.
- VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 9 SECTIONS PC 901 THROUGH PC 912 THROUGH PC 917
- INSPECTION AND TESTING OF PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH SECTION PC 107.

1. BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS	
1.01 SCOPE	
A. PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.	
B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING AND NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.	
C. OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.	
D. THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.	
E. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK. BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT, SCOPE OF WORK AND BID PRICE SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNPRESEEN EXISTING CONDITIONS.	
F. IN ALL AREAS SUBJECT TO FREEZING CONDITIONS, THE CONTRACTOR SHALL PROVIDE FREEZE PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.	
G. ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.	
H. COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE ARCHITECT.	
I. MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.	
J. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITY SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED FEES.	
K. THE CONTRACTOR IS RESPONSIBLE FOR ALL PAINTING ASSOCIATED WITH CUTTING AND PATCHING ALL PAINTING IN AREAS WITH COMPLETE FINISH RENOVATIONS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.	
1.02 SUBMITTALS	
A. SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.	
<ol style="list-style-type: none"> PIPE AND FITTINGS HANGERS AND SUPPORTS PLUMBING PIPING LAYOUT TESTS PLUMBING FIXTURES WATER HEATERS & ACCESSORIES MIXING VALVES ALL SCHEDULED PLUMBING EQUIPMENT 	
B. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING MANUFACTURER INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.	
C. THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.	
D. REVIEW OF SHOP DRAWINGS BY THE ENGINEER SHALL BE LIMITED TO THE INITIAL REVIEW AND A SECOND REVIEW OF ANY REQUIRED RESUBMITTED DATA. IF THE ENGINEER IS REQUIRED TO REVIEW SHOP DRAWINGS FOR A THIRD (OR MORE) SUBMISSION OF THE SAME ITEM, THE CONTRACTOR SHALL BE LIABLE FOR COMPENSATING THE ENGINEER FOR THESE SUBSEQUENT REVIEWS AS PER THE ENGINEER'S CURRENT HOURLY RATE SCHEDULE.	
E. SUBMIT PROOF OF APPROVAL AND/OR CONFIRMATION OF SATISFACTORY TEST RESULTS TO THE OWNER AND THE ARCHITECT.	
F. SUBMIT TO THE OWNER'S MAINTENANCE PERSONNEL OPERATION AND MAINTENANCE DATA FOR ALL SYSTEM COMPONENTS, SERVICING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY.	
G. FOR ALL BELOW GRADE PIPING WHERE ACTUAL INSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.	
H. RECORD AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER/TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.	
1.03 SUBSTITUTIONS	
A. ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURERS' EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER'S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.	
B. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.	
1.05 DEFINITIONS	
A. FURNISH: TO PURCHASE, PROCURE, ACQUIRE AND DELIVER, COMPLETE WITH RELATED ACCESSORIES.	
B. INSTALL: TO ERECT, MOUNT AND CONNECT, COMPLETE WITH RELATED ACCESSORIES.	

- C. PROVIDE: TO FURNISH AND INSTALL.
- D. PLUMBING CONTRACTOR, THE CONTRACTOR, THIS CONTRACTOR: THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THESE DRAWINGS.
- E. REFER TO THE 2021 MAINE PLUMBING CODE (UPC 2021) FOR ADDITIONAL DEFINITIONS.
- 1.06 DRAWINGS
- A. THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/TENANT AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.
- B. PROVIDE ALL NECESSARY INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.
- C. REFER TO PLUMBING EQUIPMENT/FIXTURE SCHEDULE ON THE DRAWINGS FOR ALL FIXTURE AND EQUIPMENT SPECIFICATIONS.
- D. REFER TO FIXTURE CONNECTION SIZE SCHEDULE FOR ALL FIXTURE ROUGHING SIZE REQUIREMENTS.
- E. VERIFY ALL INDICATED CONDITIONS BEFORE STARTING WORK AND REPORT ANY DISCREPANCIES. THE DRAWINGS REFLECT CONDITIONS WHICH CAN BE REASONABLY INTERPRETED FROM THE EXISTING VISIBLE CONDITIONS OR FROM DRAWINGS AND INFORMATION FURNISHED BY THE OWNER.
- F. LOCATE ALL FIXTURES AND EQUIPMENT AS PER THE FINAL ARCHITECTURAL DRAWINGS.
- 1.07 PRODUCTS
- A. SANITARY AND VENT PIPING:
- ABOVE GRADE PIPING SHALL BE HUBLESS CAST IRON PIPE WITH STAINLESS STEEL COUPLINGS AND ELASTOMERIC GASKETS WITH A MINIMUM 4 BANDS PER COUPLING.
 - SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
 - PVC OR OTHER COMBUSTIBLE PLASTIC PIPING SHALL NOT BE INSTALLED IN CEILING PLENUM SPACES.
 - ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.
- B. DOMESTIC WATER PIPING:
- ABOVE GRADE WATER PIPING SHALL BE TYPE "L" HARD-DRAWN COPPER TUBE.
 - FITTINGS IN DOMESTIC WATER PIPING SHALL BE WROUGHT COPPER OR CAST BRASS.
 - JOINTS SHALL BE MADE WITH LEAD-FREE SOLDER.
 - THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
 - COMPLY WITH NSF 61 FOR MATERIALS FOR WATER-SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.
 - ALL DOMESTIC WATER PIPING ABOVE GRADE SHALL BE INSULATED WITH FIRE-RETARDANT, FACTORY-APPLIED JACKET. PROVIDE COLD WATER PIPING WITH FACTORY-APPLIED VAPOR BARRIER. INSULATION REQUIREMENT SHOULD COMPLY WITH ENERGY CONSERVATION CODE 2015 SECTION C403.2.10 REFER BELOW TABLE.
- | FLUID OPERATING TEMPERATURE RANGE (°F) | INSULATION CONDUCTIVITY | | NOMINAL PIPE OR TUBE SIZE (INCHES) | | | |
|--|---------------------------------|-----------------------------|------------------------------------|-------|-----|-----|
| | CONDUCTIVITY BTU IN./(H FTZ-°F) | MEAN RATING TEMPERATURE, °F | < 1 | 1 1/4 | 2 | 3 |
| 105-140 | 0.21-0.28 | 100 | 1.0 | 1.0 | 1.5 | 1.5 |
| 40-60 | 0.21-0.27 | 75 | 0.5 | 0.5 | 1.0 | 1.0 |
7. WATER DISTRIBUTION SYSTEM AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2015 C404.7, HAVING ONE OR MORE RECIRCULATION PUMPS THAT PUMP WATER FROM A HEATED-WATER SUPPLY PIPE BACK TO THE HEATED-WATER SOURCE THROUGH A COLD-WATER SUPPLY PIPE SHALL BE A DEMAND RECIRCULATION WATER SYSTEM. PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:
- THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OR A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
 - THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).
8. AS PER INTERNATIONAL ENERGY CONSERVATION CODE 2015 C404.6 HEATED-WATER CIRCULATION SYSTEMS SHALL BE PROVIDED WITH A CIRCULATION PUMP. THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE. CONTROLS FOR CIRCULATING HOT WATER SYSTEM PUMPS SHALL START THE PUMP BASED ON THE IDENTIFICATION OF A DEMAND FOR HOT WATER WITHIN THE OCCUPANCY. THE CONTROLS SHALL AUTOMATICALLY TURN OFF THE PUMP WHEN THE WATER IN THE CIRCULATION LOOP IS AT THE DESIRED TEMPERATURE AND WHEN THERE IS NO DEMAND FOR HOT WATER.
9. HW SYSTEM PIPING IS DESIGNATED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER IECC C404.5.1. THE HW PIPE LENGTH FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER FOLLOWING TABLE.

NOMINAL PIPE SIZE (INCHES)	MAXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
3/8"	2'	43'
1/2"	0.5'	20'
1"	0.5'	13'
1 1/2"	0.5'	8'
2"	0.5'	6'
2" OR LARGER	0.5'	4'

- SEAL ALL JOINTS BETWEEN SEGMENTS OF INSULATION.
- PROVIDE SHIELDS BETWEEN HANGERS AND INSULATION.
- HANGERS AND SUPPORTS:
 - HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINNELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER PIPE.
 - SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.
 - ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED SUPPORTS.
 - PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND STANDARDS AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
 - UNLESS OTHERWISE INDICATED OR REQUIRED BY AUTHORITIES HAVING JURISDICTION, THE FOLLOWING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS AS REQUIRED BY THE BOCA NATIONAL BUILDING CODE, SECTION 1610.6.4: ALL EQUIPMENT AND MACHINERY, ALL NEW PIPING 2-1/2" AND LARGER (1-1/4" AND LARGER INBOILER/MECHANICAL ROOMS) WITH HANGERS GREATER THAN 12" IN LENGTH FROM THE TOP OF PIPE TO THE STRUCTURE.
- SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.
- VALVES:
 - PROVIDE GATE VALVES, BUTTERFLY OR BALL VALVES FOR SHUT-OFF DUTY ON MAIN AND BRANCH SUPPLY LINES. FOR ALL PIPE RUNS 2" AND SMALLER, PROVIDE BALL FOR ALL PIPE RUNS LARGER THAN 2" AND SMALLER THAN 4", PROVIDE GATE VALVES, LARGER 4" AND LARGER, PROVIDE BUTTERFLY VALVES FOR SHUT-OFF DUTY.
 - ALL FIXTURES WITH THE EXCEPTION OF FLUSHMETER-EQUIPPED WATER CLOSETS AND URINALS SHALL HAVE STOP VALVES TO CONTROL SUPPLY TO THE FIXTURE. WHERE SUPPLIES ARE EXPOSED PROVIDE CHROME-PLATED STOPS WITH CHROME-PLATED ESCUTCHEONS ON PIPING PENETRATIONS.
 - ALL PLUMBING FIXTURES AND EQUIPMENT TO HAVE SHUT-OFF VALVES ON SUPPLY LINES.
 - ALL BRANCH LINES TO HAVE SHUT-OFF VALVES.
 - ALL VALVES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS WHERE REQUIRED FOR VALVE ACCESS.
 - PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.
- SLEEVES AND ESCUTCHEONS:
 - SLEEVES THROUGH STRUCTURAL CONCRETE MEMBERS AND SLEEVES FOR WALLS BELOW GRADE AND FLOORS ON GRADE SHALL BE STANDARD WEIGHT GALVANIZED SCHEDULE 40 STEEL PIPE. SLEEVES THROUGH OTHER THAN STRUCTURAL COMPONENTS OF THE BUILDING SHALL BE 20 GAGE GALVANIZED SHEET METAL WITH LOCK SEAM JOINTS. USG THERMAFIBER SAFING INSULATION SHALL BE INSTALLED BETWEEN PIPE AND SLEEVE.
 - PIPE ESCUTCHEON PLATES SHALL BE INSTALLED WHERE EXPOSED PIPING PASSES THROUGH WALLS, CEILING, AND FLOORS AND SHALL BE MINIMUM 20 GAGE STEEL. PROVIDE CHROME PLATED ESCUTCHEON PLATES IN FINISHED AREAS.
- DRAINAGE ACCESSORIES
 - GENERAL:
 - INSTALL THE WORK OF THIS SECTION IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, UNLESS OTHERWISE SPECIFIED.
 - SECURE EXTERNAL COMPONENTS IN PLACE WITH VANDAL RESISTANT FASTENERS OR DEVICES WHICH CANNOT BE REMOVED WITHOUT SPECIAL TOOLS.
- 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.
- 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 PIPE AND SEGMENTS OF SUCH PIPE THAT EXCEED 30'-0" IN LENGTH.
- IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.
- REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE-PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RISERS.
- VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.

- IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.
 - PROVIDE DIELECTRIC FITTINGS BETWEEN DISSIMILAR METALS.
 - PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE DRAIN.
 - PROVIDE ACCESS DOORS/PANELS FOR SERVICE AND ACCESS TO ALL VALVES AND OTHER SYSTEM COMPONENTS ENCLOSED IN WALLS AND CEILING. ACCESS DOORS SHALL BE FURNISHED BY THIS CONTRACTOR, INSTALLED BY THE GENERAL CONTRACTOR.
 - ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.
 - ANY PENETRATIONS THROUGH FIRE RATED PARTITIONS, FLOORS, OR CEILING SHALL BE STEEL SLEEVED AND SEALED WITH 3M BRAND UL RATED FIRE BARRIER CAULK OR APPROVED EQUAL.
 - 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.
 - AT ALL INDIRECT WASTE DRAINS, MAINTAIN AIR GAP AS REQUIRED BY CODE.
 - INSTALL SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS, FLOORS, AND CEILING, 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. EXPOSED AREAS PROVIDE ESCUTCHEONS COMPATIBLE WITH FINISH.
 - PROVIDE WATER HAMMER ARRESTERS ON SUPPLY PIPING TO ALL FLUSHMETER VALVES AND QUICK-CLOSING VALVES.
 - MAINTAIN ALL REQUIRED AND RECOMMENDED CLEARANCES FOR ALL PLUMBING SYSTEM COMPONENTS AND EQUIPMENT.
2. INSTALLATION
- 2.01 GENERAL
- 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.
 - EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECTS.
 - EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.
 - COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.
 - REAM PIPE AND TUBE ENDS. REMOVE BURRS, BEVEL PLAN AND FERROUS END PIPE.
 - REMOVE SCALE AND FOREIGN MATTER, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.
 - PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.
 - 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.
 - PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.
 - 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.
 - 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.
 - 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.
 - 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
- INSTALL PLUMBING PIPING IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING COMPLIES WITH REQUIREMENTS AND SERVES INTENDED PURPOSES.
 - 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.
 - 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
- COVER ALL HOT WATER AND HOT WATER RECIRCULATION PIPE WITH 1" THICK FOR PIPE SIZE UP TO 1 1/2" AND 1 1/2" THICK FOR PIPE SIZE 1 1/2" AND GREATER WITH MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. COVER ALL COLD WATER PIPE WITH 1/2" THICK FOR PIPE SIZE UP TO 1 1/2" AND 1" THICK FOR PIPE SIZE 1 1/2" AND GREATER WITH 1" MANVILLE MICRO-LOK AP-T PLUS FIBERGLASS INSULATION. FITTINGS AND VALVES SHALL BE INSULATED WITH MANVILLE ZESTON 2000 PVC INSULAT-ED FITTING COVERS. INSTALL ALL INSULATION AS PER MANUFACTURERS RECOMMENDATIONS. ALL INSULATION MATERIAL SHALL COMPLY WITH THE NEW YORK CITY 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 2015 INTERNATIONAL ENERGY CONSERVATION CODE.
3. TESTING
- 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.
 - TESTING OF THE INSTALLED SYSTEMS SHALL BE MADE BY THE CONTRACTOR IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER.
 - THE CONTRACTOR SHALL NOT COVER UP OR PERMANENTLY CONCEAL PIPING, DEVICES OR ANY PORTION OF NEWLY CONSTRUCTED PLUMBING SYSTEMS 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.
 - 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.
 - DEFECTS SHALL BE REPAIRED 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 THIS CONTRACTOR. NO EXTRA COMPENSATION WILL BE ALLOWED FOR THESE TESTS, THE COST THEREOF BEING INCLUDED IN THE LUMP SUM BID FOR THIS CONTRACT.
 - 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.
 - ALL PIPING AND EQUIPMENT SHALL BE THOROUGHLY CLEANED INSIDE AND OUT, OF DIRT, CUTTINGS, OILS AND OTHER FOREIGN SUBSTANCES AND SHALL BE LEFT CLEAN.
 - ALL REQUIRED TESTS SHALL BE WITNESSED BY LOCAL AUTHORITIES AND THE OWNER'S REPRESENTATIVE.
 - ALL EQUIPMENT WILL BE FACTORY TESTED.
 - 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.
 - REPORT IN WRITING TO AUTHORITIES HAVING JURISDICTION, THE ARCHITECT AND THE OWNER THE RESULTS OF ALL TESTING.
 - TESTING REQUIREMENTS
 - TEST ALL DOMESTIC WATER PIPING HYDROSTATICALLY TO 50 PSIG.
 - HYDROSTATIC TEST PRESSURES SHALL REMAIN CONSTANT WITH NO VARIATION FOR 15 MINUTES.
 - TESTS SHALL BE WITNESSED BY THE BUILDING ENGINEER.
 - 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.
 - REFILL ENTIRE POTABLE HOT AND COLD WATER SUPPLY SYSTEM WITH CHLORINE SOLUTION (HTH OLN CHEMICAL CORP.) AT A STRENGTH TO MEET STANDARDS OF THE DEPARTMENT OF HEALTH, AND FOR A PERIOD OF RETENTION AS STIPULATED.
 - THOROUGHLY FLUSH PIPING SYSTEM WITH FRESH WATER IMMEDIATELY PRIOR TO FINAL ACCEPTANCE.
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.





GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
2. PROVIDE ACCESS PANELS FOR CLEANOUTS & SHUT-OFF VALVES AS REQUIRED.
3. REFER RISER DIAGRAMS FOR ALL PIPE SIZES.

SANITARY KEYED NOTES

1. EXISTING WATER CLOSET REPLACE WITH NEW WATER CLOSET. EXISTING SANITARY, VENT WITH ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING CONDITION OF PIPING PRIOR TO BID. REPLACE IF REQUIRED.
2. EXISTING LAVATORY REPLACE WITH NEW LAVATORY. EXISTING SANITARY, VENT, WATER PIPING WITH ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING CONDITION OF PIPING PRIOR TO BID. REPLACE IF REQUIRED.
3. CONNECT NEW 2" SANITARY LINE TO EXISTING SANITARY LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXISTING SANITARY LINE SIZE, INVERT AND LOCATION.
4. EXISTING PANTRY SINK REPLACE WITH NEW PANTRY SINK. EXISTING SANITARY, VENT WITH ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING CONDITION OF PIPING PRIOR TO BID. REPLACE IF REQUIRED.
5. EXISTING SHOWER REPLACE WITH NEW MOP SINK. EXISTING SANITARY, VENT WITH ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING CONDITION OF PIPING PRIOR TO BID. REPLACE IF REQUIRED.
6. CONNECT NEW 1-1/2" VENT LINE TO EXISTING VENT LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXISTING VENT LINE SIZE AND LOCATION.

1 FIRST FLOOR PLUMBING SANITARY AND VENT PLAN
SCALE: 1/4" = 1'-0"



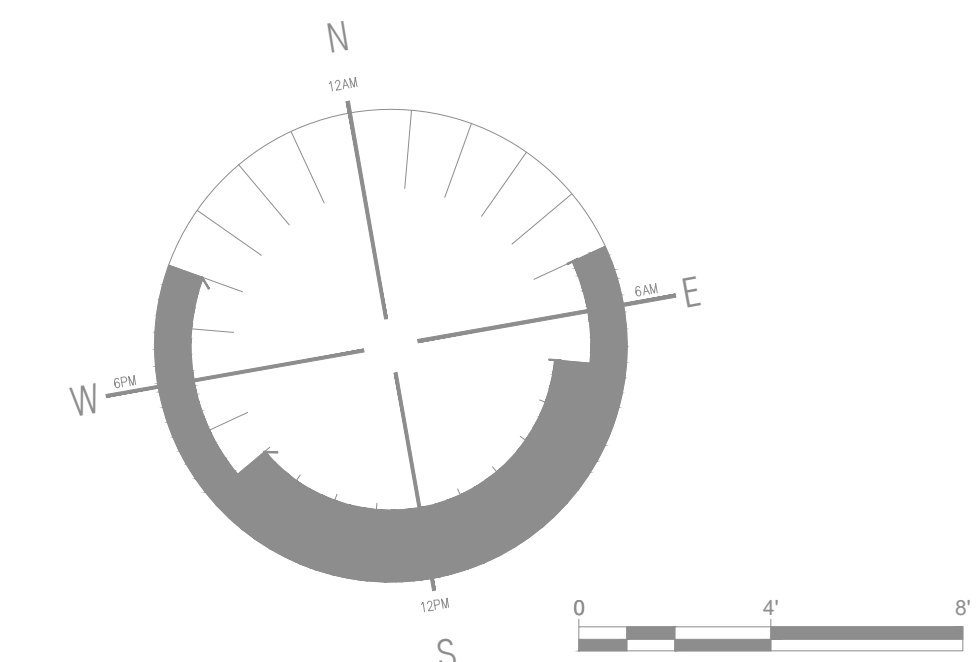
GENERAL NOTES:

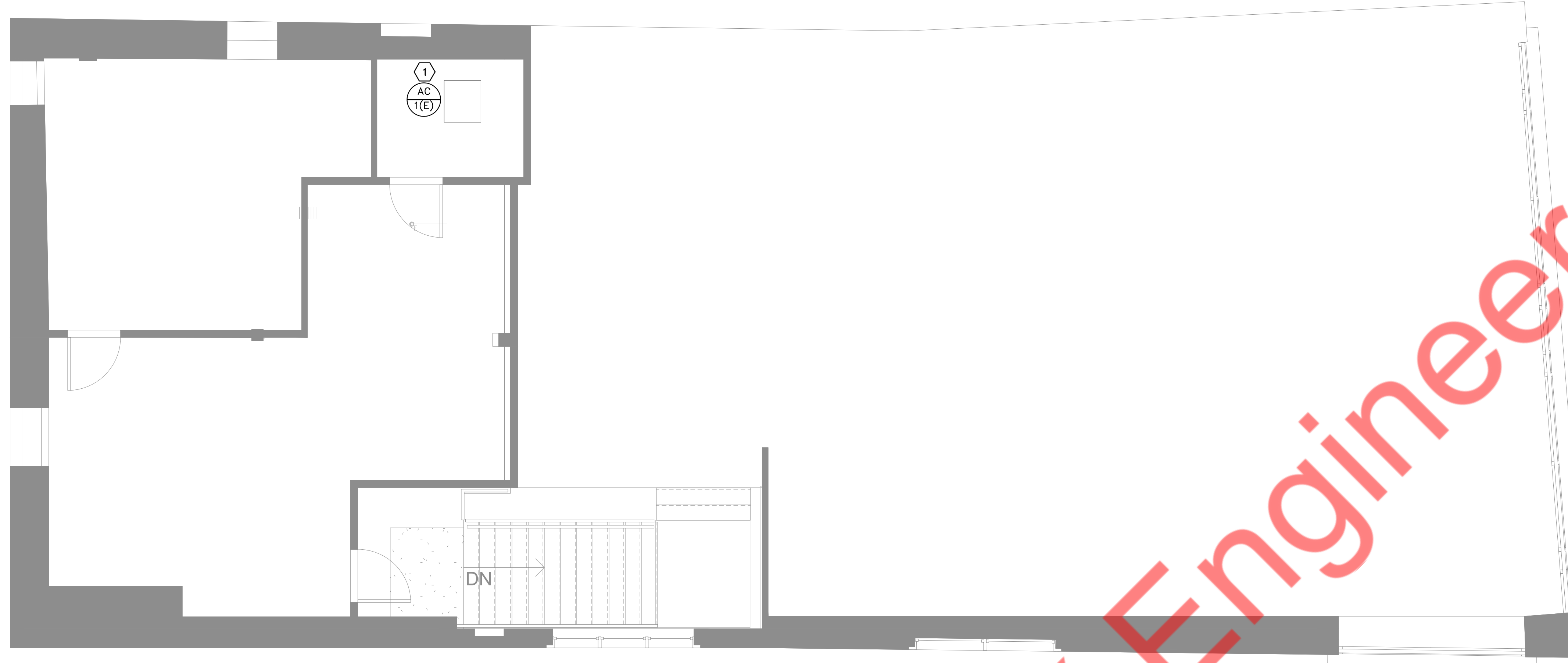
1. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
2. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR & SHUT-OFF VALVES AS REQUIRED.
3. REFER RISER DIAGRAMS FOR ALL PIPE SIZES.

WATER KEYED NOTES

1. EXISTING WATER CLOSET REPLACE WITH NEW WATER CLOSET. WATER PIPING WITH ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING CONDITION OF PIPING PRIOR TO BID. REPLACE IF REQUIRED.
2. EXISTING LAVATORY REPLACE WITH NEW LAVATORY. EXISTING WATER PIPING WITH ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING CONDITION OF PIPING PRIOR TO BID. REPLACE IF REQUIRED.
3. CONNECT NEW 1/2" CW LINE TO EXISTING CW LINE IN SPACE. CONTRACTOR TO FIELD VERIFY EXISTING WATER LINE SIZE AND LOCATION.
4. EXISTING PANTRY SINK REPLACE WITH NEW PANTRY SINK. EXISTING WATER PIPING WITH ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING CONDITION OF PIPING PRIOR TO BID. REPLACE IF REQUIRED.
5. EXISTING SHOWER REPLACE WITH NEW MOP SINK. EXISTING WATER PIPING WITH ASSOCIATED ACCESSORIES AND FITTINGS TO REMAIN. CONTRACTOR TO FIELD VERIFY EXISTING CONDITION OF PIPING PRIOR TO BID. REPLACE IF REQUIRED.
6. CONTRACTOR TO FIELD VERIFY AVAILABILITY, CAPACITY, WORKING CONDITION AND LOCATION OF EXISTING WATER HEATER. REPLACE WATER HEATER IF REQUIRED. BASE BID ACCORDINGLY.
7. PROVIDE ASSE 1070 APPROVED HOT WATER MIXING VALVE (TMV-1) IF NOT PROVIDED. SET MAX. OUTLET TEMP. AT 110°F.

2 FIRST FLOOR PLUMBING WATER PLAN
SCALE: 1/4" = 1'-0"



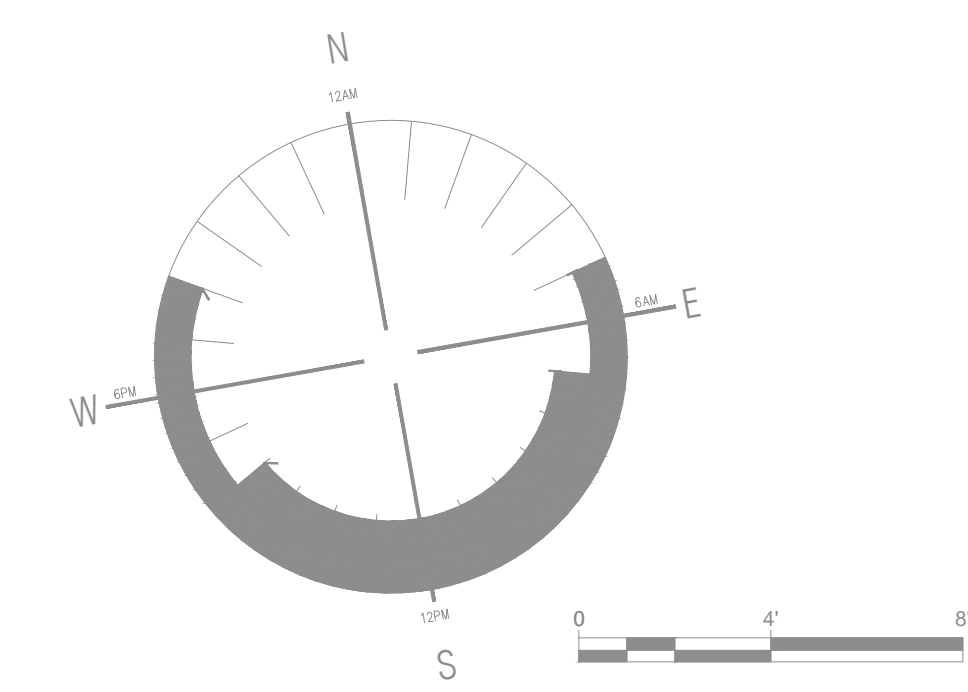


GENERAL NOTES:
 A. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.

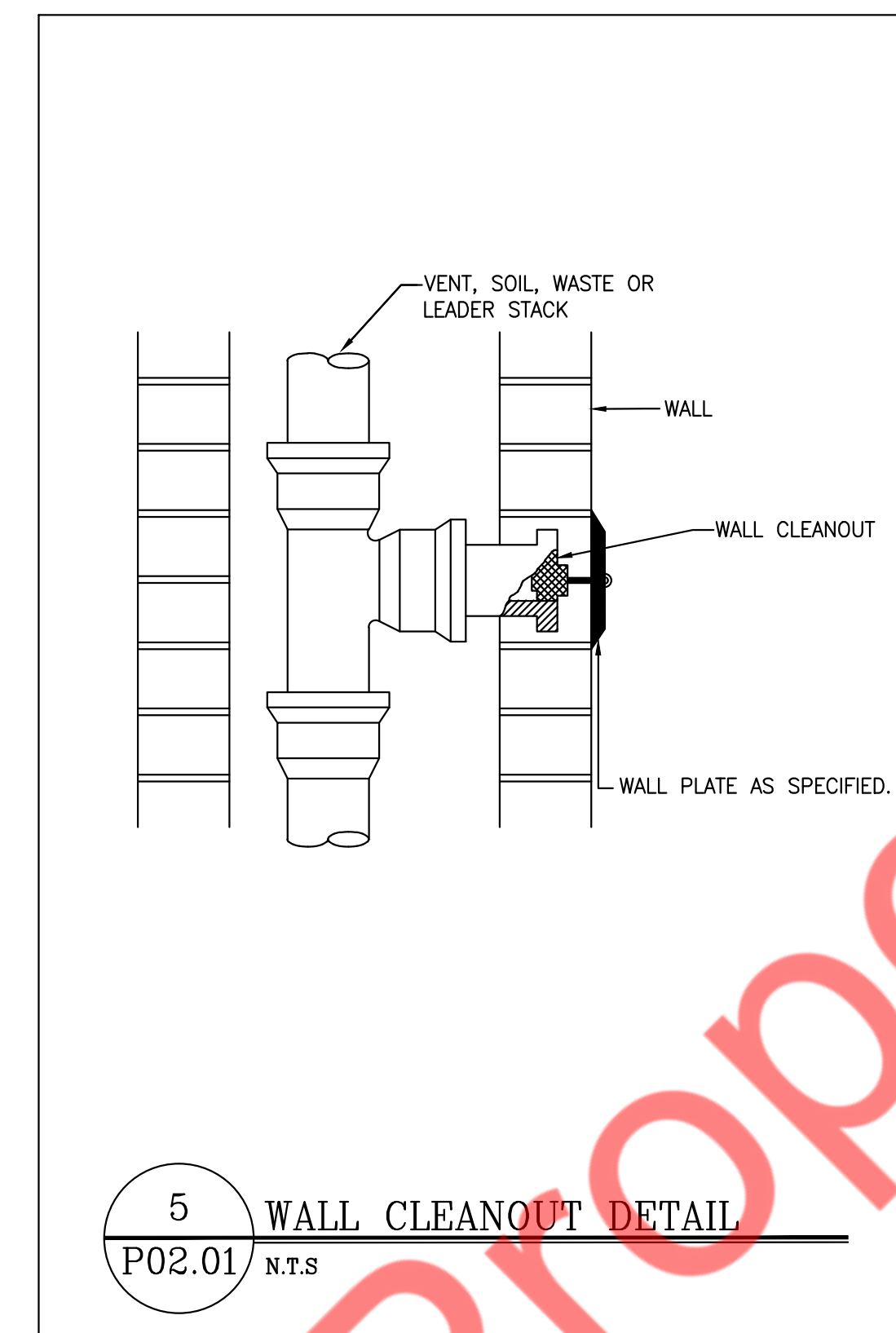
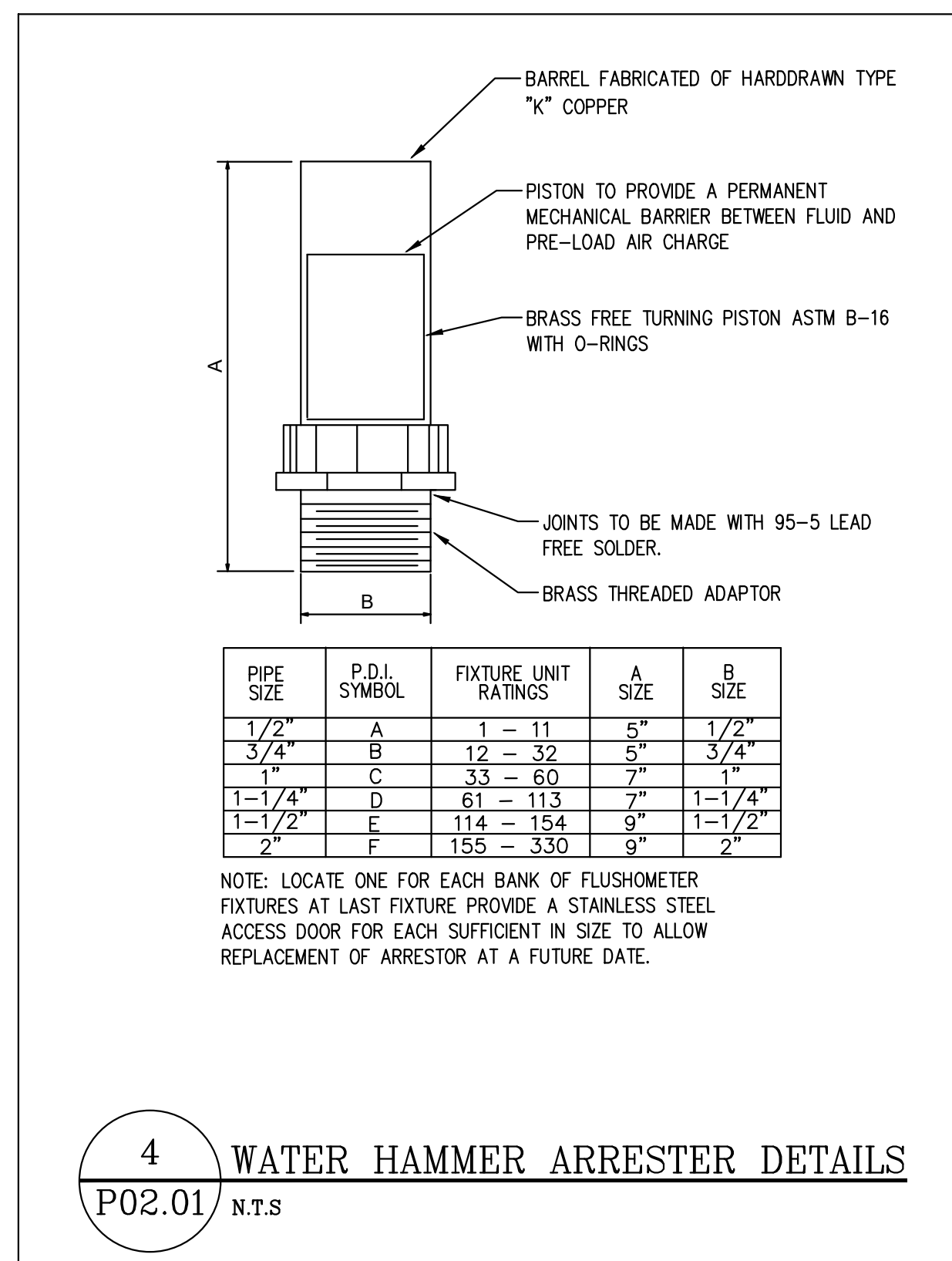
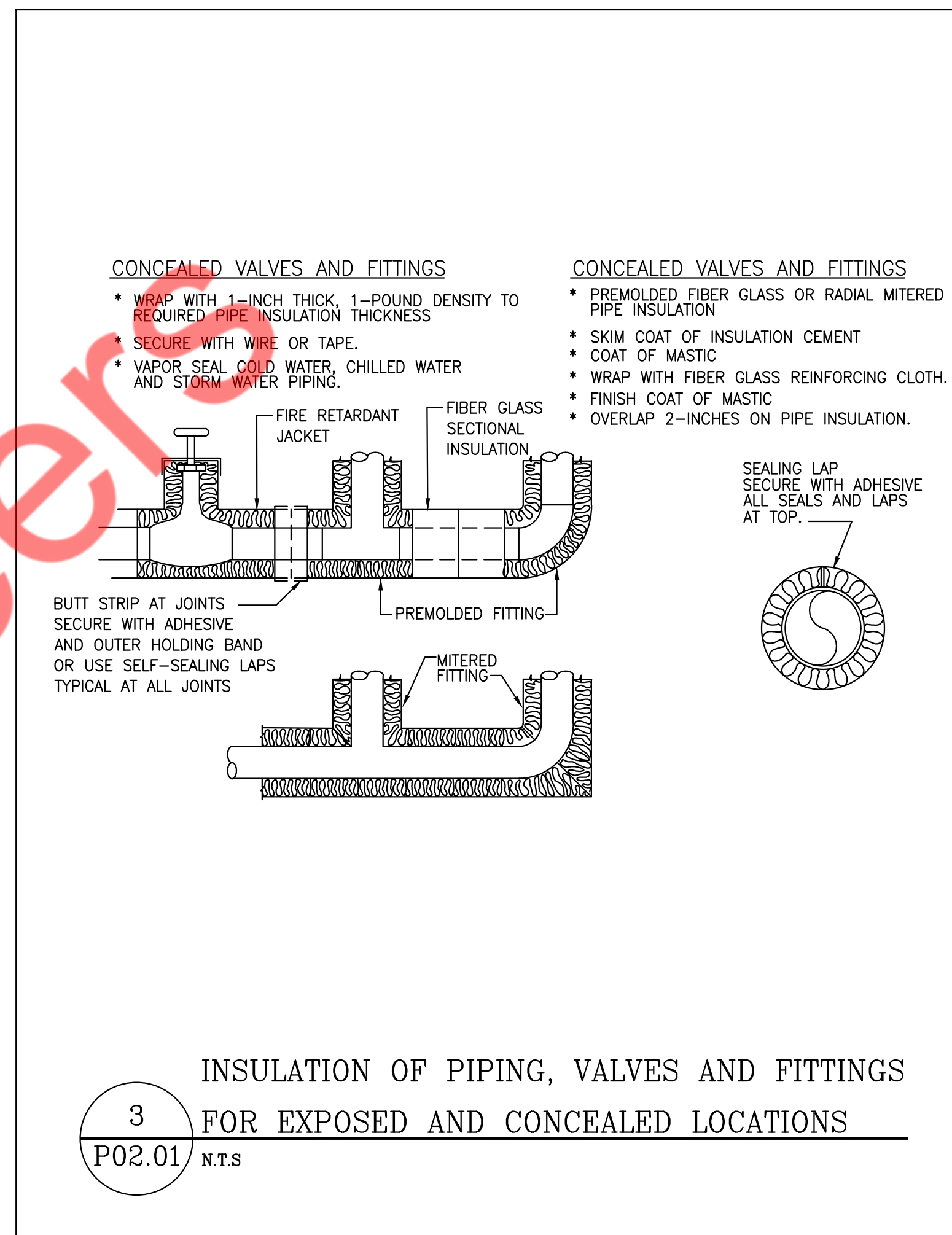
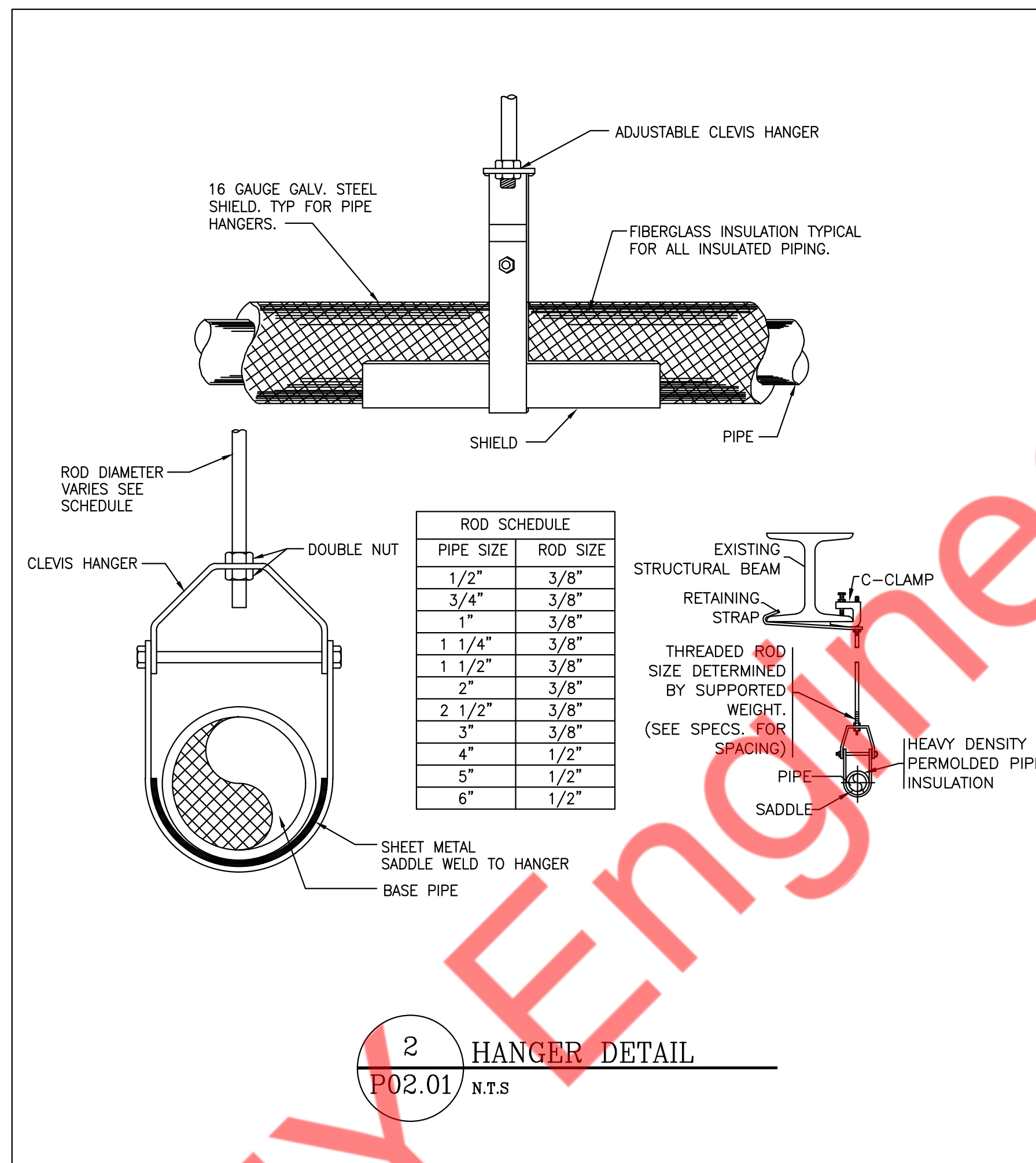
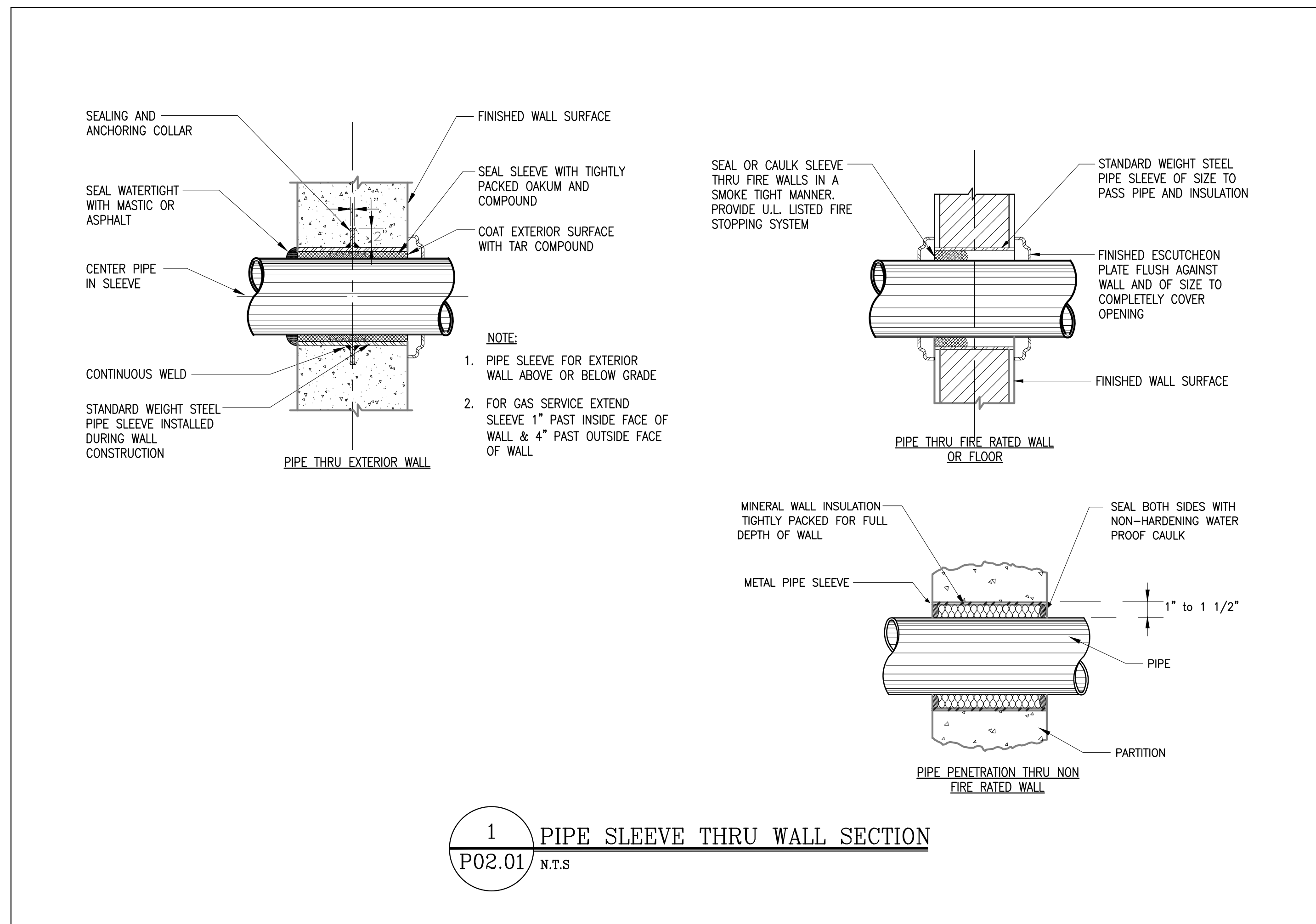
GAS KEYED NOTES
 ① AC-1(E) EXISTING TO REMAIN. CONTRACTOR TO FIELD VERIFY, AND ENSURE EXISTING GAS PIPING IS IN GOOD CONDITION. REPLACE GAS PIPING IF REQUIRED.

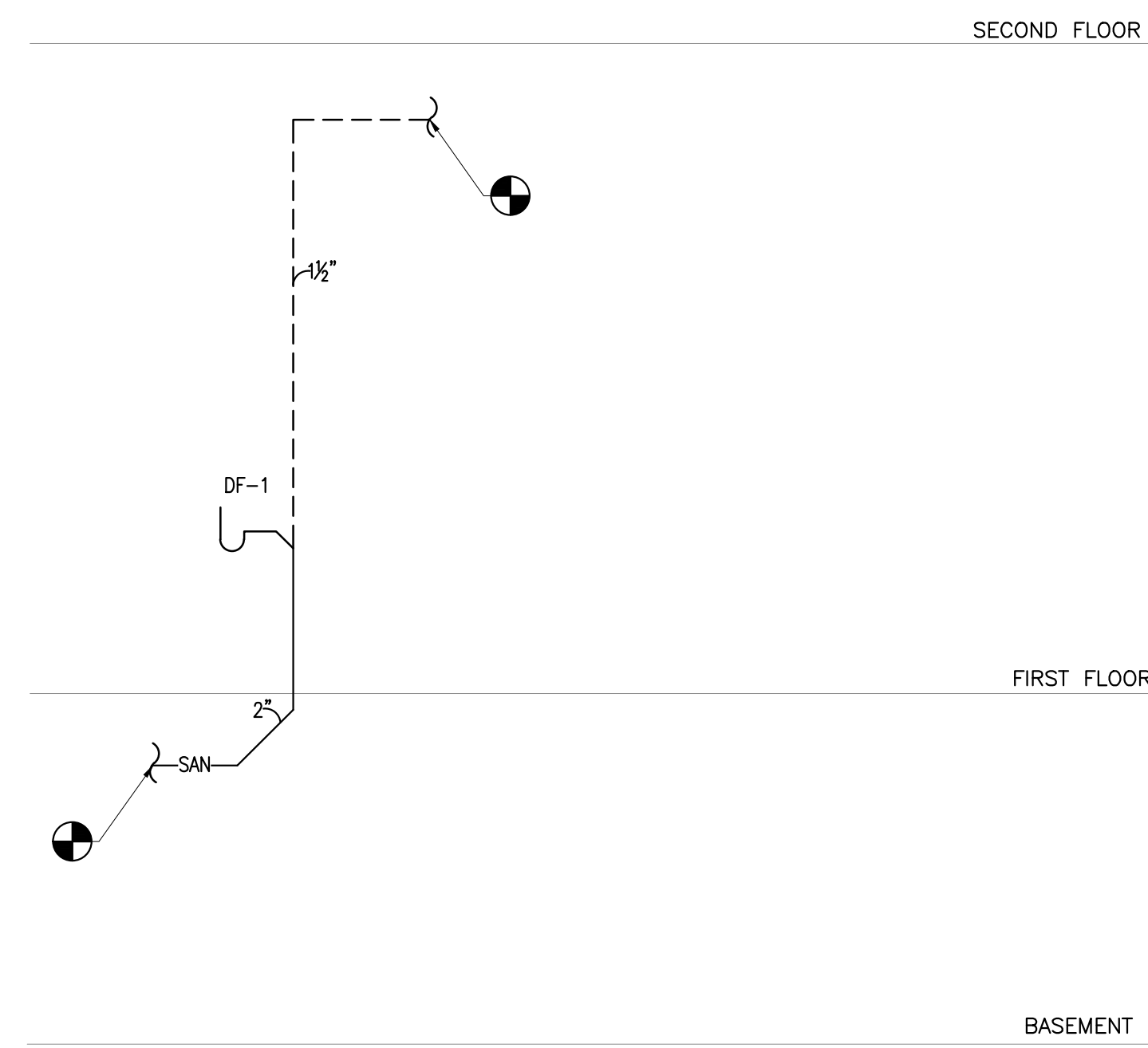
① SECOND FLOOR GAS PLAN
 SCALE: 1/4" = 1'-0"

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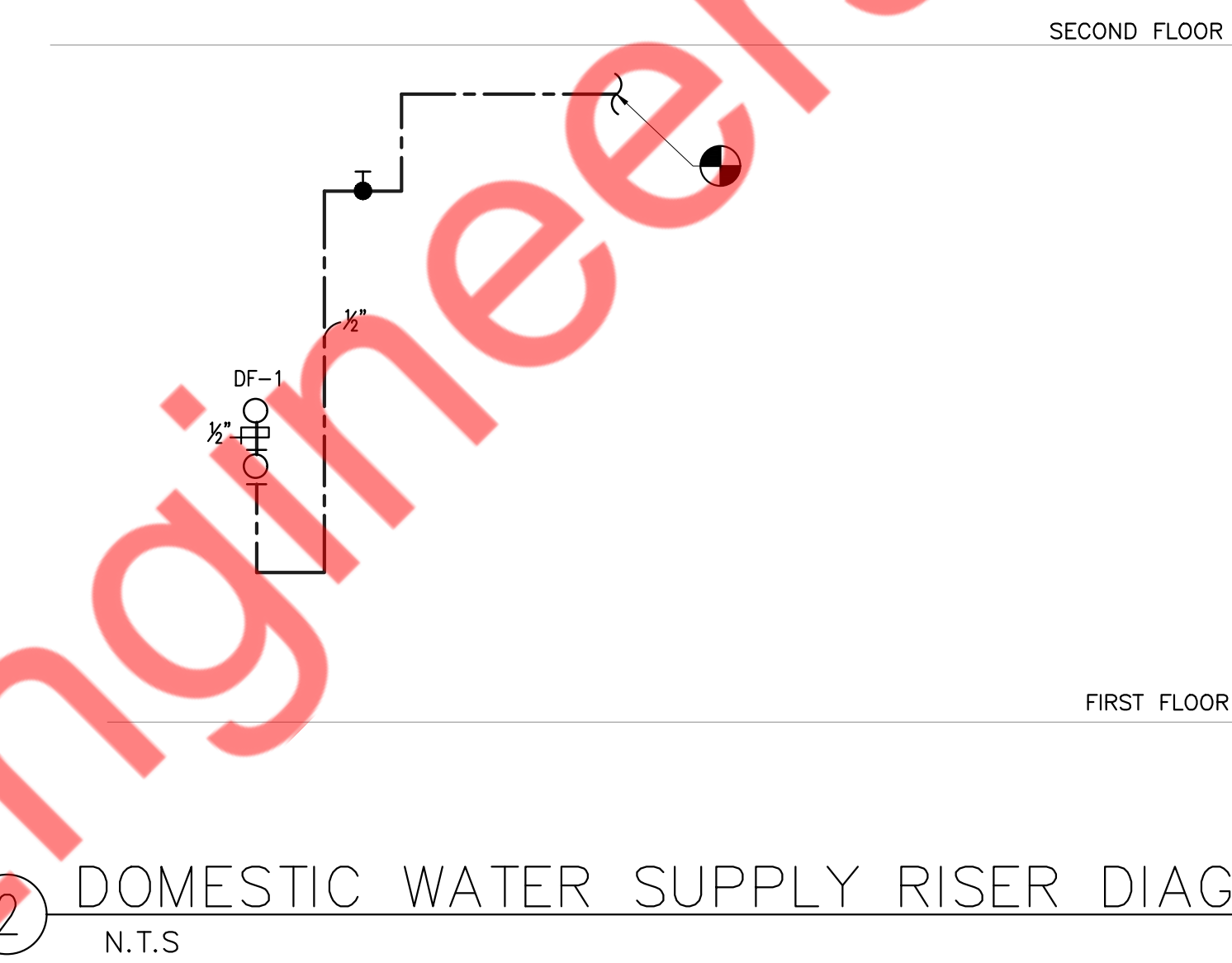


PLUMBING GAS PLAN





① SANITARY RISER DIAGRAM
N.T.S



② DOMESTIC WATER SUPPLY RISER DIAGRAM
N.T.S

PLUMBING FIXTURE SCHEDULE														
SYMBOL	FIXTURE					FITTINGS			SERVICES				TRAP	REMARKS
	DESCRIPTION	MANUFACTURER	MODEL	TYPE	SIZE	MANUFACTURER	TYPE	SUPPLY	S/W	V	CW	HW		
WC-1	WATER CLOSET	-	-	-	-	-	-	-	4"	2"	3/4"	-	-	-
LAV-1	LAVATORY	-	-	-	-	-	-	-	1-1/2"	1-1/2"	1/2"	1/2"	-	-
S-1	PANTRY SINK	ELKAY	LRADQ221965	COUNTERTOP	22"H X 19.5"W X 6.5"D	-	-	-	2"	2"	1/2"	1/2"	1 1/4"x3/8" CAST BRASS P-TRAP W/C.O.PLUG	-
DF-1	DRINKING FOUNTAIN	OASIS	PG8EBFSL	BI-LEVEL	35-1/4"W X 18-5/8"W X 14-1/8"D	-	-	HANDS-FREE VERSAFILLER	1-1/2"	1-1/2"	1/2"	-	-	-
MS-1	MOP SINK	FIAT	MSBGTG2424	MIDDLE STONE	24"x24"x10"	FAIT	830AA	SUPPLY WITH STOPS, LOOSE KEY	1-1/2"	1-1/2"	1/2"	1/2"	-	-

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PLUMBING SCHEDULES AND RISERS

FIRE ALARM SYSTEM

A. DESCRIPTION:

- THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND PLACE IN OPERATING CONDITION, A COMPLETE FIRE ALARM SYSTEM AS SPECIFIED IN THIS SECTION, TO INCLUDE THE FURNISHING OF ALL LABOR, EQUIPMENT, MATERIALS AND THE PERFORMANCE OF ALL OPERATIONS ASSOCIATED WITH THE INSTALLATION OF THE FIRE ALARM SYSTEM, AS SHOWN ON THE CONTRACT DRAWINGS AND HEREIN SPECIFIED.
- THE COMPLETE SYSTEM INSTALLATION SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE NATIONAL FIRE SAFETY CODE, THE (ADA) AMERICAN DISABILITIES ACT, THE NATIONAL ELECTRICAL CODE, REQUIREMENTS, AND ALL THE REQUIREMENTS OF THE LOCAL FIRE DEPARTMENT.
- THE REQUIREMENTS OF THE GENERAL CONDITIONS AND THE SUPPLEMENTARY CONDITIONS OF THE CONTRACT DOCUMENTS SHALL APPLY TO ALL WORK SPECIFIED IN THIS SECTION.
- THE WORK COVERED UNDER THIS SECTION OF THE CONTRACT SPECIFICATIONS SHALL BE COORDINATED WITH ALL OTHER WORK SPECIFIED IN THE OTHER SECTIONS OF THE CONTRACT SPECIFICATIONS.
- THE FIRE ALARM SYSTEM DESCRIBED HEREIN AND AS SHOWN ON THE PLANS, SHALL BE WIRED, CONNECTED, TESTED AND LEFT IN FIRST CLASS OPERATING CONDITION. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE PROPER CONTROL EQUIPMENT, CONTROL INTERFACE ANNUNCIATORS, ALARM INITIATING DEVICES, ALARM NOTIFICATION APPLIANCES, WIRING, TERMINATIONS, ELECTRICAL BOXES, AND ALL OTHER NECESSARY MATERIALS FOR A COMPLETE OPERATING SYSTEM.
- THE FIRE ALARM SYSTEM SHALL BE A MICROPROCESSOR - BASED SYSTEM ALLOWING FOR EDITING OF THE SOFTWARE PROGRAM FOR CHANGES IN SYSTEM OPERATION. THE SYSTEM SHALL BE CAPABLE OF ON-SITE PROGRAMMING TO ACCOMMODATE SYSTEM CHANGES AND/OR SYSTEM EXPANSIONS. ALL SOFTWARE OPERATIONS SHALL BE STORED IN NON-VOLATILE, FLASH PROM MEMORY. LOSS OF THE SYSTEM'S PRIMARY AND/OR SECONDARY POWER SOURCES SHALL NOT RESULT IN A LOSS OF THE SYSTEM SOFTWARE PROGRAMS. FIELD PROGRAMMING SHALL NOT BE LOST IN THE EVENT OF MAIN AND/OR BATTERY POWER LOSS.
- FULL FLEXIBILITY FOR SELECTIVE INPUT-OUTPUT CONTROL FUNCTIONS BASED ON AUDING, NOTING, TUNING, AND SPECIAL COORD OPERATIONS SHALL ALSO BE INCORPORATED IN THE RESIDENT SOFTWARE PROGRAM OF THE SYSTEM.

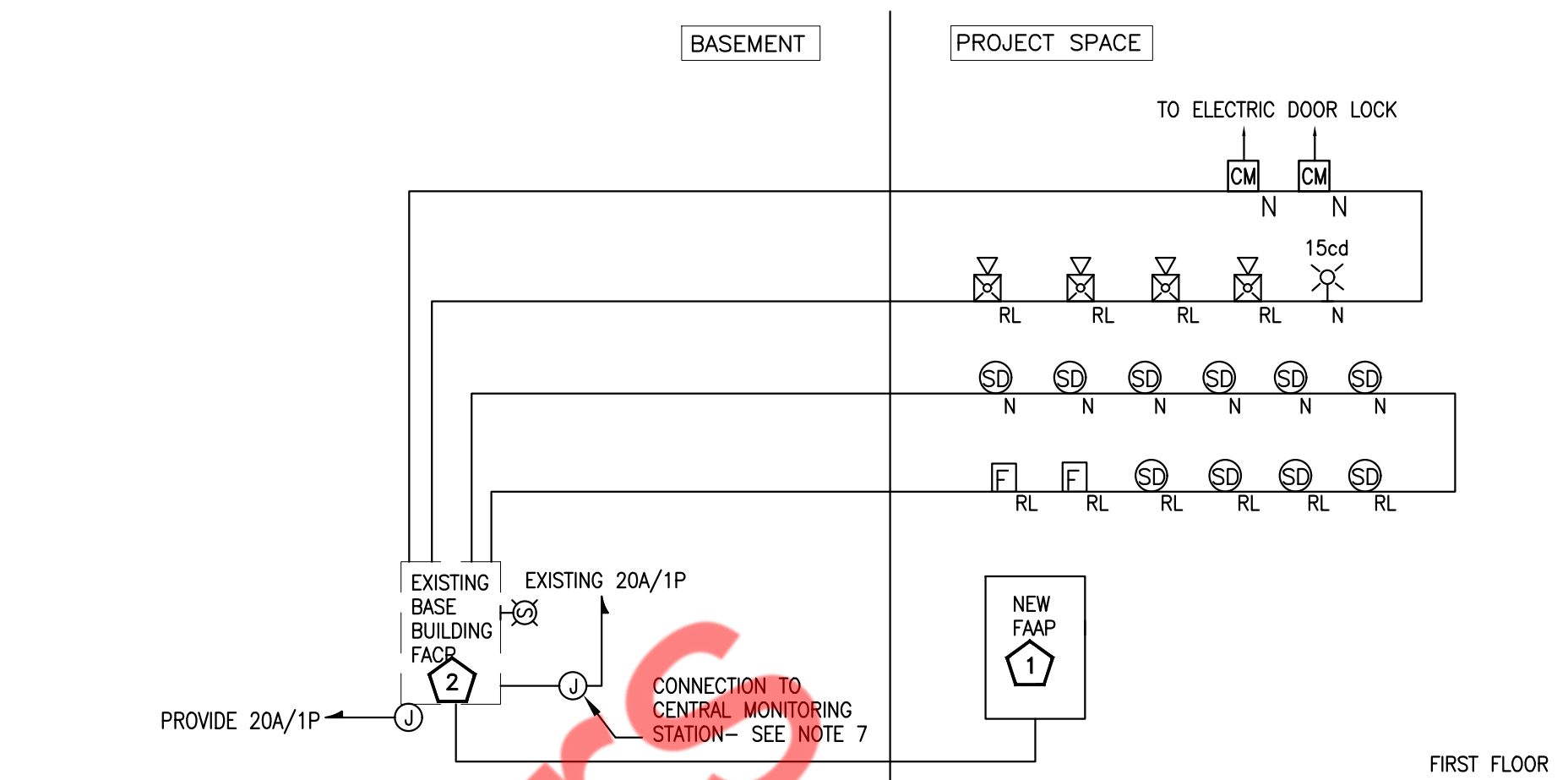
B. SYSTEM OPERATION

- THE SYSTEM OPERATION SUBSEQUENT TO THE ACTIVATION OF ANY MANUAL OR AUTOMATIC ALARM INITIATING DEVICE SHALL BE AS FOLLOWS:
 - ALL AUDIBLE VISUAL ALARM INDICATING APPLIANCES SHALL SOUND AT THE NEW FIRE ALARM PANEL AND AT THE REMOTE ANNUNCIATOR UNTIL SILENCED BY THE ALARM SILENCE SWITCH.
 - THE ALARM SHALL BE DISPLAYED ON AN 80-CHARACTER LCD DISPLAY. THE TOP LINE OF 40 CHARACTERS SHALL BE THE POINT IDENTIFIER. THE SYSTEM ALARM LED SHALL FLASH ON THE CONTROL PANEL UNTIL THE ALARM HAS BEEN ACKNOWLEDGED. ONCE ACKNOWLEDGED, THIS SAME LED SHALL LATCH ON. A SUBSEQUENT ALARM RECEIVED FROM ANOTHER ZONE SHALL FLASH THE SYSTEM ALARM LED ON THE CONTROL PANEL. THE DEVICE ZONE NUMBER THROUGH THE NEW ALARM INFORMATION, AT THE CONTROL PANEL.
- TRANSMIT A SIGNAL FROM THE CONTROL PANEL VIA AN RS232 SERIAL PORT, TO PRINT THE SYSTEM STATUS CHANGES ON THE REMOTE SYSTEM PRINTER.
- ACTIVATE THE MUNICIPAL CONNECTION VIA THE RADIO MASTER BOX.
- ACTIVATE CONTROL RELAYS LOCATED WITHIN AN EXTERNAL CONTROL CABINET LOCATED NEXT TO THE FIRE ALARM CONTROL PANEL SPECIFIED IN ADDITION TO BUILDING EVACUATION THE FOLLOWING AUXILIARY CONTROL AND INTERFACE FUNCTIONS SHALL BE PROVIDED BY THE SPECIFIED SYSTEM.
 - SELECTIVE AUTOMATIC HVAC FAN SHUTDOWN AND MANUAL (HOA) OVERRIDE.
 - RELEASE OF MAGNETIC DOOR HOLDER.
 - CAPTURE AN ALTERNATE FLOOR RECALL OF SPECIFIED ELEVATORS.
- SYSTEM SUPERVISION:
 - THE SYSTEM SHALL BE PROVIDED WITH STYLE 6 (SLC) ADDRESSABLE DEVICE COMMUNICATION CIRCUITS, STYLE 0 (DO) INITIATING DEVICE CIRCUITS AND (STYLE 2) NOTIFICATION APPLIANCE CIRCUITS. ALL SYSTEM FAULTS SHALL BE INDICATED AND DISPLAYED AT THE CONTROL PANEL.
 - THE SYSTEM SHALL BE PROVIDED WITH A STANDBY BATTERY SET OR SETS, WITH SUFFICIENT CAPACITY TO OPERATE THE ENTIRE SYSTEM UPON LOSS OF NORMAL OPERATING POWER, FOR A TIME PERIOD OF *RHODE ISLAND* (60) HOURS IN SUPERVISORY MODE, WITH (15) MINUTES OF ALARM AT THE END OF THE (60) HOUR TIME PERIOD. THE STANDBY BATTERY SET SHALL BE CHARGED, LOAD TESTED AND MONITORED FOR EITHER A DISCONNECTED OR LOW BATTERY STATUS CONDITION BY THE SYSTEM. ANY FAULT DETECTED WITH THE STANDBY BATTERIES SHALL BE INDICATED AND DISPLAYED AT THE CONTROL PANEL.
 - FIRE ALARM CONTROL PANEL.
 - CONTROL PANEL SHALL HAVE SOLID STATE, MICROPROCESSOR BASED ELECTRONICS USING SURFACE MOUNT TECHNOLOGY, THROUGH-PUT TECHNOLOGY WILL NOT BE ALLOWED. IT SHALL DISPLAY ONLY THOSE PRIMARY CONTROLS AND DISPLAYS ESSENTIAL TO OPERATION DURING A FIRE ALARM CONDITION. KEYBOARDS OR KEYPADS SHALL NOT BE REQUIRED TO OPERATE THE SYSTEM DURING THE FIRE ALARM CONDITIONS. THE UNIT SHALL HAVE 9 AMP POWER SUPPLY MINIMUM.
 - A LOCAL AUDIBLE DEVICE SHALL SOUND DURING ALARM, TROUBLE OR SUPERVISORY CONDITIONS. THIS AUDIBLE DEVICE SHALL SOUND DIFFERENTLY DURING EACH CONDITION TO DISTINGUISH ONE CONDITION FROM ANOTHER WITHOUT HAVING A VIEW THE PANEL. THIS AUDIBLE DEVICE SHALL ALSO SOUND DURING EACH KEY PRESS TO PROVIDE AN AUDIBLE FEEDBACK TO ENSURE THAT THE KEY HAS BEEN PRESSED PROPERLY.

- THE FOLLOWING PRIMARY CRYSTAL DISPLAYS:
 - INDIVIDUAL RED SYSTEM ALARM LED
 - INDIVIDUAL YELLOW SUPERVISORY SERVICE LED
 - INDIVIDUAL YELLOW TROUBLE LED
 - GREEN "POWER ON" LED
 - ALARM ACKNOWLEDGE KEY
 - TROUBLE ACKNOWLEDGE KEY
 - ALARM SILENCE KEY
 - SYSTEM RESET KEY
- PRIMARY, KEYS, LED'S AND LCD DISPLAY.
- THE CONTROL PANEL SHALL HAVE A 2-LINE X 40 CHARACTER LIQUID CRYSTAL DISPLAY WHICH SHALL BE BACK LIGHTED FOR ENHANCED READABILITY, SO AS TO CONSERVE BATTERY STANDBY, POWER IT SHALL NOT BE LIT DURING AN AC POWER FAILURE, UNLESS AN ALARM CONDITION OCCURS OR THERE IS KEYPAD ACTIVITY.
- THE DISPLAY SHALL SUPPORT BOTH UPPER AND LOWER CASE LETTERS. LOWER CASE LETTERS SHALL BE USED FOR SHORT TITLES AND PROMPTING THE USER. UPPER CASE LETTERS SHALL BE USED FOR SYSTEM STATUS INFORMATION. A CURSOR SHALL BE VISIBLE WHEN ENTERING INFORMATION. SYSTEMS USING UPPER CASE LETTERS ONLY WILL NOT OFFER CLEAR DISTINCTION BETWEEN ALARMS AND PROGRAMMING AND ARE NOT ACCEPTABLE.
- ANY SUPPLEMENTAL NOTIFICATION CONTROL PANELS SHALL BE CAPABLE OF OPERATING ALL CONNECTED NOTIFICATION APPLIANCE DEVICES THROUGHOUT THE BUILDING, AND 25 % SPARE CAPACITY FOR VISUAL AND THE HORN CIRCUITS. THEY SHALL HAVE AT A MINIMUM 12 AMPS OF AVAILABLE NAC POWER.
- ISOLATE MODULES
 - PROVIDE FIELD MOUNTED ISOLATE MODULES FOR EVERY 20 DEVICES TO PROTECT CIRCUIT INTEGRITY IN THE EVENT OF A WIRING FAULT & ENSURE STYLE 6 WIRING CONVENTIONS.
- RESET SYSTEM
 - THE SYSTEM RESET BUTTON SHALL BE USED TO RETURN THE SYSTEM TO ITS NORMAL STATE AFTER AN ALARM CONDITION HAS BEEN REMEDIATED. THE LCD DISPLAY SHALL STEP THE USER THROUGH THE RESET PROCESS WITH SIMPLE ENGLISH LANGUAGE MESSAGES. MESSAGE "SYSTEM RESET IN PROGRESS" WILL FIRST BE DISPLAYED, FOLLOWED BY THE MESSAGE "SYSTEM RESET COMPLETED," AND FINALLY "SYSTEM IS NORMAL," SHOULD ALL ALARM CONDITIONS BE CLEARED. IN ORDER TO MAINTAIN CONSISTENCY WITH OTHER EXISTING PANELS, NO DEVIATION FROM THESE MESSAGES CAN BE ACCEPTED.
 - SHOULD AN ALARM CONDITION CONTINUE TO EXIST, THE MESSAGE "SYSTEM RESET IN PROGRESS" WILL BE FOLLOWED BY THE MESSAGE "SYSTEM RESET ABORTED," AND THE SYSTEM WILL REMAIN IN AN ABNORMAL STATE. SYSTEM CONTROL RELAYS SHALL NOT RESET. THE SILENCE KEY AND THE ALARM LED WILL BE ON. THE DISPLAY WILL INDICATE THE TOTAL NUMBER OF ALARMS AND TROUBLES PRESENT IN THE SYSTEM, ALONG WITH A PROMPT TO USE THE ACK KEYS TO REVIEW THE POINTS. THESE POINTS WILL NOT REQUIRE ACKNOWLEDGMENT IF THEY WERE PREVIOUSLY ACKNOWLEDGED.
- H.O.A. SWITCHES
 - PROVIDE KEY PAD POSITION SWITCH AS SHOWN ON CONTRACT DRAWINGS.
- SILENT WALKTEST WITH HISTORY LOGGING
 - THE SYSTEM SHALL BE CAPABLE OF BEING TESTED BY ONE PERSON. WHILE IN THE TESTING MODE, THE ALARM ACTIVATION OF AN INITIATING DEVICE CIRCUIT SHALL BE SILENTLY LOGGED AS AN ALARM CONDITION IN THE HISTORICAL DATA FILE. THE PANEL SHALL AUTOMATICALLY RESET ITSELF AFTER LOGGING OF THE ALARM. THE SYSTEM SHALL SIGNAL THE DEVICE ZONE NUMBER THROUGH THE BUILDING AUDIBLE UNITS, FOR IMMEDIATE VERIFICATION BY THE TEST TECHNICIAN. DUE TO THE CRITICAL NATURE OF THE TEST PROCEDURES, NO DEVIATION FROM THIS SECTION CAN BE ACCEPTED.
- LED SUPERVISION
 - ALL SLAVE MODULE LEDS SHALL BE SUPERVISED FOR BURNOUT OR DISARRANGEMENT. SHOULD A PROBLEM OCCUR, THE LCD SHALL DISPLAY THE MODULE AND LED LOCATION NUMBERS TO FACILITATE LOCATION OF THE LED. DUE TO THE CRITICAL NATURE OF THE PANEL LCD FUNCTIONS, NO DEVIATION FROM THIS REQUIREMENT CAN BE ACCEPTED.
- SYSTEM TROUBLE REMINDER
 - SHOULD A TROUBLE CONDITION BE PRESENT WITHIN THE SYSTEM AND THE AUDIBLE TROUBLE SIGNAL SILENCED, THE TROUBLE SIGNAL SHALL RESOUND AT PREPROGRAMMED TIME INTERVALS TO ACT AS REMINDER THAT THE FIRE ALARM SYSTEM IS NOT 100% OPERATIONAL. BOTH THE TIME INTERVAL AND THE TROUBLE REMINDER SIGNALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE BUILDING CODE AND NFPA 72 AS REFERENCED.
- MULTIPLE ADDRESSABLE PERIPHERAL NETWORK
 - PROVIDE ADDRESSABLE CIRCUITS FOR COMMUNICATION WITH ADDRESSABLE DEVICES. SYSTEM SHALL HAVE AN INDEPENDENT ISOLATED ADDRESSABLE LOOPS, UP TO 318 ADDRESSABLE DEVICES.
 - THE SYSTEM MUST PROVIDE COMMUNICATION WITH INITIATING AND CONTROL DEVICES INDIVIDUALLY. ALL OF THESE DEVICES WILL BE INDIVIDUALLY ANNUNCIATED AT THE CONTROL PANEL.
 - ANNUNCIATION SHALL INCLUDE THE FOLLOWING CONDITIONS FOR EACH POINT.
 - ALARM
 - TROUBLE
 - OPEN
 - SHORT
 - DEVICE MISSING/FAILED
 - ALL ADDRESSABLE DEVICES SHALL HAVE THE CAPABILITY OF BEING DISABLED OR ENABLED INDIVIDUALLY.
 - UP TO 318 ADDRESSABLE DEVICES ON A CLASS A CIRCUIT. SYSTEMS THAT REQUIRE FACTORY RE-PROGRAMMING TO ADD OR DELETE SERVICES ARE UNACCEPTABLE.
 - IDENTIFICATION OF ADDRESSABLE DEVICES.
 - PHOTOELECTRIC DETECTOR HEAD
 - PROVIDE PHOTOELECTRIC TYPE DETECTORS, WHERE INDICATED OR REQUIRED. THEY SHALL BE A FLUSH MOUNT WHICH MOUNTS TO A TWISTLOCK BASE, AND SHALL BE UL APPROVED.
 - THE DETECTORS SHALL BE OF THE SOLID STATE PHOTOELECTRIC TYPE AND SHALL CONTAIN NO RADIOACTIVE MATERIAL. THEY WILL USE A REFRACTED INFRARED LED LIGHT SOURCE AND BE SEALED AGAINST REAR AIR FLOW ENTRY.

- THE DETECTOR SHALL FIT INTO A BASE THAT IS COMMON WITH BOTH THE HEAT DETECTOR AND IONIZATION TYPE DETECTOR AND SHALL BE COMPATIBLE WITH OTHER ADDRESSABLE DETECTORS, ADDRESSABLE MANUAL STATIONS, AND ADDRESSABLE ZONE ADAPTER MODULES ON THE SAME CIRCUIT. THE ADDRESSABLE SHALL BE CONTAINED IN THE BASE OF THE DETECTOR. THOSE SYSTEMS WHICH PROVIDE ADDRESSING IN THE HEAD, SHALL PROVIDE AN ADDRESSABLE MONITOR MODULE AND A CONVENTIONAL DETECTOR ASSEMBLY TO ALLOW THE OWNER TO REPLACE A DETECTOR HEAD WITHOUT THE NEED OF VERIFYING DETECTOR ADDRESS.
- THERE SHALL BE NO LIMIT TO THE NUMBER OF DETECTORS OR ZONE ADAPTER MODULES WHICH MAY BE ACTIVATED OR "IN ALARM" SIMULTANEOUSLY.
- DUE TO THE REQUIREMENT FOR IMMEDIATE CHANGE OUT OF DETECTOR HEADS ADDRESS SETTING SWITCHES, JUMPERS ETC., MAY BE PROVIDED IN THE HEAD OR BEHIND THE DETECTOR BASE. DETECTORS WHICH USE DIP SWITCHES ARE NOT ACCEPTABLE.
- PROVIDE A DUCT HOUSING WITH SENSOR, WITH RELAY. THE RELAY SHALL BE SOFTWARE PROGRAMMABLE TO ALLOW THE UNIT IN WHICH THE DETECTOR IS MOUNTED IN TO BE SHUT DOWN, OR ANY OTHER DEVICE TO BE CONTROLLED BY THIS PROGRAMMABLE RELAY. THE RELAY MAY BE A SEPARATE UNIT FROM THE DUCT HOUSING TO ALLOW FOR TROUBLESHOOTING AND DISCONNECTS.
- PROVIDE SAMPLING TUBE AS REQUIRED FOR UNIT SIZE.
- PROVIDE A REMOTE TEST UNIT FOR EACH DUCT SMOKE DETECTOR WITH LED ALARM INDICATOR AND TEST KEY SWITCH.
- LCD ANNUNCIATOR
 - PROVIDE A VGA COLOR TOUCH SCREEN LCD ANNUNCIATOR AND STATIC GRAPHIC PLOT PLAN AS SHOWN ON THE CONTRACT DRAWINGS. SUBMIT A LAYOUT OF THIS UNIT TO THE ENGINEER FOR APPROVAL.
 - PROVIDE CITY CONNECTIONS TO THE LOCAL FIRE DEPARTMENT.
- ADDRESSABLE THERMAL DETECTOR HEAD
 - PROVIDE THERMAL DETECTOR HEADS WHERE INDICATED OR REQUIRED.
 - THERMAL DETECTOR HEADS MUST BE UL LISTED. SHALL BE A COMBINATION RATE-OF-USE AND FIXED TEMPERATURE (135 F) TYPE, AUTOMATICALLY RESTORABLE.
 - PROVIDE REMOTE LED ALARM INDICATORS, AS INDICATED ON PLANS.
- ADDRESSABLE PULL STATIONS
 - PROVIDE ADDRESSABLE PULL STATIONS WHICH CONTAIN ELECTRONICS THAT COMMUNICATE THE STATION'S STATUS (ALARM, NORMAL) TO THE CONTROL PANEL OVER ONE TWISTED PAIR. THE ADDRESS WILL SET ON THE STATION. THEY WILL BE MANUFACTURED FROM HIGH IMPACT RED LEXAN. STATION WILL MECHANICALLY LATCH UPON OPERATION AND REMAIN SO UNTIL MANUALLY RESET BY OPENING WITH A KEY COMMON TO ALL SYSTEM LOCKS. PULL STATIONS WILL BE DOUBLE ACTION AND AS IDENTIFIED BY A SCHEDULE ON THE PRINTS.
 - THE FRONT OF THE STATION IS TO BE HINGED TO A BACKPLATE ASSEMBLY AND MUST BE OPENED WITH A KEY TO RESET THE STATION. THE KEY SHALL BE COMMON WITH THE CONTROL PANELS. STATIONS WHICH USE ALLEN WRICHES OR SPECIAL TOOLS TO RESET WILL NOT BE ACCEPTED. THE STATION SHALL CONSIST OF HIGH IMPACT LEXAN PLASTIC, RED IN COLOR.
 - THE ADDRESSABLE MANUAL STATION SHALL BE CAPABLE OF FIELD PROGRAMMING OF ITS "ADDRESSABLE" LOCATION ON AN ADDRESSABLE INITIATING CIRCUIT.
 - THERE SHALL BE NO LIMIT TO THE NUMBER OF STATIONS, DETECTORS OR ZONE ADAPTER MODULES, WHICH MAY BE ACTIVATED OR "IN ALARM" SIMULTANEOUSLY.
 - THE ADDRESSABLE MANUAL STATION SHALL BE UNDERWRITER'S LABORATORIES INC. LISTED.
 - PROVIDE PROTECTIVE COVERS, EQUAL TO STOPPER II, WHERE REQUIRED BY THE A.H.U.
- ZONE ADAPTER MODULES
 - ZONE ADAPTER MODULES SHALL BE USED FOR MONITORING OF WATERFLOW, VALVE TAMPER, HALON CONTROL PANELS, NON-ADDRESSABLE DETECTORS, AND FOR CONTROL OF EVACUATION INDICATING APPLIANCES AND AHU SYSTEMS.
 - AN ADDRESSABLE INTERFACE MODULE SHALL BE PROVIDED FOR INTERFACING NORMALLY OPEN DIRECT CONTACT DEVICES TO AN ADDRESSABLE INITIATING CIRCUIT.
 - ADDRESSABLE MODULES WILL BE CAPABLE OF MOUNTING IN A STANDARD ELECTRIC OUTLET BOX. ZAMS WILL INCLUDE COVER PLATES TO ALLOW SURFACE OR FLUSH MOUNTING. ZAMS WILL RECEIVE THEIR 24 VDC POWER FROM A SEPARATE TWO WIRE PAIR RUNNING FROM AN APPROPRIATE POWER.
 - THERE SHALL BE TWO TYPES OF DEVICES:
 - MONITOR MODULE
 - CONTROL MODULE
 - ADDRESSABLE DEVICE SUPERVISION.
 - ALL DEVICES SHALL BE SUPERVISED FOR TROUBLE CONDITION. THE SYSTEM CONTROL PANEL WILL BE CAPABLE OF DISPLAYING THE TYPE OF TROUBLE CONDITION (OPEN, SHORT, DEVICE MISSING/FAILED). SHOULD A DEVICE FAIL, IT WILL NOT HINDER THE OPERATION OF OTHER DEVICES.
 - SPRINKLER FLOW AND TAMPER SWITCHES ARE TO BE SUPPLIED AND INSTALLED BY THE SPRINKLER CONTRACTOR AND WIRED BY THE ELECTRICAL CONTRACTOR AS REQUIRED BY THE LOCAL FIRE DEPARTMENT. EACH DEVICE SHALL BE AN ADDRESS ON THE FIRE ALARM PANEL, SO THAT THEY MAY BE PROGRAMMED AS EITHER ALARMS OR TROUBLES. PROGRAM ALL AS ALARMS ON THIS PROJECT.
 - AUDIBLE/VISUAL UNIT (XENON STROBE)
 - PROVIDE MULTI-CANDELA HORN/STROBE UNITS COMPRISED OF A HORN AND XENON FLASH TUBE ENTIRELY SOLID STATE. THE UNIT TO CONFORM TO ITS REQUIREMENTS.
 - VISUAL FLASHING LAMPS (XENON STROBE)
 - VISUAL INDICATING APPLIANCES SHALL BE COMPRISED OF A XENON FLASH TUBE AND ENTIRELY SOLID STATE. THIS UNIT SHALL MOUNT TO A SINGLE GANG BOX AND PLATE FOR SURFACE MOUNT. MINIMUM OF 75 CD LIGHT OUTPUT TO CONFORM TO A.D.A. ALL STROBES SHALL BE SYNCHRONIZED.

- MINI-HORNS
 - WHITE W/RED LETTERING MINI HORN WHERE INDICATED ON CONTRACT DRAWINGS. THE UNIT SHALL MOUNT TO A SINGL E, DEEP GANG BOX.
- STROBE LIGHT
 - PROVIDE A MULTI-CANDELA STROBE APPLIANCE.
- MAGNETIC DOOR HOLDERS
 - PROVIDE SEMI-FLUSH WALL MOUNTED, 120 V.A.C AND 24 V.D.C. WITH LONG CATCH PLATE.
- BATTERIES AND BATTERY CABINET
 - PROVIDE MAINTENANCE - FREE BATTERIES.
- RELAY MODULE
 - PROVIDE ADDRESSABLE RELAY TO PROVIDE SUPERVISED CONTROL OF AUXILIARY CIRCUITS (AHU'S, DOOR HOLDER'S, ETC) VIA SLC ADDRESSABLE LOOP. RELAY SHALL PROVIDE SUPERVISED OUTLET FOR 3AMPS @ 30VDC OR 0.5AMPS AT 120VAC, WHERE CURRENT EXCEEDS LIMITATIONS PROVIDE ISOLATION RELAY RATED FOR REQUIRED LOAD.
- INSTALLATION FIRE ALARM WIRING
 - ALL FIRE ALARM WIRING SHALL CONFORM TO THE APPLICABLE STATE AND LOCAL FIRE SAFETY CODES.
 - WRING SHOWN ON DRAWINGS IS FOR ESTIMATING PURPOSES ONLY. THE FINAL WIRING REQUIREMENTS SHALL BE PER THE EQUIPMENT MANUFACTURER'S WIRING DIAGRAMS AND NO INCREASE IN CONTRACT PRICE WILL BE ALLOWED FOR ANY ADDITIONAL WIRES THAT MAY BE SHOWN ON THE MANUFACTURER'S DRAWINGS.
 - DETAILED ONE-LINE SCHEMATIC WIRING DIAGRAMS OF EACH SPECIFIED DEVICE BETWEEN ALL SYSTEMS. THESE CONNECTION DRAWINGS ARE TO INDICATE ROUTING OF CONDUCTORS VIA THE FLOOR TERMINAL BOXES.
- SHUTDOWNS OF ANY EXISTING SYSTEMS
 - THIS CONTRACTOR SHALL COORDINATE ALL REQUIRED SHUTDOWNS OF THE EXISTING FIRE ALARM SYSTEM DURING THE DURATION OF THIS CONTRACT. ALL SYSTEM SHALL BE COORDINATED WITH THE OWNER AND THE FIRE DEPARTMENT. THE FIRE ALARM SYSTEMS SHALL BE RETURNED TO A NORMAL MODE OF OPERATION BY THE END OF EACH WORKDAY. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL COSTS INCURRED FOR A FIRE WATCH IF THE SYSTEM IS NOT OPERATIONAL AT THE END OF A WORKDAY.
- PROGRAMMING OF SYSTEM
 - THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN APPROVED ZONE AND DEVICE CUMULATIVE LABELS, THAT WILL BE PROGRAMMED INTO THE SYSTEM FOR ZONE AND DEVICE IDENTIFICATION PURPOSES. THE SUBJECT CUSTOM LABELS SHALL BE APPROVED BY OWNERS REPRESENTATIVE AND THE FIRE DEPT. BEFORE THEY ARE PROGRAMMED INTO THE SYSTEM.
- TRAINING:
 - THE ELECTRICAL CONTRACTOR AND SYSTEM MANUFACTURER SHALL PROVIDE A MINIMUM OF ONE (1) ON-SITE TRAINING SESSIONS FOR THE OWNER'S REPRESENTATIVES. EACH SESSION SHALL BE A MINIMUM OF 1 HOUR.
 - DUE TO THE CRITICAL NATURE OF PROPER SYSTEM OPERATION, TRAINING MUST BE CONDUCTED BY PERSONNEL IN THE DIRECT EMPLOY OF THE MANUFACTURER OF THE FIRE ALARM CONTROL PANEL. A THIRD PARTY INSTRUCTOR IS NOT ACCEPTABLE.
- WARRANTY:
 - THE CONTRACTOR SHALL WARRANT THE COMPLETE FIRE ALARM SYSTEM WIRING AND EQUIPMENT TO BE FREE FROM INHERENT MECHANICAL AND ELECTRICAL DEFECTS FOR A PERIOD OF (3) THREE YEARS FROM THE DATE OF THE COMPLETED AND CERTIFIED TEST OR FROM THE DATE OF FIRST BENEFICIAL USE.
 - THE EQUIPMENT MANUFACTURE SHALL MAKE AVAILABLE TO THE OWNER A MAINTENANCE CONTRACT PROPOSAL TO PROVIDE A MINIMUM OF TWO (2) INSPECTIONS AND TEST PER YEAR IN COMPLIANCE WITH NFPA-72H GUIDELINES.
- SUBMITTALS
 - PROVIDE COMPLETE SETS OF DOCUMENTATION TO INCLUDE THE FOLLOWING:
 - A COMPLETE POINT TO POINT RISER DIAGRAM OF THE FIRE ALARM SYSTEM SHOWING ALL DEVICES AND EQUIPMENT AND SIZE, TYPE AND NUMBERS OF ALL CONDUCTORS.
 - BATTERY STANDBY AND POWER SUPPLY CALCULATIONS SHOWING TOTAL POWER REQUIRED TO MEET THE SPECIFIED SYSTEM REQUIREMENTS INCLUDING SPARE CAPACITY ALLOWANCES. CALCULATIONS SHALL INCLUDE A COMPLETE LIST OF CURRENT REQUIREMENTS DURING NORMAL, SUPERVISORY, TROUBLE AND ALARM CONDITIONS. CALCULATIONS SHALL ALSO DEMONSTRATE PROPER CONSIDERATION OF CURRENT REQUIREMENTS, WIRE SIZE, WIRE LENGTH AND VOLTAGE DROP CHARACTERISTICS.
 - MANUFACTURER'S ORIGINAL CATALOG DATA SHEETS SHALL BE SUPPLIED FOR ALL OF THE EQUIPMENT TO BE SUPPLIED. ALL EQUIPMENT SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER AND NO EQUIPMENT SHALL BE ORDERED WITHOUT PRIOR APPROVAL.
- DOCUMENTATION:
 - AT THE COMPLETION OF THE PROJECT A COMPLETE SET OF OPERATING/MAINTENANCE MANUALS, THE FIRE ALARM SUBMITTAL BOOK, POINT-TO-POINT WIRING DIAGRAMS, A TERMINAL STRIP CABINET CONNECTION POINT DIAGRAM FOR EACH TERMINAL CABINET, A COMPLETE POINT ADDRESS LISTING BY DEVICE, AND A FINAL TEST REPORT SHALL BE GIVEN TO THE OWNER.



BUILDING FIRE ALARM RISER

N.T.S.

FIRE ALARM RISER DIAGRAM KEYNOTES:

- FIRE ALARM ANNUNCIATOR PANEL TO BE COMPATIBLE WITH THE BASE BUILDING FIRE CONTROL PANEL. SELECT MODEL HONEYWELL ANN-80.
- VERIFY EXACT LOCATION AND MODEL OF THE FACP IN THE FIELD. CONTRACTOR TO BUY FACT COMPATIBLE FA DEVICES ONLY. ALL FIRE ALARM DEVICES SHALL BE CONNECTED TO THE FACP.

FIRE ALARM RISER NOTES:

- REFER TO FLOOR PLAN FOR EXACT QUANTITIES AND LOCATIONS OF ALL DEVICES.
- THE FIRE ALARM SYSTEM SHALL CONFORM WITH REQUIREMENTS OF THE NEW YORK FIRE SAFETY CODE AND THE CITY OF NEW YORK FIRE DEPARTMENT. SHOP DRAWINGS SHALL BE SUBMITTED TO THE FIRE DEPARTMENT FOR APPROVAL.
- PROVIDE A NEW ADDRESSABLE FIRE ALARM SYSTEM AS MANUFACTURED BY FCI OR APPROVED EQUAL. THE PANEL SHALL BE E3 SERIES. ALL DEVICES SHALL BE NEW AND MANUFACTURED BY GAMEWELL/FCI OR APPROVED EQUAL. ALL FIRE ALARM WIRING SHALL BE CLASS A PER FCI OR APPROVED EQUAL RECOMMENDATIONS AND SHALL BE INSTALLED IN MINIMUM 3/4" EMT CONDUIT.
- ALL FIRE ALARM WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF NFPA, STATE, AND LOCAL BUILDING CODES AND THE AMERICANS WITH DISABILITIES ACT (ADA).
- PROVIDE REMOTE BOOSTER POWER SUPPLY PANELS AS REQUIRED.
- PROVIDE FAULT ISOLATION MODULES ON THE SIGNAL LINE CIRCUIT TO PROTECT THE SYSTEM FROM LINE TO LINE FAULTS. MODULES SHALL BE PROVIDED AS REQUIRED, WITH A MINIMUM OF (1) MODULE PER EVERY 25 DEVICES.
- EXISTING CONNECTION FOR RADIO MASTER BOX/DEDICATED COMMUNICATION LINES FROM THE BASE BUILDING FACP TO THE FIRE DEPARTMENT MONITORING STATION IN ACCORDANCE WITH FIRE DEPARTMENT REQUIREMENTS.

FIRE ALARM SYSTEM LEGEND

- [FACP] MANUAL PULL STATION MOUNTED 44" AFF
- [FACP] FIRE ALARM CONTROL PANEL
- [FACP] FIRE ALARM ANNUNCIATOR PANEL
- [SD] SMOKE DETECTOR/SENSOR
- [HD] HEAT DETECTOR/SENSOR
- [V] VISIBLE ONLY(STROBE) - WALL MOUNT CD- CANDELA RATING/SETTING
- [H] COMBINATION HORN/VISIBLE CD- CANDELA RATING/SETTING WALL MOUNTED.
- [H] COMBINATION HORN/VISIBLE CD- CANDELA RATING/SETTING-CEILING MOUNTED.
- [SK] SMART KEY BOX
- [RTS] REMOTE TEMPERATURE SWITCH
- [CM] CONTROL MODULE
- [WFS] WATER FLOW SWITCH
- [TS] TAMPER SWITCH
- [MM] MONITOR MODULE
- (RL) RELOCATED
- (E) EXISTING
- (N) NEW

I/O MATRIX:

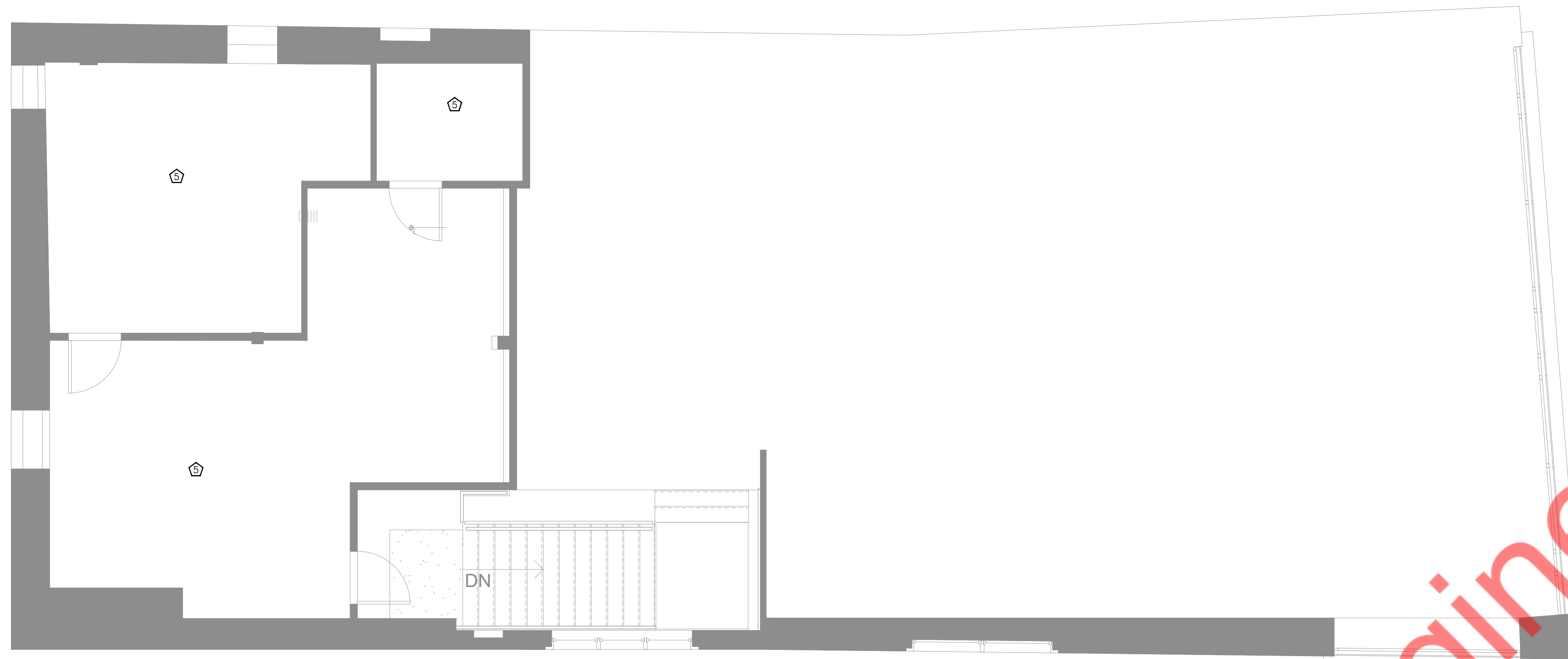
SYSTEM INPUTS INITIATING DEVICES	SYSTEM OUTPUTS INDICATING/CONTROLLED DEVICES								
	A	B	C	D	E	F	G	H	I
1 MANUAL PULL STATION	●								
2 AREA SMOKE DETECTOR	●								
3 FIRE ALARM AC POWER FAILURE		●							
4 FIRE ALARM SYSTEM LOW BATTERY		●							
5 OPEN CIRCUIT		●							
6 GROUND CIRCUIT		●							
7 NOTIFICATION APPLIANCE CIRCUIT SHORT		●							

CONTROL UNIT ANNUNCIATION	NOTIFICATION	REQUIRED FIRE SAFETY
ACTIVATE COMMON ALARM SIGNAL INDICATOR ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING		
ACTIVATE COMMON TROUBLE SIGNAL INDICATOR ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.		
SOUND INTERNAL BUZZER AT FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.		
TEXT MESSAGE DISPLAY REBASE TYPE & LOCATION OF THE ACTIVATING DEVICES ON LCD OF FIRE ALARM CONTROL PANEL & OUTLYING ANNUNCIATORS.		
ACTIVATE EVACUATION SIGNAL THROUGH HORNS AND FLUSH THE STROBES THROUGHOUT FLOORS.		
TRANSMIT "MANUAL" ALARM SIGNAL TO FIRE DEPARTMENT MONITORING COMPANY.		
TRANSMIT "SMOKE" ALARM SIGNAL TO FIRE DEPARTMENT VIA AN APPROVED CENTRAL STATION MONITORING COMPANY.		
TRANSMIT "TROUBLE" ALARM SIGNAL TO FIRE DEPARTMENT MONITORING COMPANY.		
RELEASE ALL ELECTRICALLY HELD OPEN FIRE & SMOKE DOORS.		

TYPE OF DESIGN

INSTALLATION OF AUTOMATIC SMOKE DETECTION ALARM SYSTEM





2 FIRE ALARM PLAN SECOND FLOOR
SCALE: 1/4" = 1'-0"

FIRE ALARM GENERAL NOTES

- A. ALL FIRE ALARM DEVICES (STROBES, ALARMS & SMOKE DETECTORS) IN THIS SPACE SHALL BE CEILING MOUNTED UNLESS SHOWN WALL MOUNTED.
- B. FA DEVICES TAGGED AS (E) ARE EXISTING AND SHALL REMAIN CONNECTED. CONTRACTOR TO LOOP NEW DEVICES AS NEEDED.

FIRE ALARM KEY NOTES

1. ALL FIRE ALARM DEVICES SHALL BE CONNECTED TO THE FIRE ALARM CONTROL PANEL (FACP). CONTRACTOR SHALL COORDINATE WITH BASE BUILDING/OWNER/ARCHITECT.
2. FIRE ALARM ANUNCIATOR PANEL TO BE COMPATIBLE WITH THE FIRE ALARM CONTROL PANEL (FACP). SELECT MODEL HONEYWELL ANN-80.
3. COORDINATE EXACT LOCATION OF FACP IN FIELD. CONFIRM THAT THE PANEL IS IN OPERABLE CONDITION. IF YES, THEN CONFIRM IF WE CAN USE ADDITIONAL LOOPS.
4. (TRACCESS) TRAC-VULT BT SMART KEY BOX (SURFACE/RECESSED). COORDINATE WITH EMPEOPLE REPRESENTATIVE FOR EXACT LOCATION AND MOUNTING HEIGHT.
5. ALL FA DEVICES SHALL REMAIN CONNECTED TO THE EXISTING CIRCUIT.



1 FIRE ALARM PLAN FIRST FLOOR
SCALE: 1/4" = 1'-0"

Property of NY Engineers



FIRST FLOOR FIRE ALARM PLAN

SPRINKLER GENERAL NOTES

- ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA-13 2016 AND ALL LOCAL LAWS AND AUTHORITIES.
- 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.
- ALL SPRINKLER HEADS SHALL BE INSTALLED AT CENTER OF TILE WHEREVER APPLICABLE.
- 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.
- 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.
- REFER TO ENGINEERING DRAWINGS FOR SPRINKLER HEADS 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 A.H.J.
- 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 (10) TEN ADDITIONAL SPRINKLERS INSTALLED. EXACT LOCATIONS OF THESE SPRINKLER HEADS SHALL BE DETERMINED IN FIELD.
- THE SPRINKLER SYSTEMS ARE TO BE HYDROSTATIC TESTED FOR A (2) HOUR MINIMUM AT 200 LBS. PRESSURE AND ARE TO BE WITNESSED BY AUTHORIZED BUILDING PERSONNEL. COORDINATE ALL TESTING WITH BUILDING MANAGER.
- ALL SERVICE SHUTDOWNS SHALL BE BY BASE BUILDING ENGINEERS. MINIMUM OF 48 HOURS NOTICE IS REQUIRED TO THE BUILDING OFFICE PRIOR TO SHUT DOWN.
- ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
- 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-13-2016.
- COMPOSITE DRAWINGS

- AFTER REMOVAL OF CEILINGS, CONSTRUCTION MANAGER SHALL INSPECT THE SITE WITH BUILDING REPRESENTATIVES TO IDENTIFY BASE BUILDING MEP INFRASTRUCTURE ITEMS WHICH ARE TO REMAIN. ALL SUCH ITEMS ARE TO BE CLEARLY TAGGED "TO REMAIN" AND TO BE PROTECTED DURING DEMOLITION, IN A MANNER SATISFACTORY TO BUILDING MANAGEMENT.
- BUILDING DEPARTMENT SPRINKLER NOTES**
- THE INSTALLATION, COMPONENTS, SIZING, SPACING, CLEARANCES, POSITION AND TYPE OF SYSTEMS SHALL CONFORM TO THE 2015 INTERNATIONAL BUILDING CODE, MAINE FIRE CODE 2018.
 - DIRECT CONNECTION OF SPRINKLERS TO THE PUBLIC WATER SYSTEM SHALL CONFORM TO SECTION 903.3.5 OF 2015 INTERNATIONAL BUILDING CODE.
 - AUTOMATIC SPRINKLER SYSTEMS SHALL COMPLY WITH SECTION 903 OF 2015 INTERNATIONAL BUILDING CODE.
 - INSPECTION AND TESTS OF SPRINKLERS SHALL BE CONDUCTED AS SEC. 2015 INTERNATIONAL BUILDING CODE, MAINE FIRE CODE 2018.
 - THE OCCUPANCY OF THE AREAS TO BE SPRINKLERED IN ACCORDANCE WITH 903.2 OF 2015 INTERNATIONAL BUILDING CODE.
 - FIRE HOSE THREADS AND FITTINGS USED IN CONNECTION WITH AUTOMATIC SPRINKLER SYSTEMS SHALL BE IN ACCORDANCE WITH 903.3.6 OF 2015 INTERNATIONAL BUILDING CODE.
 - STOCK OF EXTRA SPRINKLERS WILL BE FURNISHED AS REQUIRED BY 2015 INTERNATIONAL BUILDING CODE (REQUIRED FOR EACH TEMPERATURE RATING).
 - SPRINKLER ALARM SHALL BE IN ACCORDANCE WITH CHAPTER 9 OF 2015 INTERNATIONAL BUILDING CODE.
 - 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 SEC. 714 2015 INTERNATIONAL BUILDING CODE.
 - PROVIDE DEPARTMENT OF WATER SUPPLY LETTER WITH FLOW TEST DATE IF THERE IS A DIRECT CONNECTION TO THE STREET WATER SUPPLY.
 - ALL VALVES ON CONNECTIONS TO WATER SUPPLIES TO SPRINKLER SHALL BE APPROVED O.S. & Y. OR APPROVED INDICATOR TYPE.
 - 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 CHAPTER 9 OF 2015 INTERNATIONAL BUILDING CODE.
 - HYDRAULICALLY DESIGNED SYSTEMS SHALL BE IN ACCORDANCE WITH SECTION 903.3.8.5 OF 2015 INTERNATIONAL BUILDING CODE.
 - 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.
 - FIRE PROTECTION SYSTEM SHALL BE MAINTAINED IN ACCORDANCE WITH SECTION 901.2 OF 2015 INTERNATIONAL BUILDING CODE.
 - FIRE PROTECTION SYSTEMS SHALL BE INSPECTED, TESTED AND MAINTAINED IN ACCORDANCE WITH THE REFERENCED STANDARDS LISTED IN TABLE 901.2 OF 2015 INTERNATIONAL BUILDING CODE.
 - AUTOMATIC SPRINKLER SYSTEMS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH SECTIONS 903.3.1 THROUGH 903.3.5 OF 2015 INTERNATIONAL BUILDING CODE.
 - SHOP DRAWINGS FOR THE FIRE PROTECTION SYSTEM SHALL BE SUBMITTED TO INDICATE CONFORMANCE AS PER CHAPTER 9, ANY OTHER APPLICABLE PROVISION OF THE UNIFORM CODE, AND THE CONSTRUCTION DOCUMENTS PER 2015 INTERNATIONAL BUILDING CODE SECTION 106.2& CHAPTER 23, NFPA 13-2016. SUCH SHOP DRAWINGS SHALL BE APPROVED PRIOR TO THE START OF SYSTEM INSTALLATION. SHOP DRAWINGS SHALL CONTAIN ALL INFORMATION AS REQUIRED BY THE REFERENCED INSTALLATION STANDARDS IN CHAPTER 9 OR IN ANY OTHER APPLICABLE PROVISION OF THE UNIFORM CODE.
 - PROVIDE FLUSHING TO SPRINKLER SYSTEM AS PER NFPA 13-2016 SECTION 8.16.3 AND TESTING PER NFPA 13-2016 SECTION 10.10.2.2 WITNESSED BY THE A.H.J. FLUSHING & TESTING SHALL BE DOCUMENTED ON THE REQUIRED NFPA FORMS AND A COPY PROVIDED TO THE A.H.J. CO-ORDINATE FLUSHING DRAIN REQUIREMENT WITH PLUMBING CONTRACTOR.

SPRINKLER SPECIFICATIONS

- PART 1 - GENERAL**
- 1.01 REQUIREMENTS
- 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 STATE OF MAINE.
 - 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 CONSIDERED 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.
 - 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 OR MATERIALS SHOULD SUCH PROCEDURE NOT BE FOLLOWED.
 - THE SCHEDULING OF THE SPRINKLER WORK SHALL BE COORDINATED WITH BUILDING MANAGEMENT, WITH OTHER CONTRACTORS AND WITH THE ENGINEER. INTERNATIONAL BUILDING CODE (REQUIRED FOR EACH TEMPERATURE RATING).
 - 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 STATE OF MAINE FIRE DEPARTMENT 48 HOURS NOTICE PRIOR TO SHUT-DOWN OF SPRINKLER, OR OTHER SYSTEMS.
- 1.02 WORK INCLUDED
- WORK SHALL INCLUDE ALL SPRINKLER WORK FURNISHED AND INSTALLED AS INDICATED ON THE PLANS AND AS SPECIFIED HEREIN.
 - ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE 2015 INTERNATIONAL BUILDING CODE, N.E.P.A. STANDARD 13-2016, AND OWNERS INSURANCE RATING ORGANIZATION.
 - PROVIDE COMPLETE NEW SPRINKLER SYSTEM CONNECTING TO EXISTING SPRINKLER SYSTEM ALARM CHECK VALVE ASSEMBLY.
 - 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.
 - PROVIDE COMPUTER GENERATED HYDRAULIC CALCULATIONS IN ACCORDANCE WITH 2015 INTERNATIONAL BUILDING CODE AND NFPA STANDARDS.
- 1.03 SHOP DRAWINGS AND SUBMITTALS
- THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL, FULLY COORDINATED SHOP DRAWINGS, CAPACITY, DATA, AND CATALOG CUTS OF THE FOLLOWING:
 - PIPE AND FITTINGS
 - VALVES
 - HANGERS AND SUPPORTS
 - SPRINKLER PIPING LAYOUT
 - TESTS
 - SPRINKLER HEADS
 - HYDRAULIC CALCULATIONS
 - 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, AND 2015 INTERNATIONAL BUILDING CODE.
 - ADD APPROPRIATE HOSE ALLOWANCE.
 - THE SPRINKLER CONTRACTOR SHALL OBTAIN THE LATEST FIRE PUMP TEST AT THE SITE TO VERIFY THE AVAILABLE WATER SUPPLY.
- 1.04 BUILDING DEPARTMENT FILING, PERMITS AND CERTIFICATES
- THE SPRINKLER CONTRACTOR SHALL FILE ALL REQUIRED DRAWINGS AND HYDRAULIC CALCULATIONS WITH THE BUILDING DEPARTMENT AND BE RESPONSIBLE FOR OBTAINING FINAL APPROVAL.
 - 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
- THE SPRINKLER SYSTEM SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2015 INTERNATIONAL BUILDING CODE FIRE DEPARTMENT INSPECTOR.
 - 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.
 - 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.

- 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 ALTERNATIVES 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.
- 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 STATE OF MAINE BUILDING CODE.
 - HANGERS AND THEIR COMPONENTS SHALL BE FERROUS. HANGERS SHALL BE ADJUSTABLE FLAT IRON TYPE OF CLEVIS TYPE.
 - SPRINKLER PIPING OR HANGERS SHALL NOT BE USED TO SUPPORT NON-SYSTEM COMPONENTS.
 - 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.
 - SPRINKLER PIPING SHALL BE SUPPORTED INDEPENDENTLY OF THE CEILING SHEATHING.
 - WHEN SPRINKLER PIPING IS INSTALLED BELOW DUCTWORK, PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE, NOT FROM THE DUCTWORK.
 - 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.
 - 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.
 - 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.
 - AS-BUILT DRAWINGS
 - PREPARE AND SUBMIT "AS BUILT" DRAWINGS AT THE COMPLETION OF THE PROJECT.
 - SPRINKLER HEADS
 - SPRINKLERS SHALL BE RATED FOR ORDINARY TEMPERATURES (155 DEG. F.) EXCEPT AS REQUIRED NEAR HEATERS OR LOCATIONS WHERE ELEVATED TEMPERATURES MAY NORMALLY BE EXPECTED OR AS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS.
 - SPRINKLER HEADS SHALL BE BY TYCO SPRINKLER CO., INC. MANUFACTURE OR APPROVED EQUAL, UL AND FM APPROVED, AS FOLLOWS:
 - SPRINKLER HEADS IN FINISHED CEILINGS WITH PENDENT PIPING SHALL BE SAME AS EXISTING.
 - SIDEWALL SPRINKLER HEADS SHOULD BE SAME AS EXISTING.
 - PROVIDE SPARE SPRINKLER EMERGENCY CABINETS CONFORMING TO NFPA 13-2016.
 - SPRINKLER EMERGENCY CABINETS SHALL BE OF TYCO SPRINKLER CO., INC. OR APPROVED EQUAL, UL AND FM APPROVED.
 - CABINET SHALL BE CONSTRUCTED OF 22 GAUGE STEEL WITH PRIME COAT AND MANUFACTURER'S BAKED ENAMEL FINISH IN COLOR SELECTED BY THE ARCHITECT.
 - CABINET SHALL CONTAIN A MINIMUM OF 6 SPRINKLER HEADS OF EACH TYPE EMPLOYED.
 - PRESSURE GAUGE
 - ASHCROFT SERIES 1079, OR APPROVED OTHER, 4-1/2" DIA. 0-300 P.S.I. RANGE, 5 P.S.I. INTERVALS.
- PART 3 - EXECUTION**
- 3.01 GUARANTEE
- 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
- 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 FLUMB AND TRUE.
 - SPRINKLER PIPING SHALL BE INSTALLED SO THAT THE SYSTEM CAN BE DRAINED THROUGH A HARD PIPED CONNECTION TO THE BUILDING DRAINAGE SYSTEM.
 - PIPE SHALL BE REMOVED BY REAMING.
 - 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
- THREADED JOINTS SHALL BE MADE UP OF TIGHT USING PIPE JOINT TEFLON COMPOUND OR TAPE, APPLIED ON THE MALE THREADS ONLY.

SPRINKLER DRAWING LIST

SP00.00	SPRINKLER GENERAL NOTES, SYMBOLS, ABBREVIATIONS, AND SPECIFICATIONS
SP01.01	SPRINKLER FLOOR PLANS
SP02.01	SPRINKLER DETAILS

SPACING BETWEEN SPRINKLER HEADS

LIGHT HAZARD : 15' MAX
NOTE: MAXIMUM DISTANCE BETWEEN SPRINKLER HEADS & WALLS IS 1/2 THE DISTANCE BETWEEN HEADS.

PROTECTION AREA OF SPRINKLER HEADS

LIGHT HAZARD : 225 SQ. FT.

FIRE PROTECTION SYSTEM INTENT

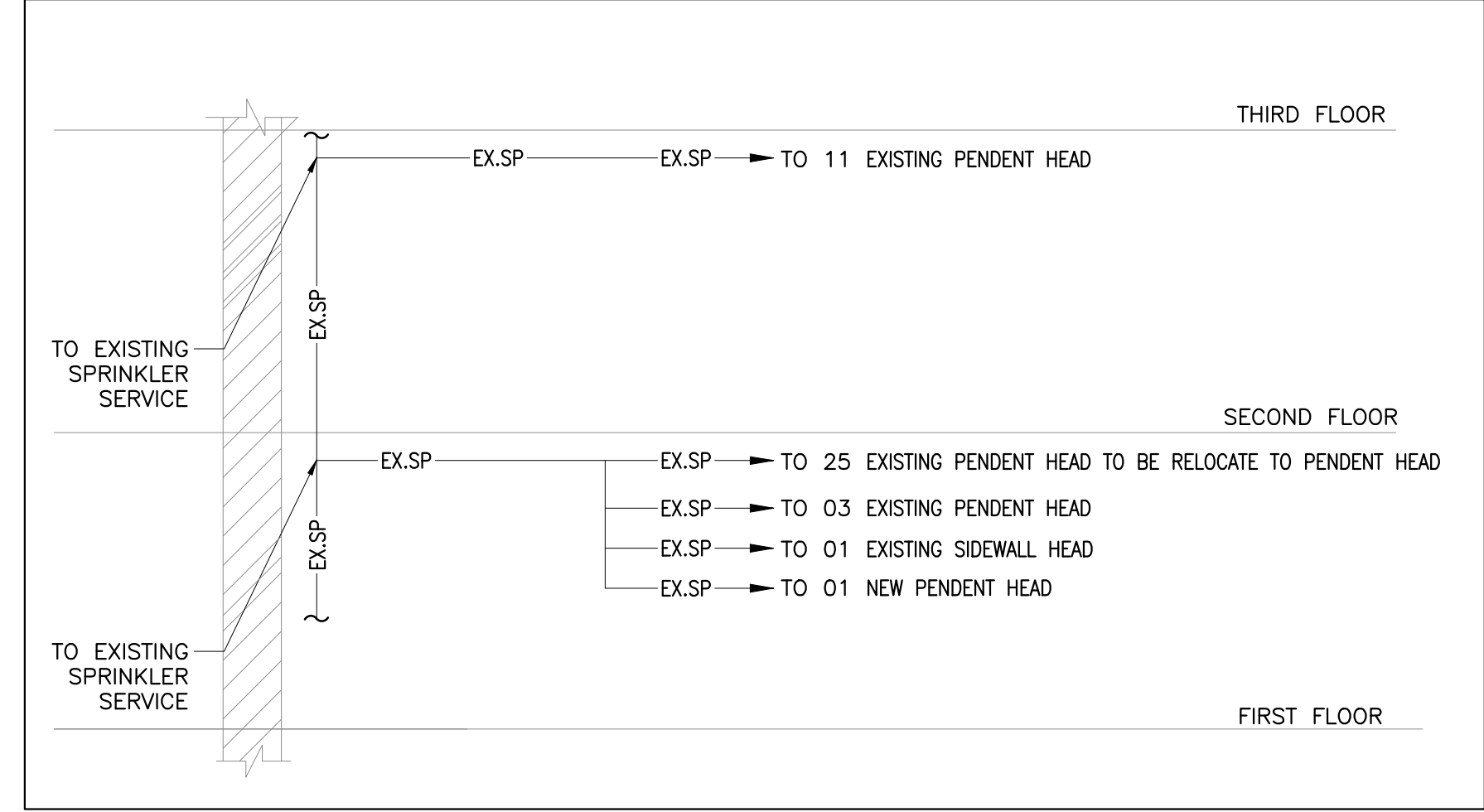
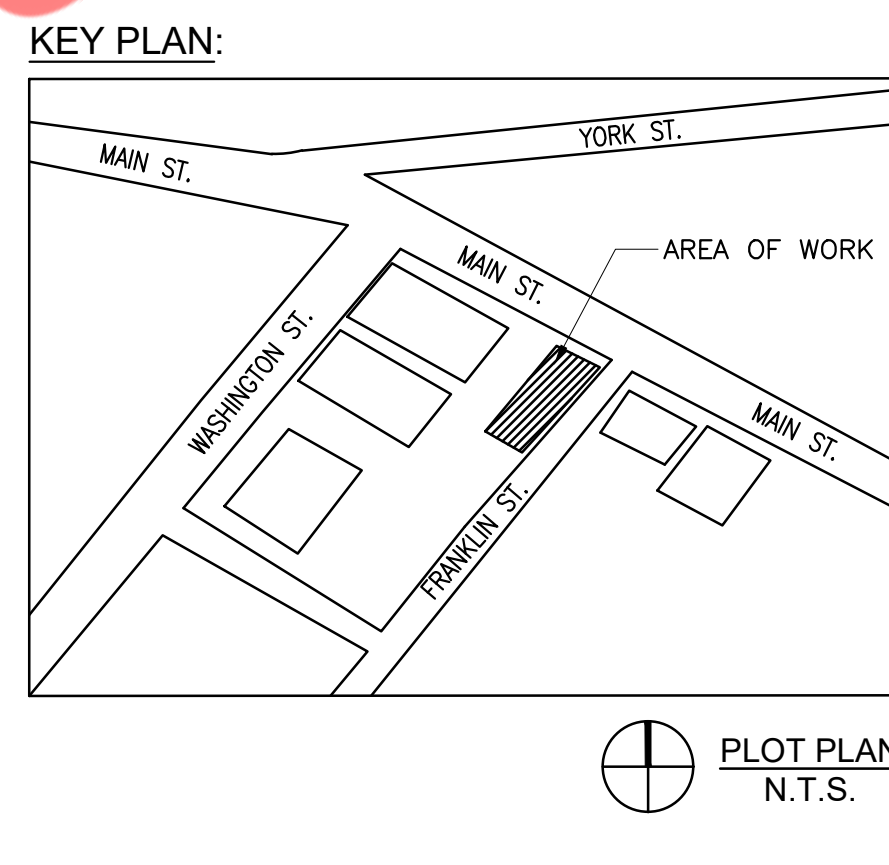
- ALL WORK SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 13 2016.
- PERFORM A NEW FLOW TEST OR OBTAIN A RECENT FLOW TEST AND USE THE RESULTS WHEN PREPARING HYDRAULIC CALCULATIONS.
- PROVIDE A COMPLETE WET SPRINKLER SYSTEM, IN ACCORDANCE WITH NFPA 13 2016.

SCOPE OF WORK:

- THE SPRINKLER SYSTEM IS DESIGNED AS PER NFPA 13.

GENERAL NOTES:

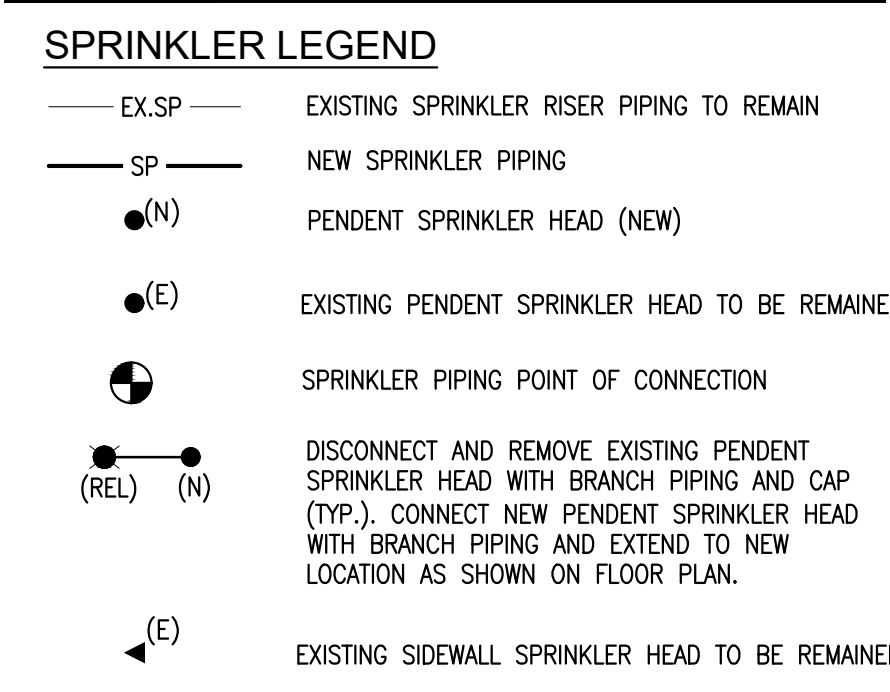
- FOR SPRINKLER WORK ONLY.
- ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.



SPRINKLER SCHEDULE

SYMBOL	NAME	COVERAGE	AREA	METAL	TEMPERATURE (°F)	K-FACTOR	NPT	MFG	MODEL#	APPROVALS
●	PENDENT	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.
*	UPRIGHT	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.
◀	SIDEWALL	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.	S.A.E.

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



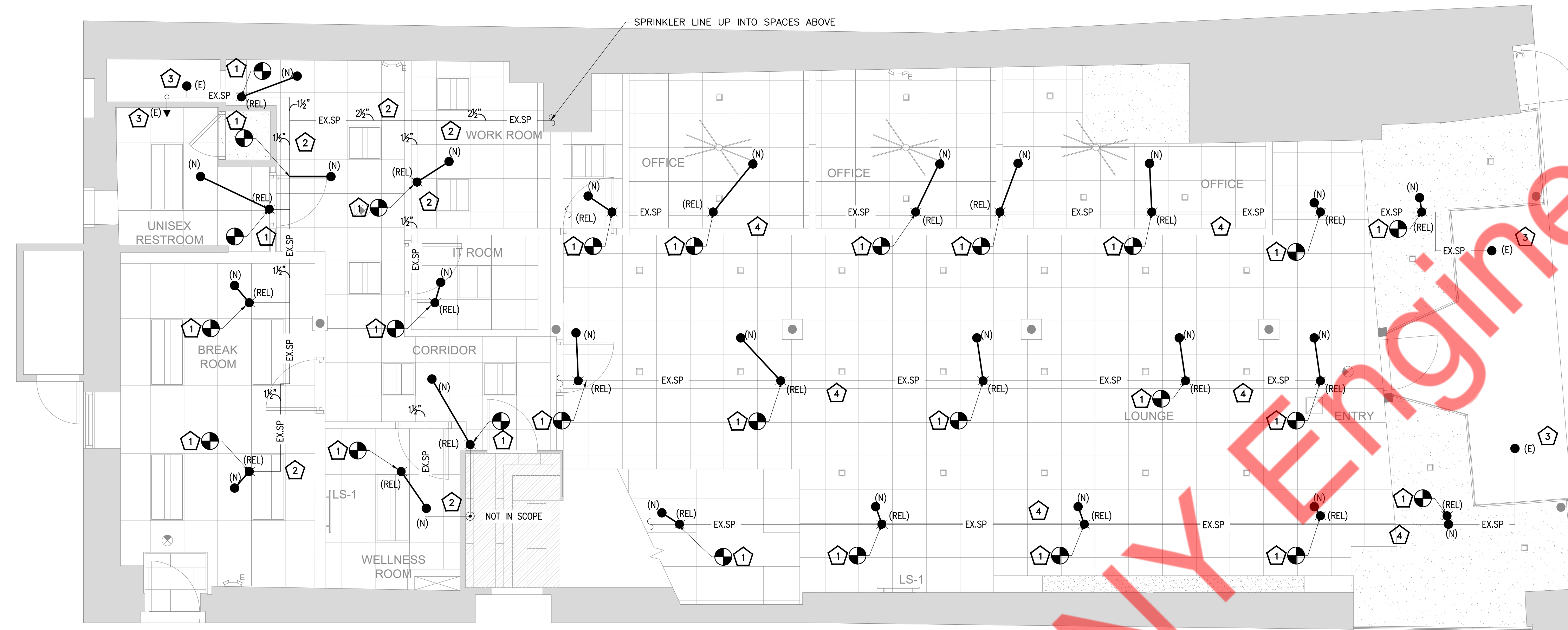
SPRINKLER DEMOLITION NOTES

- PROVIDE ALL LABOR, APPARATUS, ETC. FOR THE REMOVAL OF ALL EXISTING SPRINKLER HEADS, PIPING, HANGERS, ETC. EXCEPT AS INDICATED.
- MAINTAIN CONTINUOUS OPERATION OF EXISTING RISERS SO AS NOT TO INCONVENIENCE OTHER BUILDING TENANTS.
- SPRINKLER CONTRACTOR SHALL VISIT THE PREMISES PRIOR TO SUBMITTING HIS PROPOSAL AND EXAMINE THE AREAS EFFECTED BY THIS WORK. HE IS TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND WITH POSSIBLE DIFFICULTIES THAT MAY ATTEND THE EXECUTION OF THIS WORK.
- PERFORM THIS WORK SIMULTANEOUSLY WITH THAT OF OTHER TRADES SO AS NOT TO DELAY OVERALL PROGRESS OF WORK.
- OWNER'S OCCUPANCY REGULATIONS MAY REQUIRE THAT CERTAIN PORTIONS OF WORK BE DONE AFTER REGULAR WORKING HOURS. COORDINATE WITH BUILDING MANAGEMENT. COST OF OVERTIME IS TO BE INCLUDED IN THE CONTRACTOR'S PROPOSAL.
- REMOVE ALL DEMOLITION MATERIALS FROM PROJECT SITE, EXCEPT ITEMS DESIGNATED BY ARCHITECT/OWNER TO REMAIN OWNER'S PROPERTY AND BE STORED.
- NO DEAD ENDS SHALL BE LEFT ON PIPING.
- EXISTING EXPOSED PIPING NOT BEING REUSED, AND NOT SPECIFICALLY NOTED OR SHOWN ON DRAWING TO BE ABANDONED SHALL BE COMPLETELY REMOVED.
- THE EXISTING SYSTEM SHALL BE LEFT IN PERFECT WORKING ORDER AT COMPLETION OF NEW WORK.
- NO REMOVED EXISTING PIPING SHALL BE REUSED.
- DO NOT USE ANY PART OF THE BUILDING AS A SHOP EXCEPT PARTS DESIGNATED FOR SUCH PURPOSES.
- ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.E.P.A. - 13 2016 AND ALL LOCAL AUTHORITIES.
- CONTRACTOR SHALL FIELD VERIFY EXACT ELEVATION, LOCATION AND PIPE SIZES OF EXISTING SPRINKLER HEADS AND PIPING BEFORE INSTALLATION OF NEW WORK.
- ALL SPRINKLER WORK SHALL COMPLY WITH BUILDING STANDARDS AND REQUIREMENTS.
- A FIRE WATCH GUARD WITH A CERTIFICATE OF FITNESS SHALL BE MAINTAINED DURING SHUT DOWNS.
- DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR IS RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
- PIPE SIZE TO BE MINIMUM OF ONE INCH (1").
- ALL WORK TO BE DONE DURING THE HOURS DESIGNATED BY OWNER.
- CONTRACTORS SHALL TAKE SPECIAL CARE TO DEMOLISH ONLY THAT WORK WHICH IS REQUIRED TO BE DEMOLISHED AND NOT TO DISTURB ANY WORK WHICH IS TO REMAIN. IF IN THE COURSE OF THE DEMOLITION, THE CONTRACTOR DESTROYS OR DISTURBS ANY WORK WHICH IS TO REMAIN, THEN HE SHALL, AT HIS OWN EXPENSE, REPAIR OR REPLACE SUCH WORK AS NECESSARY.
- EXISTING PIPING SERVING ADJACENT AREAS NOT IN AREA OF WORK SHALL REMAIN ACTIVE AND WITHOUT DISTURBANCE.

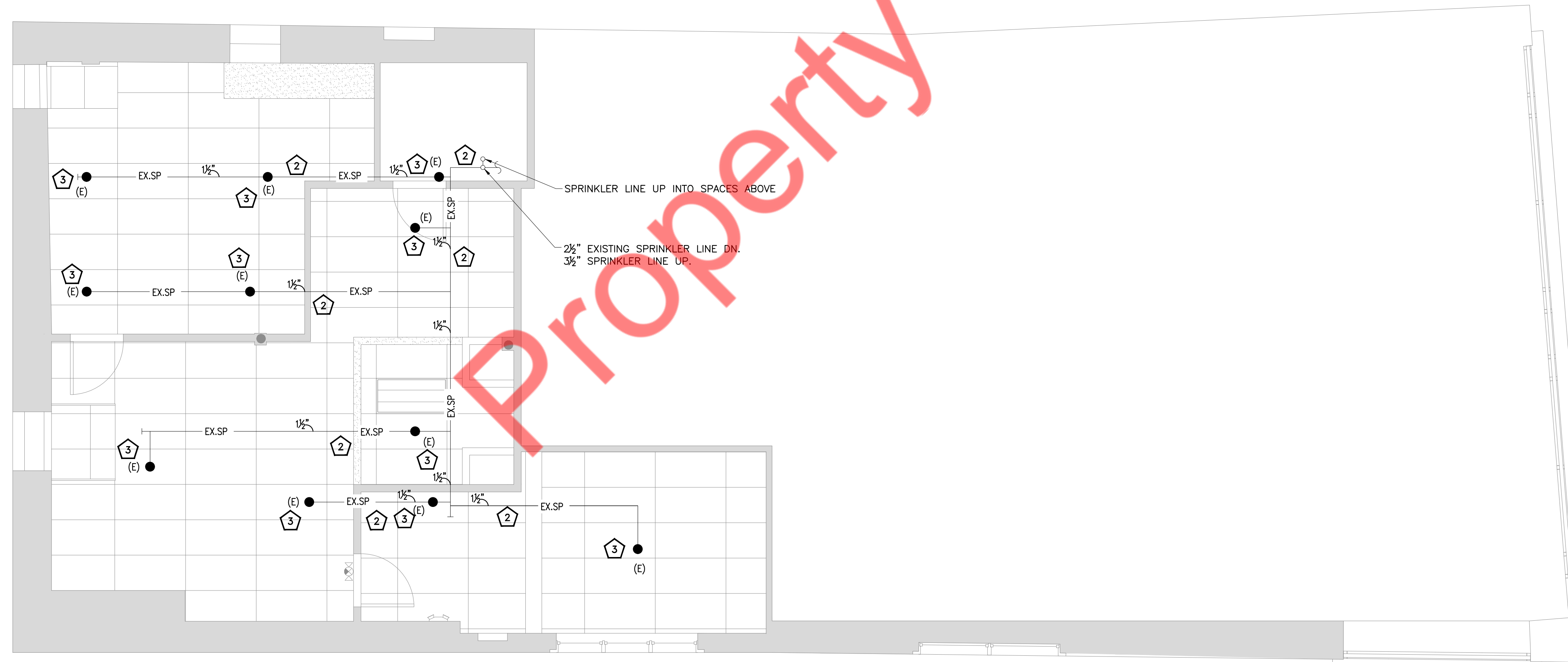
SPRINKLER GENERAL NOTES, SYMBOLS, ABBREVIATIONS AND SPECIFICATIONS

SPRINKLER GENERAL NOTES, SYMBOLS, ABBREVIATIONS AND SPECIFICATIONS





01 FIRST FLOOR SPRINKLER PLAN
SCALE: 1/4" = 1'-0"



02 SECOND FLOOR SPRINKLER PLAN
SCALE: 1/4" = 1'-0"

SPRINKLER KEY NOTES

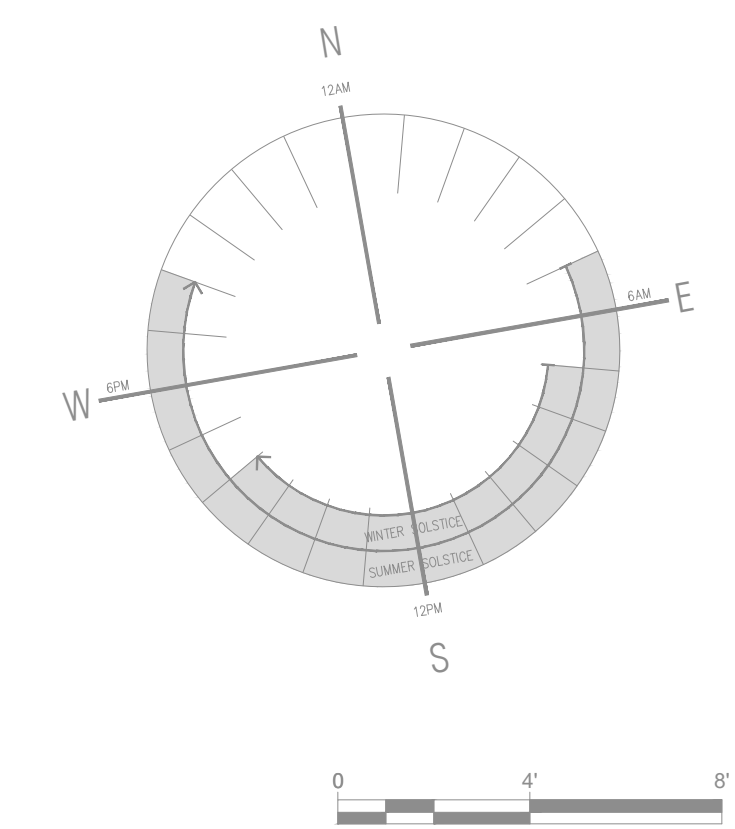
- 1 ALL BRANCH TAKE-OFF FOR EACH SPRINKLER TO BE MIN. 1".
- 2 EXISTING SPRINKLER PIPING TO REMAIN, CONTRACTOR TO FIELD VERIFY EXACT ROUTING & SIZING ON FIELD. UPGRADE THE SPRINKLER PIPE SIZE IF REQUIRED. NOTIFY ENGINEER IN CASE OF DISCREPANCY.
- 3 EXISTING SPRINKLER HEADS TO REMAIN, CONTRACTOR TO FIELD VERIFY THE CONDITION OF THE EXISTING SPRINKLER HEAD AND REPLACE IF REQUIRED.
- 4 EXISTING SPRINKLER PIPING SHOWN FOR REFERENCE. CONTRACTOR TO FIELD VERIFY EXISTING SPRINKLER PIPE ROUTING, SIZE, AND LOCATION.

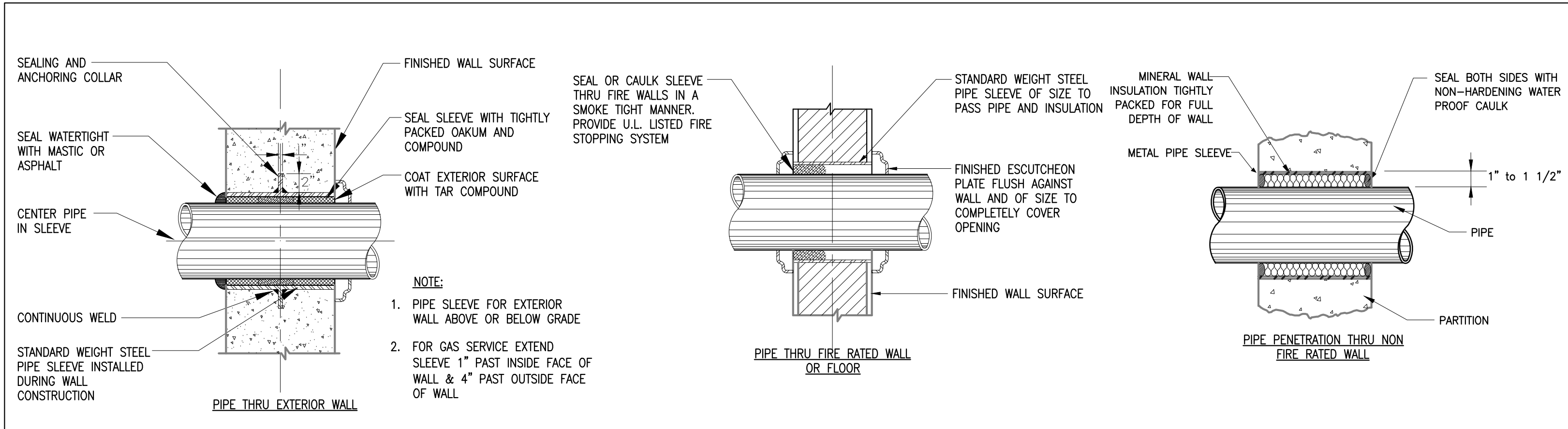
GENERAL NOTES

- 1. CONTRACTOR TO FIELD VERIFY TO INSTALL ALL SPRINKLER HEADS TO BE MAX. 12" FROM CEILING.
- 2. ALL NEW SPRINKLER HEADS LOCATION TO BE COORDINATED WITH LIGHTING AND DIFFUSERS TO AVOID CONFLICT.
- 3. ALL SPRINKLER HEADS & PIPING TO BE COORDINATED WITH EXISTING & NEW SERVICES.
- 4. 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.
- 5. 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 CONNECTION POINTS, AND ROUTES 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.
- 6. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION IF REQUIRED AS PER STRUCTURAL REQUIREMENT.
- 7. ALL SPRINKLER HEADS & PIPING TO BE COORDINATED WITH EXISTING & NEW SERVICES.
- 8. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND SIZE OF EXISTING SYSTEM. ALL PENDANT SPRINKLERS MUST BE SPACED AS FOLLOWS -
 - 1. MAXIMUM 7.5' FROM WALL
 - 2. MAXIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 15'.
 - 3. MINIMUM DISTANCE BETWEEN 2 SPRINKLER HEADS IS 6'.
 - 4. COVERAGE AREA PER SPRINKLER SHALL BE MAX. 225 SQ.FT.
- 9. ALL SPRINKLER HEADS MEET DESIGN CRITERIA PER COVERAGE.
- 10. AUXILIARY DRAIN SHALL BE PROVIDED AT THE TRAPPED SECTIONS.
- 11. ALL EXISTING SPRINKLER SYSTEM AT THIS FLOOR TO BE DEMOLISHED UNLESS OTHERWISE NOTED.
- 12. FOR SPRINKLER WORK ONLY.

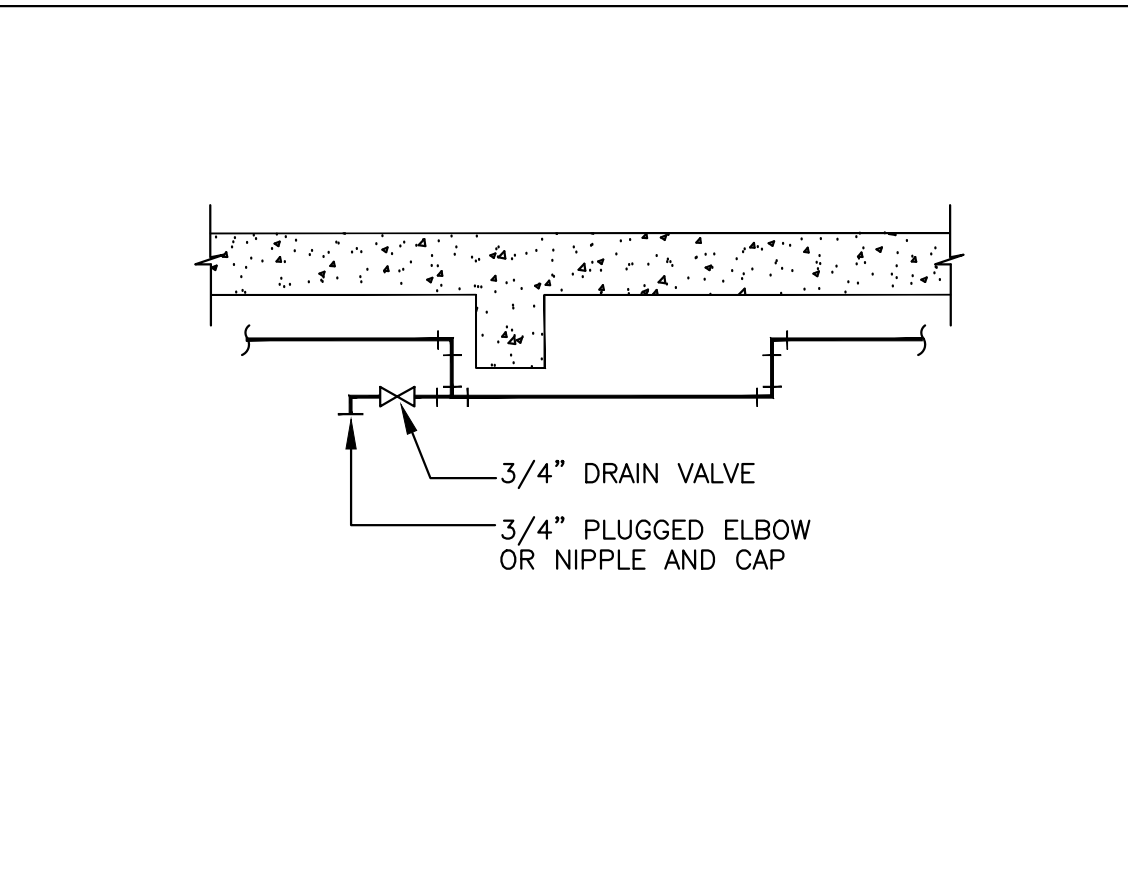
SPRINKLERS	
EXISTING PENDENT HEADS TO BE RELOCATED TO PENDENT HEAD	25
EXISTING PENDENT HEAD TO REMAIN	14
EXISTING SIDEWALL HEAD TO REMAIN	01
NEW PENDENT HEAD	01
TOTAL	41

HAZARD CLASSIFICATION AND DESIGN DENSITY:	
AREA :	OFFICE, ENTRY, LOUNGE, WELLNESS ROOM, BREAK ROOM, CORRIDOR, IT ROOM, WORK ROOM & REST ROOM
OCCUPANCY:	LIGHT HAZARD
MINIMUM DESIGN DENSITY:	0.1 GPM/SQ. FT.

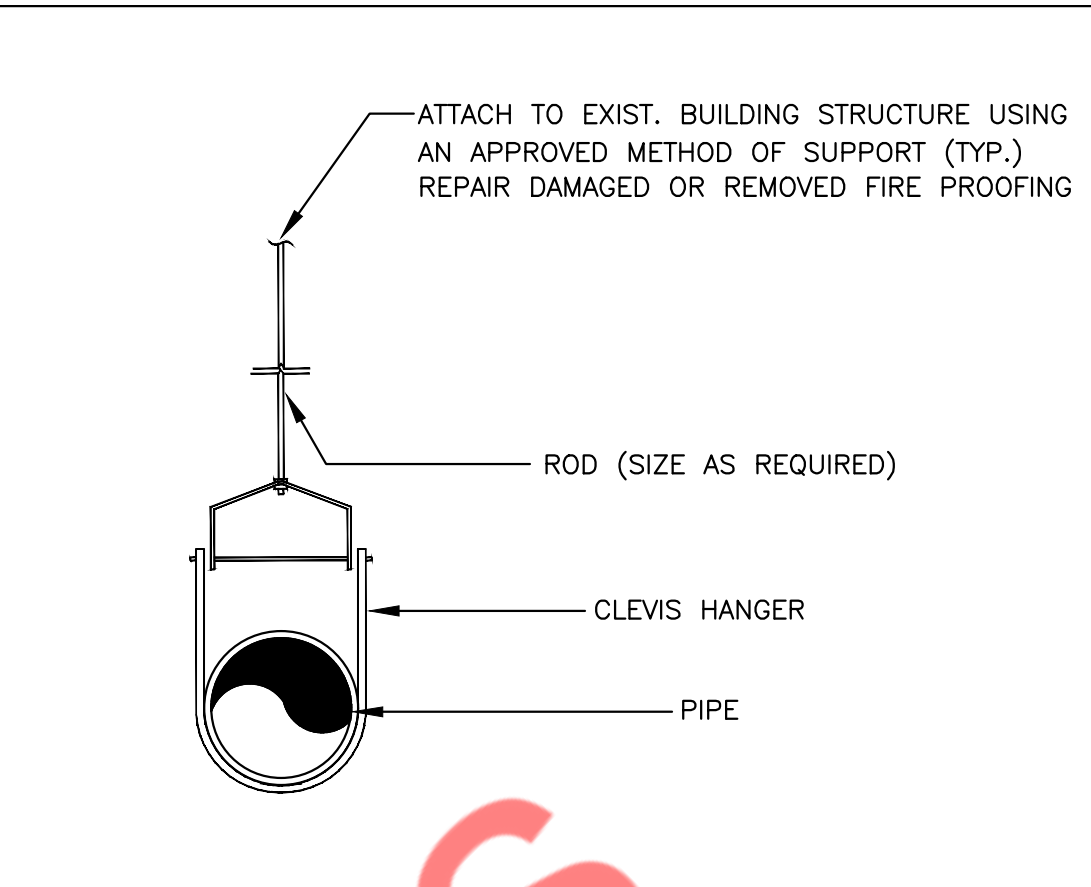




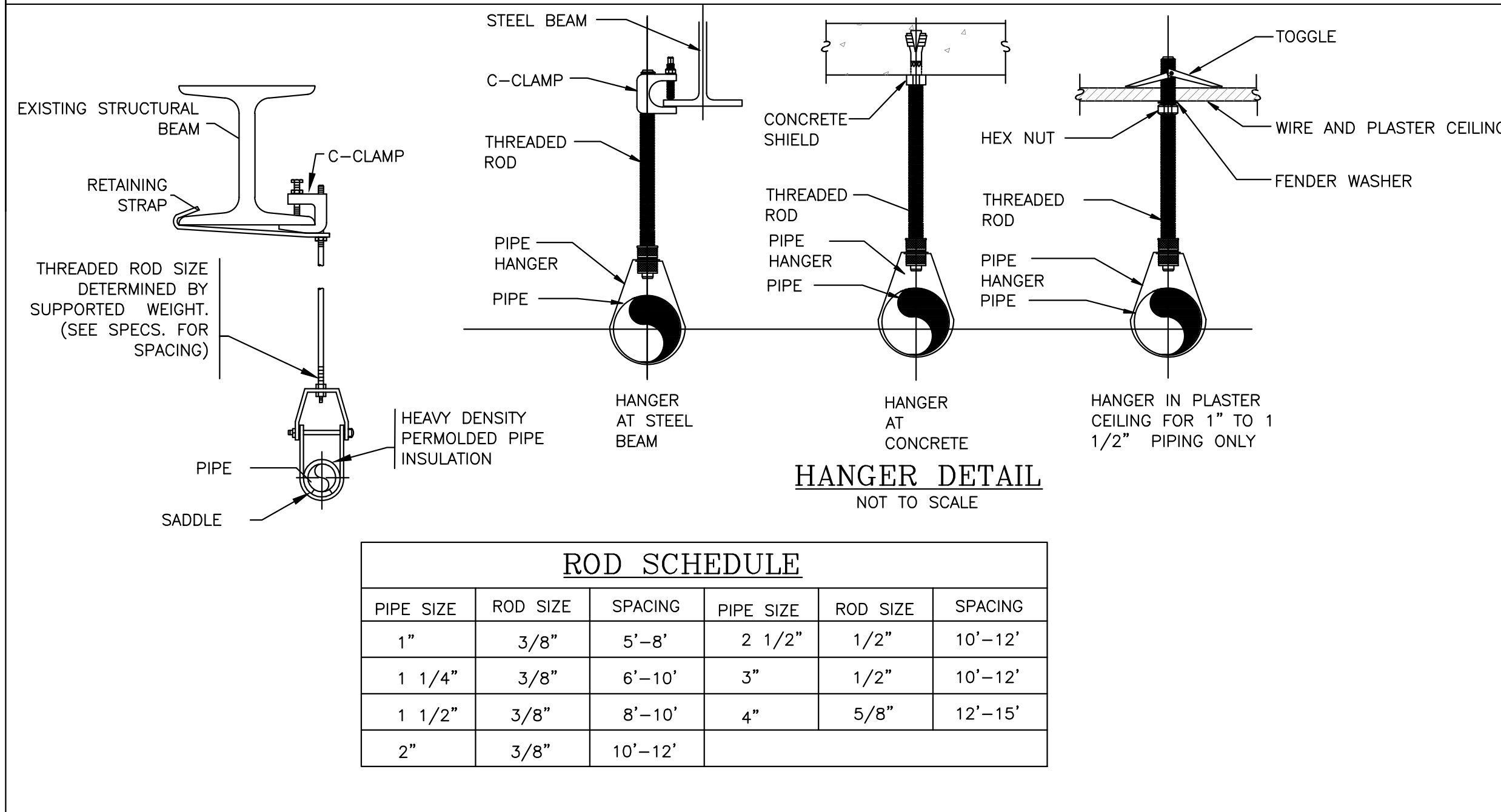
1 PIPE SLEEVE THRU WALL SECTION
SP02.01 N.T.S.



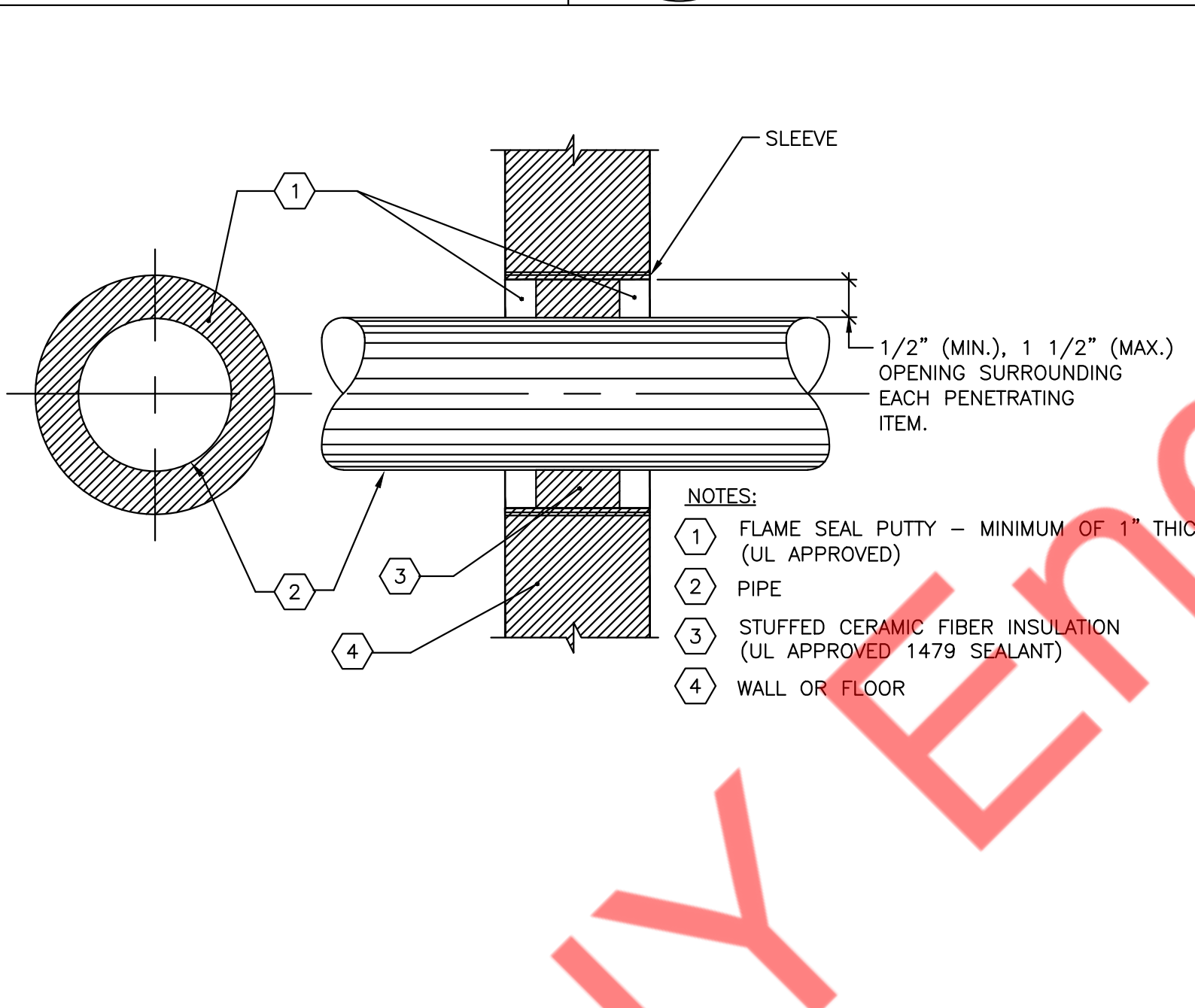
2 TYPICAL DRAIN CONNECTION FOR TRAPPED LINES ON WET PIPE SPRINKLER SYSTEMS
SP02.01 N.T.S.



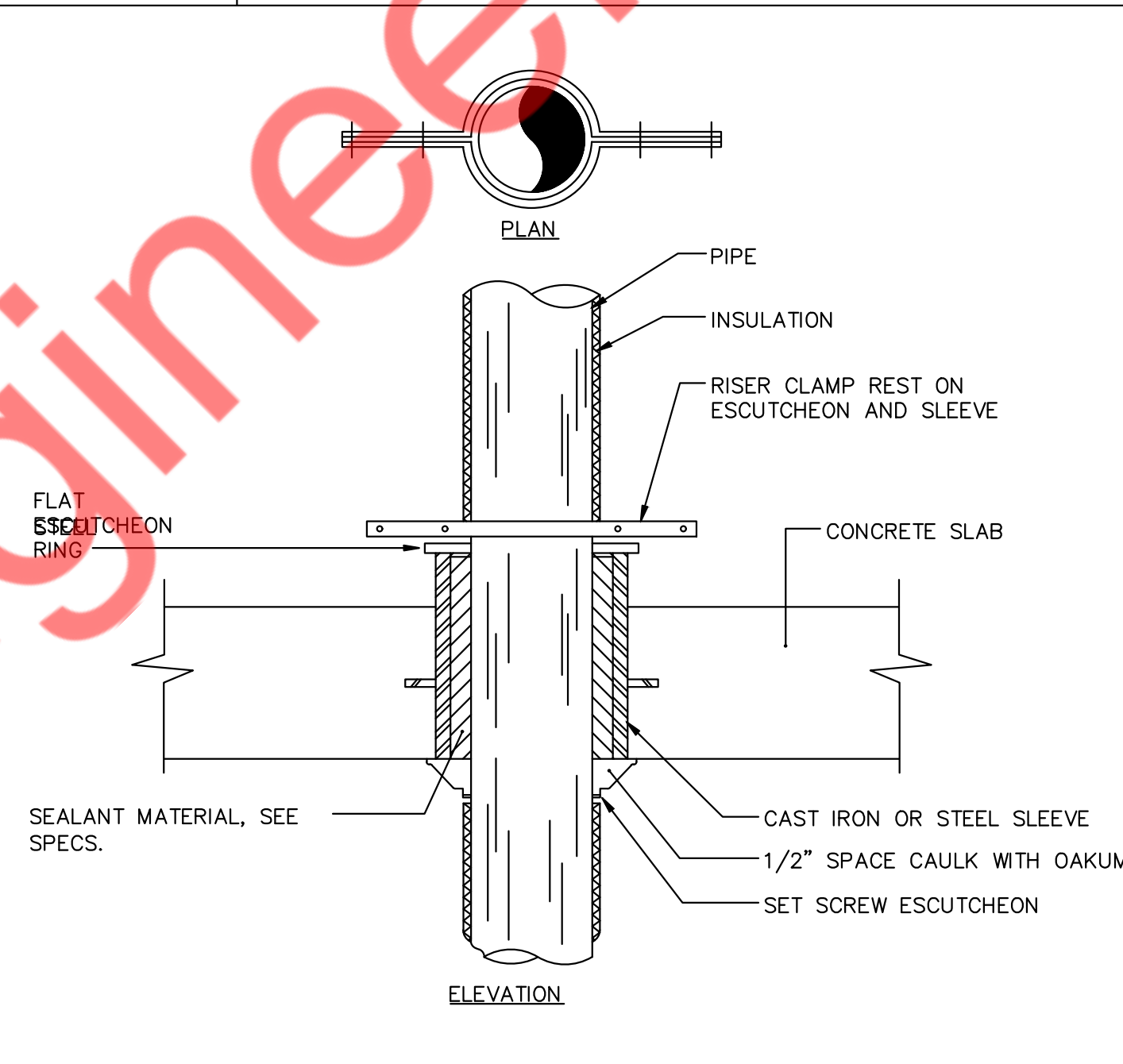
3 HANGER DETAILS TYPICAL
SP02.01 N.T.S.



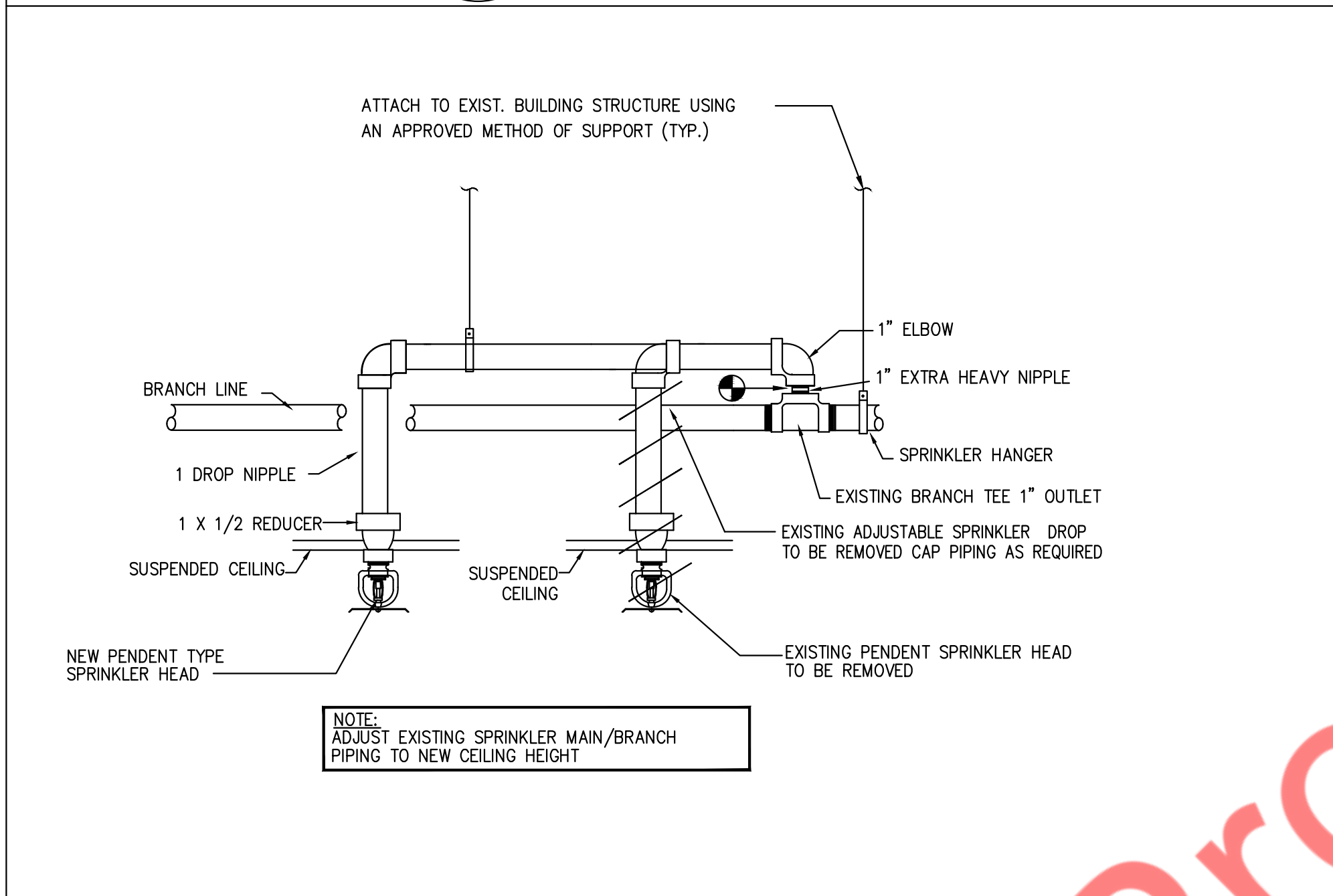
4 TYPICAL HANGER DETAIL AND ROD SCHEDULE
SP02.01 N.T.S.



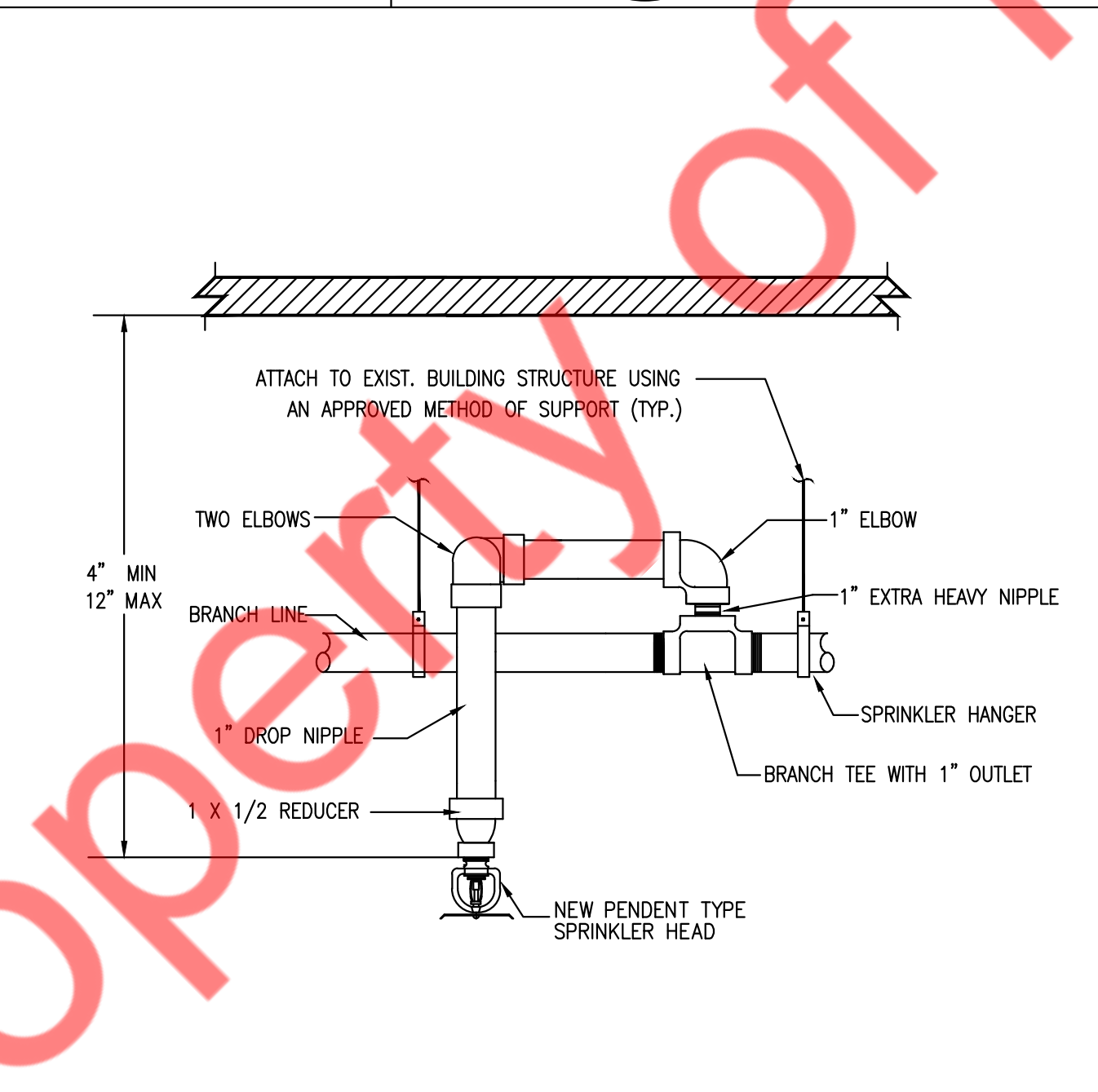
5 FIRE STOPPING DETAIL FOR FIRE/SMOKE RATED WALL/FLOOR OPENINGS
SP02.01 N.T.S.



6 SPRINKLER RISER CLAMP DETAIL
SP02.01 N.T.S.



7 UPRIGHT HEAD TO CONCEALED HEAD RELOCATION DETAIL
SP02.01 N.T.S.



8 PENDENT SPRINKLER HEAD DETAILS
SP02.01 N.T.S.