

MECHANICAL SPECIFICATIONS

PROVIDE EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM. DEFINITIONS: FURNISH MEANS TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION. INSTALL MEANS TO PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR USE. PROVIDE MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR INTENDED USE. WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION. PROVIDE OPERATION MANUALS, MAINTENANCE MANUALS AND SCHEMATICS FOR ALL MECHANICAL EQUIPMENT INSTALLED. COORDINATION: COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOF WARRANTY. DUCT DIMENSIONS: UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON THE DRAWINGS ARE INSIDE CLEAR DIMENSIONS. SHEET METAL DUCTWORK: PROVIDE SHEET METAL DUCTWORK FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS, FOR 1" W.G. PRESSURE CLASS, SEAL CLASS "A". SHEET METAL SHALL BE GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY, WITH G90 ZINC COATING. SHEET STEEL SHALL COMPLY WITH ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEET METAL, ZINC COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENTS FOR SHEET, METALLIC-COATED BY THE HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES AT ALL 90 ELBOWS. TRAPEZE DUCT HANGERS: PROVIDE MINIMUM 1" X 2" X 1" X 18 GAUGE CHANNELS WITH MINIMUM 1" X 18 GAUGE STRAPS TO STRUCTURAL SUPPORT. ROUND SHEET METAL DUCT: PROVIDE SPIRAL SEAM (ALL SIZES) OR SNAP LOCK (DUCT SIZES UP TO 10") GALVANIZED STEEL COMPLYING WITH SMACNA STANDARDS. SPIRAL SEAM DUCTWORK SHALL HAVE SMACNA SEAM TYPE RL-1. FIBER GLASS DUCT BOARD IS AN ACCEPTABLE ALTERNATIVE IF APPROVED BY OWNER AND THE LOCAL BUILDING CODE OFFICIAL. PRODUCT AND INSTALLATION MUST MEET NAIMA STANDARDS AND OTHER APPLICABLE CODES AND REGULATIONS. EXPOSED DUCTWORK: EXPOSED DUCTWORK SHALL BE CLEANED OF DEBRIS AND OIL, THEN WIPED DOWN WITH VINEGAR OR OTHER SURFACE PREPARING CHEMICAL TO PREPARE DUCT FOR PAINT. DUCT SEALANT: PROVIDE POLYMERIC RUBBER TYPE SEALANT FOR USE ON BOTH INTERIOR LOCATED DUCTWORK AND DUCTWORK EXPOSED TO OUTDOOR CONDITIONS. SEALER SHALL HAVE HIGH BONDING STRENGTH FOR SURE, FIRST TIME SEALING OF JOINTS IN LOW, MEDIUM, AND HIGH PRESSURE DUCT SYSTEMS. SEALER SHALL BE HIGH IN SOLID CONTENT. PROVIDE A TWO PART TAPE SEALING SYSTEM, CONSISTING OF WOVEN FIBER TAPE IMPREGNATED WITH A GYPSUM MINERAL COMPOUND, AND A MODIFIED ACRYLIC/SILICONE ACTIVATOR THAT REACTS EXOTHERMICALLY WITH THE TAPE. TWO PART TAPE SEALING SYSTEM MUST BE RATED FOR BOTH INDOOR AND OUTDOOR APPLICATION. TAPE SHALL NOT CONTAIN ASBESTOS. DUCT INSULATION: MATERIAL FOR SUPPLY AND RETURN AIR DUCT ABOVE CEILING INSIDE THE BUILDING SHALL HAVE THE EQUIVALENT THERMAL RESISTANCE OF MINIMUM R-6. THE REQUIRED R VALUES ARE FOR INSTALLED INSULATION WITH 25% COMPRESSION AT THE CORNERS. PROVIDE PINS AND WASHERS IN ACCORDANCE WITH SMACNA REQUIREMENTS AND AS REQUIRED TO PREVENT INSULATION FROM SAGGING. PROVIDE ADEQUATE INSULATION AT THE SUPPLY AIR DIFFUSERS TO PREVENT CONDENSATION. FLEXIBLE DUCT: UL #181 LISTED, CLASS 1, AND CONTAIN A 0.1 PERM RATED POLYETHYLENE INNER LINER, WITH R-8 FIBERGLASS INSULATION. FLEXIBLE DUCTS SHALL BE SECURED TO RIGID SHEET METAL COLLARS AND AIR DIFFUSERS WITH NYLON TIES OR STAINLESS STEEL WORM GEAR STRAPS. SEAL ALL CONNECTIONS AND JOINTS AIRTIGHT. SUPPORT FLEXIBLE DUCTS FROM THE BUILDINGS STRUCTURE WITH MINIMUM 1" WIDE, 18 GAUGE, GALVANIZED STEEL STRAP AT MAXIMUM 4'-0" CENTERS. PROVIDE 4" WIDE SHEET METAL SADDLES AT EACH SUPPORT EACH STRAP, SAG OF FLEXIBLE DUCT BETWEEN HANGERS SHALL NOT EXCEED 1/2" PER FOOT OF SUPPORT SPACING. RADIUS FOR TURNS OF FLEXIBLE DUCTS SHALL BE A MINIMUM OF ONE DUCT DIAMETER. FLEXIBLE DUCT RUNS SHALL NOT EXCEED 10'-0" IN LENGTH AND SHALL BE THE SAME SIZE AS THE DIFFUSER NECK CONNECTION. ROUND VOLUME DAMPERS: PROVIDE MINIMUM 20 GAUGE GALVANIZED STEEL FRAME AND BLADES, MINIMUM 3/8" SQUARE STEEL AXLE, MOLDED SYNTHETIC BEARINGS, WITH LOCKING POSITION REGULATOR. REGULATOR SHALL BE POSITIONED WITH SHEET METAL BRACKET BEYOND DUCT COVERING, WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE, PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING OR WALL INSTALLATION, AS REQUIRED. RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM " HEXAGONAL AXLE, BOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN THE FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".

DUCT TURNING VANES: PROVIDE FABRICATED TURNING VANES AND VANE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS". PROVIDE TURNING VANES CONSTRUCTED OF CURVED BLADES, SUPPORTED WITH BARS PERPENDICULAR TO BLADES, AND SET INTO SIDE STRIPS SUITABLE FOR MOUNTING IN DUCTWORK. FOLLOW SMACNA GUIDELINES FOR SPACING SUPPORT, AND CONSTRUCTION. ALL BLADES SHALL BE DOUBLE THICKNESS AIRFOIL TYPE. FLEXIBLE DUCT CONNECTORS: PROVIDE U.L. LABELED 30 OUNCE NEOPRENE COATED FIBERGLASS FABRIC DUCT CONNECTORS. DUCT ACCESS DOORS: PROVIDE HINGED ACCESS DOORS IN DUCTWORK WHERE REQUIRED FOR ACCESS TO EQUIPMENT. PROVIDE INSULATED ACCESS DOORS FOR INSULATED DUCTWORK. CONSTRUCT OF SAME OR THICKER GAUGE SHEET METAL AS DUCT IN WHICH IT IS INSTALLED. PROVIDE FLUSH FRAMES FOR UN-INSULATED DUCTS, AND EXTENDED FRAMES FOR EXTERNALLY INSULATED DUCTS. PROVIDE CONTINUOUS HINGE ON ONE SIDE, WITH ONE HANDLE-TYPE LATCH FOR ACCESS DOORS 12" HIGH AND SMALLER, AND TWO HANDLE-TYPE LATCHES FOR LARGER ACCESS DOORS. HVAC CONTROL SYSTEM: PROVIDE ALL THE NECESSARY CONTROLS AND CONTROL WIRING IN CONDUIT COMPATIBLE TO SYSTEMS SHOWN ON EQUIPMENT SCHEDULE M2.0. PROGRAMMABLE THERMOSTAT FOR EACH SYSTEM SHALL ENABLE THE SUPPLY FAN AND CYCLE THE COOLING AND HEATING STAGES TO MAINTAIN SPACE SET-POINT. SUPPLY FAN RUNS CONTINUOUSLY DURING THE OCCUPIED MODE. EACH THERMOSTAT SHALL HAVE A DEAD BAND OF AT LEAST 5 DEGREES (ADJ) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING IS SHUT OFF, EACH THERMOSTAT SHALL HAVE SETBACK AND SET-UP CAPABILITY DURING THE UNOCCUPIED MODE. FOR SETBACK, THE HEATING SHALL RESTART AND TEMPORARILY OPERATE ACCORDING TO A SET-POINT ADJUSTABLE DOWN TO 55 DEGREES. FOR SET-UP, THE COOLING SHALL RESTART AND TEMPORARILY OPERATE ACCORDING TO A SET-POINT ADJUSTABLE UP TO 85 DEGREES OR TO PREVENT HIGH SPACE HUMIDITY LEVELS. EACH SYSTEM SHALL BE PROVIDED WITH A MOTORIZED OUTSIDE AIR DAMPER THAT WILL AUTOMATICALLY SHUT WHEN THE SYSTEM OR SPACES SERVED ARE NOT IN USE. VENTILATION OUTSIDE AIR DAMPERS SHALL BE CAPABLE OF AUTOMATICALLY CLOSING DURING PREOCCUPANCY BUILDING WARM-UP, COOL DOWN, AND SETBACK, EXCEPT WHEN VENTILATION REDUCES ENERGY COSTS (e.g., NIGHT PURGE) OR WHEN VENTILATION MUST BE SUPPLIED TO MEET CODE REQUIREMENTS. COMMISSIONING/VERIFICATION: HVAC CONTROL SYSTEM SHALL BE TESTED TO ENSURE THAT CONTROL ELEMENTS ARE CALIBRATED, ADJUSTED, AND IN PROPER WORKING CONDITION, AND THAT THE SYSTEM MEETS THE DESIGN REQUIREMENTS. TEST AND BALANCE: CONTRACT DIRECTLY A THIRD PARTY TO PROVIDE TEST AND BALANCE OF THE HVAC SYSTEM. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR SCHEDULING. TEST AND ADJUST ALL MECHANICAL SYSTEM AND EQUIPMENT TO ASSURE PROPER BALANCE AND OPERATION. PERFORM TESTS IN ACCORDANCE WITH NEBB PROCEDURAL STANDARDS-1999 OR AABC 2002, AND ASHRAE STANDARD 111. ELIMINATE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF CONTROLS. SUBMIT COMPLETED TEST AND BALANCE REPORT TO OWNER'S REPRESENTATIVE. BALANCING CONTRACTOR SHALL BE INDEPENDENT AND CERTIFIED WITH NEBB OR AABC. BALANCE ALL SYSTEMS WITHIN 5% OF AIR FLOW INDICATED ON DRAWINGS, AND REPORT ALL DISCREPANCIES TO THE HVAC CONTRACTOR FOR CORRECTION. MARK FINAL BALANCE POSITIONS ON DAMPERS WITH PERMANENT MARKER. COMPLETION REQUIREMENTS: THE CONTRACTOR SHALL PROVIDE, WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS AND AN OPERATING AND MAINTENANCE MANUAL TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE OWNER. THE RECORD DRAWING SHALL BE OF THE ACTUAL INSTALLATION AND INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEM INCLUDING SIZES, AND THE TERMINAL AIR OR WATER DESIGN FLOW RATES. THE OPERATING AND MAINTENANCE MANUALS SHALL BE IN ACCORDANCE WITH INDUSTRY-ACCEPTED STANDARDS AND SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING: (A) SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. (B) OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED. (C) NAMES AND ADDRESSES OF AT LEAST ONE SERVICE AGENCY. (D) HVAC CONTROLS SYSTEMS MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SYSTEM SEQUENCE DESCRIPTIONS. DESIRED OR FIELD-DETERMINED SET-POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS AT CONTROL DEVICES OR, FOR DIGITAL CONTROL SYSTEMS, IN PROGRAMMING COMMENTS. (E) A COMPLETE NARRATIVE OF HOW EACH SYSTEM EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING SET-POINTS.

HVAC GENERAL NOTES

- THE INTENT OF THESE PLANS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES NECESSARY TO FURNISH, INSTALL, TEST, AND ADJUST A COMPLETE WORKABLE HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM AS SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS, BUT NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE INTENT THEREOF.
- THE ENTIRE INSTALLATION SHALL CONFORM TO THE APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.
- DRAWINGS FOR HVAC WORK ARE DIAGRAMATIC SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT, REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. PROVIDE ALL DUCTWORK, MATERIALS, CONNECTIONS, ACCESSORIES, FITTINGS, OFFSETS, TRANSITIONS, DAMPERS AS REQUIRED FOR A COMPLETE WORKABLE SYSTEM.
- ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND APPROVED LISTING. ALL EQUIPMENT, PIPING AND SUPPORTS SHALL BE RESTRAINED IN ACCORDANCE WITH THE LATEST EDITION OF THE "GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). ALL EQUIPMENT SHALL BE ANCHORED TO RESIST THE LATERAL FORCE REQUIREMENTS OF CHAPTER 16 OF THE 2012 INTERNATIONAL BUILDING CODE.
- COORDINATE THE INSTALLATION OF THE HVAC SYSTEM WITH ALL OTHER TRADES PRIOR TO FABRICATION OR INSTALLATION. COORDINATE THE LOCATIONS OF PENETRATIONS AND FINAL LOCATION OF ALL EQUIPMENT WITH THE GENERAL CONTRACTOR. PROVIDE EQUIPMENT WEIGHTS, EQUIPMENT DIMENSIONS, PLATFORM SIZES & LOCATIONS, CURB SIZES & LOCATIONS, CONCRETE PAD SIZES AND LOCATIONS AS REQUIRED. COORDINATE LOCATIONS OF GAS & CONDENSATE LINES WITH PLUMBING CONTRACTOR. COORDINATE LOCATIONS OF POWER, DISCONNECTS, AND CONTROL CONDUIT WITH THE ELECTRICAL CONTRACTOR. COORDINATE LOCATIONS OF ALL DIFFUSERS, REGISTERS, AND GRILLES WITH ARCHITECTURAL PLANS, ELECTRICAL LIGHTING PLANS AND ARCHITECTURAL ELEVATIONS.
- DETAILS FOR EQUIPMENT PADS, PLATFORMS, AND FLASHINGS SHALL BE AS INDICATED BY THE ARCHITECTURAL/STRUCTURAL/CIVIL DRAWINGS, UNLESS NOTED OTHERWISE.
- ALL EQUIPMENT, DUCTS, PIPING, SUPPORTS, AND OTHER DEVICES OUTSIDE OF THE BUILDING OR EXPOSED TO WEATHER, SHALL BE COMPLETELY WEATHER-PROOFED.
- OUTSIDE AIR INTAKES SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. BELOW ANY VENT OR EXHAUST DISCHARGE.
- ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. DUCTWORK SHALL BE CONSTRUCTED, ERECTED, INSULATED AND TESTED IN ACCORDANCE CHAPTER 6 OF THE 2012 INTERNATIONAL MECHANICAL CODE.
- ALL EXHAUST FANS SHALL BE EQUIPED WITH A BACK DRAFT DAMPER.
- DUCT AND AIR TRANSFER PENETRATIONS THRU BUILDING ASSEMBLIES REQUIRING PROTECTION SHALL BE PROTECTED WITH FIRE DAMPERS, SMOKE DAMPERS, COMBINATION SMOKE/FIRE DAMPERS AND CEILING RADIATION DAMPERS IN ACCORDANCE WITH SECTION 807 OF THE INTERNATIONAL MECHANICAL CODE. DUCTS NOT REQUIRING DAMPERS SHALL COMPLY WITH SECTION 714 & 717 OF THE 2019 PHILADELPHIA BUILDING CODE.
- INSTALL SMOKED DETECTORS AND PROVIDE FOR SMOKE DETECTION AND AUTOMATIC SHUT-OFF OF ALL AIR HANDLING EQUIPMENT IN ACCORDANCE WITH SECTION 606 OF THE 2019 PHILADELPHIA MECHANICAL CODE.
- UNLESS NOTED OTHERWISE, ALL LINE VOLTAGE WIRING, CONDUIT, FINAL CONNECTIONS, DISCONNECTS, STARTERS, AND OVER CURRENT PROTECTION DEVICES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AS INDICATED ON THESE MECHANICAL DRAWINGS AND/OR ELECTRICAL DRAWINGS AND/OR ELECTRICAL SECTION OF THE SPECIFICATIONS.
- INSTALL ALL LOW VOLTAGE HVAC CONTROL WIRE AND DEVICES PER PLAN. ALL WIRE SHALL BE IN CONDUIT PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR UNLESS NOTED OTHERWISE.
- PROVIDE OWNER WITH THREE COPIES OF A CERTIFIED AIR BALANCE REPORT PREPARED IN BY A THIRD PARTY CERTIFIED BY THE AABC OR NEBB. TEST, ADJUST AND BALANCE THE HVAC SYSTEM IN ACCORDANCE WITH AABC OR NEBB PROCEDURES. PROVIDE START-UP/TEST REPORTS FOR ALL AIR HANDLING EQUIPMENT, FANS, AND REFRIGERATION EQUIPMENT. TEST AND VERIFY PROPER OPERATION OF ALL MAKE-UP AIR/EXHAUST AIR INTERLOCK SYSTEMS AND THEIR SEQUENCES OF OPERATION. BALANCE ALL AIR FLOWS WITHIN 5% OF DESIGN VALUES. PERMANENTLY MARK BALANCE POSITION OF ALL REGULATING DEVICES.
- PROVIDE OWNER WITH THREE SETS OF AS-BUILT PLANS AND OPERATIONS AND MAINTENANCE MANUALS. CLEARLY IDENTIFY ALL EQUIPMENT WITH PERMANENT PLASTIC OR METAL LABELS/TAGS (PEN MARKING NOT ACCEPTABLE).
- PROVIDE ONE YEAR WARRANTY ON ALL LABOR, PARTS AND MATERIALS.
- ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE WRITTEN APPROVAL OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK.
 - DUCTS FOR DEMAND CONTROLLED VENTILATION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE FAN MANUFACTURER'S INSTALLATION INSTRUCTIONS, THE PROVISIONS ASHRAE 62.2, TABLE 5.3, OR THE AIRFLOW SHALL BE MEASURED AS REQUIRED BY AND IN COMPLIANCE WITH ASHRAE 62.2, 5.4.
 - DUCTS FOR KITCHEN COOKTOPS OR RANGES SHALL BE SHOWN OF METAL WITH A SMOOTH INTERIOR.
 - DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE INSTALLED IN ACCORDANCE WITH IMC 504.0.
 - DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE RIGID METALLIC DUCTS WITH A MINIMUM MILL THICKNESS OF 16 (0.016-INCH), SHALL HAVE A MINIMUM 4-INCH DIAMETER AND A SMOOTH INTERIOR. THE COMBINED HORIZONTAL AND VERTICAL LENGTH OF THE DUCTS OF THE DUCTS SHALL BE 14-FEET, WHICH SHALL BE REDUCED BY 2-FEET FOR EVERY 90-DEGREE ELBOW IN EXCESS OF TWO ELBOWS.
 - LISTED CLOTHES DRYER TRANSITION DUCTS NOT MORE THAN 6-FEET IN LENGTH SHALL BE PERMITTED TO CONNECT THE DRYER TO THE EXHAUST DUCTS AS LONG AS THEY ARE NOT CONCEALED WITHIN CONSTRUCTION, AND THEY ARE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

LEGEND

		DUCT WORK (WIDTHxDEPTH)
		LINED DUCT WORK (WIDTHxDEPTH DIMENSIONS ARE FOR I.D.)
		SUPPLY DUCT, SECTION
		RETURN DUCT, SECTION
		EXHAUST DUCT, SECTION
		RISE OR DROP IN DIRECTION OF AIR FLOW
	FLEX. CONN.	FLEXIBLE CONNECTION
		DUCT TRANSITION, ROUND AND RECTANGULAR
		SPLITTER DAMPER
		EXTRACTOR AT BRANCH DUCT
		TURNING VANES
		FLEXIBLE DUCT
		SINGLE LINE DUCT WORK
	AVD	AUTOMATIC VOLUME DAMPER
	MVD	MANUAL VOLUME DAMPER
	BDD	BACKDRAFT DAMPER
	MD	MODULATING DAMPER
	AFD	AUTOMATIC FIRE DAMPER
	AD	ACCESS DOOR
	SD	SUPPLY DIFFUSER
	RR	RETURN REGISTER
	ER	EXHAUST REGISTER
	SWR	SIDE WALL SUPPLY REGISTER
	SWE	SIDE WALL RETURN OR EXHAUST
	LD	LINEAR DIFFUSER
	DL	DOOR LOUVER
	UC	UNDER CUT DOOR
	VAV	VARIABLE AIR VOLUME
	Ⓣ	THERMOSTAT
	Ⓢ	DUCT SMOKE DETECTOR
	T/B	TO BELOW
	F/B	FROM BELOW
	T/A	TO ABOVE
	F/A	FROM ABOVE

SPECIAL NOTICE TO CONTRACTORS

- ALL CONTRACTORS (GENERAL CONTRACTOR AND SUB-CONTRACTORS) BIDDING THIS PROJECT ARE REQUIRED TO VISIT THE JOB SITE AND VERIFY THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. CONTRACTORS ARE TO CAREFULLY REVIEW ALL CONSTRUCTION DOCUMENTS AND NOTE ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED AT THE JOB SITE PRIOR TO SUBMISSION OF ANY BID. THE BUILDING OWNER REPRESENTATIVE LISTED BELOW MAY BE CONTACTED FOR ACCESS TO THE JOB SITE.
- CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION AND CONDITION OF ALL POINTS OF CONNECTION, LOCATION AND CONDITION OF ALL BUILDING (ROOF/FLOOR/CEILING) PENETRATIONS, LOCATION AND CONDITION OF ALL UTILITIES AND BUILDING SYSTEMS INCLUDING, BUT NOT LIMITED TO, GAS, WATER, SEWER, VENT, ELECTRICAL, BUILDING MECHANICAL SYSTEMS, DUCT CONNECTIONS, EXHAUST/OUTSIDE AIR CONNECTIONS, SECURITY, FIRE ALARM, DATA, AND PHONE PRIOR TO SUBMISSION OF THEIR BID.
- ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED SHALL BE BROUGHT TO THE ATTENTION, IN WRITING, TO THE ARCHITECT AND/OR ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
- NO WORK SHALL BE DONE ON ANY PART OF THE BUILDING BEYOND THE POINT INDICATED IN EACH SUCCESSIVE INSPECTION WITHOUT FIRST OBTAINING THE WRITTEN APPROVAL OF THE CODE OFFICIAL. NO CONSTRUCTION SHALL BE CONCEALED WITHOUT BEING INSPECTED AND APPROVED.

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF THE DESIGNER AND THE SAME MAY NOT BE DUPLICATED, USED OR DISCLOSED WITHOUT CONSENT OF THE DESIGNER.

NOTES:

- ALL DIMENSIONS HEREIN ARE IN IMPERIAL UNITS UNLESS STATED OTHERWISE.
- THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT DESIGNER, ENGINEER OR SPECIALIST DRAWINGS AND SPECIFICATIONS.
- THE CONTRACTOR MUST CHECK ALL DIMENSION AT SITE BEFORE COMMENCING WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
**MECH LIST OF SYMBOLS
AND GENERAL NOTES**

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		NTS

DRAWING NO. REV.

M 1 . 0

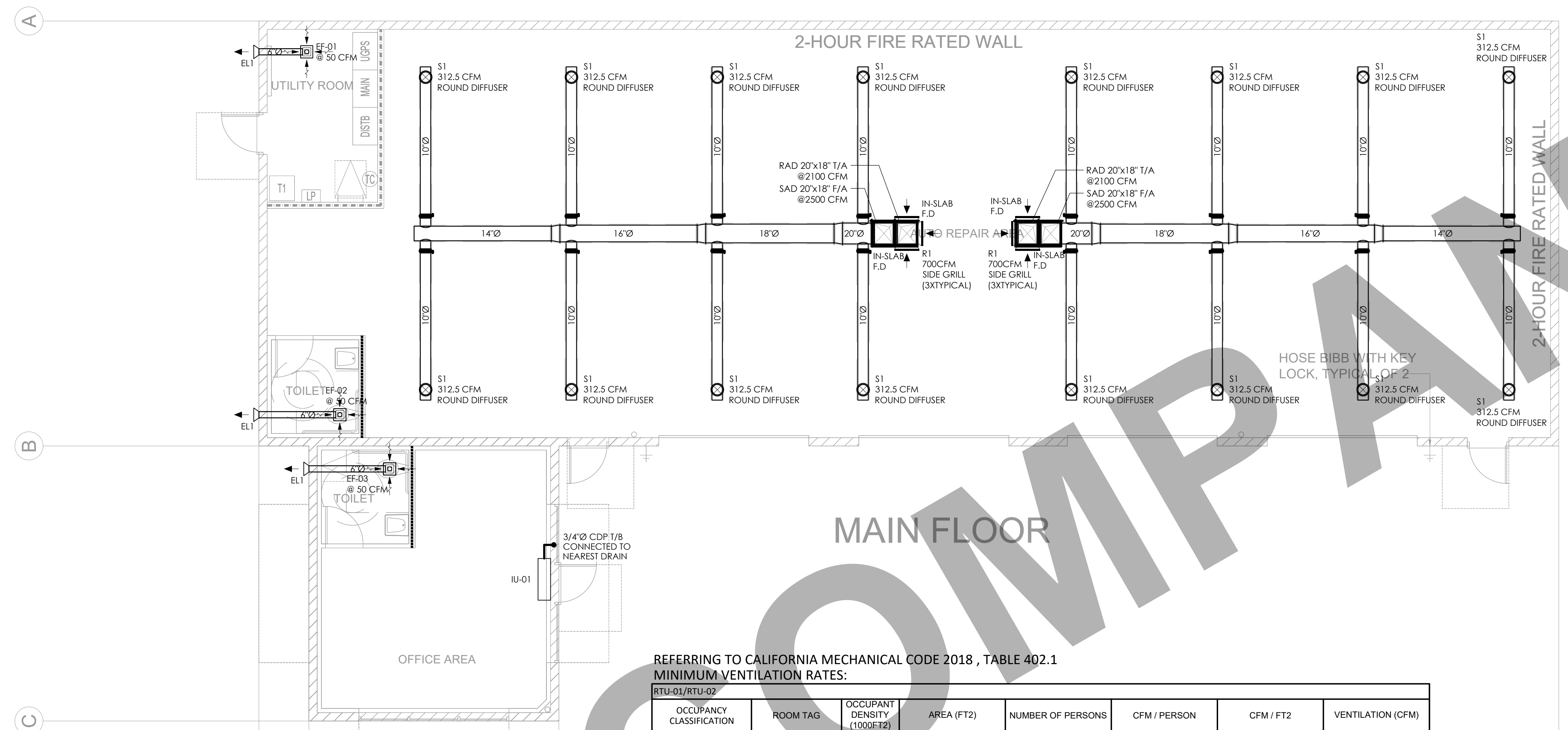


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DIVIS
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REFERRING TO CALIFORNIA MECHANICAL CODE 2018 , TABLE 402.1
MINIMUM VENTILATION RATES:

RTU-01/RTU-02							
OCCUPANCY CLASSIFICATION	ROOM TAG	OCCUPANT DENSITY (100/F ²)	AREA (FT ²)	NUMBER OF PERSONS	CFM / PERSON	CFM / FT ²	VENTILATION (CFM)
GENERAL MANUFACTURING	AUTO REPAIR AREA	7	3156.0	23.0	10.0	0.18	798.1
TOTAL VENTILATION REQUIRED (CFM)							800.0

RTU-01 & RTU-02/ CARRIER - 48HJD008 CAN OPERATE UP TO 25% OA FROM THE SUPPLY FLOW.
THE NOMINAL RTU-01 / RTU-02 FLOW RATE IS 2500 CFM
MAX. OA THE RTU CAN DELIVER IS = 2500 x 0.25 = 625 CFM; TWO UNITS SERVING THE AREA
2x625CFM = 1250CFM CAN BE USED.
1250 CFM > 800 CFM (req. OA)

**SCHEDULE No. 1
ROOF TOP UNIT SCHEDULE**

TAG	MANUFACTURER	MODEL	TOTAL COOLING (TONS)	HEATING UNIT (INP./OUTP.(MBH))	AIRFLOW @0.8"W.G. (CFM)	FAN POWER (BHP)	EER	MCA [A]	MOCP [A]	VOLT/PH/HZ
RTU-01	CARRIER	48HJD008	7.5	105.0 / 84.0	2500	1.86	12.0	38.2	45.0	208-230/3/60
RTU-02	CARRIER	48HJD008	7.5	105.0 / 84.0	2500	1.86	12.0	38.2	45.0	208-230/3/60

* RTU SHALL HAVE A FIELD INSTALLED OPERATION TO INCLUDE 25% OA FROM THE SUPPLY AIR FLOW.
* RTU SHALL BE PROVIDED WITH ECONOMIZER.

**SCHEDULE No. 2
FAN SCHEDULE**

TAG	EF-01,02/EF-03
LOCATION	BATHROOMS/UTILITY ROOM
SELECTED FLOW (CFM)	50
SELECTED PRESSURE DROP (IN. H2O)	0.25"
ELECTRICAL (V / PH / HZ)	120 / 1 / 60
POWER / Amps	25 W
MOTOR SPEED (RPS)	MULTI SPEED
FAN TYPE	CEILING FANS
MANUFACTURER	PANASONIC
MODEL	WHISPER FV-0511VKS2

NOTES:
1. PROVIDE UL LISTING.
2. PROVIDE ENERGY STAR COMPLIANCE.
3. INTERLOCK WITH WALL SWITCH.
4. PROVIDE MOTOR WITH THERMAL OVERLOADS.

**SCHEDULE No. 3
AIR OUTLETS**

TAG	DESCRIPTION	MANUFACTURER	MODEL	MOUNTING
S1	SUPPLY ROUND DIFFUSER	TITUS	Ø 12in.	Duct Mounted
R1	RETURN SIDE GRILLE	TITUS	16in. x 16in.	Duct Mounted

NOTES:
1. COORDINATE FINISH, COLOR, BORDER AND EXACT LOCATION WITH OWNER PRIOR TO ORDERING.
2. PROVIDE OPPOSED BLADE DAMPER ACCESSIBLE THROUGH DIFFUSER FACE FOR GYP BD. CEILING INSTALLATIONS.
3. PROVIDE DUCT TRANSITIONS AS REQUIRED.
4. RETURNS R1 ARE PROVIDED WITH PROPER FILTERS.

**SCHEDULE No. 4
LOUVERS**

TAG	TYPE	CFM	PR. DROP W.G.	MANUFACTURER MODEL
EL-1	EXHAUST AIR	50	0.03	RUSKIN ELF6375DX

**SCHEDULE No. 5
HEAT PUMP - INDOOR & OUTDOOR UNIT**

TAG	IU-2 & OU-01
SERVING	OFFICE AREA
MANUFACTURER	CARRIER
INDOOR MODEL	40MPHAQ12XA3
POWER SUPPLY	208-230/1/60
MAXIMUM CURRENT (A)	FROM OUTDOOR
UNIT AMPACITY (A)	FROM OUTDOOR
AIR FLOW (CFM) - RANGE	300
EXTERNAL STATIC PRESSURE (in.W.C)	0.50
COOLING CAPACITY (BTU/H)	12,000
HEATING CAPACITY (BTU/H)	12,000
INDOOR DIMENSIONS (H x W x D) (inch)	27.64x33.27x14.29"
OUTDOOR MODEL	38MPRAQ12AA3
POWER SUPPLY	208/230 / 1 / 60
MCA (A)	15.0
MOCP (A)	20.0
MAX OVERCURRENT DEVICE	25.0

NOTES:
1. PROVIDE CONDENSATE PUMP, IF REQUIRED.
2. PROVIDE DISCONNECT SWITCH.
3. PROVIDE 2" MERV 8 THROWAWAY FILTER.
4. PROVIDE VIBRATION ISOLATION.
5. PROVIDE FREEZE THERMOSTAT.

GENERAL NOTES

- MECHANICAL CONTRACTOR TO COORDINATE ROUTING AND LOCATION OF MECHANICAL COMPONENTS AND EQUIPMENT WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS PRIOR TO PERFORMING WORK.
- CONTRACTOR TO CUT AND PATCH AS REQUIRED TO PERFORM THE WORK.
- ACCESS DOORS ARE REQUIRED FOR ANY COMPONENT REQUIRING ACCESS ABOVE HARD LID CEILINGS. COORDINATE SIZE, LOCATION AND FINISH WITH ARCHITECT PRIOR TO PERFORMING WORK.
- REFER TO THE DIAGRAMS THAT APPLY TO THIS SHEET WHICH PROVIDE GENERAL GUIDANCE FOR INSTALLATION THOUGH NOT ALL COMPONENTS AND ACCESSORIES MAY BE SHOWN.
- PRIOR TO INSTALLATION, CONFIRM SPECIFIC LOCATION FOR ALL THERMOSTATS / SENSORS WITH ARCHITECT. MOUNT AT 48" A.F.F. OR IN ACCORDANCE WITH ADA REQUIREMENTS. PROVIDE LOCKING COVERS.
- COORDINATE AND CONFIRM BORDER, FRAME, FINISH, AND LOCATION WITH ARCHITECT PRIOR TO ORDERING.
- ANY PENETRATIONS THROUGH WALL STUDS, FLOOR JOISTS, OR ROOF TO BE IN ACCORDANCE WITH THE LATEST ADOPTED BUILDING CODE.
- DUCT DIMENSIONS SHOWN ARE CLEAR INSIDE DIMENSIONS.
- CONTRACTOR TO CONFIRM ADEQUATE RETURN AIR PATH BACK TO MAIN AIR HANDLING UNIT.

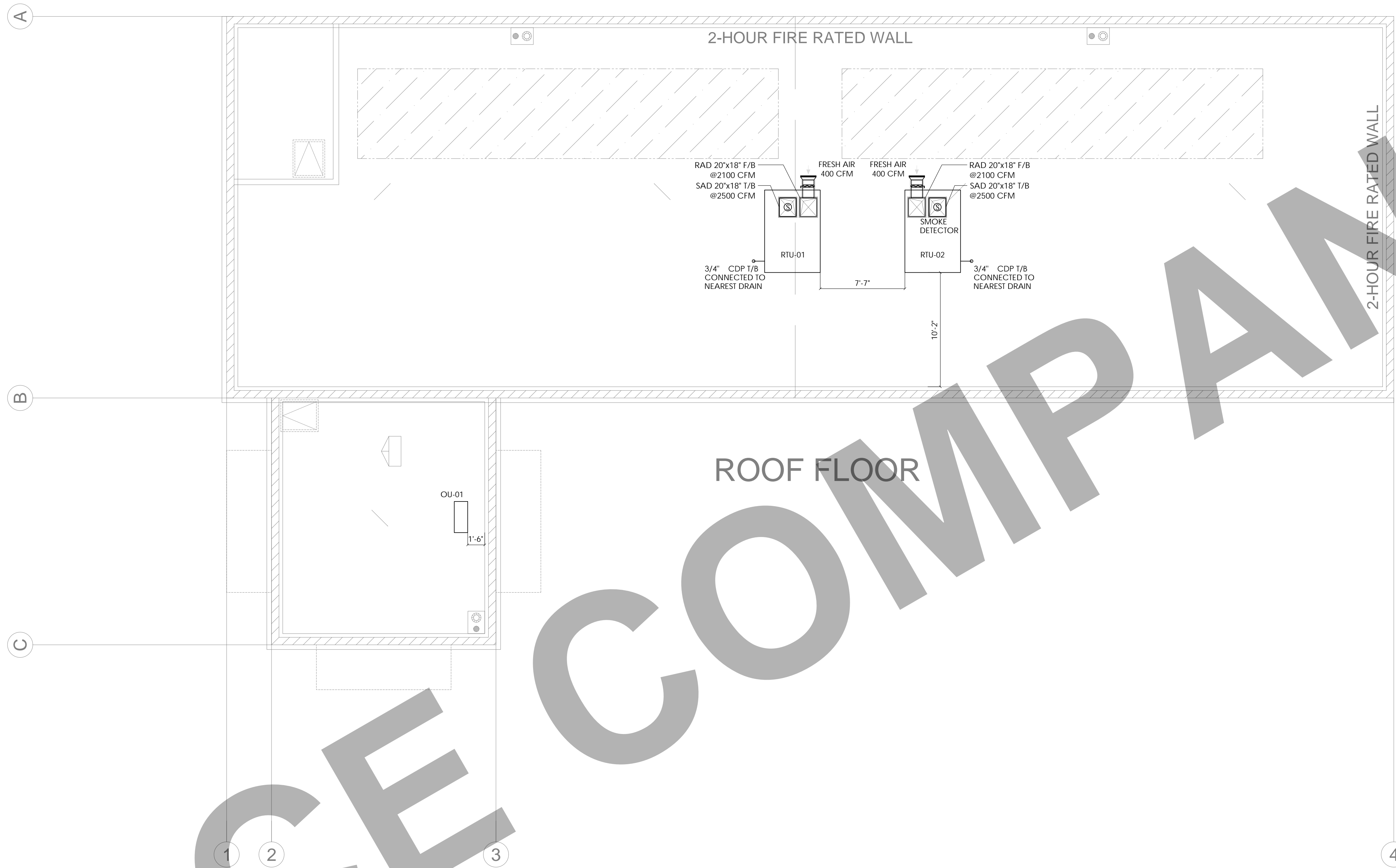
REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
**RAZO PROPOSED
CO**

TITLE:
**MAIN FLOOR MECH.LAYOUTS AND
EQUIPMENT SCHEDULE**

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/16"=1'-0"

DRAWING NO.
M 2 . 0



BCE COMPANY

GENERAL NOTES

1. MECHANICAL CONTRACTOR TO COORDINATE ROUTING AND LOCATION OF MECHANICAL COMPONENTS AND EQUIPMENT WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS PRIOR TO PERFORMING WORK.
2. CONTRACTOR TO CUT AND PATCH AS REQUIRED TO PERFORM THE WORK.
3. ACCESS DOORS ARE REQUIRED FOR ANY COMPONENT REQUIRING ACCESS ABOVE HARD LID CEILINGS. COORDINATE SIZE, LOCATION AND FINISH WITH ARCHITECT PRIOR TO PERFORMING WORK.
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6. COORDINATE AND CONFIRM BORDER, FRAME, FINISH, AND LOCATION WITH ARCHITECT PRIOR TO ORDERING.
7. ANY PENETRATIONS THROUGH WALL STUDS, FLOOR JOISTS, OR ROOF TO BE IN ACCORDANCE WITH THE LATEST ADOPTED BUILDING CODE.
8. DUCT DIMENSIONS SHOWN ARE CLEAR INSIDE DIMENSIONS.
9. CONTRACTOR TO CONFIRM ADEQUATE RETURN AIR PATH BACK TO MAIN AIR HANDLING UNIT.

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF THE DESIGNER AND THE SAME MAY NOT BE DUPLICATED, USED OR DISCLOSED WITHOUT CONSENT OF THE DESIGNER.

NOTES:

1. ALL DIMENSIONS HEREIN ARE IN IMPERIAL UNITS UNLESS STATED OTHERWISE.
2. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT DESIGNER, ENGINEER OR SPECIALIST DRAWINGS AND SPECIFICATIONS.
3. THE CONTRACTOR MUST CHECK ALL DIMENSION AT SITE BEFORE COMMENCING WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
**ROOF FLOOR
MECHANICAL LAYOUT**

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 3/16"=1'-0"
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DRAWING NO. M 2 . 1	REV.
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Air System Sizing Summary for RTU-01/RTU-02

Project Name: Fats Plaza
 Prepared By: 10/06/2012 12:20AM

Air System Information
 Air System Name: RTU-01/RTU-02
 Equipment Class: PRO ROOF
 Air System Type: SGCAV

Number of zones: 1
 Floor Area: 3166.0 SF
 Location: Los Angeles LAX, California

Sizing Calculation Information
 Calculation Month: Jan to Dec
 Sizing Date: User-Defined
 Zone CFM Sizing: Sum of space airflow rates
 Space CFM Sizing: Individual peak space loads

Central Cooling Coil Sizing Data
 Total coil load: 113.3 Tons
 CA DB (WB) @ 100% RH: 59.9 / 42.6 °F
 Sensing DB (WB): 59.9 / 42.6 °F
 Max load CFM: 8600 CFM
 Sum of peak CFM: 8600 CFM
 Supply Fan Motor: 4.87 HP
 Supply Fan Motor: 4.87 HP
 RTU Fan: 4.87 HP
 Water flow @ 10.0 °F rise: N/A

Central Heating Coil Sizing Data
 Max coil load: 45.1 MBH
 CA DB (WB) @ 100% RH: 66.0 / 43.3 °F
 Max load CFM: 8600 CFM
 Water flow @ 30.0 °F drop: N/A

Supply Fan Sizing Data
 Actual min CFM: 8600 CFM
 Standard CFM: 8600 CFM
 Actual max CFM: 1.50 CFM/FW
 Outdoor Ventilation Air Data
 Design airflow CFM: 800 CFM
 CFM/FW: 0.25 CFM/FW

Hourly Analysis Program 5.10 Page 1 of 11

Zone Sizing Summary for RTU-01/RTU-02

Project Name: Fats Plaza
 Prepared By: 10/06/2012 12:20AM

Air System Information
 Air System Name: RTU-01/RTU-02
 Equipment Class: PRO ROOF
 Air System Type: SGCAV

Number of zones: 1
 Floor Area: 3166.0 SF
 Location: Los Angeles LAX, California

Sizing Calculation Information
 Calculation Month: Jan to Dec
 Sizing Date: User-Defined
 Zone CFM Sizing: Sum of space airflow rates
 Space CFM Sizing: Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Cooling (MBH)	Minimum Supply (CFM)	Return (CFM)	Return (MBH)	Zone Heating (MBH)	Zone Floor Area (SF)	Mixing Water (GPM)
Zone 1	450.0	450.0	1.54	0.0	0.0	3166.0	0.0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Cooling (Month)	Zone Heating (MBH)	Zone Floor Area (SF)
Zone 1	86.1	Sep 1400	25.8	3166.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Cooling (Month)	Air Flow (CFM)	Heating Load (MBH)	Floor Area (SF)	Space CFM/FW
Zone 1 / AUTO REPAIR AREA	1	86.1	Sep 1400	4737	25.8	3166.0	1.50

Hourly Analysis Program 5.10 Page 2 of 11

Ventilation Sizing Summary for RTU-01/RTU-02

Project Name: Fats Plaza
 Prepared By: 10/06/2012 12:20AM

No data is available for this report. Space by space ventilation calculations were not performed for this air system because it uses the 'user-defined' sizing option. With this option the system outdoor ventilation air flow is specified directly by the user. Therefore, space-by-space calculations are not performed.

Hourly Analysis Program 5.10 Page 3 of 11

Air System Design Load Summary for RTU-01/RTU-02

Project Name: Fats Plaza
 Prepared By: 10/06/2012 12:20AM

DESIGN COOLING
 COOLING DATA AT 100% RH
 COOLING DATA AT DB 100% RH
 COOLING DATA DB (WB) 81.8 °F / 42.6 °F

DESIGN HEATING
 HEATING DATA AT DB 100% RH
 HEATING DATA DB (WB) 45.8 °F / 36.1 °F

Zone / Load	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	420 SF	11800	-	420 SF	11500	-
Wall Transmission	3910 SF	2060	-	3910 SF	4484	-
Floor Transmission	420 SF	983	-	420 SF	2300	-
Roof Transmission	420 SF	0	-	420 SF	0	-
Door Loads	0 SF	0	-	0 SF	0	-
Floor Transmission	3156 SF	0	-	3156 SF	2096	-
Partitions	94 SF	-68	-	94 SF	1873	-
Partitions	0 SF	0	-	0 SF	0	-
Overhead Lighting	3648 W	1091	-	0 W	0	-
Task Lighting	3648 W	1091	-	0 W	0	-
Electric Equipment	4820 W	15120	-	0 W	0	-
People	182	3460	43740	0	0	0
Infiltration	0	0	-	0	0	0
Manufacture	0	0	-	0	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
Zone Conditioning	0% / 0%	8866	43740	0%	0	23911
Zone 1 Total Zone Loads		8866	43740		23911	0
Plenum Fan Load	0%	0	0	0	0	0
Plenum Lighting Load	0%	0	0	0	0	0
Return Fan Load	0%	0	0	0	0	0
Return Fan Load	3000 CFM	0	0	3000 CFM	0	0
Ventilation Load	800 CFM	5420	-1947	800 CFM	2312	0
Supply Fan Load	8000 CFM	5684	-	8000 CFM	4864	-
Space Fan Coil Fans	0	0	-	0	0	0
Duct Heat Gain / Loss	2%	1724	-	2%	1724	-
In Total System Loads	-	10487	38753	-	49887	0
Central Cooling Coil	-	10487	38753	-	49887	0
Central Heating Coil	-	0	-	-	45067	0
In Total Conditioning	-	10487	38753	-	49887	0

Key:
 Positive values are sig loads
 Negative values are sig loads

Hourly Analysis Program 5.10 Page 4 of 11

Zone Design Load Summary for RTU-01/RTU-02

Project Name: Fats Plaza
 Prepared By: 10/06/2012 12:20AM

DESIGN COOLING
 COOLING DATA AT 100% RH
 COOLING DATA DB (WB) 82.7 °F / 42.9 °F

DESIGN HEATING
 HEATING DATA AT DB 100% RH
 HEATING DATA DB (WB) 45.8 °F / 36.1 °F

Zone / Load	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	420 SF	11500	-	420 SF	11500	-
Wall Transmission	3910 SF	2812	-	3910 SF	11593	-
Floor Transmission	3156 SF	9162	-	3156 SF	4444	-
Roof Transmission	420 SF	0	-	420 SF	5330	-
Door Loads	0 SF	0	-	0 SF	0	-
Floor Transmission	3156 SF	0	-	3156 SF	2096	-
Partitions	94 SF	-68	-	94 SF	1873	-
Partitions	0 SF	0	-	0 SF	0	-
Overhead Lighting	3648 W	1091	-	0 W	0	-
Task Lighting	3648 W	1091	-	0 W	0	-
Electric Equipment	4820 W	15120	-	0 W	0	-
People	182	3460	43740	0	0	0
Infiltration	0	0	-	0	0	0
Manufacture	0	0	-	0	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
Zone Conditioning	0% / 0%	8666	43740	0%	0	23911
Zone 1 Total Zone Loads		8666	43740		23911	0
Plenum Fan Load	0%	0	0	0	0	0
Plenum Lighting Load	0%	0	0	0	0	0
Return Fan Load	0%	0	0	0	0	0
Return Fan Load	3000 CFM	0	0	3000 CFM	0	0
Ventilation Load	800 CFM	5420	-1947	800 CFM	2312	0
Supply Fan Load	8000 CFM	5684	-	8000 CFM	4864	-
Space Fan Coil Fans	0	0	-	0	0	0
Duct Heat Gain / Loss	2%	1724	-	2%	1724	-
In Total System Loads	-	10487	38753	-	49887	0
Central Cooling Coil	-	10487	38753	-	49887	0
Central Heating Coil	-	0	-	-	45067	0
In Total Conditioning	-	10487	38753	-	49887	0

Key:
 Positive values are sig loads
 Negative values are sig loads

Hourly Analysis Program 5.10 Page 5 of 11

Space Design Load Summary for RTU-01/RTU-02

Project Name: Fats Plaza
 Prepared By: 10/06/2012 12:20AM

TABLE 1.1.A. Component Loads For Space "AUTO REPAIR AREA" In Zone "Zone 1"

DESIGN COOLING
 COOLING DATA AT 100% RH
 COOLING DATA DB (WB) 81.8 °F / 42.6 °F

DESIGN HEATING
 HEATING DATA AT DB 100% RH
 HEATING DATA DB (WB) 45.8 °F / 36.1 °F

SPACE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	420 SF	11800	-	420 SF	11500	-
Wall Transmission	3910 SF	2812	-	3910 SF	11593	-
Floor Transmission	3156 SF	9162	-	3156 SF	4444	-
Roof Transmission	420 SF	0	-	420 SF	5330	-
Door Loads	0 SF	0	-	0 SF	0	-
Floor Transmission	3156 SF	0	-	3156 SF	2096	-
Partitions	94 SF	-68	-	94 SF	1873	-
Partitions	0 SF	0	-	0 SF	0	-
Overhead Lighting	3648 W	1091	-	0 W	0	-
Task Lighting	3648 W	1091	-	0 W	0	-
Electric Equipment	4820 W	15120	-	0 W	0	-
People	182	3460	43740	0	0	0
Infiltration	0	0	-	0	0	0
Manufacture	0	0	-	0	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
In Total Zone Loads		8666	43740		23911	0

TABLE 1.1.B. Envelope Loads For Space "AUTO REPAIR AREA" In Zone "Zone 1"

Area	U-Value (BTU/hr-ft ² -°F)	Shade Coeff.	COOLING TRANS (BTU/hr)	HEATING TRANS (BTU/hr)
N EXPOSURE	1900	0.113	-1268	-
E EXPOSURE	850	0.113	-447	-1888
S EXPOSURE	1180	0.113	-548	-3095
W EXPOSURE	400	0.470	0.300	1124
ROOF	180	0.113	-150	-990
ROOF	3156	0.030	-9162	-4444

Hourly Analysis Program 5.10 Page 6 of 11

Dedicated Outdoor Air System (DOAS) Sizing Summary for IU-01

Project Name: Fats Plaza
 Prepared By: 10/06/2012 12:20AM

Air System Information
 Air System Name: IU-01
 Equipment Class: SPLIT FC
 Air System Type: SPLIT FC

Number of zones: 1
 Floor Area: 334.8 SF
 Location: Los Angeles LAX, California

Sizing Calculation Information
 Calculation Month: Jan to Dec
 Sizing Date: User-Defined
 Zone CFM Sizing: Sum of space airflow rates
 Space CFM Sizing: Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Cooling (Month)	Zone Heating (MBH)	Zone Floor Area (SF)
Zone 1	6.2	08/01/0511	0.0	334.8

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Load (MBH)	Water Flow (GPM)	Fan Design Airflow (CFM)	Fan Motor (HP)	Fan Motor (kW)	OA DB (WB) (°F)	OA Flow (CFM)
Zone 1	0.0	0.0	475	0.000	0.000	55.0	25

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Cooling (Month)	Zone Heating (MBH)	Zone Floor Area (SF)
Zone 1	6.2	Sep 1300	0.0	334.8

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Cooling (Month)	Air Flow (CFM)	Heating Load (MBH)	Floor Area (SF)	Space CFM/FW
Zone 1 / OFFICE	1	6.2	Sep 1300	475	0.0	334.8	1.40

Hourly Analysis Program 5.10 Page 7 of 10

Ventilation Sizing Summary for IU-01

Project Name: Fats Plaza
 Prepared By: 10/06/2012 12:20AM

1. Summary
 Ventilation Sizing Method: Sum of Space OA Airflows

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (SF)	Minimum Outdoor Air (CFM)	Required Outdoor Air (CFM)	Required Outdoor Air (CFM) (% of supply)	Unmet Demand (CFM)
OFFICE	1	334.8	1.0	475.2	0.00	0.0
Total (incl. Space Multipliers)				475.2		25.8

Hourly Analysis Program 5.10 Page 8 of 10

Air System Design Load Summary for IU-01

Project Name: Fats Plaza
 Prepared By: 10/06/2012 12:20AM

DESIGN COOLING
 COOLING DATA AT 100% RH
 COOLING DATA DB (WB) 82.7 °F / 42.9 °F

DESIGN HEATING
 HEATING DATA AT DB 100% RH
 HEATING DATA DB (WB) 45.8 °F / 36.1 °F

Zone / Load	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	200 SF	4545	-	200 SF	1744	-
Wall Transmission	334 SF	1083	-	334 SF	475	-
Floor Transmission	200 SF	466	-	200 SF	2306	-
Roof Transmission	334 SF	0	-	334 SF	388	-
Door Loads	0 SF	0	-	0 SF	0	-
Floor Transmission	334 SF	0	-	334 SF	388	-
Partitions	220 SF	-71	-	220 SF	462	-
Partitions	0 SF	0	-	0 SF	0	-
Overhead Lighting	418 W	1163	-	0 W	0	-
Task Lighting	418 W	1163	-	0 W	0	-
Electric Equipment	280 W	876	-	0 W	0	-
People	1	170	185	0	0	0
Infiltration	0	0	-	0	0	0
Manufacture	0	0	-	0	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
Zone Conditioning	0% / 0%	891	185	0%	0	5997
Zone 1 Total Zone Loads		891	185		5997	0
Plenum Fan Load	0%	0	0	0	0	0
Plenum Lighting Load	0%	0	0	0	0	0
Return Fan Load	0%	0	0	0	0	0
Return Fan Load	20 CFM	134	-170	20 CFM	711	0
Ventilation Fan Load	0 CFM	0	-	0 CFM	0	0
Space Fan Coil Fans	0 CFM	0	-	0 CFM	0	0
Duct Heat Gain / Loss	0%	0	-	0%	0	0
In Total System Loads	-	891	185	-	6196	0
Terminal Unit Cooling	-	891	185	-	6196	0
Terminal Unit Heating	-	0	-	-	6196	0
In Total Conditioning	-	891	185	-	6196	0

Key:
 Positive values are sig loads
 Negative values are sig loads

Hourly Analysis Program 5.10 Page 9 of 10

Zone Design Load Summary for IU-01

Project Name: Fats Plaza
 Prepared By: 10/06/2012 12:20AM

TABLE 1.1.A. Component Loads For Space "OFFICE" In Zone "Zone 1"

DESIGN COOLING
 COOLING DATA AT 100% RH
 COOLING DATA DB (WB) 81.8 °F / 42.6 °F

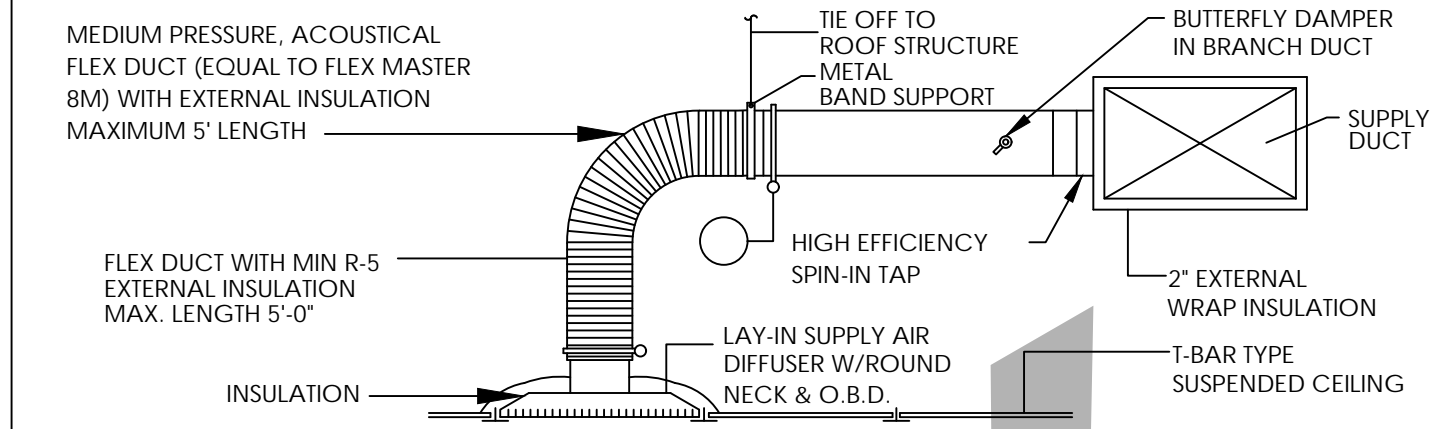
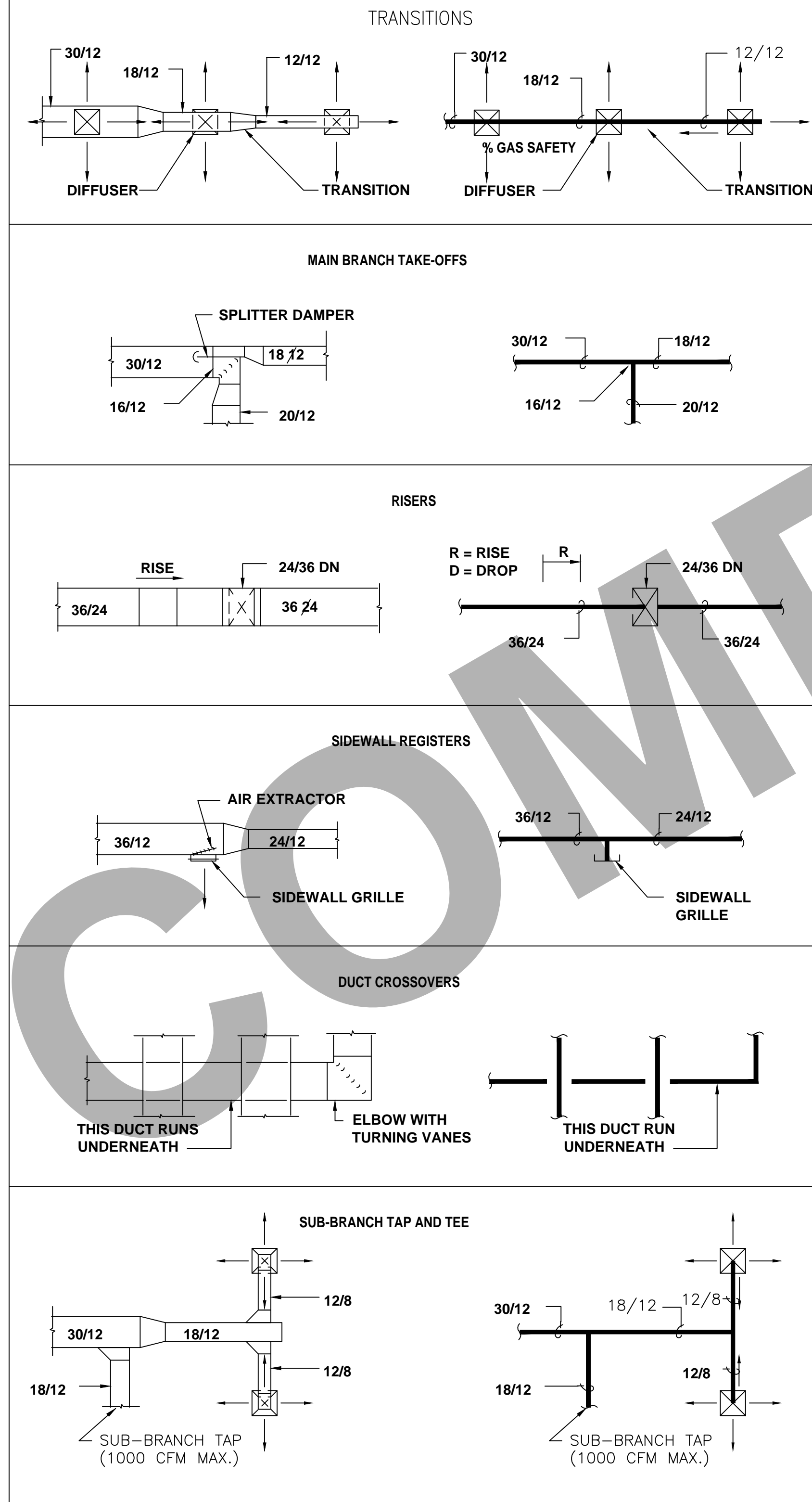
DESIGN HEATING
 HEATING DATA AT DB 100% RH
 HEATING DATA DB (WB) 45.8 °F / 36.1 °F

SPACE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	200 SF	4545	-	200 SF	1744	-
Wall Transmission	334 SF	1083	-	334 SF	475	-
Floor Transmission	200 SF	466	-	200 SF	2306	-
Roof Transmission	334 SF	0	-	334 SF	388	-
Door Loads	0 SF	0	-	0 SF	0	-
Floor Transmission	334 SF	0	-	334 SF	388	-
Partitions	220 SF	-71	-	220 SF	462	-
Partitions	0 SF	0	-	0 SF	0	

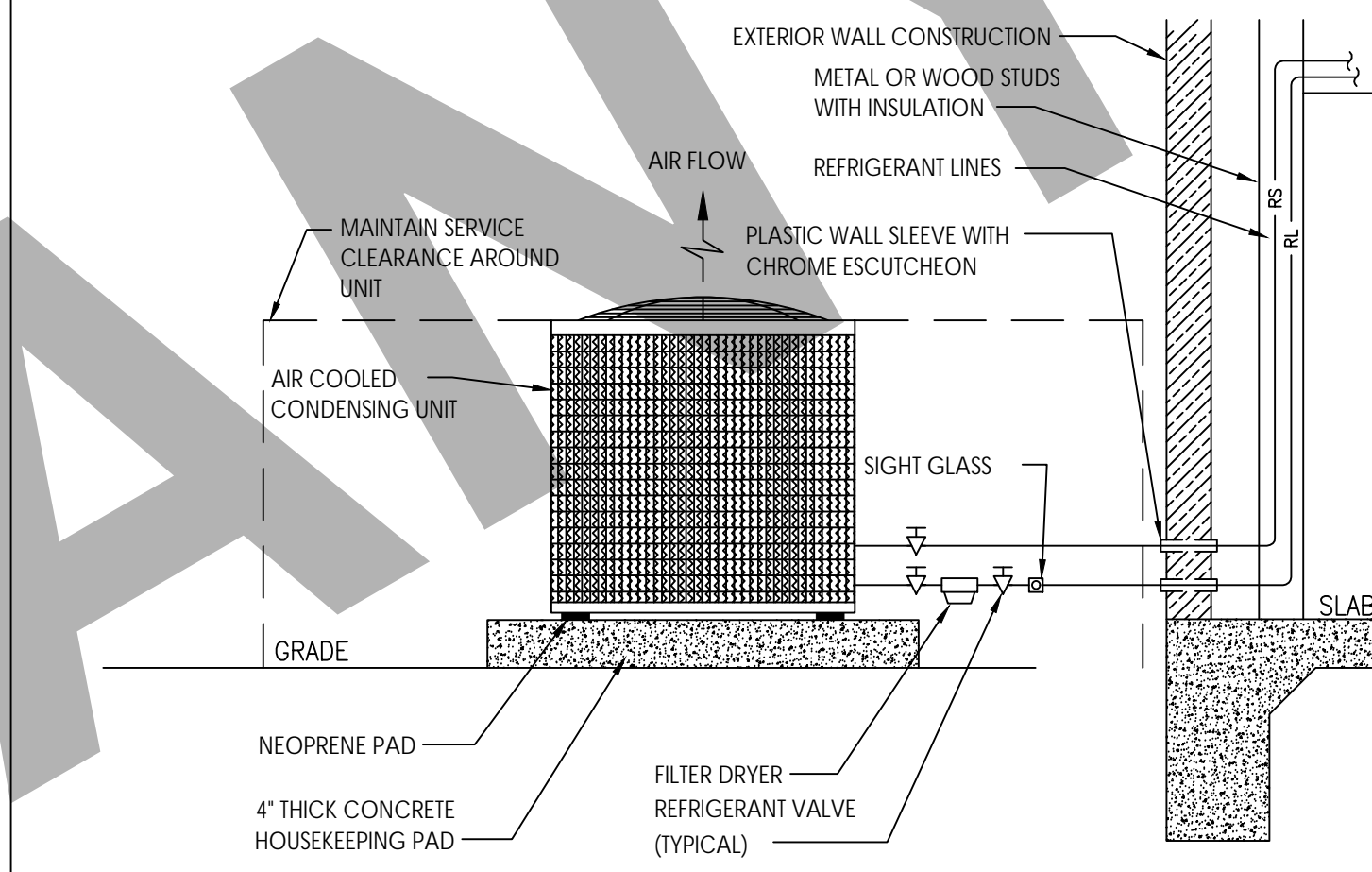
GENERAL NOTES

- MECHANICAL CONTRACTOR SHALL EXAMINE ALL OTHER SPECIFICATIONS, DRAWINGS AND ALL FEATURES OF BUILDING CONSTRUCTION WHICH MAY AFFECT HIS WORK AND SHALL BE GOVERNED BY THESE AND OTHER SPECIFICATIONS, INCLUDING THE GENERAL CONDITIONS AND PARTICULAR INSTRUCTIONS T ALL BIDDER AND SUPPLIERS .
- ALL WORK SHALL BE EXECUTED AND INSPECTED IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND/OR STATE CODES, LAWS, ORDINANCES, RULES AND REGULATIONS APPLICABLE TO THIS PARTICULAR CLASS OF WORK, AND EACH CONTRACTOR SHALL INCLUDE IN HIS PRICE ALL APPLICABLE SERVICE CHARGES, FEES, PERMITS, TAXES, AND OTHER SIMILAR COSTS IN CONNECTION THEREWITH .
- PRIOR TO FABRICATION OF DUCTWORK, THE MECHANICAL CONTRACTOR SHALL EXAMINE AND VERIFY ALL CONDITIONS ABOVE AND BELOW THE CEILING WHICH MAY INTERFERE WITH THE DUCT SYSTEM AND NOTIFY THE ARCHITECT OF ANY CONFLICT ENCOUNTERED. CONTRACTOR SHALL PROVIDE ALL OFFSETS, ETC WHICH MAY BE REQUIRED, WITHOUT ADDITIONAL COST TO THE OWNER
- ALL SHEET METAL DUCT CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH "SMACNA" LOW PRESSURE DUCT CONSTRUCTION STANDARD
- TURNING VANES SHALL BE INSTALLED IN ALL BENDS IN RECTANGULAR DUCT EXCEEDING 30"
- ALL DUCTS SHALL BE SUPPORTED WITH 1" WIDE, 16 GAUGE, GALVANIZED STEEL BANDS .
- ALL RECTANGULAR DUCT SHALL BE INSULATED WITH A MIN OF 1" INTERNAL LINER, 2 LBS DENSITY R-60 ALL ROUND DUCTS AND DIFFUSER TOPS SHALL HAVE A MIN 2" THICK OF FOIL BACKED BLANKET TYPE INSULATION R=4-4 2, WITH ALL JOINTS BUTTED AND TAPED .
- ALL DUCT DIMENSIONS SHOWN ON PLANS ARE INTERNAL
- THE MECHANICAL CONTRACTOR SHALL COORDINATE THE LOCATION OF SUPPLY AND RETURN AIR REGISTERS, DUCTS, GRILLES AND DIFFUSERS WITH LIGHTING AND CEILING PATTERNS
- PROVIDE LATERAL BRACING OF ALL DUCTS AND PIPES AS REQUIRED BY CODE .
- INSULATE AND SEAL ALL DUCTWORK PER CHAPTER 10 OF THE STATE MECHANICAL CODE (T-24, PART 4)
- MOUNT ALL THERMOSTATS AT 48" ABOVE FINISHED FLOOR
- ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES
- WHERE BRACING DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINES, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT AND THE MECHANICAL ENGINEER
- DUCT SMOKE DETECTOR SHALL BE INSTALLED BELOW THE ROOF
- ALL MECHANICAL EQUIPMENT AND SYSTEMS INSTALLED AS PART OF PROJECT SHALL COMPLY WITH ALL REQUIREMENTS OF THE 2018 PHILADELPHIA MECHANICAL CODE AND THE 2018 PHILADELPHIA BUILDING CODE AND THE 2018 PHILADELPHIA BUILDING ENERGY EFFICIENCY STANDARDS.
- OUTSIDE AIR FOR A HEATING OR COOLING SYSTEM SHALL NOT BE TAKEN FROM CLOSER THAN 10 FEET FROM AN APPLIANCE VENT OUTLET, VENT OPENING OF A PLUMBING SYSTEM, OR THE DISCHARGE OUTLET OF EXHAUST FAN, UNLESS THE OUTLET IS 3 FT. ABOVE THE OUTSIDE AIR INLET (IMC 314.3)
- PROVIDE 120 VOLT ELECTRICAL OUTLETS WITHIN 25 FT OF ALL MECH EQUIPT. (IMC 309)
- HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH ONE OF THE FOLLOWING METHODS IN ACCORDANCE WITH IMC 317.1 REQUIREMENTS
 - AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE
 - ACCA MANUAL B
 - ASHRAE 111
 - NEBB PROCEDURAL STANDARDS FOR TESTING, ADJUSTING ADJUSTING BALANCING OF ENVIRONMENTAL SYSTEMS
 - SMACNA HVAC TESTING, ADJUSTING, AND BALANCING
- MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL BE NON COMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX NOT TO EXCEED 25 AND A SMOKE DEVELOPED INDEX NOT TO EXCEED 50 WHERE TESTED AS A COMPOSITE PRODUCT IN ACCORDANCE WITH ASTM E84 OR UL 723

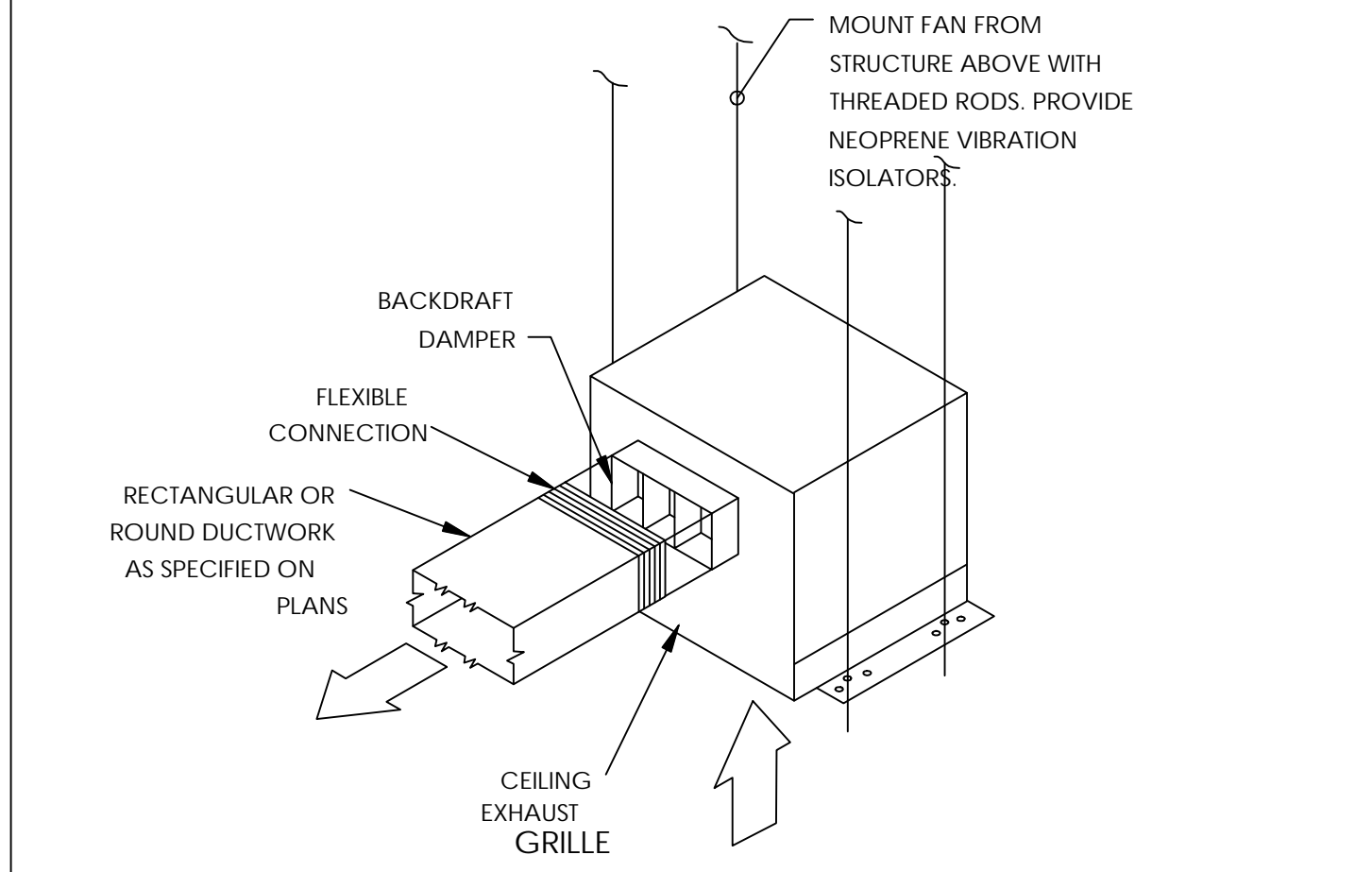
DUCTWORK SYMBOLS LEGEND



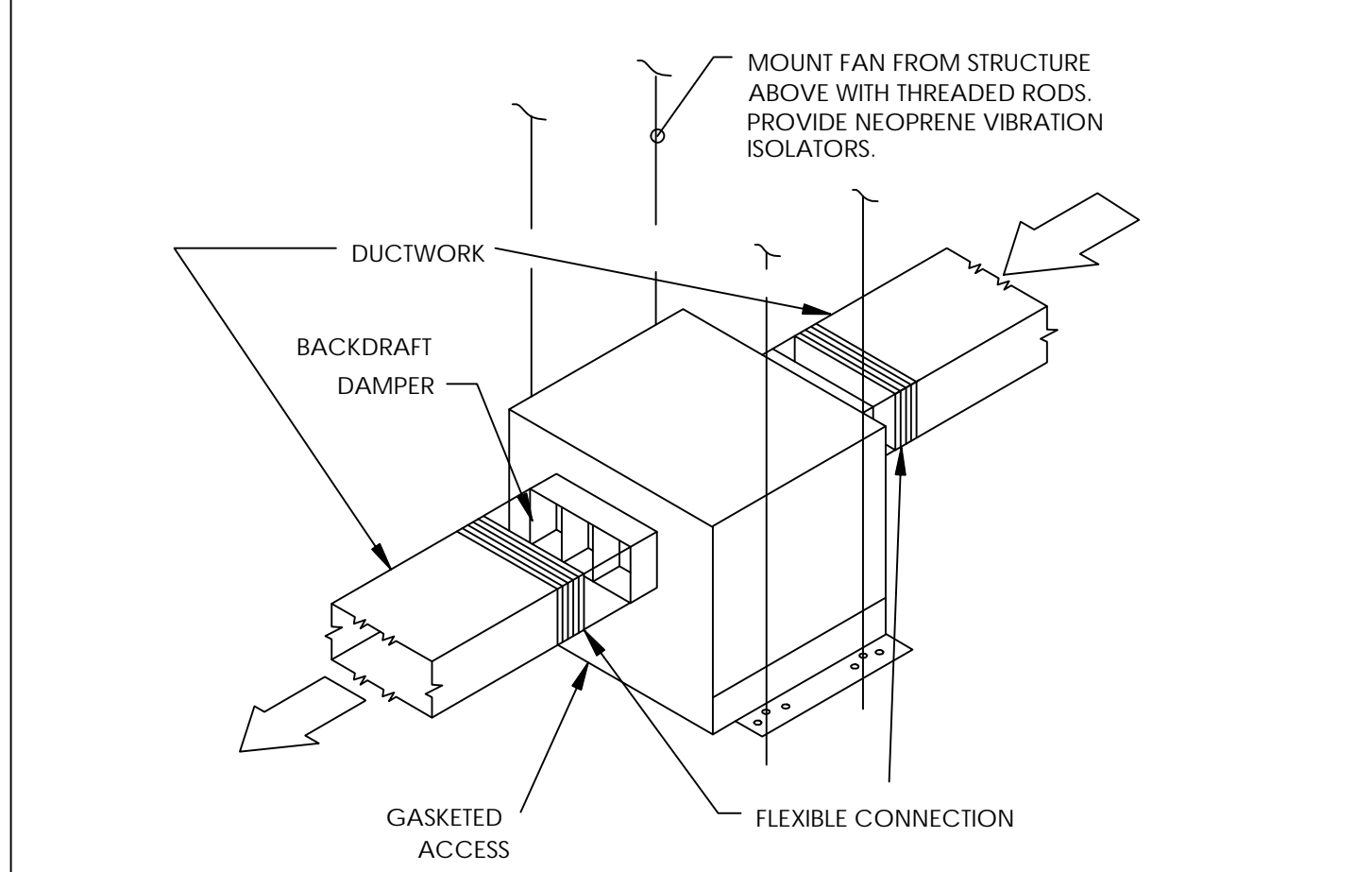
SUPPLY AIR DIFFUSER CONNECTION



OUTSIDE AIR CONDITIONER



CEILING EXHAUST FAN DETAIL



IN-LINE FAN DETAIL

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE: **MECHANICAL GENERAL DETAILS.**

PROJ. NO. PROJ. ENGR. SCALE @ 24X36: NTS

DRAWING NO. REV.

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PLUMBING SPECIFICATIONS

THE WORK INCLUDES MODIFICATION TO THE EXISTING PLUMBING SYSTEM AND PROVIDING NEW MATERIALS, FITTINGS AND ACCESSORIES NECESSARY FOR A COMPLETE FUNCTIONING PLUMBING SYSTEM. THE WORK ALSO INCLUDES ROUGH-IN AND FINAL CONNECTIONS TO FOOD SERVICE EQUIPMENT AND BEVERAGE DISPENSING EQUIPMENT PROVIDED BY OTHERS. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND/OR ORDINANCES AND IS SUBJECT TO INSPECTION. HOOK-UP CHARGES, PERMITS AND ALL OTHER EXPENSES RELATED TO A COMPLETE AND FUNCTIONING PLUMBING SYSTEM ARE INCLUDED AS A PART OF THIS SECTION. WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION. THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THE DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, FIXTURES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD ROUGH-IN DRAWINGS FOR PLUMBING FIXTURE INSTALLATION REQUIREMENTS. COMPLY WITH ALL APPLICABLE ADA INSTALLATION REQUIREMENTS. COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. PIPING SYSTEMS - GENERAL: ALL PIPING SHALL BE RUN PARALLEL TO BUILDING LINES AND SUPPORTED AND ANCHORED AS REQUIRED TO FACILITATE EXPANSION AND CONTRACTION. ALL PIPING SHALL BE CONCEALED EXCEPT IN UNFINISHED SPACES. INSTALL AS REQUIRED TO MEET ALL CONSTRUCTION CONDITIONS AND TO ALLOW FOR INSTALLATION OF OTHER WORK SUCH AS DUCTS AND ELECTRICAL CONDUIT. AT ALL CONNECTIONS BETWEEN FERROUS PIPING AND NONFERROUS PIPING, PROVIDE AN ISOLATING DIALECTIC UNION. ALL HANGERS SHALL BE COMPATIBLE WITH PIPING MATERIAL TO PREVENT CORROSION. PROVIDE ALL FITTINGS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE PLUMBING SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED. FIXTURES/EQUIPMENT FURNISHED BY OTHERS: PLUMBING CONTRACTOR SHALL PROVIDE UTILITY CONNECTIONS REQUIRED SUCH AS WATER, GAS, AIR, SUPPLIES, WASTE OUTLET, TRAPS, ETC. AT ALL PLUMBING TYPE FIXTURES OR EQUIPMENT FURNISHED BY OWNER, GENERAL CONTRACTOR, FOOD SERVICE CONTRACTOR, EQUIPMENT SUPPLIER, ETC. INCLUDED ARE STOP VALVES, ESCUTCHEONS, AND CHROME PLATED BRASS TUBING WITH COMPRESSION FITTINGS. SEWER AND WASTE PIPING: PROVIDE ALL DRAINS AND SEWERS WITHIN THE SPACE WITH CONNECTION TO THE EXISTING DRAINAGE SYSTEMS ON-SITE. SANITARY DRAINAGE PIPING ABOVE FLOOR SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE, FITTINGS AND CONNECTIONS. SANITARY DRAINAGE PIPING BELOW GRADE SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE WITH SOLVENT WELD FITTINGS MAY BE USED (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES). ALL DRAINAGE PIPING SHALL BE UNIFORMLY PITCHED, 1/4" PER FOOT UNLESS OTHERWISE REQUIRED BY EXISTING CONDITIONS, OR INDICATED ON THE DRAWINGS. VENTS: PROVIDE A COMPLETE SYSTEM OF STANDARD WEIGHT CAST IRON NO-HUB VENT RISERS WHERE THE CEILING SPACE IS USED AS A RETURN AIR PLENUM OR USE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES) WHERE THERE IS A DUCTED RETURN AIR SYSTEM. DO NOT USE PVC PIPE IN RETURN AIR PLENUM SPACES. THE VENT SYSTEM SHALL BE CARRIED THROUGH THE ROOF WITH APPROPRIATE FLASHING. CONDENSATE AND INDIRECT DRAIN PIPING: PIPING ABOVE FLOOR SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE, FITTINGS AND CONNECTIONS. PIPING BELOW GRADE SHALL BE CO-EXTRUDED PVC DWV (SCHEDULE 40) PIPE WITH SOLVENT WELD FITTINGS. CLEANOUTS: PROVIDE CLEANOUTS AT THE END OF EACH HORIZONTAL RUN, AND AT THE BASE OF ALL VERTICAL WASTE AND DRAIN PIPES. CLEANOUTS SHALL BE OF THE SAME SIZE AS THE PIPES THEY SERVE, CONFORMING TO CODE REQUIREMENTS. PROVIDE SUITABLE WALL OR FLOOR CLEANOUTS WITH ACCESSORIES TO OBSCURE FROM VIEW. WATER DISTRIBUTION PIPING: LAYOUT WATER PIPING SO THAT THE ENTIRE SYSTEM CAN BE DRAINED. HOT AND COLD WATER PIPING SHALL BE 1/2" MIN. CPVC PIPE WITH SOLVENT FITTING. PROVIDE WATER HAMMER ARRESTERS AT EACH FIXTURE OR GROUP OF FIXTURES AS REQUIRED. INSTALL CHROME PLATED BRASS ESCUTCHEON PLATES AT ALL PENETRATIONS THROUGH FINISHED SURFACES (INCLUDING CABINET INTERIORS). PIPE INSULATION: INSULATE (AS ALLOWED BY CODE) ALL LISTED SERVICE PIPING AS FOLLOWS. DOMESTIC COLD/HOT WATER, HOT WATER RETURN, STORM WATER PIPING. PROVIDE 1" PREFORMED FIBERGLASS, ASJ/SS-11, FLAME SPREAD 25, SMOKE DEVELOPED 50, ASTM C-547. FOR CONDENSATE PIPING PROVIDE 1/2" THICK INSULATION OF SAME CHARACTERISTICS AS LISTED FOR 1" ABOVE. WHERE PERMITTED BY LOCAL CODES, PROVIDE 1/2" SELF-ADHESIVE UNICELLULAR FOAM PIPE INSULATION WITH PRE-FORMED PVC FITTING COVERS - EQUAL TO SELF-ADHESIVE ARMSTRONG 2000 WITH K FACTOR OF 0.27 AT 75 DEGREES MEAN TEMPERATURE. INSULATE ANY EXPOSED CONDENSATE PIPING WITH WASTE TEMPERATURE BELOW 60 DEGREES F. SHUTOFF VALVES, WITH UNIONS SHALL BE PROVIDED FOR SERVICE TO EACH PLUMBING FIXTURE, FOOD SERVICE EQUIPMENT ITEM OR OTHER EQUIPMENT ITEM. TO FACILITATE ISOLATION FOR REPAIR OR REPLACEMENT. VALVES SHALL BE EQUAL TO JENKINS #902-T BALL VALVE, CHROME-FINISHED BRONZE, TEFLON SEATS AND PACKING, 400 LB. W.O.G., SOLDER END. ACCESS PANELS SHALL BE PROVIDED WHERE CONCEALED CONTROL DEVICES, VALVES, ETC. ARE CONCEALED WITHIN WALLS. WHERE ACCESS FOR ADJUSTMENT AND MAINTENANCE IS POSSIBLE THROUGH LAY-IN SUSPENDED CEILINGS, ACCESS PANELS ARE NOT REQUIRED. PIPING SYSTEM- PVC SCHEDULE 40, SCHEDULE 80 AND CPVC PIPE WITH SOLVENT FITTINGS SHALL BE USED WHERE PERMITTED BY CODE/LOCAL AUTHORITIES. INSTALLATION: THOROUGHLY CLEAN ITEMS BEFORE INSTALLATION. CAP PIPE OPENINGS TO EXCLUDE DIRT UNTIL FIXTURES ARE INSTALLED AND FINAL CONNECTIONS HAVE BEEN MADE. PROCEED AS RAPIDLY AS CONSTRUCTION WILL PERMIT. SET FIXTURES LEVEL AND IN PROPER ALIGNMENT. INSTALL SUPPLIES IN PROPER ALIGNMENT WITH FIXTURES. INSTALL SILICONE SEALANT BETWEEN FIXTURES AND ADJACENT MATERIAL, FOR SANITARY JOINT, AND OMIT ESCUTCHEONS. REPAIR EXISTING PLUMBING SYSTEM COMPONENTS DAMAGED BY CONSTRUCTION OPERATIONS AND RESTORE TO ORIGINAL CONDITIONS. TEST WATER SYSTEM UNDER 150 PSIG HYDROSTATIC PRESSURE, FOR FOUR (4) HOURS MINIMUM. WHEN TESTING INDICATES MATERIALS OR WORKMANSHIP IS DEFICIENT, REPLACE OR REPAIR AS REQUIRED, AND REPEAT TEST UNTIL STANDARDS ARE ACHIEVED. ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOFING WARRANTY.

GENERAL NOTES

- THE INTENT OF THESE PLANS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES NECESSARY TO FURNISH, INSTALL, TEST, AND ADJUST A COMPLETE WORKABLE PLUMBING INSTALLATION AS SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS, BUT NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE INTENT THEREOF.
- THE ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE 2006 UNIFORM PLUMBING CODE, 2006 INTERNATIONAL BUILDING CODE, 2006 INTERNATIONAL ENERGY CONSERVATION CODE AND ALL OTHER APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION. IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.
- COORDINATE ENTIRE INSTALLATION OF THE PLUMBING SYSTEM WITH THE WORK OF OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATION. FIELD VERIFY ALL DIMENSIONS AND CONDITIONS. REPORT ANY DISCREPANCIES, IN WRITING, TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.
- CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS WITH ALL CHANGES NOTED THEREON AT THE COMPLETION OF THE PROJECT IN ACCORDANCE WITH THE SPECIFICATIONS. PROVIDE ONE YEAR WARRANTY ON ALL PARTS AND LABOR.
- THE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW SCOPE. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES TO PROVIDE THE BEST ARRANGEMENT OF ALL DUCT, PIPE, CONDUIT, ETC. ALL CUTTING AND PATCHING OF THE EXISTING STRUCTURE SHALL BE PROVIDED UNDER OTHER SECTIONS OF THE WORK. PROVIDE NECESSARY REQUIREMENTS TO THE PROJECT SUPERINTENDENT.
- ALL HOT WATER PIPING AND RECIRCULATION PIPING (EXCEPT RUNOUTS 12 FT. OR SHORTER TO INDIVIDUAL FIXTURES) SHALL BE INSULATED TO MEET THE REQUIREMENTS OF THE 2006 INTERNATIONAL ENERGY CONSERVATION CODE
- CONDENSATE DRAINS SHALL BE PROVIDED FOR EACH AIR CONDITIONING UNIT. HORIZONTAL CONDENSATE DRAINS ABOVE ANY CEILING SHALL BE INSULATED WITH MIN. 3/8" THICK CLOSED CELL INSULATION.
- PIPING:
 - WASTE, VENT, AND STORM DRAIN PIPING SHALL BE CO-EXTRUDED PVC (SCHEDULE 40) PIPE
 - WATER PIPE SHALL BE CPVC PIPE
 - CONDENSATE PIPING SHALL BE CO-EXTRUDED PVC (SCHEDULE 40) PIPE
 - INSIDE GAS PIPING SHALL BE BLACK IRON SCHEDULE 40 WITH MALLEABLE IRON FITTINGS. OUTSIDE SHALL BE GALVANIZED IRON SCHEDULE 40 WITH GALVANIZED FITTINGS. GAS LINE TO BE PAINTED GRAY IN COLOR. A 24 HOUR METERED GAS TEST SHALL BE REQUIRED.
 - ALL PIPING NOT ENCLOSED IN CONDITION SPACE OR AT EXTERIOR WALLS SHALL BE INSULATED.
 - PIPING: PVC SCHEDULE 40, SCHEDULE 80 AND CPVC PIPING WITH SOLVENT WELD FITTINGS SHALL BE USED WHERE PERMITTED BY CODE/LOCAL AUTHORITIES
- ALL VENTS OR EXHAUSTS SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. ABOVE ANY WINDOW, DOOR, OPENING, OR AIR INTAKE.
- CLEANOUTS SHALL BE INSTALLED PER THE UNIFORM PLUMBING CODE.
- PROVIDE WATER TIGHT FLASHINGS WHEREVER PIPES PASS THROUGH EXTERIOR WALLS, ROOFS, OR FLOORS.
- PROVIDE ISOLATION FOR ALL PIPES THAT COME IN CONTACT WITH THE STRUCTURE.
- LOCATION OF EXISTING UTILITIES AND POINTS OF CONNECTION ARE APPROXIMATE. CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND SERVICES PRIOR TO STARTING WORK OF THIS SECTION. IF INDICATED POINTS OF CONNECTION CANNOT BE MADE TO EXISTING UTILITIES AS FOUND, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO INSTALLING ANY WORK WHICH MAY BE AFFECTED.
- VALVES SHALL BE NIBCO, JENKINS, HAMMOND, RED & WHITE OR APPROVED EQUAL. SERVICE PRESSURE SHALL BE SUITABLE FOR SERVICE INTENDED. THE MAIN WATER SHUT OFF VALVE SHALL BE A FULL PORT BALL TYPE AND APPROVED FOR SERVICE INTENDED.
- CONTRACTOR SHALL PROVIDE ALL SHUT OFF VALVES AS NECESSARY TO ISOLATE ANY EQUIPMENT, PLUMBING ITEMS, OR FIXTURES, THAT MAY NEED SERVICING OR ARE SUBJECT TO FAILURE WHETHER OR NOT SUCH VALVES ARE SHOWN ON THE DRAWINGS.
- PROVIDE HANGERS AND SUPPORTS AS REQUIRED. PLUMBERS TAPE AND WIRE ARE NOT ACCEPTABLE.
- CONTRACTOR IS RESPONSIBLE FOR HIS OWN TRENCHING, BACKFILL, AND COMPACTION OF TRENCHES NECESSARY TO COMPLETE HIS SCOPE OF WORK. BACKFILLED TRENCHES SHALL BE RETURNED TO THEIR ORIGINAL GRADE UNLESS NOTED OTHERWISE.
- CONTRACTOR SHALL AFFIX A MAINTENANCE LABEL TO ALL EQUIPMENT REQUIRING ROUTINE MAINTENANCE AND SHALL PROVIDE MAINTENANCE AND OPERATIONAL MANUALS IN ACCORDANCE WITH THE SPECIFICATIONS.
- ALL EQUIPMENT THAT REQUIRES KEYS OR SPECIAL TOOLS TO OPERATE SHALL SUPPLY THE OWNER WITH TWO OF ANY SUCH KEYS OR TOOLS FOR EACH PIECE OF EQUIPMENT THAT REQUIRE THE SAME.
- ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE APPROVAL, IN WRITING, OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK.
- ALL PLUMBING, ELECTRICAL, AND GAS LINES SHALL BE CONCEALED WITHIN THE BUILDING STRUCTURE TO AS GREAT EXTENT AS POSSIBLE. ALL LINES NOT CONCEALED SHALL BE SECURED 6" OFF THE FLOOR AND 3/4" FROM THE WALLS USING STANDOFF BRACKETS
- AN APPROVED BACKFLOW PREVENTOR SHALL BE PROPERLY INSTALLED UPSTREAM OF ANY POTENTIAL HAZARD BETWEEN THE POTABLE WATER SUPPLY AND SOURCE OF CONTAMINATION.
- WATER SUPPLY CARBONATORS SHALL BE PROTECTED BY AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTOR. THE RELIEF VALVE SHALL DRAIN IN-DIRECTLY TO A FLOOR SINK WITH A 1" MIN. AIR GAP.

PLUMBING LEGEND

SYMBOL	ABBRV.	DESCRIPTION
	SS or W	NEW SEWER OR WASTE
	V	NEW VENT
	CW	NEW COLD WATER
	HW	NEW HOT WATER
	G	NEW GAS
	CD	NEW CONDENSATE DRAIN
	CA	COMPRESSED AIR
⊕	FCO	FLOOR CLEANOUT
⊕	WCO	WALL CLEANOUT
⊕	FD	FLOOR DRAIN
⊕	FS	FLOOR SINK
⊕	TP	TRAP PRIMER & TRAP PRIMER PIPING
⊕	SOV	SHUT-OFF VALVE
⊕	CV	CHECK VALVE
⊕	PRV	BACKFLOW PREVENTER W SOVS
⊕	T & P	
⊕	DN	PIPE DOWN
⊕	UP	PIPE UP
⊕	POC	POINT OF CONNECTION
⊕	-	PLUMBING NOTE CALL-OUT
⊕	ABV	ABOVE
⊕	AFF	ABOVE FINISH FLOOR
⊕	AP	ACCESS PANEL
⊕	BEL	BELOW
⊕	BLDG	BUILDING
⊕	CLG	CEILING
⊕	CONT	CONTINUATION
⊕	EL	ELEVATION
⊕	FIN	FINISH
⊕	FL	FLOOR
⊕	GR	GRADE
⊕	NTS	NOT TO SCALE
⊕	OC	ON CENTER
⊕	S= %	SLOPE AT A PERCENTAGE
⊕	SHT	SHEET
⊕	TYP	TYPICAL
⊕	VTR	VENT THRU ROOF

PLUMBING / GENERAL NOTES

BATHTUBS AND WHIRLPOOL BATHTUBS. THE MAX. HOT WATER TEMPERATURE DISCHARGING SHALL BE LIMITED TO 120 DEGREES.

BATHTUBS WASTE OPENING IN FLOOR OVER CRAWL SPACES SHALL BE PROTECTED BY A METAL SCREEN NOT EXCEEDING 12" OR SOLID COVER.

SHOWERS AND TUB-SHOWERS COMBINATIONS IN ALL BUILDINGS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE, THERMOSTATIC, OR COMBINATION OF BOTH THAT PROVIDE SCALD AND THERMAL SHOCK PROTECTION. VALVES SHALL BE ADJUSTED TO DELIVER A MAXIMUM MIXED WATER SETTING OF 120 DEGREES FAHRENHEIT. THE WATER HEATER THERMOSTAT SHALL NOT BE CONSIDERED A SUITABLE CONTROL FOR MEETING THIS PROVISION. VERIFY AND WHERE WATER PRESSURE EXCEEDS 80 PSI AN APPROVED PRESSURE REGULATOR PRECEDED BY AN ADEQUATE STRAINER SHALL BE INSTALLED

1-INSTALL TEMPERATURE AND PRESSURE RELIEF VALVE WITH MINIMUM 3/4" DRAIN PIPE AND TERMINATE TO THE EXTERIOR OF THE BUILDING OVER WINDOW, DOOR OR VISIBLE LOCATION. DISCHARGE FROM A RELIEF VALVE INTO A WATER HEATER PAN SHALL BE PROHIBITED

2-PROVIDE (ON THE PLANS) A GAS PIPING DIAGRAM OF THE GAS PIPING SYSTEM THAT INCLUDES ALL PIPE SIZES, PIPE LENGTHS AND BTU RATINGS.

3-SUBMIT GAS LOAD CALCULATIONS IN ACCORDANCE WITH IPC TABLE 12-8 TO VERIFY THE PIPE SIZES ARE ADEQUATE FOR THE MAXIMUM DELIVERY CAPACITY OF CUBIC FEET OF GAS PER HOUR.

4- A WHOLE HOUSE GAS TEST IS REQUIRED UPON COMPLETION OF THE INSTALLATION, ALTERATION, OR REPAIR OF ANY GAS PIPING. THE CITY SHALL BE NOTIFIED WHEN GAS PIPING IS READY FOR INSPECTION. 5- 2 GPM SHOWER FIXTURE, MAX. 1.5 GPM BATHROOM FAUCET, MAX. 2 GPM KITCHEN FAUCET, AND MAX 1.28 WATER CLOSET TO CONFORM TO CITY GREEN REQUIREMENTS.

BATHROOMS: PROVIDE AN EXHAUST FAN (AT LEAST 50 CFM) DUCTED TO THE OUTSIDE (MINIMUM 4" DIAMETER FLEX DUCT WITH A MAXIMUM LENGTH OF 70') WITH A MINIMUM VENTILATION RATE OF 100 CFM. IDENTIFY THE REQUIREMENT FOR A BACKDRAFT DAMPER ON THE DUCT, AN ENERGY STAR COMPLIANT EXHAUST FAN THAT IS CONTROLLED BY A HUMIDITY SENSOR THAT IS CAPABLE OF BEING ADJUSTED BETWEEN ≤ 50-PERCENT TO 80-PERCENT HUMIDITY; AND A SEPARATE SWITCH FROM THE LIGHT UNLESS THE FAN IS ALLOWED TO OPERATE WITH THE LIGHT SWITCHED OFF.

6-NOTE THAT ALL PLUMBING VENTS SHALL TERMINATE NOT LESS THAN 6" ABOVE ROOF NOR LESS THAN 1' FROM ANY VERTICAL SURFACE. VENTS SHALL TERMINATE NOT LESS THAN 10" FROM OR 3' ABOVE ANY WINDOW, DOOR OPENING AIR INTAKE, OR VENT SHAFT NOR 3' FROM LOT LINE. IF WATER PRESSURE EXCEEDS 80 PSI, AND EXPANSION TANK AND AN APPROVED PRESSURE REGULATOR SHALL BE INSTALLED.

NON-REMOVABLE BACK FLOW PRE-VENTER OR BIBB-TYPE VACUUM BREAKER WILL BE INSTALLED ON ALL EXTERIOR HOSE BIBS. HOT WATER RE-CIRCULATING SYSTEM IS INSTALLED, THE ENTIRE LENGTH OF HOT WATER PIPES SHALL BE INSULATED.

NOTES:

- Projects which disturb less than one acre of soil shall manage storm water drainage during construction by one of the following: A. Retention basins. B. Where storm water is conveyed to a public drainage system, water shall be filtered by use of a barrier system, wattle or other approved method.
- Site grading or drainage system will manage all surface water flows to keep water from entering buildings (sewers, water collection, French drains, etc.). CGC Section 4.106.3. Exception: Additions not altering the drainage path.
- When a shower is provided with multiple shower heads, the sum of flow to all the heads shall not exceed 1.8 gpm @ 80 psi, or the shower shall be designed so that only one head is on at a time. CGC Section 4.303.1.3.2.
- Landscape irrigation water use shall have weather or soil based controllers. CGC Section 4.304.1.
- The plans that a minimum of 65% of construction waste is to be recycled. CGC Section 4.408.1.
- The contractor shall submit a Construction Waste Management Plan, per CGC Section 4.408.2.
- The builder is to provide an operation manual (containing information for maintaining appliances, etc.) for the owner at the time of final inspection. CGC Section 4.410.1.
- The gas fireplace(s) shall be a direct-vent sealed-combustion type. Woodstove or pellet stoves must be US EPA Phase II rated appliances. CGC Section 4.503.1.

WATER SAVING STANDARDS.

THE WATER SAVING PERFORMANCE STANDARDS FOR A PLUMBING FIXTURE ARE THOSE ESTABLISHED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), CURRENT REVISION, OR THE FOLLOWING STANDARDS, WHICHEVER ARE THE MORE RESTRICTIVE

- THE MAXIMUM FLOW FROM A SINK OR LAVATORY FAUCET OR A FAUCET AERATOR SHALL NOT EXCEED 0.5 GALLONS OF WATER PER MINUTE AT A PRESSURE OF 60 POUNDS PER SQUARE INCH WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES.
- THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A TOILET SHALL NOT EXCEED AN AVERAGE OF 1.28 GALLONS WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES
- THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A URINAL AND THE ASSOCIATED FLUSH VALVE, IF ANY, SHALL NOT EXCEED AN AVERAGE OF ONE GALLON WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES

SPECIAL NOTICE TO CONTRACTORS

- ALL CONTRACTORS (GENERAL CONTRACTOR AND SUB-CONTRACTORS) BIDDING THIS PROJECT ARE REQUIRED TO VISIT THE JOB SITE AND VERIFY THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. CONTRACTORS ARE TO CAREFULLY REVIEW ALL CONSTRUCTION DOCUMENTS AND NOTE ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED AT THE JOB SITE PRIOR TO SUBMISSION OF ANY BID. THE BUILDING OWNER REPRESENTATIVE LISTED BELOW MAY BE CONTACTED FOR ACCESS TO THE JOB SITE.
- CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION AND CONDITION OF ALL POINTS OF CONNECTION, LOCATION AND CONDITION OF ALL BUILDING (ROOF/FLOOR/CEILING) PENETRATIONS, LOCATION AND CONDITION OF ALL UTILITIES AND BUILDING SYSTEMS INCLUDING, BUT NOT LIMITED TO, GAS, WATER, SEWER, VENT, ELECTRICAL, BUILDING MECHANICAL SYSTEMS, DUCT CONNECTIONS, EXHAUST/OUTSIDE AIR CONNECTIONS, SECURITY, FIRE ALARM, DATA, AND PHONE PRIOR TO SUBMISSION OF THEIR BID.
- ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED SHALL BE BROUGHT TO THE ATTENTION, IN WRITING, TO THE ARCHITECT AND/OR ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

CLIENT:

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- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO	DESCRIPTION	DATE	BY

PROJECT:

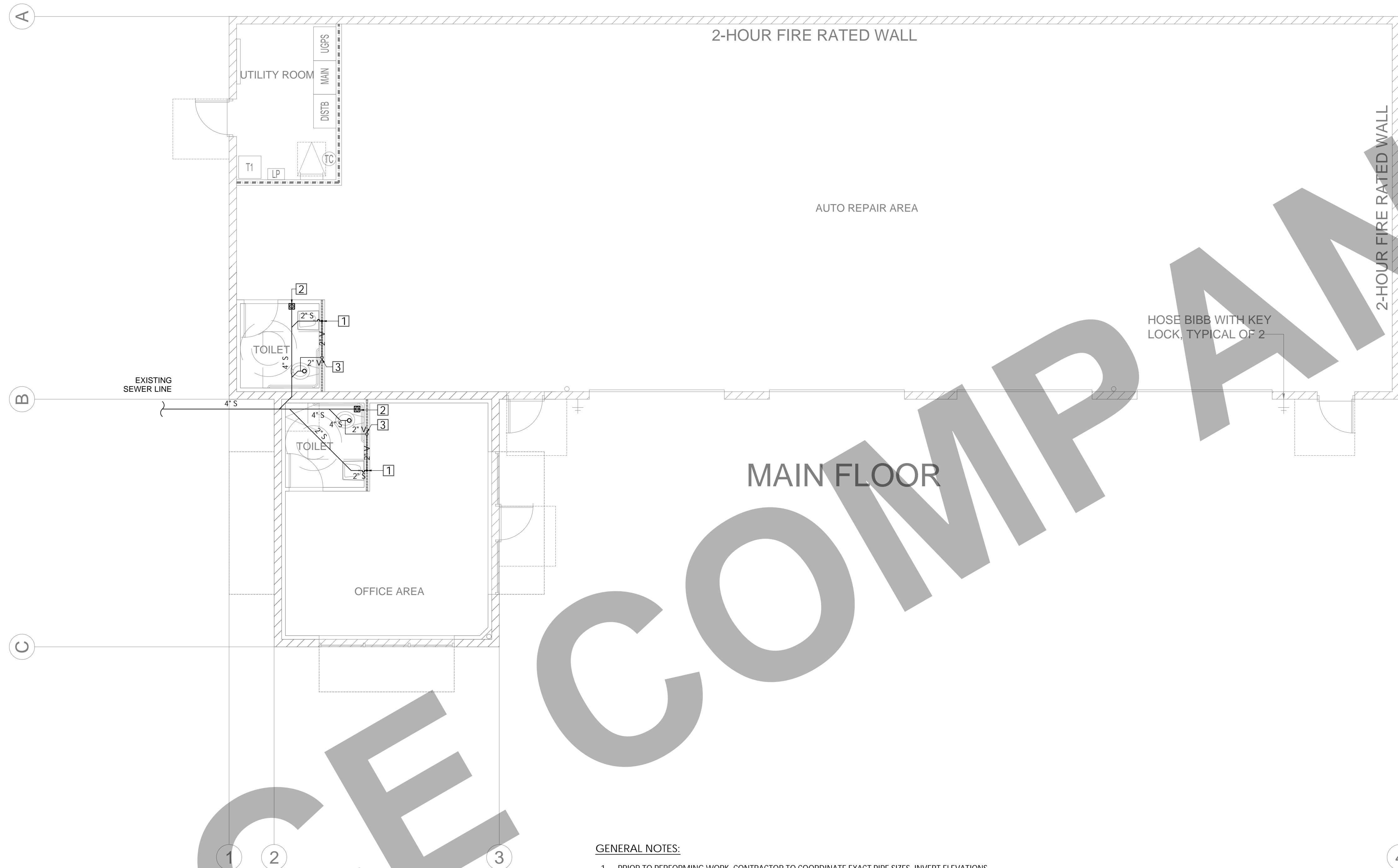
TITLE: PLUMBING LIST OF SYMBOLS AND GENERAL NOTES

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		NTS

DRAWING NO.

REV.

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GENERAL NOTES:

1. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE EXACT PIPE SIZES, INVERT ELEVATIONS, PRESSURES FOR LOCATIONS OF ANY SEWER, WATER PIPING AND WATER METER WITH CIVIL UTILITIES DRAWINGS, AND ANY OTHER ENGINEER AS APPLICABLE.
2. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE PIPE ROUTING WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS.
3. REFER TO MECHANICAL PLANS FOR PLUMBING SPECIFICATION OF MATERIAL, INSULATION AND INSTALLATION REQUIREMENTS.
4. CONTRACTOR IS RESPONSIBLE FOR ROUGH-IN COORDINATION AND LOCATIONS. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS AND FIXTURES.
5. CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED CUTTING AND PATCHING.
6. ALL NOTCHING, BORING, AND CUTTING OF HOLES IN WALL STUDS AND FLOOR JOISTS SHALL BE PERFORMED BASED ON THE LATEST ADOPTED AND APPROVED EDITION OF THE BUILDING CODE.
7. ALL PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
8. ALL WATER PIPING SHALL BE INSTALLED ON INTERIOR SIDE OF THE BUILDING WALL INSULATION.
9. CONTRACTOR SHALL PROVIDE VALVES LOCATED ABOVE LAY-IN CEILING OR 24"x24" CEILING ACCESS PANEL COORDINATE FINAL LOCATION AND SIZE WITH ARCHITECT. PROVIDE BALANCING VALVES FOR HOT WATER RETURN SYSTEM AS REQUIRED.
10. ALL SANITARY DRAINAGE PIPING 3" AND SMALLER SHALL BE SLOPED AT $\frac{1}{8}$ " PER FOOT. PIPING 4" AND LARGER SHALL BE SLOPED AT $\frac{1}{4}$ " PER FOOT.
11. ALL CONDENSATE DRAIN PIPING SHALL BE SLOPED AT $\frac{1}{8}$ " PER FOOT AND PROVIDE ACCESSIBLE CLEANOUTS AT ALL CHANGES OF DIRECTION.
12. VENTS THAT TERMINATE AT THE ROOF SHALL BE A MINIMUM OF 10' FROM ANY FRESH AIR INTAKE.
13. REFER TO THE PLUMBING DIAGRAMS FOR GUIDANCE OF INSTALLATION INTENT. CONTRACTOR IS TO PROVIDE ALL COMPONENTS NECESSARY TO MEET THE DESIGN INTENT, WHETHER SHOWN IN DIAGRAM OR NOT.

SANITARY SHEET NOTES:

- 1 — WASTE DROP AND 2" VENT RISE.
- 2 — 4" FLOOR CLEAN-OUT.
- 3 — 3" VENT STACK TO ABOVE.
- 4 — 3" FLOOR DRAIN.
- 5 — 4" SOIL DROP FROM ABOVE.
- 6 — WASTE DROP
- 7 — GRADE CLEAN-OUT.
- 8 — 3" SOIL DROP FROM ABOVE.
- 9 — 3" SOIL DROP TO BELOW.
- 10 — 4" SOIL DROP TO BELOW.

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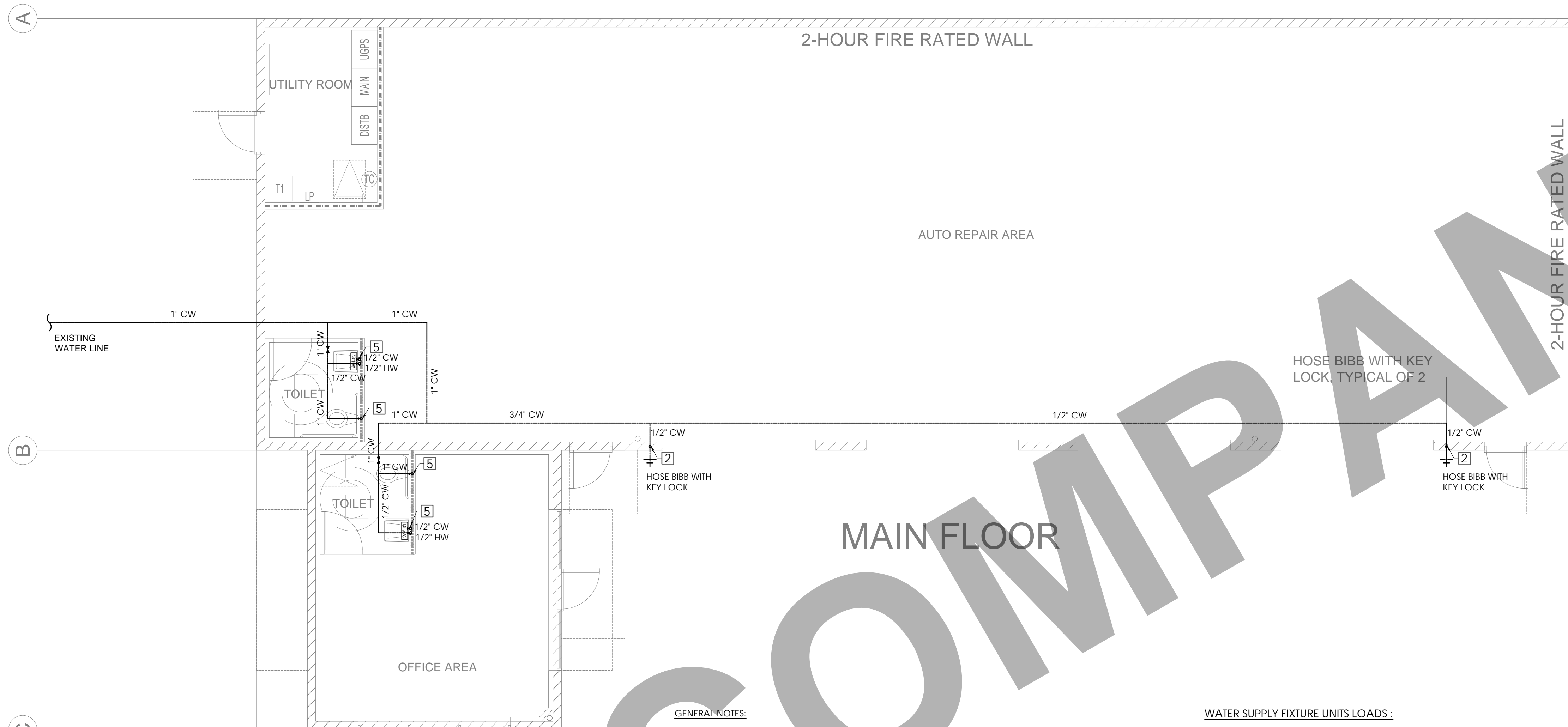
PROJECT:

TITLE:
SANITARY LAYOUTS

PROJ. NO. PROJ. ENGR. SCALE @ 24X36:
3/16"=1'-0"

DRAWING NO. REV.

P 2 . 0



GENERAL NOTES:

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9. CONTRACTOR SHALL PROVIDE VALVES LOCATED ABOVE LAY-IN CEILING OR 24"x24" CEILING ACCESS PANEL COORDINATE FINAL LOCATION AND SIZE WITH ARCHITECT. PROVIDE BALANCING VALVES FOR HOT WATER RETURN SYSTEM AS REQUIRED.
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WATER SUPPLY FIXTURE UNITS LOADS:

FIXTURE	W.S.F.U	QTY.	TOTAL W.S.F.U
HOSE BIBB	1.0	2	2.0
WATER CLOSET	2.5	2	5.0
LAVATORY	1.0	2	2.0
TOTAL =			9.0

TOTAL BUILDING WATER LOAD

DESCRIPTION	LOAD WSFU	PIPE SIZE PEX
DCW	8	3/4"
DHW	1	1/2"
TOT. COMBINED	9.0	1"

WATER SUPPLY SHEET NOTES:

- 1 — DCW, DHW RISE TO HIGH LEVEL.
- 2 — DCW & DHW DROP IN WALL.
- 3 — DCW FROM BELOW GRADE UP IN WALL.
- 4 — DHW DOWN TO BELOW GRADE.
- 5 — DCW/DHW/RHW TO FIXTURE CONNECTION.

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WATER LAYOUTS

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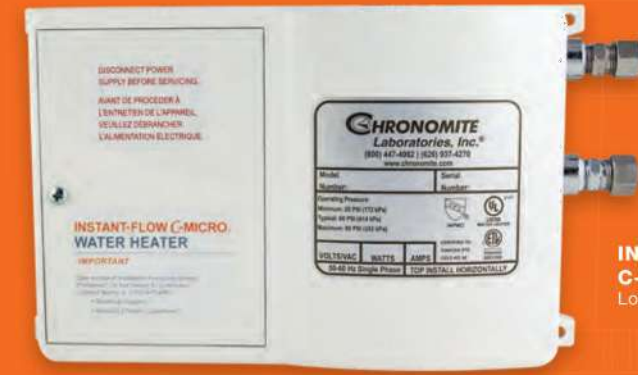
DRAWING NO. REV.

P 3 . 0



POINT-OF-USE WATER HEATERS

HEATING WATER FOR OVER 50 YEARS



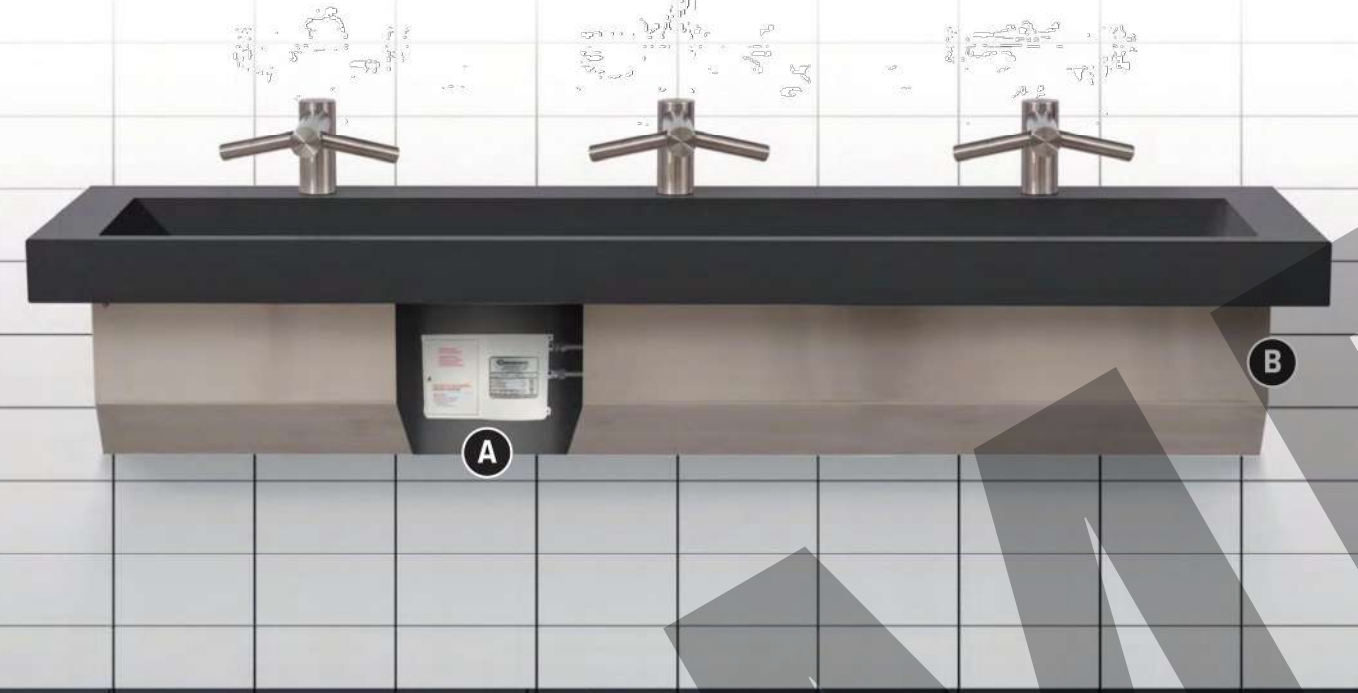
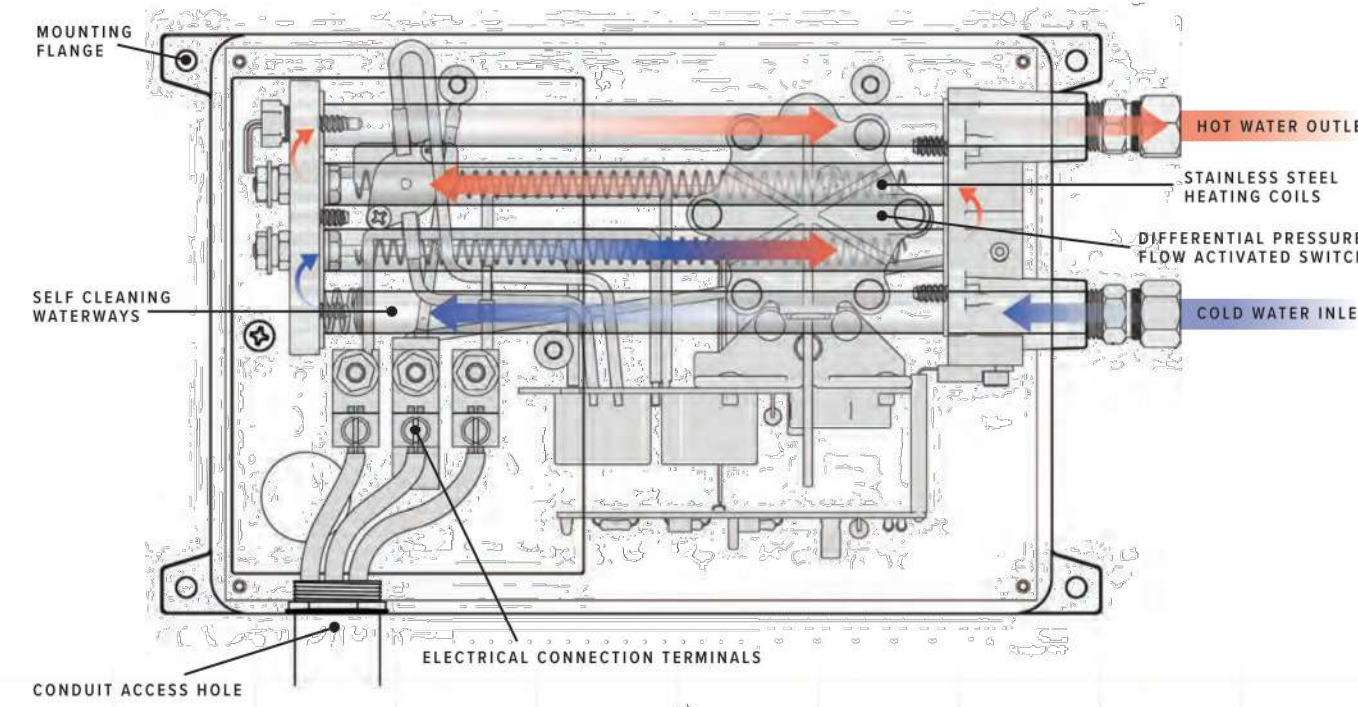
INSTANT-FLOW® C-MICRO (CM SERIES)
Low Activation - 0.20 gpm

MINI TANK (CMT SERIES)
1.3 to 6.0 Gallons



BOXER® (ERB SERIES)
2.8 to 30 gpm

HOW IT WORKS



A. CHRONOMITE® - INSTANT-FLOW® C-MICRO CM SERIES TANKLESS WATER HEATER
B. NEO-METRO® - 9153 SLAB EDGE WITH DYSON® AIRBLADE WASH-DRY

1.8 - 9.6 KW

INSTANT-FLOW® SR MODEL SR SERIES

POINT-OF-USE ELECTRIC TANKLESS WATER HEATER



INSTANT FLOW® - SR SERIES										
LOW FLOW						°F TEMPERATURE RISE @				
MODEL	ACTIVATION GPM	VOLTS	KW	AMPS	90°C WIRE	0.35 GPM	0.5 GPM	1.0 GPM	1.5 GPM	2.0 GPM
SR-15L/120	0.35	120	1.80	15	14 AWG	35	25	12	8	6
SR-20L/120	0.35	120	2.40	20	12 AWG	47	31	16	11	8
SR-30L/120	0.35	120	3.60	30	10 AWG	70	49	25	16	12
SR-30L/208	0.35	208	4.16	20	12 AWG	81	57	28	19	14
SR-20L/240	0.35	240	4.80	20	12 AWG	90+	66	33	22	16
SR-15L/277	0.35	277	4.15	15	14 AWG	81	57	28	19	14
SR-20L/277	0.35	277	5.54	20	12 AWG	90+	76	38	25	19

INSTANT FLOW® - SR SERIES										
STANDARD FLOW						°F TEMPERATURE RISE @				
MODEL	ACTIVATION GPM	VOLTS	KW	AMPS	90°C WIRE	0.65 GPM	1.0 GPM	1.5 GPM	2.0 GPM	
SR-30/208	0.65	208	6.24	30	10 AWG	66	41	28	21	
SR-40/208	0.65	208	8.32	40	8 AWG	87	57	38	28	
SR-30/240	0.65	240	7.20	30	10 AWG	76	49	33	25	
SR-40/240	0.65	240	9.60	40	8 AWG	90+	66	44	33	
SR-30/277	0.65	277	8.31	30	10 AWG	87	57	38	28	

Note: Local plumbing and electrical codes must be followed for the installation of the water heater and accessories.

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SCHEDULE No. 1

ELECTRIC TANKLESS WATER HEATER SCHEDULE

TAG	WH-01:WH-02
LOCATION	AS SHOWN
MANUFACTURER	CHRONOMITE
MODEL	SR-15L/120
TYPE	ELECTRIC
VOLTS	120
POWER KW	1.80
AMPS	15
WIDTH x DEPTH (in)	9-5/8" x 2-3/4"
HEIGHT (in)	5-3/4"

Design calculation sheet

Project no:	Date:	7/10/2022	Sheet no.:	1 of 1	Computed by:	Innodez
Subject:	Razo Proposed Commercial Center			Checked by:	Innodez	
Hot Water Calculation				Approved by: Innodez		
Application Type		Industrial Plant				
Water Temperature		T _{in} = 50 °F = 10 °C				
		T _{out} = 140 °F = 60 °C				
		ΔT = 90 °F = 50 °C				
Fixture		GPH	QTY.			
Basin, Private lavatory		2	x	1	=	2 gph
Other		GPH	QTY.			
		Maximum Possible Demand	=	2	gph	
		Demand Factor (Custom)	=	0.3	gph	
		Maximum Probable Demand	=	0.6	gph	
		Maximum Probable Demand	=	0.01	gpm	
		Heater Recovery Capacity	=	0.00	L/s	
		Heater Recovery Capacity	=	0.01	gpm	
		Storage Factor (Custom)	=	0.8		
		Storage Tank Capacity	=	0.48	gal	
			=	1.9	liters	
		Actual Selection	=	2	Liters	
Heater or Coil	=	500	x	gpm	x	ΔT / Efficiency
Capacity	=	500	x	0.01	x	90 / 0.9 = 500
						btu/hr
						= 0.2
						kW
						Actual Selection = 1
						kW

IDEAL APPLICATIONS

Manual handwashing faucets, kitchen sinks, bar sinks, utility sinks, and hand set showers.

Chronomite Instant-Flow® SR Low-Flow Electric Tankless Water Heaters are designed to provide reliable instant hot water when installed at the point of use. This instant electric tankless water heater is perfect for lavatories and sinks. It is ideal for two-handle and single-handle faucets and is the perfect under-the-sink water heater. The SR series is designed to provide a predetermined temperature rise to the incoming cold water and to increase the water outlet temperature by manually increasing/decreasing water flow.

Instant-Flow® SR Electric Water Heaters meet the ADA barrier-free requirements and are 99% energy efficient.

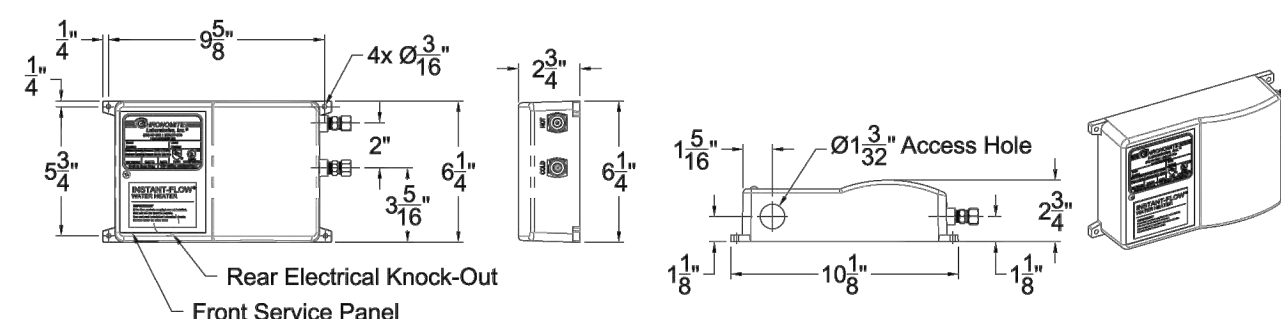
Chronomite Electric Tankless Water Heaters are the space-saving solution for point-of-use, under-the-counter sink and basin applications where instant hot water is needed. Chronomite Electric Tankless Water Heaters are designed to be lightweight, compact and are constructed with a durable metal housing for optimal vandal resistance. No pressure and temperature relief valves are needed (unless required by code), saving time and money on installation.

FOR OPTIMAL PERFORMANCE, CHRONOMITE ELECTRIC TANKLESS WATER HEATERS SHOULD ALWAYS BE INSTALLED WITHIN 18 INCHES OF THE POINT OF USE.

CHRONOMITE INSTANT-FLOW® SR ELECTRIC TANKLESS WATER HEATER FEATURES

- 99% Energy Efficient
- Compact Size
- Easy to Install
- Low Installation Cost
- Unlimited Hot Water
- Meets ADA Requirements
- Optional Stainless Steel Housing

SUFFIX OPTION	DESCRIPTION
Standard housing	Aluminum
P	ABS Housing
SS	Satin Finish Stainless housing
SSP	Polished Stainless Housing
NPT08	1/2" Male NPT Connection
NPT12	3/4" Male NPT Connection - ABS only
2095-1	Disconnect Switch



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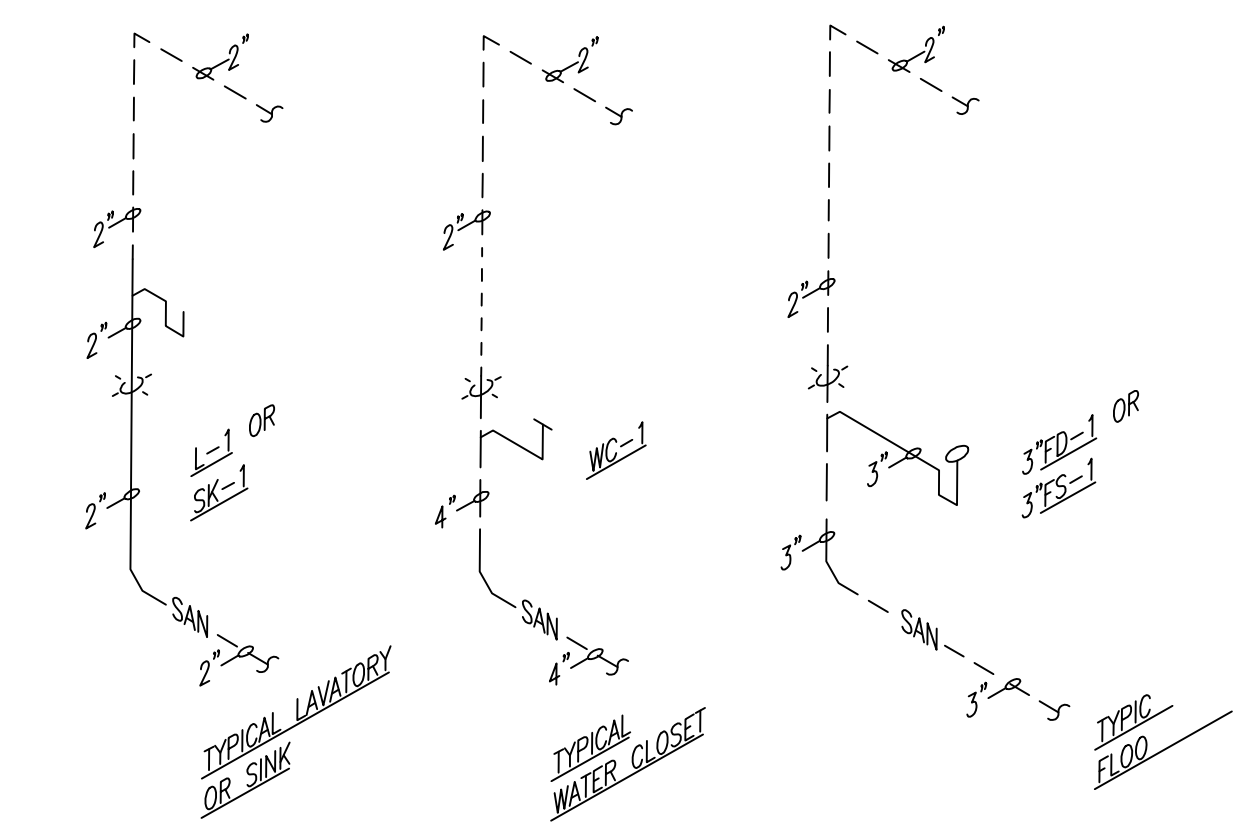
PROJECT:

TITLE:
HOT WATER CALCS. AND CATALOG. AND SCHEDULES

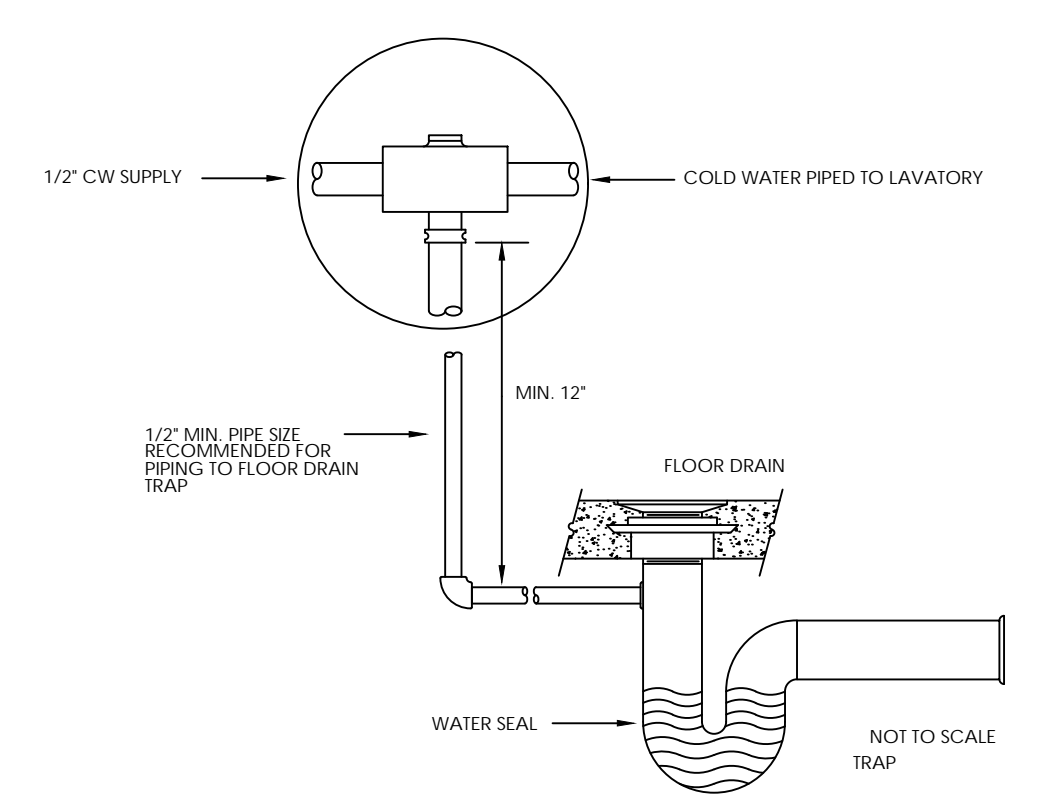
PROJ. NO. PROJ. ENGR. SCALE @ 24X36:
NTS

DRAWING NO. REV.

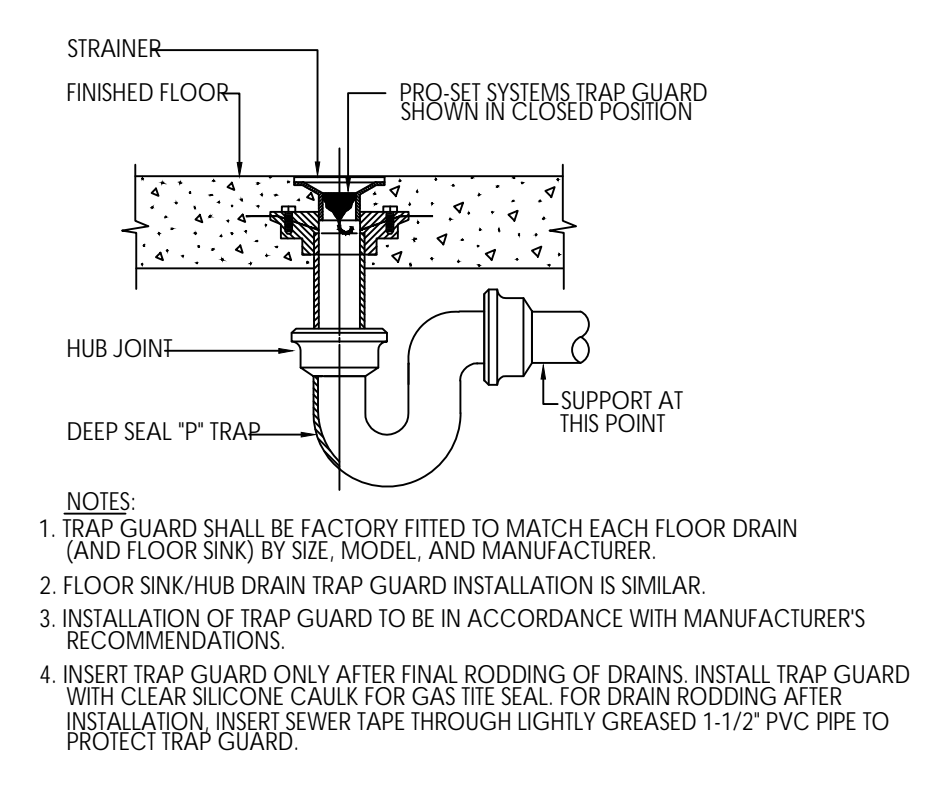
P 4 . 0



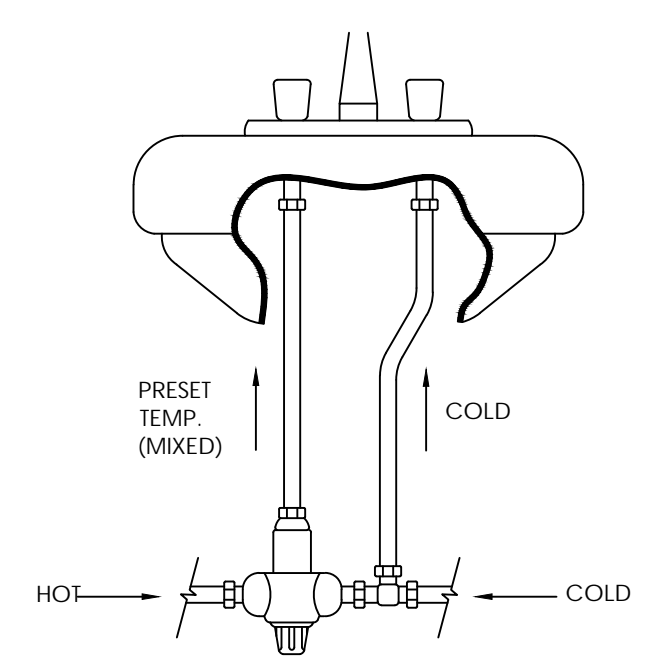
1 TYPICAL WASTE AND VENT RISERS
SCALE: NONE



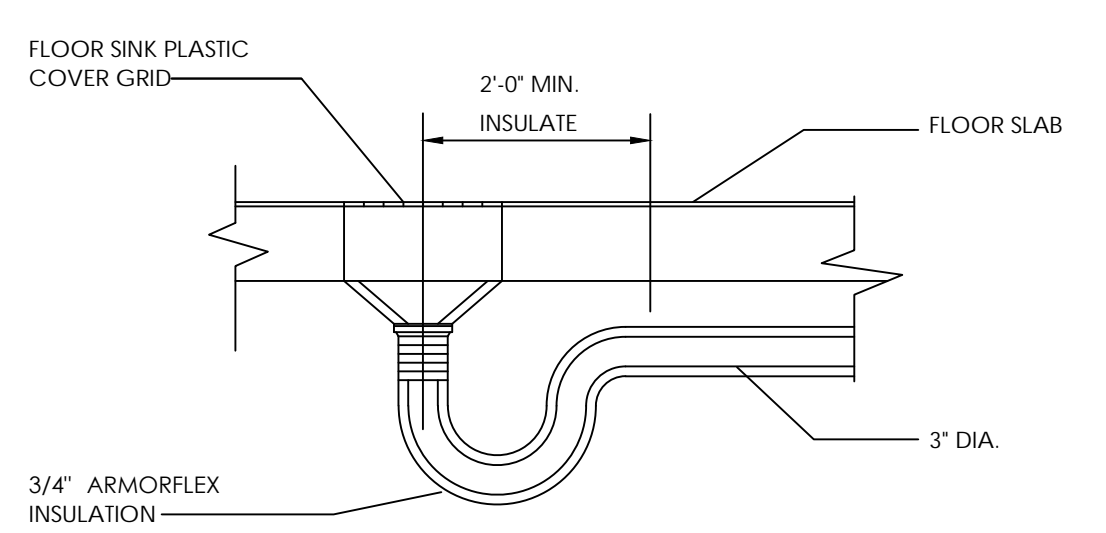
2 TRAP PRIMER
SCALE: NONE



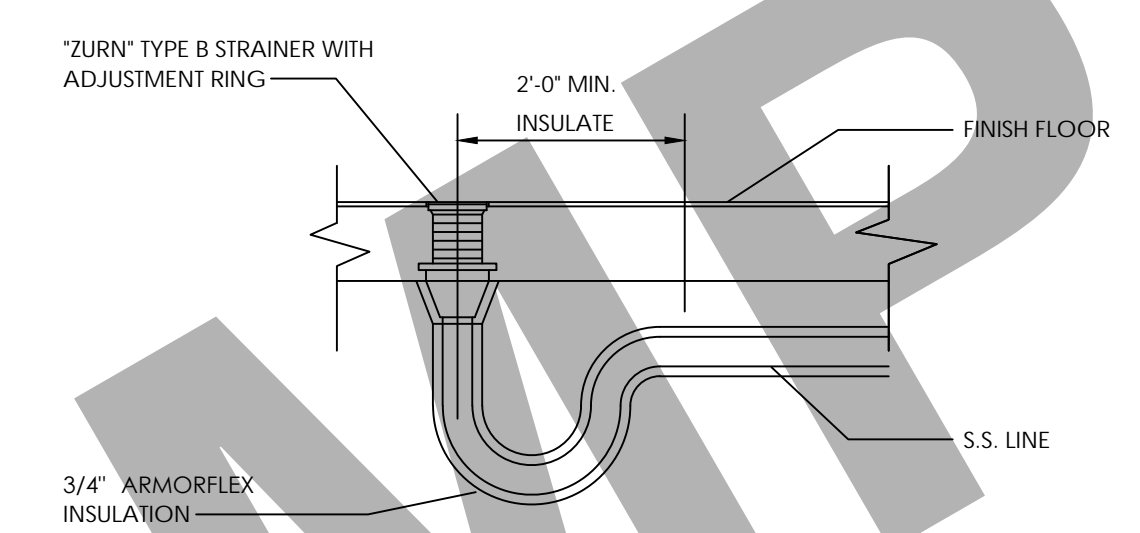
3 FLOOR DRAIN WITH TRAP SEAL PROTECTION
SCALE: NONE



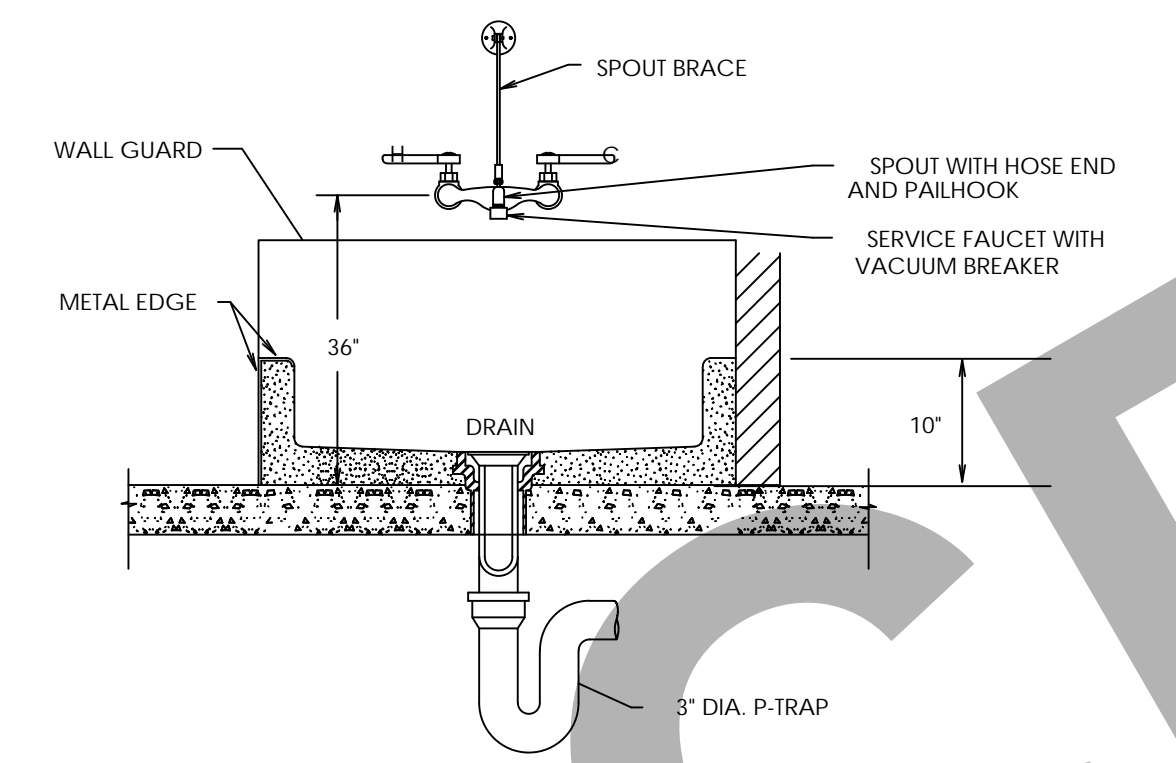
ANTI-SCALD MIXING VALVE
NO SCALE



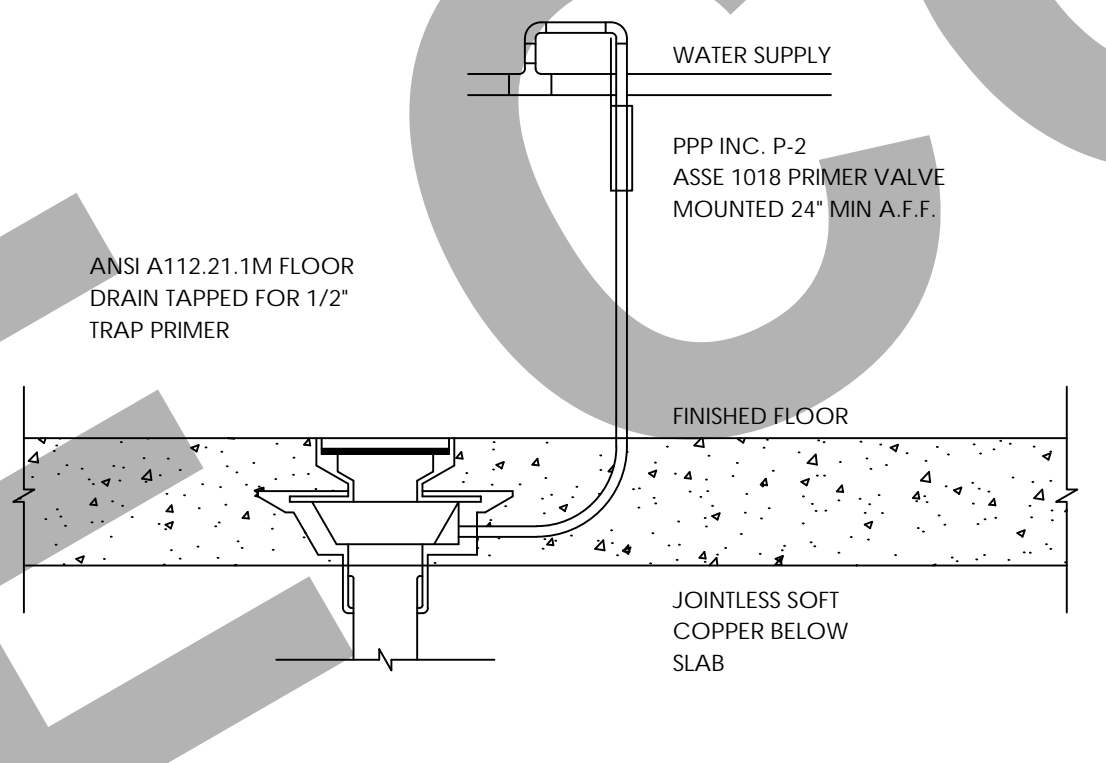
FLOOR SINK DETAIL
NO SCALE



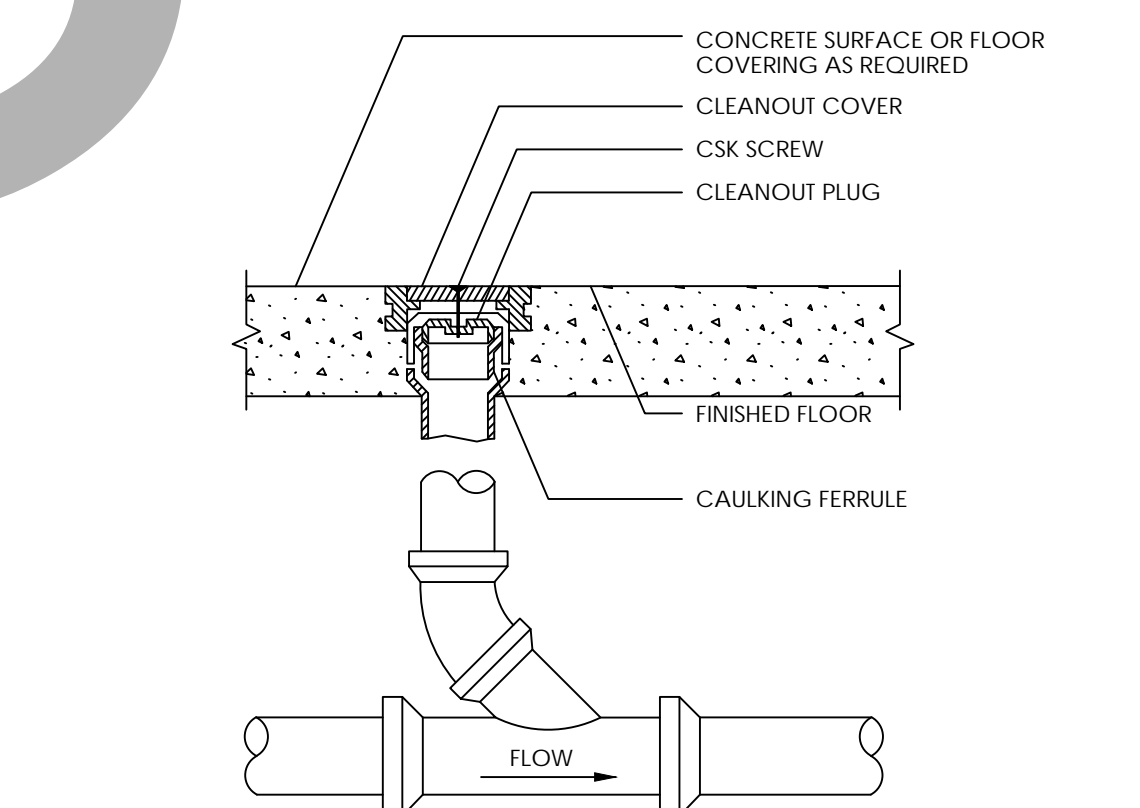
FLOOR DRAIN DETAIL
NO SCALE



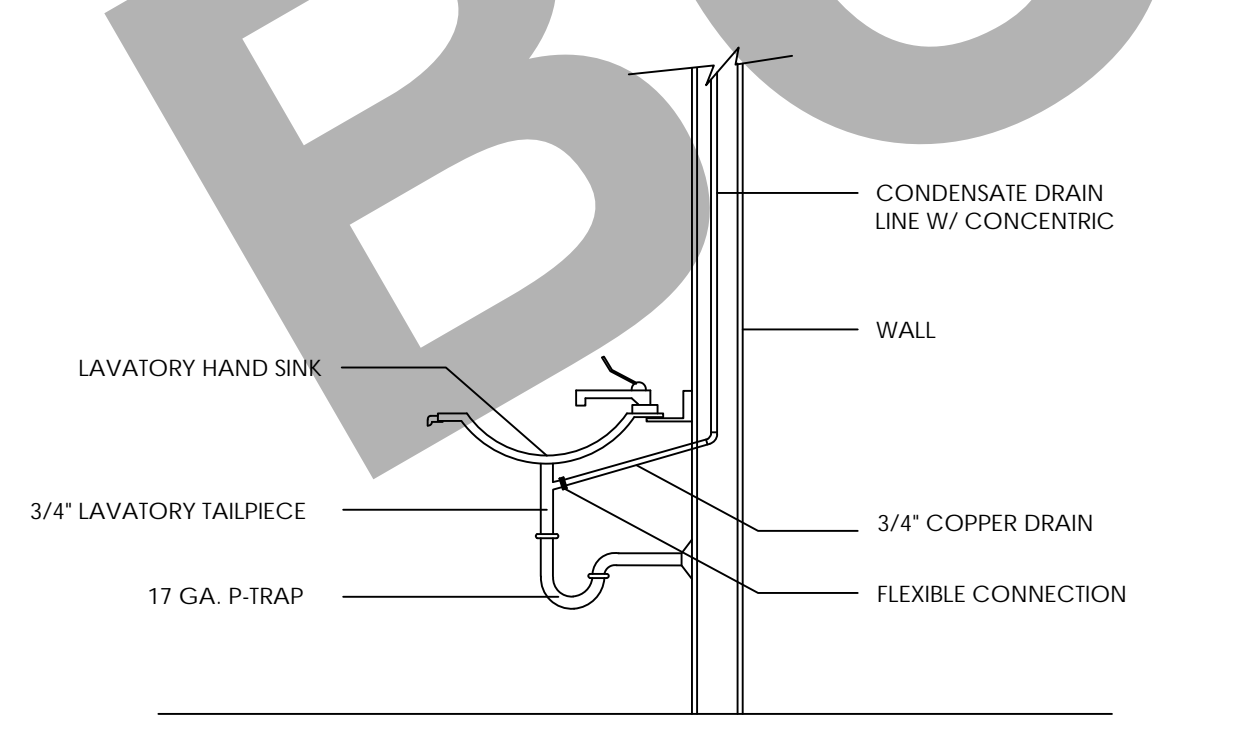
MOP SINK DETAIL
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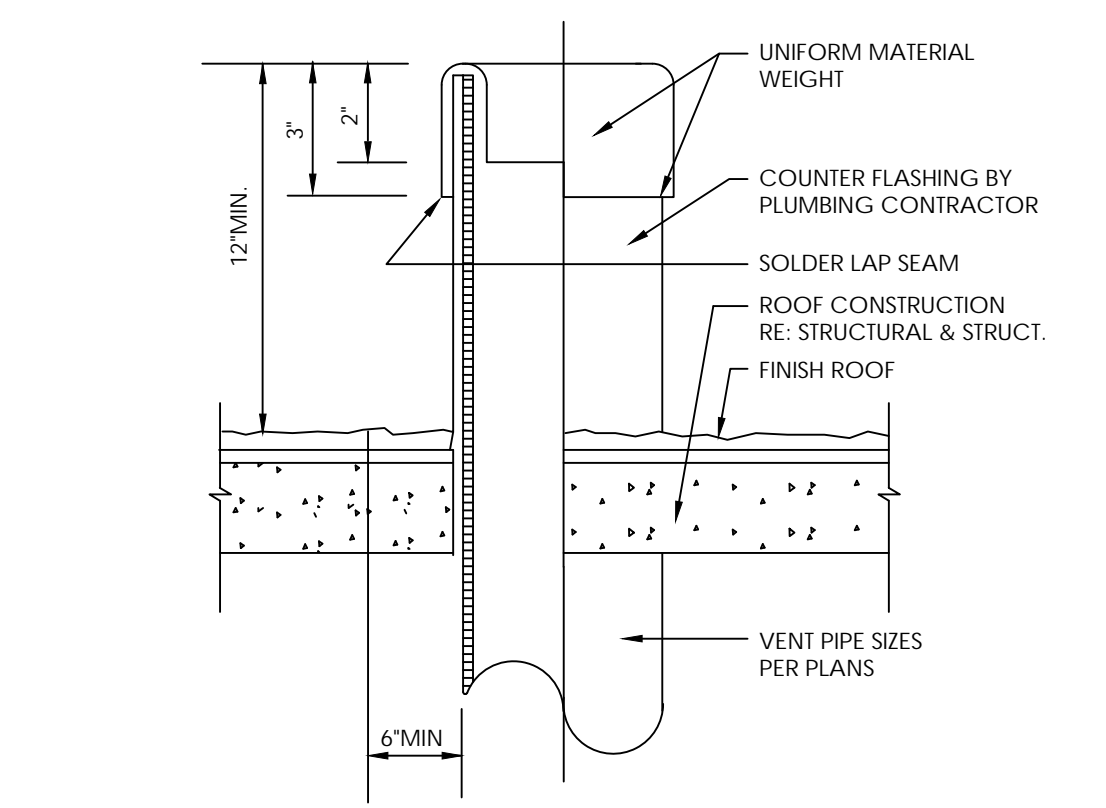
TRAP PRIMER DETAIL
NO SCALE



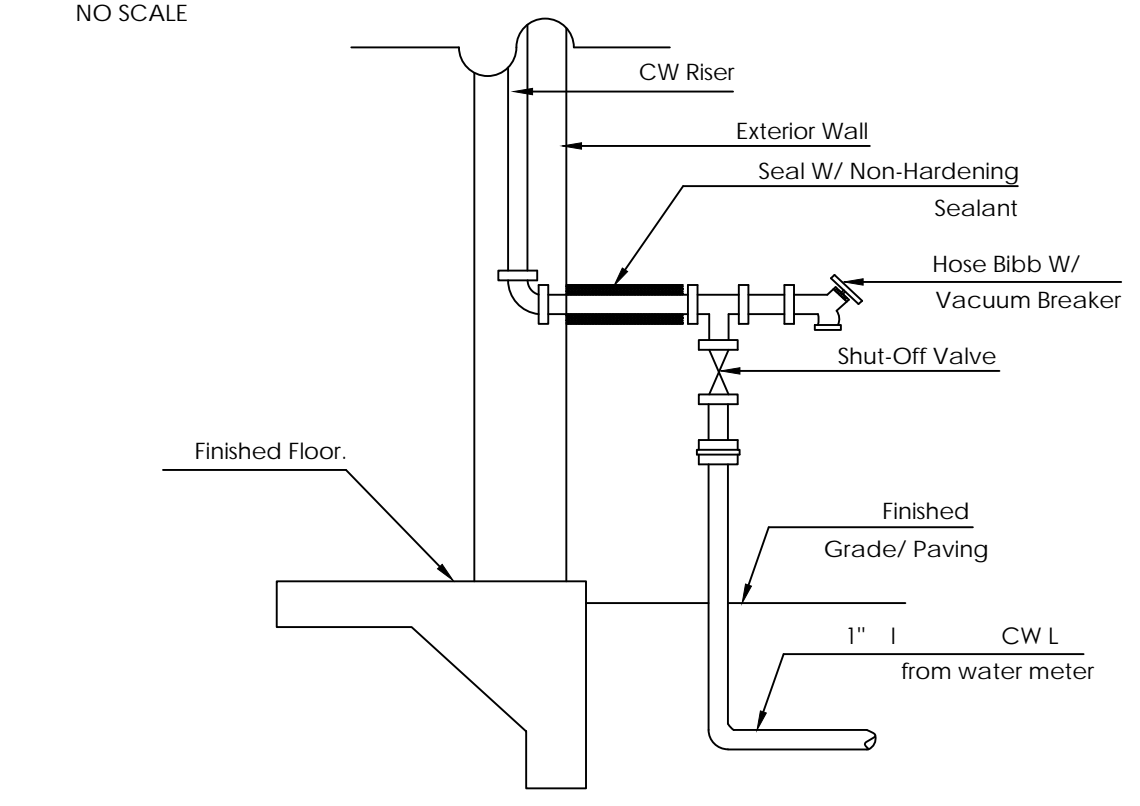
FLOOR CLEANOUT DETAIL
NO SCALE



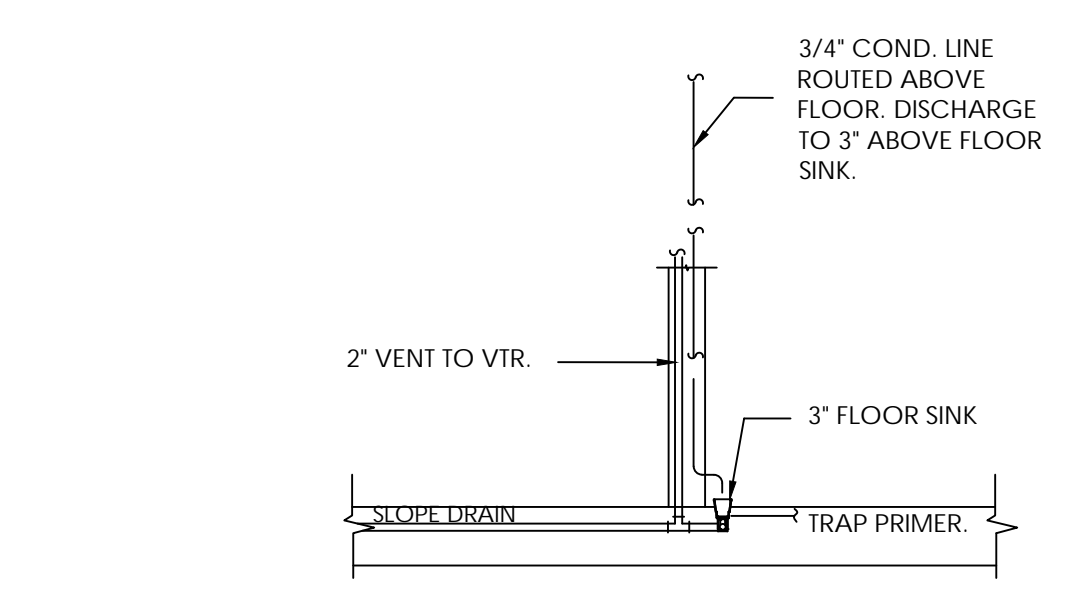
CONDENSATE DETAIL
NO SCALE



VENT THRU ROOF DETAIL
NO SCALE



WATER ENTRY DETAIL
NO SCALE



COND. ON FLOOR SINK DETAIL
NO SCALE

CLIENT:

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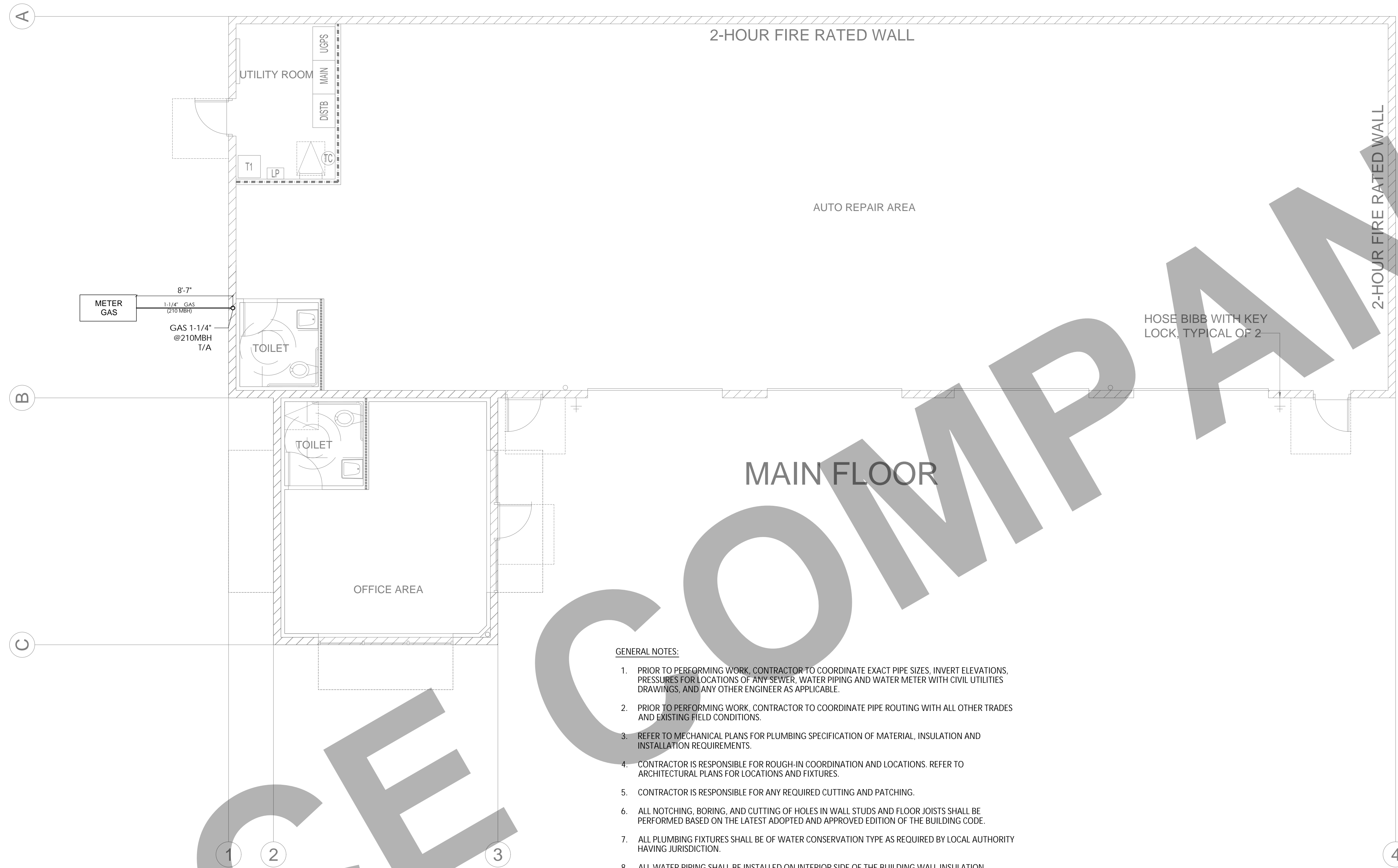
REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
PLUMBING GENERAL DETAILS.

PROJ. NO. PROJ. ENGR. SCALE @ 24X36:
NTS

DRAWING NO. REV.
P 5 . 0



GENERAL NOTES:

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14. EACH VENT PIPE OR STACK SHALL EXTEND THROUGH ITS FLASHING AND SHALL TERMINATE VERTICALLY NOT LESS THAN 6 INCHES (152 MM) ABOVE THE ROOF NOR LESS THAN 1 FOOT (305 MM) FROM A VERTICAL SURFACE.
15. EACH VENT SHALL TERMINATE NOT LESS THAN 10 FEET (3048 MM) FROM, OR NOT LESS THAN 3 FEET (914 MM) ABOVE, AN OPENABLE WINDOW, DOOR, OPENING, AIR INTAKE, OR VENT SHAFT, OR NOT LESS THAN 3 FEET (914 MM) IN EVERY DIRECTION FROM A LOT LINE, ALLEY AND STREET EXCEPTED.

ALL GAS PIPES ARE METALLIC SCHEDULE 40

THE TOTAL GAS PIPE LENGTH FROM GAS METER TO THE FARTHEST EQUIPMENT IS APPRX. 125 FEET.

GAS UNITS AND MBH :

ITEM	MBH
RTU-01	105
RTU-02	105
TOTAL =	960

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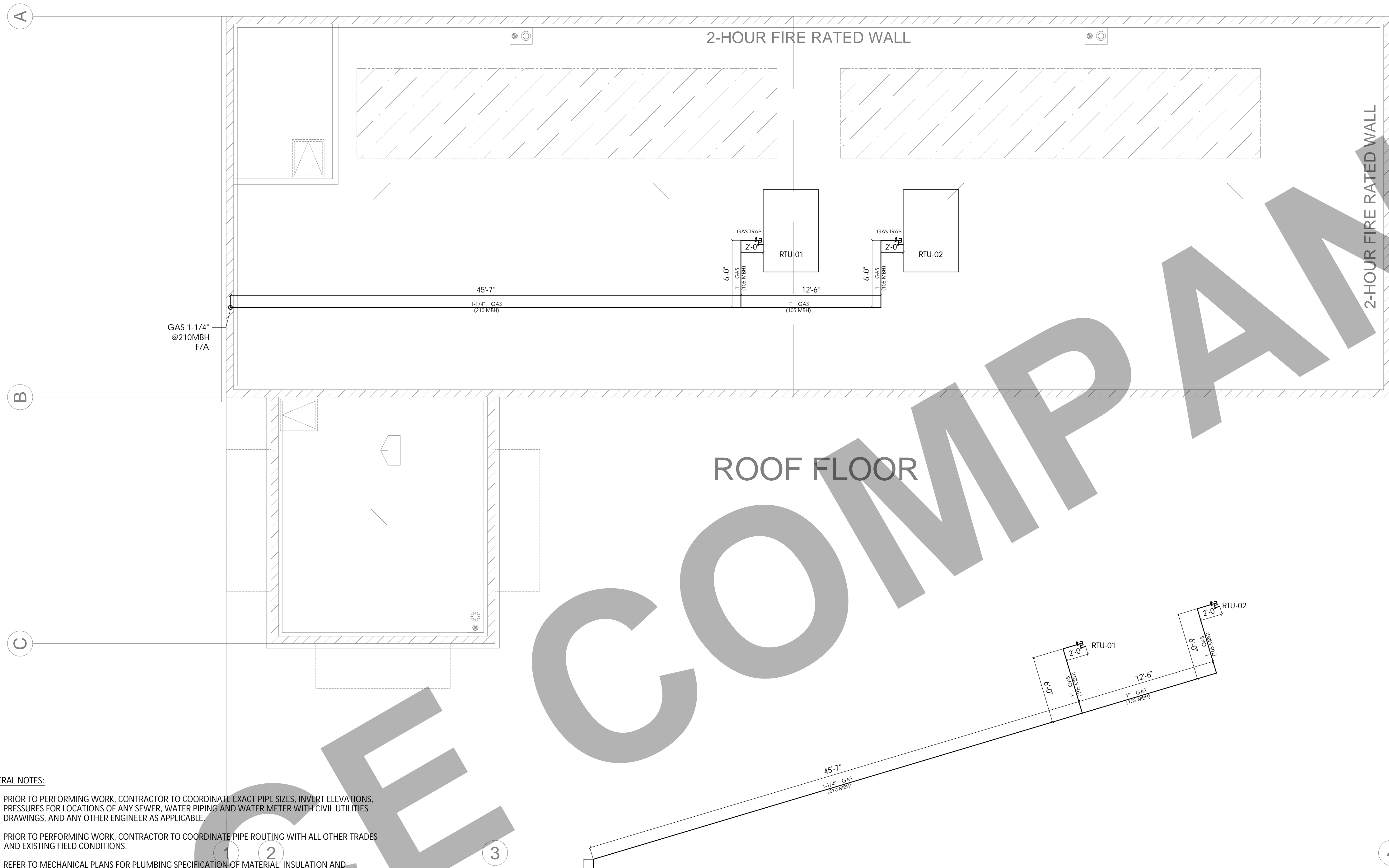
PROJECT:

TITLE:
MAIN FLOOR
GAS LAYOUTS

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36: 3/16"=1'-0"

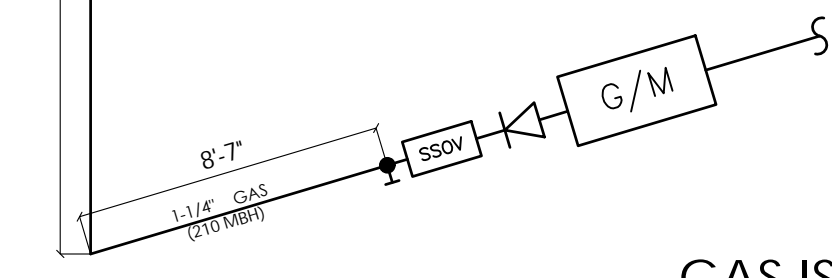
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P 6 . 1



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13. REFER TO THE PLUMBING DIAGRAMS FOR GUIDANCE OF INSTALLATION INTENT. CONTRACTOR IS TO PROVIDE ALL COMPONENTS NECESSARY TO MEET THE DESIGN INTENT, WHETHER SHOWN IN DIAGRAM OR NOT.
14. EACH VENT PIPE OR STACK SHALL EXTEND THROUGH ITS FLASHING AND SHALL TERMINATE VERTICALLY NOT LESS THAN 6 INCHES (152 MM) ABOVE THE ROOF NOR LESS THAN 1 FOOT (305 MM) FROM A VERTICAL SURFACE.
15. EACH VENT SHALL TERMINATE NOT LESS THAN 10 FEET (3048 MM) FROM, OR NOT LESS THAN 3 FEET (914 MM) ABOVE, AN OPENABLE WINDOW, DOOR, OPENING, AIR INTAKE, OR VENT SHAFT, OR NOT LESS THAN 3 FEET (914 MM) IN EVERY DIRECTION FROM A LOT LINE, ALLEY AND STREET EXCEPTED.



GAS ISOMETRIC RISER DIAGRAM

ALL GAS PIPES ARE METALLIC SCHEDULE 40

THE TOTAL GAS PIPE LENGTH FROM GAS METER TO THE FARTHEST EQUIPMENT IS APPRX. 125 FEET.

GAS UNITS AND MBH :

ITEM	MBH
RTU-01	105
RTU-02	105
TOTAL =	960

CLIENT:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
ROOF FLOOR GAS LAYOUTS AND ISOMETRIC RISER DIAGRAM.

PROJ. NO. PROJ. ENGR. SCALE @ 24X36:
3/16"=1'-0"

DRAWING NO. REV.

P 6 . 2

GENERAL ELECTRICAL NOTES	
#	DESCRIPTION
1	GENERAL CONTRACTOR SHALL VERIFY FIELD CONDITIONS BEFORE SUBMITTING BID.
2	ALL WORK SHALL BE DONE IN ACCORDANCE WITH 2019 NEC, AS AMENDED BY 2019 ELECTRICAL CODE, 2019 ENERGY CODE AND ANY ADDITIONAL STATE OR LOCAL CODES WHICH MAY APPLY.
3	GENERAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, CERTIFICATES, ETC. REQUIRED.
4	GENERAL CONTRACTOR SHALL OBTAIN AND PAY FOR BOTH ROUGH AND FINAL UNDER-WRITERS OR OTHER APPROVED INSPECTION AGENCY CERTIFICATES "ELECTRICAL INSPECTION". THESE CERTIFICATES SHALL BE PRESENTED WITH REQUEST FOR FINAL PAYMENT.
5	IT IS THE INTENT OF THESE PLANS TO PROVIDE A COMPLETE OPERATING ELECTRICAL SYSTEM. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL WIRING, EQUIPMENT, MATERIAL, ETC. REQUIRED, EXCEPT WHERE SPECIFICALLY NOTED AS BEING FURNISHED BY OTHERS. SHOULD THERE BE ANY QUESTIONS CONCERNING RESPONSIBILITY, THEY SHALL BE ADDRESSED TO ARCHITECT PRIOR TO BID. NO EXTRA CHARGES WILL BE ALLOWED.
6	ELECTRICAL SERVICE SHALL BE COORDINATED WITH THE EXISTING FIELD CONDITIONS.
7	CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS TO ALL CONTROLS, OWNER-SUPPLIED EQUIPMENT, MECHANICAL AND PLUMBING EQUIPMENT AS REQUIRED.
8	REFER TO ARCHITECTURAL DRAWINGS FOR ELEVATION DETAILS. ALL FIXTURE AND DEVICE LOCATIONS SHOWN ON ARCHITECTURAL DRAWINGS SUPERSEDE THOSE SHOWN ON ELECTRICAL PLANS.
9	CIRCUIT NUMBER ON THE DRAWINGS ARE FOR IDENTIFICATION ONLY AND DO NOT INDICATE THE POSITION ON THE PANEL BOARD. CONNECT THE CIRCUITS WITH THE LIGHTEST LOADS AND THE RECEPTACLE CIRCUITS NEAR THE TOP OF THE PANEL, AND THE MORE HEAVILY LOADED CIRCUITS NEAR THE BOTTOM. BALANCE ALL CIRCUITS EVENLY BETWEEN PHASE SO THAT FEEDER WIRES CARRY APPROXIMATELY EQUAL CURRENT. ALL PHASES MUST BE BALANCED WITHIN 10% OR LESS. G.C. SHALL REBALANCE IF NECESSARY.
10	BRANCH CIRCUIT CONDUCTOR INSULATION SHALL BE COLOR CODED AND SHALL BE 600 VOLT. TYPE THHN/THWN.
11	CABLES IN HIGH TEMPERATURE AREAS SHALL HAVE INSULATION TYPE SUITABLE FOR THE TEMPERATURE. CABLES USED IN SPACES FOR ENVIRONMENTAL AIR SHALL CONFORM WITH APPLICABLE N.E.C REQUIREMENTS.
12	ALL WIRING USED IN RETURN OR DISCHARGE AIR PLENUMS SHALL BE PLENUM RATED OR INSTALLED PER METHODS APPROVED BY THE LATEST EDITION OF THE N.E.C. FOR SUCH APPLICATION.
13	ALL WIRE AND CABLE CONDUCTORS SHALL BE COPPER WITH INSULATION RATED 600V. CONDUCTORS SIZED #10 AWG AND SMALLER SHALL BE SOLID OD STRANDED, AND CONDUCTORS SIZED LARGER THAN #10 AWG SHALL BE STRANDED WIRE.
14	BRANCH CIRCUITS FOR POWER AND LIGHTING SHALL NOT BE LESS THAN #12 AWG. OR AS NOTED. WIRES ARE TO BE SIZED FOR THE APPROPRIATE VOLTAGE DROPS. SEE WIRE SIZE SCHEDULE ON THIS SHEET.
15	ALL DATA CABLES SHALL BE CAT6, PLENUM RATED, TO BE PROVIDED BY OWNER SELECTED VENDOR. ELECTRICAL WORK SHALL BE TO PROVIDE OUTLET BOXES AND "RING AND STRING" FOR PULLING OF CABLES IN CONCEALED SPACES.
16	CONTROL WIRING SHALL NOT BE LESS THAN #14 AWG UNLESS OTHERWISE NOTED.
17	HOMERUNS SHOWN ARE SCHEMATIC. CONTRACTOR MAY ORIGINATE HOMERUNS FROM DIFFERENT LOCATIONS. ALL WIRE INCLUDING HOMERUNS SHALL BE DELINEATED ON AS-BUILT DRAWINGS.
18	ALL WIRING INSTALLED UNDER THIS CONTRACT SHALL BE TESTED FOR PROPER CONNECTIONS AND SHORT CIRCUITS PRIOR TO THE TURNING OVER OF WORK AS A COMPLETE UNIT.
19	PROVIDE ALL ELECTRICAL SYSTEM GROUNDING IN ACCORDANCE WITH N.E.C. REQUIREMENTS EVEN IF IT IS NOT SHOWN ON THE DRAWINGS. INCLUDE ADDITIONAL GROUNDING CONDUCTORS IN ALL RACEWAYS EVEN THOUGH THE DRAWINGS SHOW ONLY CIRCUIT AND/OR NEUTRALS CONDUCTORS. THE PLUMBING AND PIPING SYSTEM SHALL NOT BE USED AS A GROUND. ALL TRANSFORMER NEUTRALS SHALL BE GROUNDED TO BUILDING STEEL IN ACCORDANCE WITH NEC 250-70.
20	ALL CONDUITS PASSING THROUGH PARTITIONS ARE TO BE APPROPRIATELY SLEEVED AND SEALED.
21	FURNISH AND INSTALL ALL CONDUIT WITH PULL WIRES AS REQUIRED. ALL OUTLET BOXES SHALL BE STEEL, EXTRA DEEP WITH GROUNDING PIGTAILS. GROUNDING PUSH-CLIPS ARE NOT ACCEPTABLE.
22	ALL PENETRATIONS SHALL BE INSTALLED AND SEALED PER NATIONAL STATE AND LOCAL CODES
23	DO NOT MAKE ANY CHANGES OR SUBSTITUTIONS WITHOUT SPECIFIC WRITTEN APPROVAL FROM THE ARCHITECT OR ENGINEER.
24	GUARANTEE ALL WORK, MATERIAL AND EQUIPMENT FOR A PERIOD OF ONE YEAR FROM THE DATE OF APPROVAL AND FINAL ACCEPTANCE.
25	THIS DESIGN IS BASED ON INITIAL DESIGN DATA. GENERAL CONTRACTOR TO SUPPLY AND INSTALL FEEDERS, FUSES AND CIRCUIT BREAKERS TO MATCH THE NAMEPLATE RATING OF ALL EQUIPMENT. THIS SHALL BE INCLUDED IN THE INITIAL BID PROPOSAL AND NO EXTRAS SHALL BE ENTERTAINED.
26	LABEL ALL JUNCTION BOXES, OUTLETS, LIGHT SWITCH, ETC. WITH CIRCUIT NUMBER ON INTERIOR ON COVER PLATE. USE SELF-ADHESIVE "DYMO" LABEL 1/8" HIGH LETTERS.
27	GENERAL CONTRACTOR SHALL PROVIDE SEISMIC RESTRAINTS AND SUPPORTS FOR ALL FLOOR, WALL, AND CEILING MOUNTED ELECTRICAL EQUIPMENT TO RESIST EARTHQUAKE EFFECTS DETERMINED IN ACCORDANCE WITH THE BUILDING CODE.
28	THE G.C. SHALL PROVIDE ALL EQUIPMENT, MATERIALS AND LABOR TO COMPLETE ALL ELECTRICAL WORK IN A NEAT AND WORKMANLIKE MANNER AND IN ACCORDANCE WITH GOOD COMMERCIAL PRACTICE INCLUDING THE INSTALLATION OF ALL THE EQUIPMENT MATERIALS AND SYSTEMS AND THE FINAL CONNECTIONS TO THE OWNER'S EQUIPMENT AND FIXTURES AS REQUIRED BY THE OWNER. THE G.C. SHALL ALSO FURNISH TEMPORARY WIRING AND LIGHTING TO PROVIDE A MINIMUM OF 25 FC IN WORK AREAS FOR USE OF ALL THE TRADES DURING CONSTRUCTION AND THE INSTALLATION OF THE OWNERS FIXTURES. THE G.C. IS RESPONSIBLE TO REMOVE ALL TEMPORARY WIRING UPON COMPLETION OF CONSTRUCTION OF ALL TRADES.
29	THIS CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE AND INSTALL ALL SUPPLEMENTARY SUPPORT, INCLUDING SUPPORT STEEL AS REQUIRED TO HANG ALL EQUIPMENT AND LIGHTING FROM THE EXISTING STRUCTURE IN ACCORDANCE WITH THE ARCHITECTURAL/STRUCTURAL SUPPORT AND LOADING CRITERIA.

GENERAL ELECTRICAL NOTES	
#	DESCRIPTION
30	IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO PROVIDE FULLY DIMENSIONED COORDINATION DRAWINGS FOR ALL OF HIS RESPECTIVE WORK. THESE DRAWINGS MUST BE FULLY COORDINATED WITH ALL EXISTING CONDITIONS. ALL HVAC, PLUMBING, FIRE PROTECTION, ELECTRICAL, LIGHTING, STRUCTURAL AND ARCHITECTURAL SYSTEMS PRIOR TO PREPARING COMPOSITE MULTI DISCIPLINE COORDINATION DRAWINGS.
31	ALL DISCONNECTING MEANS AND EQUIPMENT INDICATED ON THE DRAWING SHALL BE IDENTIFIED BY NAMEPLATE IN COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE 110-22.
32	ALL WIRING FOR THE EMERGENCY LIGHTING AND EMERGENCY SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE ARTICLE 700.
33	THE WIRING METHODS AND MATERIALS INDICATED IN THE SPECIFICATIONS AND ON THE DRAWINGS SHALL BE INSTALLED AND CONNECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE ARTICLE 300.
33	THE WIRING METHODS AND MATERIALS INDICATED IN THE SPECIFICATIONS AND ON THE DRAWINGS SHALL BE INSTALLED AND CONNECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE ARTICLE 300.
34	THE ELECTRICAL SERVICE AND DISTRIBUTION SYSTEM AS INDICATED ON THE RISER DIAGRAM AND MATERIALS INDICATED IN THE SPECIFICATIONS SHALL BE IN COMPLIANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE ARTICLE 230, SERVICES.
35	ALL OVER CURRENT PROTECTION SHALL BE IN COMPLIANCE WITH THE NATIONAL ELECTRIC CODE SECTION 240, OVERCURRENT PROTECTION.
36	ALL GROUNDING REQUIREMENTS OF THE COMPLETE ELECTRICAL DISTRIBUTION SYSTEM AND AS INDICATED IN THE SPECIFICATIONS SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ARTICLE 250, GROUNDING AND BONDING.
37	PRIOR TO ANY REQUIRED CUTTING AND PATCHING OF CONCRETE FLOOR AND/OR CUTTING OF ROOF, CONTRACTOR SHALL COORDINATE WITH BUILDING ENGINEER.
38	FOR ALL LIGHTING FIXTURES MOUNTED IN HUNG CEILING THE GENERAL CONTRACTOR SHALL PROVIDE AND INSTALL INDIVIDUAL SUPPORT AT EACH CORNER OF RECESSED LIGHTING TROFFER CONNECTED TO BUILDING STEEL ABOVE. ALL CONDUIT AND MC CABLE MOUNTED ABOVE HUNG CEILING SHALL BE INDIVIDUALLY SUPPORTED IN THE SAME FASHION AS PER NEC REQUIREMENTS.
39	DO NOT SCALE FROM THESE DRAWINGS.
40	PLANS ARE PREPARED WITH REQUIRED BRANCH CIRCUITS INDICATED BY CIRCUITS NUMBERS. PROVIDE AND INSTALL ALL CONDUITS, CONDUCTORS, BOXES, MISCELLANEOUS FITTINGS, ETC. FOR A COMPLETE AND OPERABLE SYSTEM (HOME RUN SHOWN). BRANCH CIRCUIT INSTALLATION SHALL COMPLY WITH SPECIFICATIONS AND N.E.C.
41	ELECTRICAL RECEPTACLE, SWITCH AND CONTROL HEIGHTS (CBC-1136A.1): RECEPTACLE HEIGHTS: ELECTRICAL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30 AMPERES OR LESS AND COMMUNICATION SYSTEM RECEPTACLES SHALL BE LOCATED NO MORE THAN 48 INCHES (1219MM) MEASURED FROM THE TOP OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING NOR LESS THAN 15 INCHES (381MM) MEASURED FROM THE BOTTOM OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING TO THE LEVEL OF FINISHED FLOOR OR WORKING PLATFORM. IF THE REACH IS OVER AN OBSTRUCTION (FOR EXAMPLE, A KITCHEN BASE CABINET) BETWEEN 20 AND 25 INCHES (508 AND 635MM) IN DEPTH, THE MAXIMUM HEIGHT MEASURED AT THE BOX IS REDUCED TO 44 INCHES (1118MM) FOR FORWARD APPROACH, OR 46 INCHES (1168MM) FOR SIDE APPROACH, PROVIDED THE OBSTRUCTION IS NO MORE THAN 24 INCHES (610MM) IN DEPTH. OBSTRUCTION SHALL NOT EXCEED MORE THAN 25 INCHES (635MM) FROM THE WALL BENEATH THE RECEPTACLE.
42	SWITCH AND CONTROL HEIGHTS: (CBC 1136A.2): CONTROL OR SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCES, ALARMS OR COOLING, HEATING AND VENTILATING EQUIPMENT SHALL BE LOCATED NO MORE THAN 48 INCHES (1219MM) MEASURED FROM THE TOP OF THE OUTLET BOX NOR LESS THAN 15 INCHES (381MM) MEASURED FROM THE BOTTOM OF THE OUTLET BOX TO THE LEVEL OF THE FINISHED FLOOR OR WORKING PLATFORM. IF THE REACH IS OVER A PHYSICAL BARRIER OR AN OBSTRUCTION (FOR EXAMPLE, A KITCHEN BASE CABINET) BETWEEN 20 AND 25 INCHES (508 AND 635MM) IN DEPTH, THE MAXIMUM HEIGHT IS REDUCED TO 44 INCHES (1118MM) FOR FORWARD APPROACH, OR 46 INCHES (1168MM) FOR SIDE APPROACH, PROVIDED THE OBSTRUCTION IS NO MORE THAN 24 INCHES (610MM) IN DEPTH. PHYSICAL BARRIERS OR OBSTRUCTIONS SHALL NOT EXTEND MORE THAN 25 INCHES (635MM) FROM THE WALL BENEATH A CONTROL.

ELECTRICAL LEGEND	
	High Bay Lighting similar to Corvus UFO High Bay Light 100 Watt from RuggedGrade
	Lighting 4-ft x 2-ft Cool White LED Panel Light similar to GT GENERAL PURPOSE T 8TROFFER 2X 4 4LP T 48A 19LENS 14ELEEC
	Lighting 4-ft x 2-ft Cool White LED Panel Light SURFACE MOUNTED
	HEAVY DUTY JUNCTION BOX, FLUSH IN CEILING FOR EXHAUST FANS
	EXIT SIGN WITH EMERGENCY LIGHT SHALL BE ON ALL TIME WITH 90 BACK UP MINUTES BATTERY BUILT IN
	ONE WAY LIGHTING SWITCH TWO WAYS LIGHTING SWITCH SWITCH WITH OCCUPANCY SENSOR SWITCH WITH TIMER
	SELF-CONTAINED SMOKE/CARBON MONOXIDE (120 W/BATTERY BACKUP) - CEILING MOUNTED
	DUPLEX RECEPTACLE - WALL MOUNTED @ 18" AFF UNLESS NOTED GFCI DENOTES GROUND FAULT PROTECTION
	NON-FUSED DISCONNECT SWITCH - SIZE AS INDICATED
	120W LED Wall Pack Light similar to wall pack light (WPG Series) from superbrightleds (WPG-50K120W-S-Photocell)
	EMERGENCY ILLUMINATION FIXTURE, SHALL BE ON ALL TIME WITH 90 BACK UP MINUTES BATTERY BUILT IN
	HEAVY DUTY JUNCTION BOX, WALL MOUNTED FOR SIGNAGE

LOAD PER PHASE AND NOTES					
LOAD PER PH (KVA)	WIRING	OF BRANCH CIRCUIT PER 10N VOLTAGE			NOTES AND REMARKS
		1PH, MAX D. 3%	(240, 3PH, MAX V.D. 3%)		
< 1.92	#10	94 FT	141 FT	163 FT	5
	#8	144 FT	217 FT	250 FT	5
	#6	230 FT	345 FT	398 FT	5
< 1.44	#12	75 FT	113 FT	130 FT	5
	#10		188 FT	217 FT	5
	#8		289 FT	334 FT	5
< 1.26	#6	306 FT	460 FT	531 FT	5
	#12	86 FT	129 FT	149 FT	
	#10	143 FT	215 FT	248 FT	
< 1.08	#8	220 FT	330 FT	381 FT	
	#12	100 FT	150 FT	173 FT	
	#10	167 FT	250 FT	289 FT	
< 0.9	#8	256 FT	385 FT	445 FT	
	#12	120 FT	180 FT	240 FT	
	#10	200 FT	300 FT	347 FT	
< 0.72	#12	150 FT	225 FT	260 FT	
	#10	250 FT	376 FT	434 FT	
#	NOTES				
1	CONTRACTOR SHALL REFER TO THIS TABLE PRIOR TO START OF BRANCH CIRCUIT ROUGH-IN.				
2	CONTRACTOR SHALL USE THE APPROPRIATE WIRE SIZE IN CONJUNCTION WITH THE LENGTH OF THE PROPOSED FIELD VERIFIED ROUTING OF BRANCH CIRCUIT WIRING (INCLUDING VERTICAL & LATERAL RUN, ROUTED PARALLEL/PERPENDICULAR TO THE BUILDING STRUCTURE).				
3	SEE PANEL SCHEDULE FOR THE CORRESPONDING KVA LOAD PER PHASE OF A PARTICULAR BRANCH CIRCUIT.				
4	RESISTANCE VALUES USED ARE FOR UNCOATED COPPER WIRES IN STEEL CONDUIT. 75 DEGREE C., OPERATING AT 60HZ.				
5	THE VALUES IN "120V, 1PH" COLUMN IS TO BE USED FOR GENERAL PURPOSE RECEPTACLE LOADS.				

ABBREVIATIONS AND TAGS			
ABB.	DESCRIPTION	ABB.	DESCRIPTION
EWH	ELECTRIC WATER HEATER	SD	SMOKE DETECTOR
(E)	EXISTING TO REMAIN	TEL	TELEPHONE
EC	ELECTRICAL CONTRACTOR	TX	TRANSFORMER
FA	FIRE ALARM	TV	TELEVISION
FMT	FLEXIBLE METALLIC TUBING	UAC	UNDER ANOTHER CONTRACT
GC	GENERAL CONTRACTOR	UAS	UNDER ANOTHER SECTION
GFCI	GROUND FAULT INTERRUPTER	UON	UNLESS OTHERWISE NOTED
IG	ISOLATED GROUND	V.D.	VOLTAGE DROP
LL		W	WIRE
LV	LOW VOLTAGE	WP	WEATHERPROOF
	MECHANICAL UNIT TAG. SEE MECHANICAL DRAWINGS FOR ADDITIONAL DESCRIPTION.		DETAIL TAG. REFER TO DETAIL 4 ON SHEET NUMBER E-4.

InnoDez

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APN: 3141-006-009, 010 & 011
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LANCASTER, CA 93535

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REV. NO.	DESCRIPTION	DATE	BY

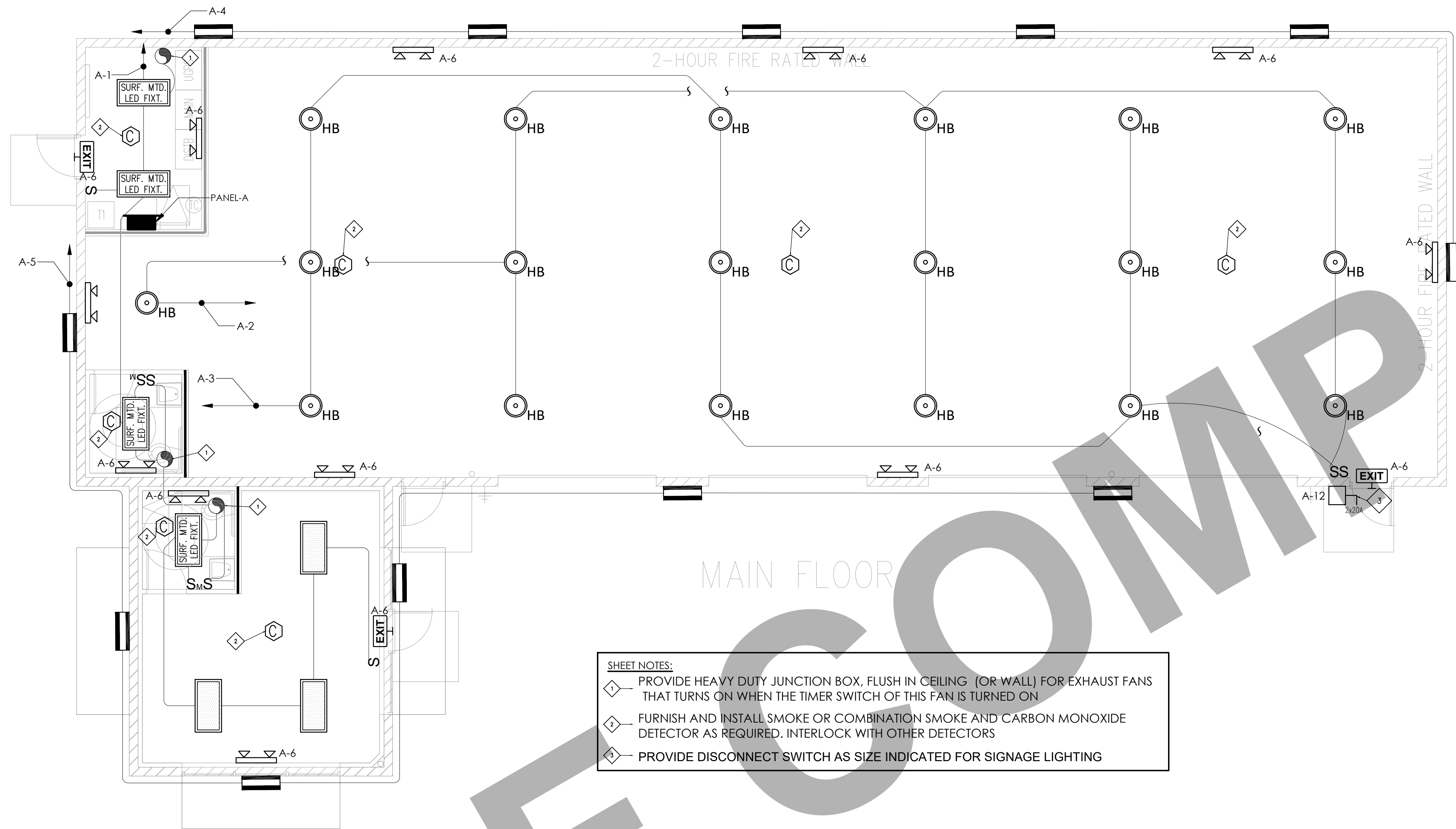
PROJECT:
PROPOSED COMMERCIAL CENTER BUILDING-1

TITLE:
ELECTRICAL GENERAL NOTES AND SPECIFICATIONS

PROJ. NO. PROJ. ENGR. SCALE @ 24X36:
NTS

DRAWING NO. REV.

E 0 . 0 0



SHEET NOTES:

- ◇ PROVIDE HEAVY DUTY JUNCTION BOX, FLUSH IN CEILING (OR WALL) FOR EXHAUST FANS THAT TURNS ON WHEN THE TIMER SWITCH OF THIS FAN IS TURNED ON
- ◇ FURNISH AND INSTALL SMOKE OR COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR AS REQUIRED. INTERLOCK WITH OTHER DETECTORS
- ◇ PROVIDE DISCONNECT SWITCH AS SIZE INDICATED FOR SIGNAGE LIGHTING

- LIGHTING GENERAL NOTES**
1. ALL JUNCTION BOXES, CONDUITS, AND AIRS SHALL BE SIZED PER NEC.
 2. CONNECT ALL EXIT LIGHTS AHEAD OF ANY LOCAL OR AUTOMATIC SWITCHING DEVICE.
 3. PROVIDE A CONSTANT HOT FROM PANEL BOARD DIRECTLY TO ALL EMERGENCY BATTERY PACKS/BALLASTS IN EMERGENCY LIGHTING FIXTURES AND EXIT SIGNS. EMERGENCY LIGHTING FIXTURES SHALL TURN ON TO FULL BRIGHTNESS IN CASE OF POWER LOSS.
 4. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION & MOONING HEIGHTS OF ALL LIGHTING FIXTURES SHOWN ON THIS DRAWING.
 5. REFER TO DETAIL SHEET FOR SYMBOLS, SPECIFICATIONS, ABBREVIATIONS, AND LIGHTING FIXTURE SCHEDULE.
 6. ALL DEVICES AND EQUIPMENT OUTSIDE THE SCOPE OF WORK ARE EXISTING TO REMAIN U.O.N.
 7. CONTRACTOR SHALL PROVIDE AN ACCURATELY TYPED PANEL BOARD SCHEDULE FOR EACH PANEL BOARD.
 8. ELECTRICAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY PROBLEMS PERTAINING TO CIRCUIT AVAILABILITY OR LOAD CAPACITY PRIOR TO INSTALLATION.
 9. ALL EXTERIOR LUMINARIES AND ELECTRICAL DEVICES SHALL BE USED AS WEATHERPROOF TYPE.
 10. ALL NEW CEILING OCCUPANCY SENSORS SHALL BE DUAL-TECHNOLOGY WITH 1000 SQFT COVERAGE AT 360 DEGREES U.O.N. ON THE DRAWING. COORDINATE EXACT LOCATION AND REQUIREMENTS OF ALL OCCUPANCY SENSORS SHOWN ON THIS DRAWING WITH MANUFACTURER REPRESENTATIVE PRIOR TO COMMENCEMENT OF WORK. CONTRACTOR TO PROVIDE POWER PACKS AS REQUIRED.
 11. CONTRACTOR SHALL CONFIRM COMPATIBILITY OF ALL LIGHTING CONTROL DEVICES/SWITCHES/DIMMERS WITH LIGHTING FIXTURES AND BALLASTS/DRIVERS PRIOR TO SUBMITTAL.
 12. FIXTURE MARKED WITH SUBSCRIPT "(E)" IS EXISTING TO REMAIN, CONTRACTOR TO MAINTAIN CONTINUITY OF BRANCH CIRCUITS.
 13. ALL CONDUIT RUNS IN OPEN PLENUM SPACE SHALL BE INSTALLED IN A NEAT MANNER PERPENDICULAR OR PARALLEL TO WALLS AND PAINTED AS DIRECTED BY OWNER.

- LIGHTING KEY NOTES**
1. PROVIDE WEATHERPROOF JUNCTION BOX WITH 20A 120V BRANCH CIRCUIT TO POWER EXTERIOR SIGNAGE. CONTRACTOR TO PROVIDE 1P-20A RATED TOGGLE SWITCH WITHIN SIGHT IN AN ACCESSIBLE AREA AS A DISCONNECT MEAN AND TO COORDINATE EXACT LOCATION AND REQUIREMENTS WITH OWNER/SIGN VENDOR PRIOR TO ROUGH-IN. EXTERIOR SIGNAGE SHALL BE CONTROLLED VIA WIRELESS SWITCH PACK OR AS DIRECTED BY OWNER.
 2. LIGHTING FIXTURES SERVING RESTROOMS SHALL BE 120V RATED. CONNECTED TO THE SAME BRANCH CIRCUIT SERVING EXHAUST FAN, AND CONTROLLED AS SHOWN ON DETAIL SHEET.
 3. INTERIOR AND EXTERIOR LIGHTING BRANCH CIRCUITS SERVING THE SPACE SHALL BE CONTROLLED VIA WIRELESS RELAY SWITCH PACKS. COORDINATE WITH OWNER/LIGHTING SYSTEM VENDOR FOR EXACT LOCATIONS/NUMBER OF HUBS/DEVICES, SCHEDULE, WIRELESS DIMMER SWITCHES FOR TRACK LIGHT LOCATIONS AND ALL OTHER SYSTEM REQUIREMENTS PRIOR TO BID AND COMMENCEMENT OF WORK. EXTERIOR LIGHTING FIXTURES SWITCH PACKS AND CONTROL SWITCHES SHALL BE MOUNTED NEXT TO THE PANEL WHERE BRANCH CIRCUIT IS ORIGINATED OR AS DIRECTED BY OWNER/ARCHITECT.
 4. NEW EMERGENCY AND EXIT LIGHTING SHALL BE CONNECTED AHEAD OF LOCAL SWITCHING.
 5. PROVIDE IN-LINE CURRENT LIMITER AS SHOWN FOR TRACK LIGHTING.

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
PR :R

TITLE:
LIGHTING LAYOUT

PROJ. NO. PROJ. ENGR. SCALE @ 24X36:
3/16"=1'-0"

DRAWING NO. REV.
E 1 . 0 0

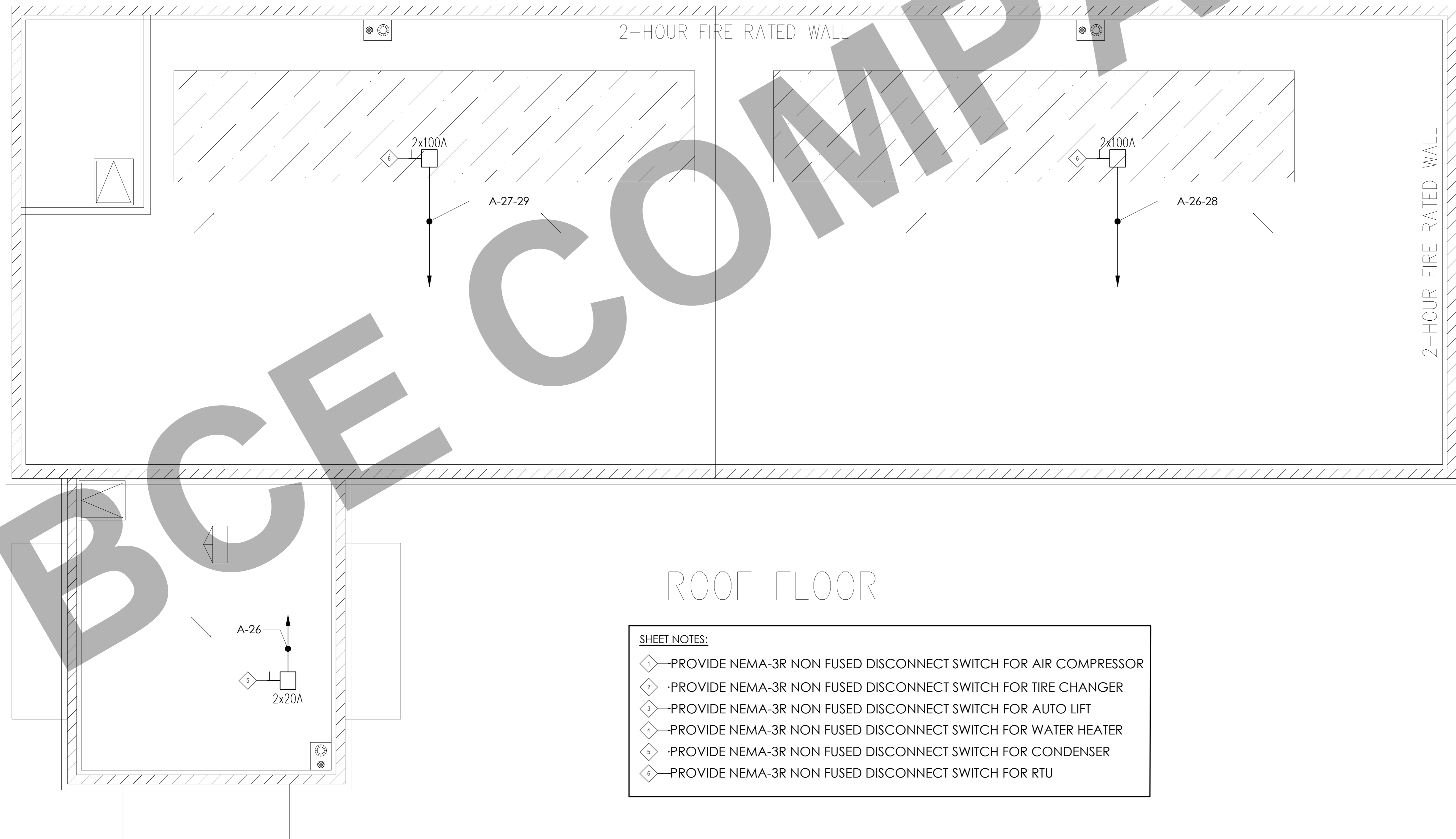
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- POWER GENERAL NOTES**
1. PROVIDE PULL STRINGS IN ALL EMPTY CONDUITS.
 2. ALL JUNCTION BOXES, CONDUITS, AND WIRES SHALL BE SIZED PER NEC.
 3. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF ALL DEVICES SHOWN ON THE DRAWING. COORDINATE WITH OWNER FOR EXACT LOCATION AND OTHER REQUIREMENTS PRIOR TO ROUGH-IN.
 4. ALL HOME RUNS SHALL BE 2#12+1#12 GND IN 3/4" CONDUIT U.O.N.
 5. CIRCUIT NUMBERS INDICATED ARE FOR DESIGN PURPOSES ONLY. CONTRACTOR SHALL COORDINATE ACTUAL CIRCUIT NUMBERS AT THE TIME OF INSTALLATION AND TO PROVIDE AN ACCURATELY TYPED PANEL BOARD SCHEDULE FOR EACH PANEL BOARD.
 6. ALL DEVICES AND EQUIPMENT OUTSIDE THE SCOPE OF WORK ARE EXISTING TO REMAIN U.O.N.
 7. CONTRACTOR SHALL PROVIDE AN ACCURATELY TYPED PANEL BOARD SCHEDULE FOR EACH PANEL BOARD.
 8. ELECTRICAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY PROBLEMS PERTAINING TO CIRCUIT AVAILABILITY OR LOAD CAPACITY PRIOR TO INSTALLATION.
 9. CONTRACTOR SHALL REFER TO MECHANICAL/PLUMBING DRAWINGS FOR EXACT LOCATION OF EQUIPMENT AND SCHEDULES. CONTRACTOR SHALL PROVIDE ALL ELECTRICAL DISCONNECTS. BRANCH CIRCUITRY, CIRCUIT BREAKERS AND CONNECTIONS REQUIRED TO POWER EQUIPMENT.
 10. CONTRACTOR TO COORDINATE EXACT LOCATION OF DISCONNECT SWITCHES, JUNCTION BOXES AND SINGLE POLE TOGGLE SWITCHES WITH MECHANICAL/PLUMBING CONTRACTORS PRIOR TO INSTALLATION.
 11. ALL CONDUIT RUNS IN OPEN PLENUM SPACE SHALL BE INSTALLED IN A NEAT MANNER PERPENDICULAR OR PARALLEL TO WALLS AND PAINTED AS DIRECTED BY OWNER.



- SHEET NOTES:**
- ◇ PROVIDE NEMA-3R NON FUSED DISCONNECT SWITCH FOR AIR COMPRESSOR
 - ◇ PROVIDE NEMA-3R NON FUSED DISCONNECT SWITCH FOR TIRE CHANGER
 - ◇ PROVIDE NEMA-3R NON FUSED DISCONNECT SWITCH FOR AUTO LIFT
 - ◇ PROVIDE NEMA-3R NON FUSED DISCONNECT SWITCH FOR WATER HEATER
 - ◇ PROVIDE NEMA-3R NON FUSED DISCONNECT SWITCH FOR CONDENSER
 - ◇ PROVIDE NEMA-3R NON FUSED DISCONNECT SWITCH FOR RTU

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
PROPOSED COMMERCIAL CENTER BUILDING-1

TITLE:
POWER ROOF LAYOUT

PROJ. NO. PROJ. ENGR. SCALE @ 24X36:
3/16"=1'-0"

DRAWING NO. REV.
E 2 . 1

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
PROPOSED COMMERCIAL CENTER BUILDING-1

TITLE:
ONE LINE DIAGRAM

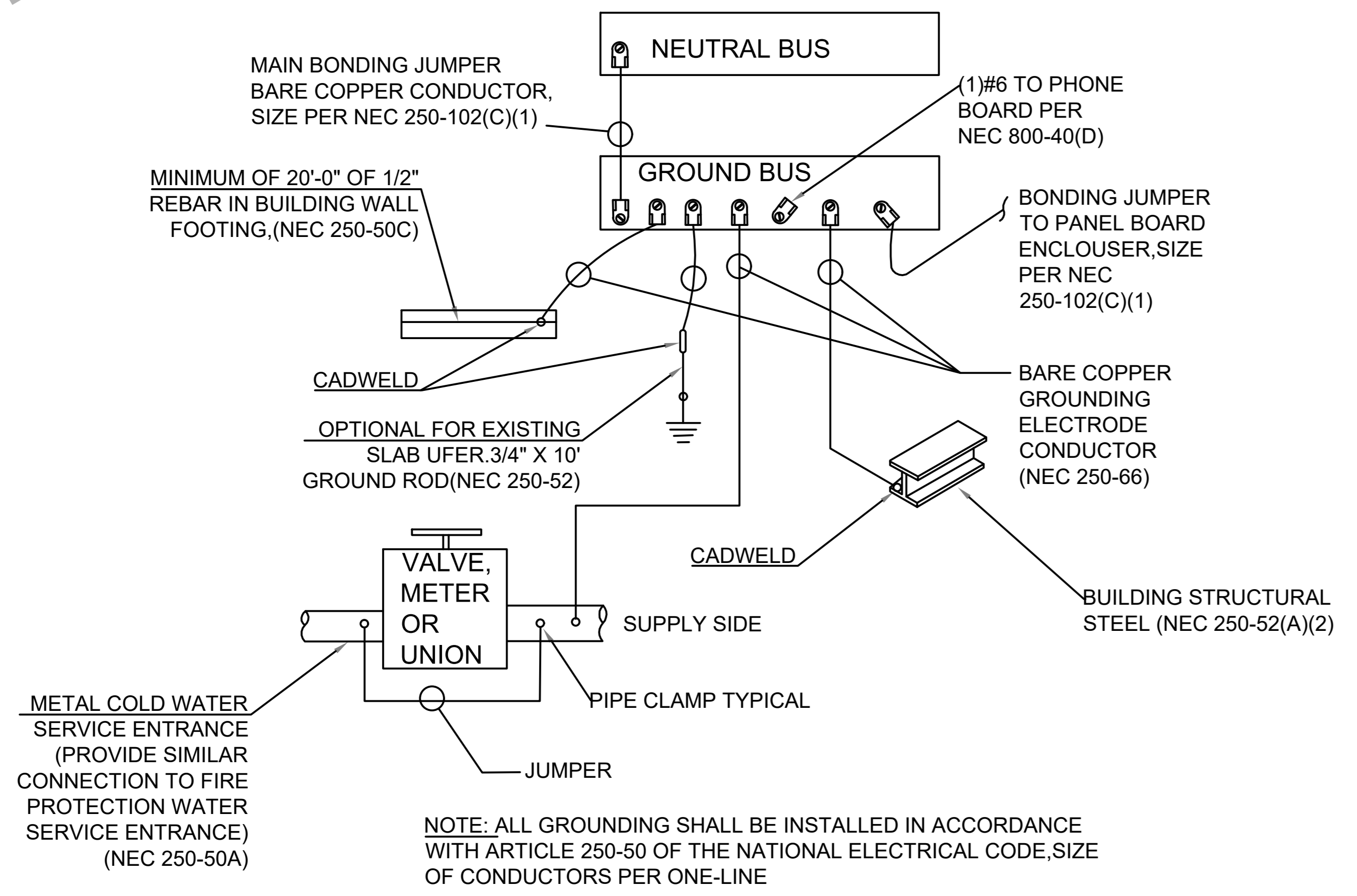
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		NTS

DRAWING NO. **E 3 . 0 0** REV.

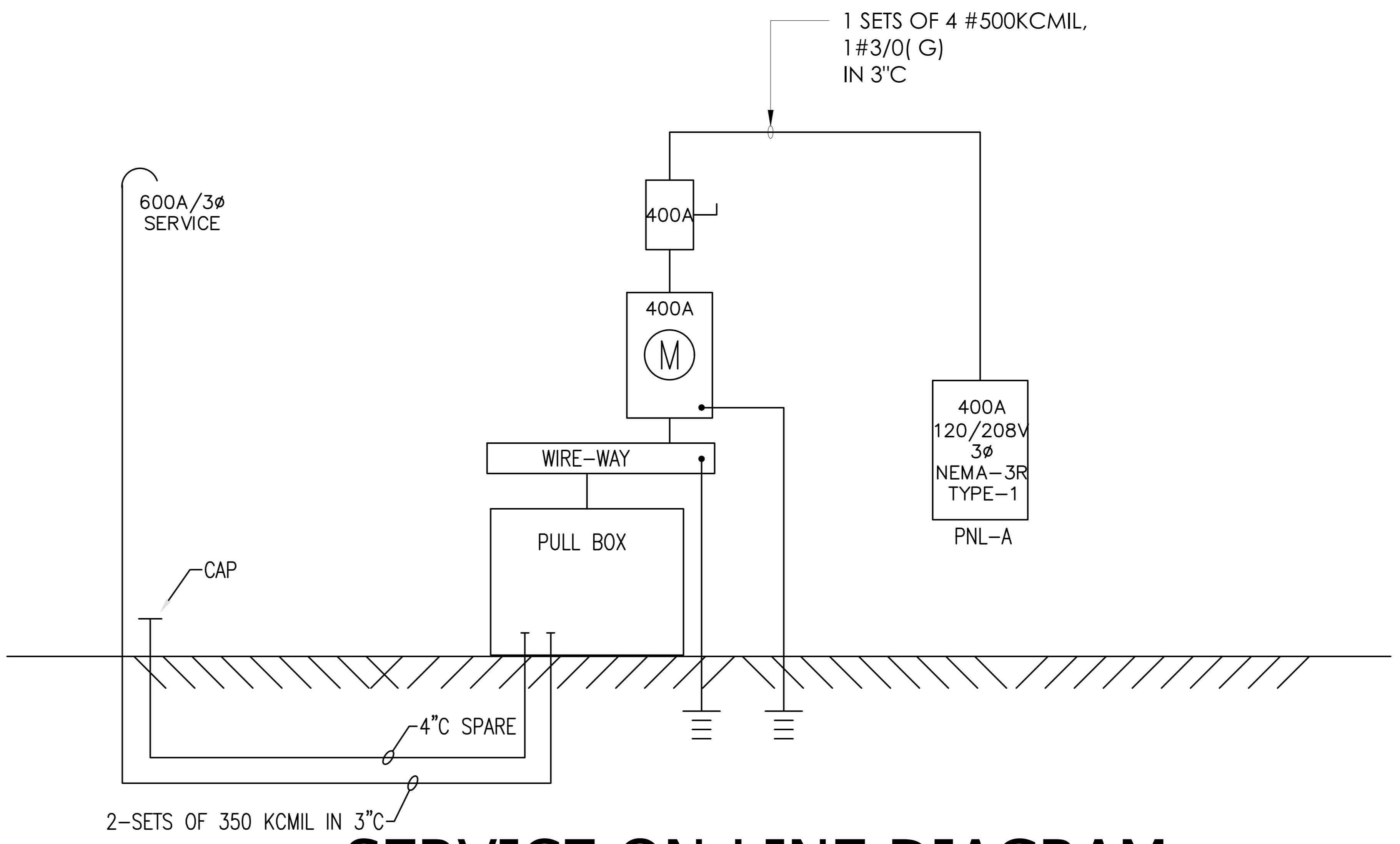
GENERAL NOTES

- A. ALL EXISTING COMPONENTS OF THIS ELECTRICAL DIAGRAM ARE TO REMAIN AS INSTALLED AND ARE SHOWN FOR REFERENCE ONLY.
- B. ALL WORK SHALL CONFORM TO THE LATEST EDITION OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70, NATIONAL ELECTRICAL CODE. ALL ITEMS ARE ON AN OR EQUAL BASIS.
- C. ASSOCIATION (NFPA) 70, NATIONAL ELECTRICAL CODE. ALL ITEMS ARE ON AN OR EQUAL BASIS.
- D. ALL SINGLE PHASE BRANCH CIRCUITS (RECEPTACLES, LIGHTING, ETC.); ARE 1/2" CONDUIT OR EMT WITH THIN, 90C WIRING, UNLESS NOTED OTHERWISE. ALL OTHER CONDUIT AND WIRING SHALL BE AS INDICATED ON THE PLANS. ACTUAL ROUTING AND HOME RUN GROUPINGS ARE TO BE DETERMINED IN THE FIELD.
- E. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC EXCEPT FOR DETAILS AND ELEVATIONS. DO NOT SCALE FROM DIAGRAMMATIC DRAWINGS. EXACT LOCATIONS OF DEVICES AND PANELS ARE TO BE DETERMINED AND ROUGHED-IN DURING CONSTRUCTION TO AVOID INTERFERENCE, TO MEET USER REQUIREMENTS, TO PROVIDE ADEQUATE MOUNTING, AND TO MEET NEC LINEAR ACCESS AND CLEARANCE REQUIREMENTS.
- F. BACK TO BACK MOUNTING OF RECEPTACLES IS NOT PERMITTED.
- G. IN ADDITION TO THE NEC REQUIREMENTS FOR GFCI PROTECTION FOR RECEPTACLES, THE FOLLOWING RECEPTACLES SHALL ALSO HAVE GFCI PROTECTION: (1)-ALL RECEPTACLES LOCATED WITHIN 8 FEET OF A SINK, (2)-ALL RECEPTACLES WHICH ARE PROVIDED FOR CONVENIENCE IN SERVICING HVAC EQUIPMENT REGARDLESS OF LOCATION. AS REQUIRED TO ACCOMMODATE CONDUCTOR PULLING EASE, FIELD LIFE SAFETY.
- H. PROVIDE A LAMICOID NAMEPLATE (WHITE LETTERS ON BLACK BACKGROUND; ON EACH PANELBOARD, MOTOR STARTER, CONTACTOR, TRANSFORMER, ETC. LETTERS SHALL BE 0.75 INCH MAINIMUM.
- I. CONTRACTOR SHALL CUT AS REQUIRED TO INSTALL ELECTRICAL EQUIPMENT REPAIR OF FLOOR OR WALLS SHALL BE COORDINATED WITH GENERAL CONTRACTOR CONTRACTOR SHALL ALSO REPAIR ALL OPENINGS LEFT DUE TO EQUIPMENT REMOVAL.
- J. CONDUCTORS ARE COPPER UNLESS OTHERWISE SHOWN. ALL CONDUCTORS LARGER THAN #10 SHALL BE STRANDED.
- K. PANELBOARDS SHALL CONTAIN A TYPEWRITTEN DIRECTORY WITH A PLASTIC COVER AFFIXED TO THE INSIDE DOOR.

- L. ALL FIXTURES, DEVICES, CONDUIT, AND EQUIPMENT SHALL BE SECURED WITH APPROVED HANGERS AND ANCHORS AND IN ACCORDANCE WITH APPROVED STANDARDS OF INSTALLATION.
- M. ALL BREAKERS SHOWN IN THE PANELBOARD SCHEDULE SHALL BE RATED AS SHOWN FOR BOTH CIRCUIT CAPACITY AND FAULT CURRENT INTERRUPTING CAPACITY.
- N. ALL PANELBOARDS, DISCONNECT SWITCHES, MOTOR STARTERS, AND CONTACTORS SHALL BE NEMA 1, UNLESS OTHERWISE NOTED.
- O. ELECTRICAL CONTRACTOR MUST BE AVAILABLE AT TIME OF DBS INSPECTION. COORDINATE WITH GENERAL CONTRACTOR.
- P. FIELD VERIFY THE AVAILABLE FAULT CURRENT AT THE LANDLORD'S EXISTING PANEL AND PROVIDE A NEW, FULLY RATED, PANEL TO MATCH EXISTING.
- Q. CONTRACTOR TO MAKE FINAL CONNECTIONS IN EMS PANEL FOR LANDLORD PROVIDED LIGHTING CIRCUITS. 50% OF THE GENERAL LIGHTING CIRCUITS SHOULD BE ROUTED THROUGH THE CUSTOMER CONTROL ZONE .



GROUNDING DETAIL



SERVICE ON-LINE DIAGRAM

1 Scale: N.T.S

Project Name: Proposed Commercial Center		NRC-PRF-01-E		Page 1 of 13	
Project Address: Division Street, n/o AVE, J-5 Lancaster 93535		Calculation Date/Time: 08/36, Mon, Oct 24, 2022			
Input File Name: 3488_APN 3141-006-009, D10 & D11, Division St n o Ave, J-5 Lancaster, CA 93535_Energy Analysis.cbt31b					
A. GENERAL INFORMATION					
1	Project Location (City)	Lancaster	8	Compliance Version	Compliance2019
2	CA Title Code	93535	9	Compliance Software (version)	EnergyPlus 8.3
3	Climate Zone	14	10	Weather File	LANCASTER_721814_CZ2019.epw
4	Total Unconditioned Floor Area in Scope	382 ft ²	11	Building Orientation (deg)	(S) 180 deg
5	Total Unconditioned Floor Area	3,342 ft ²	12	Permitted Scope of Work	New/Complete
6	Total # of Stories (Habitable Above Grade)	1	13	Building Type(s)	Nonresidential
7	Total # of Dwelling Units	0	14	Use Type	Restoration
B. PROJECT SUMMARY					
Table Instructions: Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within general application.					
Building Components Complying via Performance			Building Components Complying Prescriptively		
Envelope (see Table G)	<input checked="" type="checkbox"/> Performance <input type="checkbox"/> Not Included	Covered Process: Commercial Kitchens	<input type="checkbox"/> Performance <input checked="" type="checkbox"/> Not Included	The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRC Form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRC-PRF-E.)	
Mechanical (see Table H)	<input checked="" type="checkbox"/> Performance <input type="checkbox"/> Not Included	Covered Process: Computer Rooms	<input type="checkbox"/> Performance <input checked="" type="checkbox"/> Not Included	Indoor Lighting (Unconditioned)§140.6	NRC-C1-E
Domestic Hot Water (see Table I)	<input checked="" type="checkbox"/> Performance <input type="checkbox"/> Not Included	Covered Process: Laboratory Exhaust	<input type="checkbox"/> Performance <input checked="" type="checkbox"/> Not Included	Outdoor Lighting §140.7	NRC-C10-E
Lighting (Indoor Conditioned, see Table K)	<input checked="" type="checkbox"/> Performance <input type="checkbox"/> Not Included		<input type="checkbox"/> Performance <input checked="" type="checkbox"/> Not Included	Sign Lighting §140.8	NRC-C7-E
Solar Thermal Water Heating (see Table L)	<input type="checkbox"/> Performance <input checked="" type="checkbox"/> Not Included		<input type="checkbox"/> Performance <input checked="" type="checkbox"/> Not Included	Manually Operated Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be shown on the NRC Form listed if applicable (i.e. compliance will not be shown on the NRC-PRF-E.)	
				Electrical Power Distribution §110.11	NRC-E2-E
				Commissioning §120.8	NRC-C10-E
				Solar Ready §110.10	NRC-S6A-E
CA Building Energy Efficiency Standards: 2019 Nonresidential Compliance		Report Version: NRC-PRF-01-E-12092021-6844		Report Generated at: 2022-10-24 08:37:48	

Project Name: Proposed Commercial Center		NRC-PRF-01-E		Page 2 of 13	
Project Address: Division Street, n/o AVE, J-5 Lancaster 93535		Calculation Date/Time: 08/36, Mon, Oct 24, 2022			
Input File Name: 3488_APN 3141-006-009, D10 & D11, Division St n o Ave, J-5 Lancaster, CA 93535_Energy Analysis.cbt31b					
C1. COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDU Energy Use, kWh/ft²-yr)					
COMPLIES					
Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)		
Space Heating	26.01	38.32	-12.31		
Space Cooling	591.63	137.75	53.88		
Indoor Fans	297.78	66.76	193.02		
Heat Rejection	--	--	--		
Pumps & Misc.	--	--	--		
Domestic Hot Water	53.67	89.94	-36.27		
Indoor Lighting	42.55	24.28	6.26		
ENERGY STANDARDS COMPLIANCE TOTAL	571.65	367.25	204.40 (35.8%)		
Notes: The number in parenthesis following the Compliance Margin in column 4, represents the Percent better than Standard.					
C2. RESULTS FOR 'ABOVE CODE' QUALIFICATIONS*					
This project is pursuing California Tier 1			This project is pursuing California Tier 2		
Miscellaneous Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)		
Receptacle	851.93	851.93	--		
Process	--	--	--		
Other Ltg	372.36	372.36	--		
Process Motors	105.01	105.01	--		
COMPLIANCE TOTAL PLUS MISCELLANEOUS COMPONENTS	1,309.95	1,404.53	204.4 (16.3%)		
Notes: This table is used to document compliance with programs OTHER THAN Title 24 Part 6, if applicable.					
CA Building Energy Efficiency Standards: 2019 Nonresidential Compliance		Report Version: NRC-PRF-01-E-12092021-6844		Report Generated at: 2022-10-24 08:37:48	

Project Name: Proposed Commercial Center		NRC-PRF-01-E		Page 3 of 13		
Project Address: Division Street, n/o AVE, J-5 Lancaster 93535		Calculation Date/Time: 08/36, Mon, Oct 24, 2022				
Input File Name: 3488_APN 3141-006-009, D10 & D11, Division St n o Ave, J-5 Lancaster, CA 93535_Energy Analysis.cbt31b						
C3. ENERGY USE SUMMARY						
Energy Component	Standard Design Site (kBtu)	Proposed Design Site (kBtu)	Margin (kBtu)	Standard Design Site (kBtu)	Proposed Design Site (kBtu)	Margin (kBtu)
Space Heating	--	0.6	0.6	4.8	--	4.5
Space Cooling	1.9	1.2	0.7	--	--	--
Indoor Fans	3.4	0.9	2.5	--	--	--
Heat Rejection	--	--	--	--	--	--
Pumps & Misc.	--	--	--	--	--	--
Domestic Hot Water	0.1	1.2	-1.1	9.8	--	9.8
Indoor Lighting	0.6	0.5	0.1	--	--	--
Compliance Total	6.0	4.4	1.6	14.6	0.0	14.6
Process	11.2	11.2	0.0	--	--	--
Process	--	--	--	--	--	--
Other Ltg	4.9	4.9	0.0	--	--	--
Process Motors	1.4	1.4	0.0	--	--	--
TOTAL	23.5	23.9	1.6	14.6	0.0	14.6
D. EXCEPTIONAL CONDITIONS						
The aged solar reflectance and aged thermal emittance must be listed in the Cool Roof Rating Council database of certified products. For projects where initial reflectance is used, the initial reflectance must be listed, and the aged reflectance is calculated by the software program and used in the compliance model.						
This project uses the Simplified Geometry Performance Modeling Approach which is not capable of modeling daylighting controls and assumes the prescriptive Secondary Daylit Control requirements are met. PRESCRIPTIVE COMPLIANCE documentation (form NRC-LTV-02-E) for the requirements of section 140.6(f) Automatic Daylighting Controls in Secondary Daylit Zones is required.						
The user model includes spaces that are designed to be served by mechanical cooling systems, but the cooling systems were not included in the simulation model. A cooling system has been modeled for both the proposed and standard cases.						
The user model includes spaces without sufficient cooling equipment. Cooling equipment has been added to the model to meet cooling loads.						
E. HERS VERIFICATION						
This Section Does Not Apply						
CA Building Energy Efficiency Standards: 2019 Nonresidential Compliance		Report Version: NRC-PRF-01-E-12092021-6844		Report Generated at: 2022-10-24 08:37:48		

Project Name: Proposed Commercial Center		NRC-PRF-01-E		Page 4 of 13					
Project Address: Division Street, n/o AVE, J-5 Lancaster 93535		Calculation Date/Time: 08/36, Mon, Oct 24, 2022							
Input File Name: 3488_APN 3141-006-009, D10 & D11, Division St n o Ave, J-5 Lancaster, CA 93535_Energy Analysis.cbt31b									
G1. ENVELOPE GENERAL INFORMATION (conditioned spaces only)									
1	2	3	4	5	6				
Opaque Surfaces & Orientation	Total Gross Surface Area (ft ²)	Total Fenestration Area (ft ²)	Window to Wall Ratio (%)						
North Facing*	0 ft ²	0 ft ²	0.0%						
East Facing*	220 ft ²	130 ft ²	59.1%						
South Facing*	200 ft ²	112 ft ²	56.0%						
West Facing*	220 ft ²	0 ft ²	0.0%						
Total	640 ft²	222 ft²	34.7%						
Roof	382 ft ²	0 ft ²	0.0%						
Notes: *North Facing is oriented to within 45 degrees of true north, including 45°00'00" east of north (NE), but excluding 45°00'00" west of north (NW). *East Facing is oriented to within 45 degrees of true east, including 45°00'00" south of east (SE), but excluding 45°00'00" north of east (NE). *South Facing is oriented to within 45 degrees of true south, including 45°00'00" west of south (SW), but excluding 45°00'00" east of south (SE). *West Facing is oriented to within 45 degrees of true west, including 45°00'00" north of west (NW), but excluding 45°00'00" south of west (SW).									
G2. CHRC ROOFING PRODUCT SUMMARY									
1	2	3	4	5	6				
Assembly Name	Roof Pitch	Aged Solar Reflectance	Thermal Emittance						
Metal Roof22	Low-Slope	0.64	0.75	Not Provided					
G3. OPAQUE SURFACE ASSEMBLY SUMMARY									
1	2	3	4	5	6	7	8	9	10
Surface Name	Surface Type	Area (ft ²)	Framing Type	Cavity R-Value	Continuous R-Value	U-Factor	Value	Description of Assembly Layers	Source - 7/8 in. Vapor permeable film, 1/8 in. P-5 Gypsum Board - 1/2 in. Concrete - Part Grouted and Insulated Glass fiber batt - 3 1/2 in. R13 (CCC Default)
R-15 Wall11	ExteriorWall	640	Wood	15	NA	U-Factor	0.095	Source - 7/8 in. Vapor permeable film, 1/8 in. P-5 Gypsum Board - 1/2 in. Concrete - Part Grouted and Insulated Glass fiber batt - 3 1/2 in. R13 (CCC Default)	N
R-13 Wall18	InteriorWall	400	NA	0	15	U-Factor	0.051	Concrete - Part Grouted and Insulated Glass fiber batt - 3 1/2 in. R13 (CCC Default)	N
CA Building Energy Efficiency Standards: 2019 Nonresidential Compliance		Report Version: NRC-PRF-01-E-12092021-6844		Report Generated at: 2022-10-24 08:37:48					

Project Name: Proposed Commercial Center		NRC-PRF-01-E		Page 5 of 13					
Project Address: Division Street, n/o AVE, J-5 Lancaster 93535		Calculation Date/Time: 08/36, Mon, Oct 24, 2022							
Input File Name: 3488_APN 3141-006-009, D10 & D11, Division St n o Ave, J-5 Lancaster, CA 93535_Energy Analysis.cbt31b									
G4. OPAQUE SURFACE ASSEMBLY SUMMARY									
1	2	3	4	5	6	7	8	9	10
Surface Name	Surface Type	Area (ft ²)	Framing Type	Cavity R-Value	Continuous R-Value	U-Factor	Value	Description of Assembly Layers	Source - 7/8 in. Vapor permeable film, 1/8 in. P-5 Gypsum Board - 1/2 in. Concrete - Part Grouted and Insulated Glass fiber batt - 3 1/2 in. R13 (CCC Default)
Slab On Grade20	UndergroundFloor	3724	NA	0	NA	F-Factor	0.73	Slab Type - Unheated/Uncooled/Chloride Insulation Orientation - None Insulation Thickness - 102 Asphalt shingles - 1/4 in. Plywood - 3/2 in. Air - Ceiling - 3/4 in. Metal Framed roof. Side. OC - 1/2 in. R-38 Optimum Board - 1/2 in.	N
Metal Roof22	Roof	3724	Metal	38	NA	U-Factor	0.065	Source - 7/8 in. Vapor permeable film, 1/8 in. P-5 Gypsum Board - 1/2 in. Concrete - Part Grouted and Insulated Glass fiber batt - 3 1/2 in. R13 (CCC Default)	N
8 CMU Wall29	ExteriorWall	6246	NA	0	NA	U-Factor	0.379	Concrete - Part Grouted and Empty 125 by75 - 8 in.	N
CA Building Energy Efficiency Standards: 2019 Nonresidential Compliance		Report Version: NRC-PRF-01-E-12092021-6844		Report Generated at: 2022-10-24 08:37:48					

Project Name: Proposed Commercial Center		NRC-PRF-01-E		Page 6 of 13							
Project Address: Division Street, n/o AVE, J-5 Lancaster 93535		Calculation Date/Time: 08/36, Mon, Oct 24, 2022									
Input File Name: 3488_APN 3141-006-009, D10 & D11, Division St n o Ave, J-5 Lancaster, CA 93535_Energy Analysis.cbt31b											
H1. DRY SYSTEM EQUIPMENT (Surfaces, air handling units, heat pumps, VRF, economizers etc.)											
1	2	3	4	5	6	7	8	9	10	11	12
Equipment Name	Equipment Type	Qty	Total Heating Output (kBtu/hr)	Supply Heat Output (kBtu/hr)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/hr)	Efficiency Unit	Efficiency	Economizer Type (if present)	Control
DX Heat Pump	MiniSplitHP (SplitType)	1	12	0	HSPF	14.00	12	SEER/EER	22.00 / 13.50	NA	N
CA Building Energy Efficiency Standards: 2019 Nonresidential Compliance		Report Version: NRC-PRF-01-E-12092021-6844		Report Generated at: 2022-10-24 08:37:48							

Project Name: Proposed Commercial Center		NRC-PRF-01-E		Page 7 of 13									
Project Address: Division Street, n/o AVE, J-5 Lancaster 93535		Calculation Date/Time: 08/36, Mon, Oct 24, 2022											
Input File Name: 3488_APN 3141-006-009, D10 & D11, Division St n o Ave, J-5 Lancaster, CA 93535_Energy Analysis.cbt31b													
H2. FAN SYSTEMS SUMMARY													
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Name or Item Tag	Design OA	CFM	CFM	Modeling Method	Power Units	Control	CFM	Modeling Method	Power Units	Control	CFM	Power Units	Control
DX Heat Pump	1	0	300	BrakelosePower	0.150	bhp	ConstantVolume	NA	NA	NA	NA	NA	N
CA Building Energy Efficiency Standards: 2019 Nonresidential Compliance		Report Version: NRC-PRF-01-E-12092021-6844		Report Generated at: 2022-10-24 08:37:48									

Project Name: Proposed Commercial Center		NRC-PRF-01-E		Page 8 of 13			
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Input File Name: 3488_APN 3141-006-009, D10 & D11, Division St n o Ave, J-5 Lancaster, CA 93535_Energy Analysis.cbt31b							
H3. EXHAUST FAN SUMMARY							
1	2	3	4	5	6	7	8
System ID	Zone Name	Qty	CFM	Motor BHP	Power Per Foot (W/ft)	Total Static Pressure (in. H ₂ O)	Control
Auto Repair Tablets 0022	1-Office Area	1	100	0.023	0.250	1.18	N
2-Auto Repair Tablets 00	2	100	0.023	0.250	1.18	N	
CA Building Energy Efficiency Standards: 2019 Nonresidential Compliance		Report Version: NRC-PRF-01-E-12092021-6844		Report Generated at: 2022-10-24 08:37:48			

Project Name: Proposed Commercial Center		NRC-PRF-01-E		Page 9 of 13	
Project Address: Division Street, n/o AVE, J-5 Lancaster 93535		Calculation Date/Time: 08/36, Mon, Oct 24, 2022			
Input File Name: 3488_APN 3141-006-009, D10 & D11, Division St n o Ave, J-5 Lancaster, CA 93535_Energy Analysis.cbt31b					
K2. INDOOR CONDITIONED LIGHTING SCHEDULE					
1	2	3	4	5	6
Name or Item Tag	Complete Luminaire Description (i.e., 3 lamp fluorescent troffer, F37E, one dimmable electronic ballast)	Watts per luminaire	How Wattage is Determined	Total Number Luminaires	Installed Watts
C	1 Lamp 2 1/8" Tube T8 Enc	50	According to §130.0(c)	3	150
D	2 Lamp 2 1/8" Linear T8 Enc	50	According to §130.0(c)	1	50
CA Building Energy Efficiency Standards: 2019 Nonresidential Compliance		Report Version: NRC-PRF-01-E-12092021-6844		Report Generated at: 2022-10-24 08:37:48	

Project Name: Proposed Commercial Center		NRC-PRF-01-E		Page 10 of 13				
Project Address: Division Street, n/o AVE, J-5 Lancaster 93535		Calculation Date/Time: 08/36, Mon, Oct 24, 2022						
Input File Name: 3488_APN 3141-006-009, D10 & D11, Division St n o Ave, J-5 Lancaster, CA 93535_Energy Analysis.cbt31b								
K3. INDOOR CONDITIONED LIGHTING CONTROL CREDITS								
1	2	3	4	5	6	7	8	9
Area Description	Primary Function Area (Must meet requirements of Table 140.6-A)	Type of Lighting Control	Power Adjustment Factor (PAF)	Luminaire Name or Item Tag	Watts per Luminaire	# of Luminaires	Lighting Controlled (Watts)	Control Credit (Watts)
5-1 Office Area	Office Area (2350 square feet)	NA	0.00	C	150.0	3	150	0
5-1 Office Area	Office Area (2350 square feet)	NA	0.00	D	50.0	1	50	0
CA Building Energy Efficiency Standards: 2019 Nonresidential Compliance		Report Version: NRC-PRF-01-E-12092021-6844		Report Generated at: 2022-10-24 08:37:48				

Project Name: Proposed Commercial Center		NRC-PRF-01-E		Page 11 of 13	
Project Address: Division Street, n/o AVE, J-5 Lancaster 93535		Calculation Date/Time: 08/36, Mon, Oct 24, 2022			
Input File Name: 3488_APN 3141-006-009, D10 & D11, Division St n o Ave, J-5 Lancaster, CA 93535_Energy Analysis.cbt31b					
L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION					
Table Instructions: Selections shall be made by Documentation Author to indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and can be found online at: https://www.energy.ca.gov/files/24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRC/					
Building Component	Form/Title				
Envelope	NRC-ENV-01-E - Must be submitted for all buildings				
Mechanical	NRC-MCH-01-E - Must be submitted for all buildings				
Plumbing	NRC-PLB-01-E - Must be submitted for all buildings				
Indoor Lighting	NRC-LTV-01-E - Must be submitted for all buildings				
CA Building Energy Efficiency Standards: 2019 Nonresidential Compliance		Report Version: NRC-PRF-01-E-12092021-6844		Report Generated at: 2022-10-24 08:37:48	

Project Name: Proposed Commercial Center		NRC-PRF-01-E		Page 12 of 13	
Project Address: Division Street, n/o AVE, J-5 Lancaster 93535		Calculation Date/Time: 08/36, Mon, Oct 24, 2022			
Input File Name: 3488_APN 3141-006-009, D10 & D11, Division St n o Ave, J-5 Lancaster, CA 93535_Energy Analysis.cbt31b					
M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE					

STATE OF CALIFORNIA
Nonresidential Building Commissioning
 NRC-CX-E

CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
 NRCC-CX-E

Project Name: Commercial Center at Division Street, n/o AVE, J-5
 Report Page: (Page 4 of 6)
 Project Address: Division Street, n/o AVE, J-5
 Date Prepared: 10/24/2022

Documentation Author's Declaration Statement
 I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Viranchi Shah
 Signature: Viranchi Shah
 Date Signed: 2022-10-24

Company: www.getit24.com
 Address: 14730 Beach Blvd.
 City/State/Zip: La Mirada CA 90638
 Phone: (714) 948-2424
 CEA/HERS Certification Identification (if applicable):

Responsible Person's Declaration Statement
 I certify the following under penalty of perjury, under the laws of the State of California:
 1. The information provided on this Certificate of Compliance is true and correct.
 2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
 3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
 4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
 5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Person's Name: Viranchi Shah
 Signature: Viranchi Shah
 Date Signed: 2022-10-24
 Title: License #

Company: www.getit24.com
 Address: 14730 Beach Blvd.
 City/State/Zip: La Mirada CA 90638
 Phone: (714) 948-2424
 CEA/HERS Certification Identification (if applicable):

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance
 Report Version: NRCC PRF-01-E-12092021-6844
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STATE OF CALIFORNIA
Nonresidential Building Commissioning
 NRC-CX-E

CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
 NRCC-CX-E

Project Name: Commercial Center at Division Street, n/o AVE, J-5
 Report Page: (Page 2 of 4)
 Project Address: Division Street, n/o AVE, J-5
 Date Prepared: 10/24/2022

A. GENERAL INFORMATION

01 Project Location (City)	Lancaster	04 Building Size (ft ²)	382
02 Occupancy Type	Nonresidential	05 Nonresidential Conditioned Floor Area (ft ²)	± 10,000 ft ²
03 Project Type	Newly constructed	06 HVAC System Type	Unitary or packaged equipment each serving one zone

B. PROJECT SCOPE
 Based on project information provided in Table A, Table B indicates which commissioning related requirements apply per §120.8. Table B is not editable by the user.

Commissioning Requirements per §120.8

01 Table F: Design Review Kickoff	§120.8(d) and §120.8(e)(2)	This design review kickoff meeting establishes who will play the role of the design reviewer, the project schedule and identify owner's requirements. This meeting should be conducted during schematic design.
02 Table G: Owner's Project Requirements (OPR)	§120.8(e)	This requirement does not apply.
03 Table H: Basis of Design (BOD)	§120.8(c)	This requirement does not apply.
04 Table I: Design Review	§120.8(d) and §120.8(e)	The design reviewer(s) reviews the construction documents for clarity, completeness, and adherence to the owner's goals. Commissioning measures must be included in the construction documents to facilitate the design review and commissioning process. For projects with >= 10,000 ft ² of nonresidential conditioned floor area the design review is for adherence with the Owner's Project Requirements (OPR) and Basis of Design (BOD). This should be conducted during design.
05 Table J: Commissioning Plan	§120.8(i)	This requirement does not apply.
06 Table K: Functional Performance Testing	§120.8(a)	This requirement does not apply.
07 Table L: Documentation and Training	§120.8(j)	This requirement does not apply.
08 Table M: Commissioning Report	§120.8(j)	This requirement does not apply.

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Nonresidential Building Commissioning
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Project Name: Commercial Center at Division Street, n/o AVE, J-5
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C. COMPLIANCE RESULTS
 Table C will indicate if the project data input into the compliance document is compliant with commissioning requirements per §120.8. This table is not editable by the user. If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D, for guidance.

01	02	03	04	05	06	07	08	09
Design Kickoff Review	Owner's Project Requirements	Basis of Design	Design Review	Commissioning Plan	Functional Performance Testing	Documentation and Training	Commissioning Report	Compliance Results
Table F	Table G	Table H	Table I	Table J	Table K	Table L	Table M	
Yes		Yes						COMPLIES
10	Design Review(s) for the project include:							

D. EXCEPTIONAL CONDITIONS
 This table is auto-filled with uneditable comments because of selected items or data entered in tables throughout the form.

E. ADDITIONAL REMARKS
 This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

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F. DESIGN REVIEW KICKOFF MEETING
 This table indicates that the design reviewer meets the qualification requirements per Title 24, Part 1 Section 10-103(a) and demonstrates compliance with design review kickoff requirements per §120.8(d). This meeting should occur during the Schematic Design phase of the project.

Design Review Kickoff Meeting Details

01 Date of Design Review Kickoff Meeting	0001-01-01
02 Meeting Attendees (one person may play multiple roles)	
03 Owner/Facility Manager	<input checked="" type="checkbox"/> (Design Reviewer(s))
04 Project Manager	<input type="checkbox"/> (Design Architect/ Engineer(s))
05 Call Recorder	<input type="checkbox"/> (Certified Acceptance Test Tech(s))
06 Commissioning Provider	<input type="checkbox"/> (Energy T24 Part 6 Consultant)

Design Reviewer Qualifications per Title 24 Part 1 Section 10-103(a)(1)
 The design reviewer(s) must be licensed professional engineers or licensed architects, or licensed contractors representing services performed by or under the direct supervision of a licensed engineer or architect, as specified in the provisions of Division 3 of the Business and Professions Code.
 Do the Design Reviewer(s) meet these qualifications? Yes No

Project Involvement or a Third Party Engineer, Architect, or Contractor
 In addition, for buildings with >= 10,000 ft² but < 50,000 ft², the design reviewer(s) shall be a qualified in-house engineer or architect with no other project involvement or a third party engineer, architect, or contractor.
 Yes No

Design Reviewer(s) for this project will be:
 Preliminary Construction Schedule

Activity	Start Date	Completion Date
01 Schematic Design	0001-01-01	0001-01-01
02 Design Development	0001-01-01	0001-01-01
03 Construction Documents	0001-01-01	0001-01-01
04 Construction	0001-01-01	0001-01-01
05 Building Turnover	0001-01-01	0001-01-01

Project Goals Related to Energy Efficiency

06 Operational Costs	
07 Desired Building Lifespan	
08 Equipment Lifecycle	
09 Project Energy Efficiency Goals	
10 Envelope Goals	

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CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
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Project Name: Commercial Center at Division Street, n/o AVE, J-5
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F. DESIGN REVIEW KICKOFF MEETING

15 HVAC System Goals	
16 Indoor Lighting System Goals	
17 Outdoor Lighting System Goals	
18 Water Heating System Goals	
19 Equipment and System Specifications	
20 Operations and Maintenance	

G. OWNER'S PROJECT REQUIREMENTS (OPR)
 This section does not apply to this project.

H. BASIS OF DESIGN (BOD)
 This section does not apply to this project.

I. CONSTRUCTION DOCUMENT DESIGN REVIEW CHECKLIST
 This table is only completed if a design review document is not attached to permit application to demonstrate compliance with §120.8(b) and §120.8(c). For buildings with >= 10,000 ft² conditioned floor area, the design review will ensure the construction documents meet the Owner's Project Requirements (Table G) and the Basis of Design (Table H). For buildings with < 10,000 ft² conditioned floor area, the design review will ensure the construction documents meet the goals documented in Table F during the Design Review Kickoff.

01 Attaching Completed Design Review Documentation?	YES	NO
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J. COMMISSIONING PLAN
 This section does not apply to this project.

K. FUNCTIONAL PERFORMANCE TESTING
 This section does not apply to this project.

L. DOCUMENTATION AND TRAINING
 This section does not apply to this project.

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CERTIFICATE OF COMPLIANCE
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M. COMMISSIONING REPORT
 This section does not apply to this project.

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION
 There are no certificates of installation applicable to commissioning requirements.

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE
 Although there are no "COC" Certificates of Acceptance required to document commissioning requirements, Certificates of Acceptance may be used to supplement functional performance testing required by §120.8(d).

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Nonresidential Building Commissioning
 NRC-CX-E

CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
 NRCC-CX-E

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 Date Prepared: 10/24/2022

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
 I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Viranchi Shah
 Signature: Viranchi Shah
 Date Signed: 2022-10-24
 Company: www.getit24.com
 Address: 14730 Beach Blvd.
 City/State/Zip: La Mirada CA 90638
 Phone: 7148884736

RESPONSIBLE PERSON'S DECLARATION STATEMENT
 I verify the following under penalty of perjury under the laws of the State of California:
 1. The information provided on this Certificate of Compliance is true and correct.
 2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
 3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
 4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
 5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Person's Name: Viranchi Shah
 Signature: Viranchi Shah
 Date Signed: 2022-10-24
 Title: License #

Company: www.getit24.com
 Address: 14730 Beach Blvd.
 City/State/Zip: La Mirada CA 90638
 Phone: (714) 948-2424
 CEA/HERS Certification Identification (if applicable):

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STATE OF CALIFORNIA
Indoor Lighting
 NRCC-E

CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
 NRCC-CL-E

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 Date Prepared: 10/24/2022

A. GENERAL INFORMATION

01 Project Location (City)	Lancaster	04 Total Conditioned Floor Area (ft ²)	0
02 Climate Zone	14	05 Total Unconditioned Floor Area (ft ²)	3,342
03 Occupancy Types Within Project (select all that apply):		06 # of Stories (Habitable Above Grade)	1
Commercial Industrial	Office		

B. PROJECT SCOPE
 This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §160.6 or §161.0(b) for alterations.

Scope of Work	Conditioned Spaces		Unconditioned Spaces	
	01	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft ²)	Calculation Method	Area (ft ²)
<input checked="" type="checkbox"/> New Lighting System	Area Category Method	0	Area Category Method	3342
<input type="checkbox"/> New Lighting System	Parking Garage			
	Total Area of Work (ft ²)	0		3342

C. COMPLIANCE RESULTS
 If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D, for guidance.

Lighting in conditioned and unconditioned spaces must not be combined for compliance per §160.6(b)(1)	Allowed Lighting Power per §160.6(b) (Watts)				Total Allowed (Watts)	Total Adjusted (Watts)	Compliance Results
	01	02	03	04			
Complete Building	§160.6(c)(1)	Area Category Additional §160.6(c)(2) (+)	Tailored §160.6(c)(3) (+)		2,172	2,150	COMPLIES
(See Table I)	(See Table I)	(See Table I)	(See Table I)				
Unconditioned	2,172.3	0			2,172	2,150	0 = 2,150

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CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:
 ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF THE DESIGNER AND THE SAME MAY NOT BE DUPLICATED, USED OR DISCLOSED WITHOUT CONSENT OF THE DESIGNER.

NOTES:
 1. ALL DIMENSIONS HEREIN ARE IN IMPERIAL UNITS UNLESS STATED OTHERWISE.
 2. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT DESIGNER, ENGINEER OR SPECIALIST DRAWINGS AND SPECIFICATIONS.
 3. THE CONTRACTOR MUST CHECK ALL DIMENSION AT SITE BEFORE COMMENCING WORK.
 4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:

TITLE:
T24 02

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36"
		NTS

DRAWING NO.
T - 2

REV.

