## Project Synopsis

-	
project description:	an tenant finish project for Rocktops Granite and Stone to create a showroom space and slab storage.
client:	Rocktops Granite and Stone 1140 S Enterprise Street Olathe, Kansas 66061 p: 913.782.0802
architect:	Justin Bridges Davidson Architecture & Engineering 4301 Indian Creek Parkway Overland Park, Kansas 66207 p: 913.451.9390
structural engineer:	Mettemeyer Engineering 1500 NW Vivion Road, Suite D Kansas City, Missouri 64118 p: 816.587.0101
MEP engineer:	BC Engineers 5720 Reeder Street Shawnee, Kansas 66203 p: 913.262.1772
general contractor:	Doug Rothfuss Capital Construction Services 2642 NE Hagan Road Lee's Summit, Missouri 64064 p: 816.875.0018

## Code Synopsis

governing municipality: Lee's Summit, Missouri

governing code:	2018 International Building Code 2018 International Plumbing Code 2018 International Mechanical Code 2018 International Fire Code 2018 International Fuel Gas Code 2017 NEC (w/ Part 8 Rules)
stories: total building area: tenant area: construction type: fire suppression: occupancy group: occupant load:	one 71,571 s.f. 6,977 s.f. Type II B yes, ESFR fire sprinkler system B (business) and S-1 (storage)
warehouse 1/500 s.f.:	5,260 / 500 = 11

### plumbing fixture requirements (per table 403.1) total occupant load: 22 occupants

business 1/150 s.f.:

Total

I	I			
<u>fixture</u> water closet	<u>requirement</u> 1 per 25 for first 50	= 1	<u>quantity provided</u> 1	
lavatory	1 per 40 for first 80	= 1	1	
drinking fountains	1 per 100	= 1	2 (1 high-low)	
service sink	1 service sink		1	

1.527 / 150 = 11

22 occ.

## **General Notes**

- Paint interior of all warehouse walls "flat white" full height. All warehouse walls to receive 6" standard cove vinyl wall base
- Double keyed locks are not permitted on any required exit. All exit and emergency lighting are subject to an on-site inspection.
- Egress illumination shall be provided at an intensity of not less than 1 foot candle (fc) at floor level and at the exterior of the building.
- Mechanical roof top units (rtu's) shall have an accessible GFCI outlet(s) per code. • Provide electrical outlets at 15" A.F.F. to the lowest outlet
- per ADA / ANSI. • All electrical outlets within 6'-0" of any water source shall
- be GFCI protected. Building construction must comply with all requirements of
- ADA / ANSI accessibility guidelines. • Provide 44" min. clear width in all exit passageways.
- Exit doors shall be openable from the inside without the use of key, any special knowledge, or effort. • Furnish and install horns & strobes as required.
- Fully seal and caulk around all penetrations in exterior walls and roof.
- All construction shall conform to the standards and regulations adopted by Lee's Summit, Missouri.
- The general contractor shall contact all utility companies prior to the start of construction, and verify depth of utilities that may be encountered during such.
- The general contractor shall be responsible for obtaining all required permits, and otherwise complying with all applicable regulations governing the project.
- The general contractor shall field verify existing surface and subsurface ground conditions prior to the start of construction. • Provide fire extinguishers and cabinets, where necessary.
- Coordinate quantity and location with fire marshal. • All floor finish changes shall occur under centerline of
- door in closed position. • All interior glazing shall be clear. Temper all interior glass.

## General Ceiling Notes

- Refer to general construction notes and specifications for
- information. • Refer to engineering drawings for HVAC, electrical fixtures, specifications and details.
- Refer to engineering drawings for emergency fixture
- locations and specifications. • All ceilings to be 10'-0" A.F.F. unless noted otherwise.
- All headers to be painted white. Install R-19 sound attenuation ceiling batts above entire

showroom area.

total fixtures

Toilet Accessory Schedule

CH Clothes Hook w/ bumper

Item

GB 18" Grab Bar

(PT) Paper Towel

(SD) Soap Dispenser

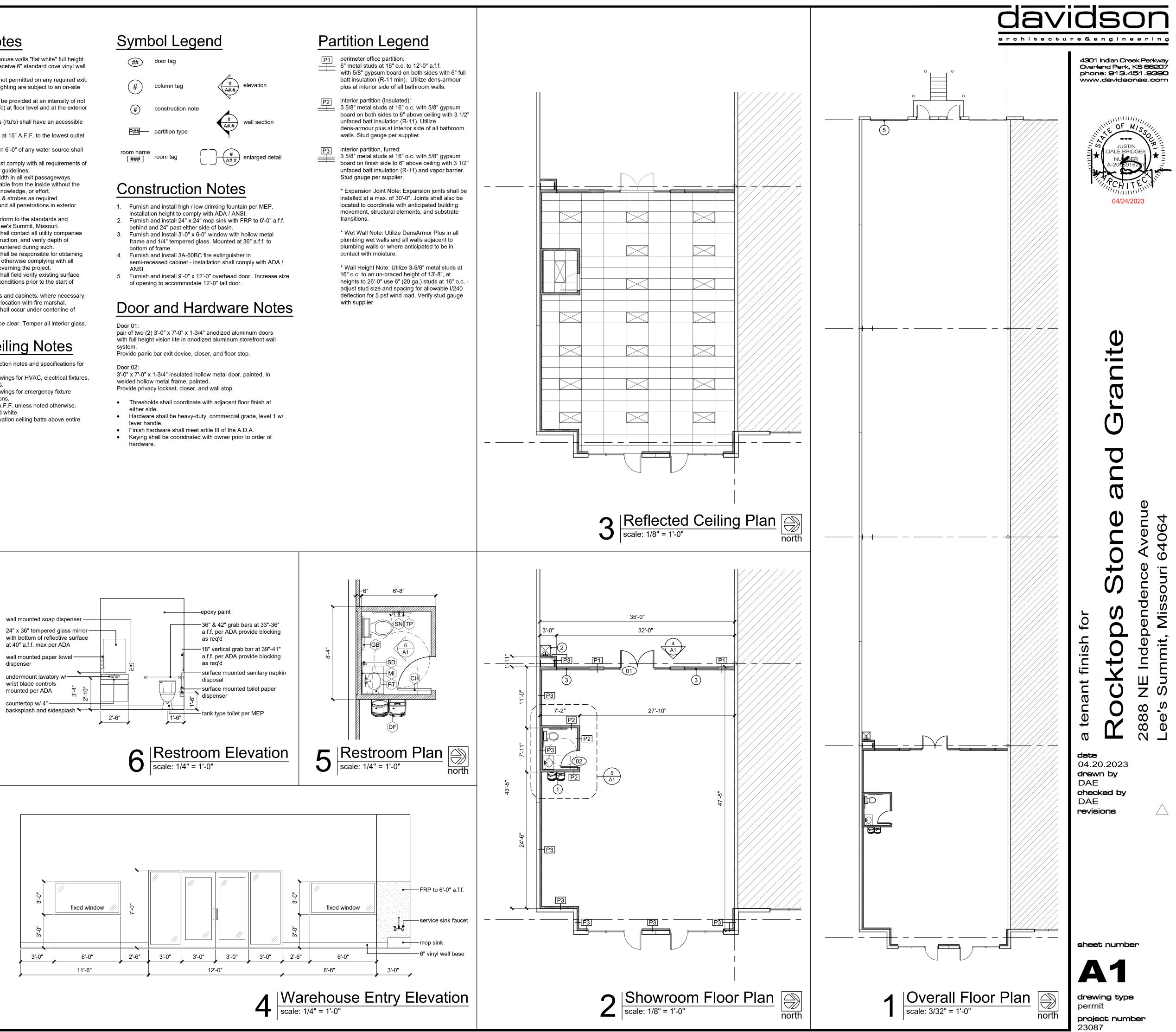
[MI] Mirror

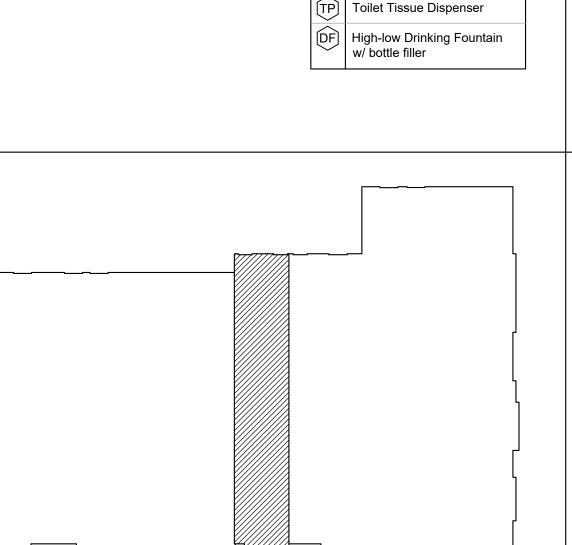
36" Grab Bar

42" Grab Bar

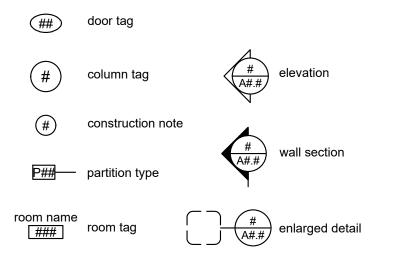
SN Sanitary Napkin Disposal

wall mounted soap dispenser ----24" x 36" tempered glass mirror with bottom of reflective surface at 40" a.f.f. max per ADA wall mounted paper towel ---dispenser undermount lavatory w/ wrist blade controls mounted per ADA countertop w/ 4" ---backsplash and sidesplash 🖌 🔸 2'-6"



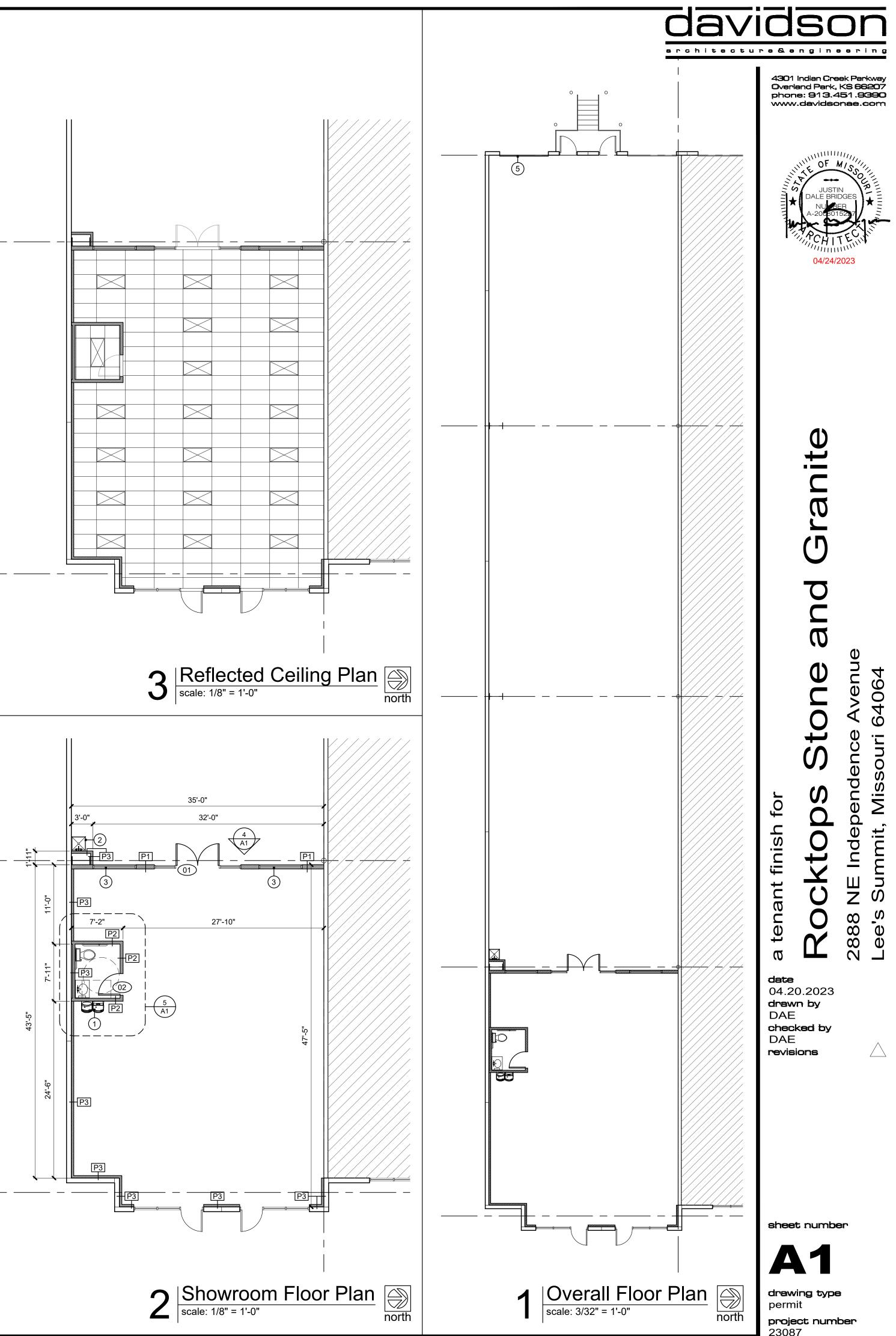


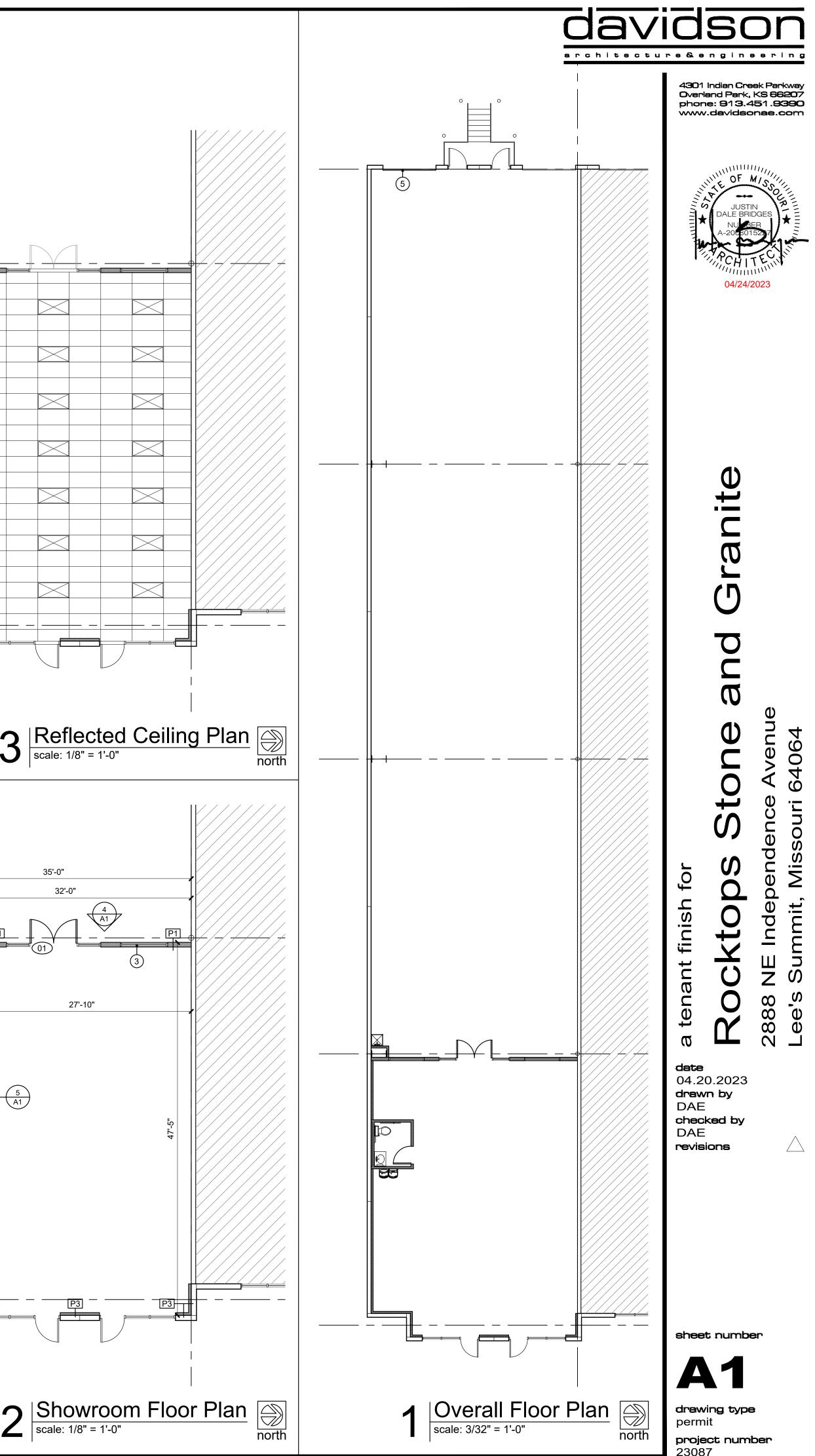
Key Plan











### **GENERAL CONDITIONS**

- 1. CONTRACTOR, BUILDER AND SUBCONTRACTORS INVOLVED IN ANY FORM OF CONSTRUCTION USING THESE CONTRACT DOCUMENTS SHALL BE INFORMED OF THE FOLLOWING RESPONSIBILITIES, PERFORMANCE CRITERIA, LIMITATIONS AND RISKS ASSOCIATED WITH CONSTRUCTION. IF THE OWNER, DEVELOPER OR CONTRACTOR IS NOT ABLE TO ACCEPT THE RESPONSIBILITIES OR PERFORMANCE CRITERIA AND LIMITATIONS, NOTIFY THE ENGINEER OF RECORD OR ARCHITECT PRIOR TO START OF CONSTRUCTION. IT SHALL BE EXPRESSLY UNDERSTOOD THAT THE ENGINEER IS NOT RESPONSIBLE OR LIABLE FOR THE LACK OF PERFORMANCE OF MATERIALS, SYSTEMS OR DESIGNS NOT BEING LIMITED TO ITEMS OUTLINED BELOW. CONTRACTORS AND SUBCONTRACTORS SHALL THOROUGHLY REVIEW ALL CONDITIONS AND RESPONSIBILITIES STATED IN THESE NOTES, PLANS, SECTIONS / DETAILS, AND SHALL NOTIFY THE ENGINEER AND OWNER IN WRITING PRIOR TO CONSTRUCTION OF ANY CONDITIONS OR RESPONSIBILITIES WHICH ARE NOT ACCEPTABLE OR NOT UNDERSTOOD.
- 2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE STRUCTURAL ENGINEERS IN THIS OR SIMILAR LOCALITIES. THEY NECESSARILY ASSUME THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR. SUBCONTRACTOR AND/OR WORKPERSONS WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS. IT IS UNDERSTOOD THAT THE CONTRACTOR WILL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR ALL WORK.
- 3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS AND METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DESIGN AND PROVIDE ADEQUATE, SHORING, BRACING, FORMWORK, ETC. AS REQUIRED FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION.
- 4. CONSTRUCTION MATERIALS SHALL BE UNIFORMLY SPREAD OUT SUCH THAT DESIGN LIVE LOAD PER SQUARE FOOT AS STATED HEREIN IS NOT EXCEEDED. VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
- 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, CONDITIONS AND ELEVATIONS WITH OTHER DISCIPLINES DRAWINGS PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL INFORM THE ARCHITECT AND ENGINEER OF RECORD IN WRITING OF ANY DISCREPANCIES OR OMISSIONS NOTED ON THE DRAWINGS. ANY SUCH DISCREPANCY, OMISSION OR VARIATION NOT REPORTED BEFORE THE START OF CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 6. WHERE REFERENCE IS MADE TO VARIOUS TEST STANDARDS FOR MATERIALS, SUCH STANDARDS SHALL BE THE LATEST EDITION AND/OR ADDENDA.
- 7. OPTIONS ARE FOR CONTRACTOR'S CONVENIENCE. IF AN OPTION IS USED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY CHANGES AND SHALL COORDINATE ALL DETAILS.
- 8. ALL OPENINGS ARE NOT SHOWN ON THESE DRAWINGS. ESTABLISH AND VERIFY ALL OPENINGS AND INSERTS FOR ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL WITH APPROPRIATE TRADES, DRAWINGS AND SUBCONTRACTORS PRIOR TO CONSTRUCTION. OPENINGS MAY REQUIRE ADDITIONAL REINFORCING OR SUPPORTS AS SHOWN ON TYPICAL DETAILS. IF TYPICAL DETAILS FOR ALL CONDITIONS ARE NOT INCLUDED HEREIN, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REQUEST IN WRITING ADDITIONAL INFORMATION.
- 9. ALL INSPECTIONS REQUIRED BY THE BUILDING CODES, LOCAL BUILDING OFFICIALS, OR BY THESE PLANS SHALL BE PROVIDED BY AN INDEPENDENT INSPECTION COMPANY OR THE BUILDING DEPARTMENT. SPECIAL INSPECTION REQUIREMENTS STATED HEREIN ARE PARTIAL. COMPLETE INSPECTION REQUIREMENTS SHALL BE AS DIRECTED BY THE LOCAL BUILDING DEPARTMENT. SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE A SPECIAL INSPECTION, UNLESS SPECIFICALLY CONTRACTED FOR.

### CONFLICTING REQUIREMENTS

- 1. ANY AND ALL CONFLICTS WITHIN THE CONTRACT DOCUMENTS (PLANS, SPECIFICATIONS AND OTHER DOCUMENTS); OR BETWEEN THE DOCUMENTS AND EXISTING PROJECT CONDITIONS SHALL BE QUANTIFIED BY THE CONTRACTOR(S); AND ALL ASSOCIATED COSTS MUST BE INCLUDED IN THE CONTRACTOR(S) BASE BID; OR ANY AND/OR ALL COSTS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR(S). IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR(S) TO BRING EACH CONFLICT TO THE ATTENTION OF THE ENGINEER OF RECORD. ALL CONFLICTS SHALL BE IDENTIFIED IN WRITTEN FORM AND SUBMITTED THROUGH THE "REQUEST FOR INFORMATION" (RFI) PROCESS DURING BIDDING. THE ENGINEER OF RECORD SHALL REVIEW ALL IDENTIFIED CONFLICTS AND RENDER TO THE CONTRACTOR(S) THEIR DECISION.
- 2. IF THE CONTRACTOR(S) DO NOT SUBMIT AN RFI AND/OR DO NOT RECEIVE A DIRECTIVE OR CLARIFICATION IN WRITING FROM THE ENGINEER OF RECORD THROUGH NO FAULT OF THEIR OWN, CONTRACTOR SHALL BE REQUIRED TO COMPLY WITH THE MORE STRINGENT STANDARD, OR HIGHER LEVEL OF QUALITY AT NO ADDITIONAL COSTS TO THE OWNER.
- 3. IF COMPLIANCE WITH TWO OR MORE STANDARDS IS SPECIFIED AND THE STANDARDS ESTABLISHES A DIFFERENT OR
- CONFLICTING REQUIREMENTS FOR MINIMUM QUANTITIES OR QUALITY LEVELS, COMPLY WITH THE MOST STRINGENT REQUIREMENT.

### **ELECTRONIC FILES**

1. ELECTRONIC FILES CREATED BY METTEMEYER ENGINEERING, LLC. WILL NOT BE MADE AVAILABLE FOR USE BY THE GENERAL CONTRACTOR, SUBCONTRACTORS, OR BUILDERS INVOLVED IN ANY FORM OF CONSTRUCTION. BIDS ON THE PROJECT SHALL BE MADE ACCORDINGLY.

### STRUCTURAL STEEL

1. STRUCTURAL STEEL MEMBERS SHALL CONFORM WITH THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES UNLESS NOTED OTHERWISE

<u>SHAPE</u>	<u>STANDARD</u>
CHANNELS	ASTM A36

- 2. ALL STRUCTURAL AND MISCELLANEOUS STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, CODE REFERENCED EDITION.
- 3. WELDING SHALL BE PERFORMED BY WELDERS HOLDING VALID CERTIFICATES AND HAVING CURRENT EXPERIENCE IN THE TYPE OF WELD SHOWN ON THE DRAWINGS. ALL WELDING SHALL USE E70 SERIES LOW HYDROGEN ELECTRODES UNLESS NOTED OTHERWISE. ALL WELDS INVOLVING REINFORCING BARS SHALL USE E90 SERIES ELECTRODES. ALL WELDING SHALL CONFORM TO THE LATEST AMERICAN WELDING SOCIETY (AWS) STANDARDS. WELDS ON DRAWINGS ARE SHOWN AS SHOP WELDS. CONTRACTOR MAY SHOP WELD OR FIELD WELD AT HIS DISCRETION. ALL FULL PENETRATION WELDS SHALL BE TESTED AND CERTIFIED BY AN INDEPENDENT TESTING LABORATORY.
- 4. HEAVY LOADS THAT EXCEED 75% OF ALLOWABLE LIVE LOADS SHOWN ON THE PLANS, FOR TEMPORARY EQUIPMENT, CONSTRUCTION MATERIALS, OR OTHER LOADS NOT SHOWN IN THE CONTRACT DOCUMENTS, SHALL NOT BE PLACED OR SUPPORTED FROM ELEVATED STRUCTURE WITHOUT PRIOR WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.
- 5. FIELD CUTTING, DRILLING OR OTHER MODIFICATION OF STRUCTURAL STEEL COMPONENTS IS NOT PERMITTED WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER. WHERE BEAM PENETRATIONS CANNOT BE AVOIDED OR WHERE CUTTING IS REQUIRED, CONTRACTOR SHALL SUBMIT TO THE ENGINEER, ALL PERTINENT INFORMATION INCLUDING PENETRATION SHAPE, SIZE LOCATION AND METHOD OF CUTTING THE OPENING.

### POST-INSTALLED ANCHORS

- POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS. SPECIAL INSPECTIONS ARE REQUIRED PER THE PROVISIONS SET FORTH IN BELOW REFERENCED IBC CODE REPORTS. ANCHORS ARE TO BE INSTALLED BY EXPERIENCED INSTALLERS OR CONTRACTOR TO CONTACT MANUFACTURER'S REPRESENTATIVE FOR PROPER PRODUCT INSTALLATION TRAINING ON INITIAL ANCHORS. SUBSTITUTION REQUESTS, FOR PRODUCTS OTHER THAN THOSE SPECIFIED BELOW, SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD ALONG WITH CALCULATIONS THAT ARE PREPARED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERTINENT EQUIVALENT PERFORMANCE VALUES (MINIMUM) OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARD(S) AS REQUIRED BY THE BUILDING CODE.
- 2. CONCRETE ANCHORS
- A. MECHANICAL ANCHORS FOR USE IN CRACKED AND UNCRACKED CONCRETE SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193. PRE-APPROVED MECHANICAL ANCHORS INCLUDE:
- SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR-2713)
- HILTI KWIK HUS-EZ "KH-EZ" (ICC-ES ESR-3027) B. ADHESIVE ANCHORS FOR USE IN CRACKED AND UNCRACKED CONCRETE SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC308. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:
- SIMPSON STRONG-TIE "SET-GT" (ICC-ES ESR-2508)
- HILTI HIT-HY 200-R (ICC-ES ESR 3187)
- ALL THREAD RODS SHALL BE ASTM F1554, Fy = 36 KSI

**GENERAL NOTES** 

Fy 36 KSI

### STATEMENT OF SPECIAL INSPECTIONS

- SPECIAL INSPECTIONS ARE REQUIRED FOR THIS PRIMARY BUILDING FRAME / MAIN FORCE RESISTING SYSTEM PER THE LATEST EDITION OF THE IBC.
- . REFER TO THE IBC FOR ADDITIONAL INFORMATION RELATED TO THESE TABLES.
- . INSPECTIONS AND TESTING SHALL BE PROVIDED BY A QUALIFIED TESTING LABORATORY, RETAINED BY THE OWNER AND APPROVED BY THE ENGINEER OF RECORD.
- . REPORTS SHALL INDICATE THAT WORK INSPECTED OR TESTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECT, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND THE ENGINEER OF RECORD PRIOR TO THE COMPLETION OF THAT PHASE OF THE WORK.

. A LETTER OF SUBSTANTIAL COMPLETION SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT BY THE SPECIAL INSPECTOR PRIOR TO THE FINAL INSPECTION.

POST-INSTALLED ANCHORS		
IBC TABLE 1705.3		
TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. INSPECT ANCHOR TYPE, DIAMETER, AND LENGTH.	-	Х
2. INSPECT AND VERIFY PLACEMENT.	-	х
3. INSPECT ANCHORS IN HARDENED CONCRETE MEMBERS:		
A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	-	-
B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 3.A.	-	Х

## SPECIAL INSPECTIONS

1.	BUILDING CODE:	2018 IBC
2.	RISK CATEGORY	II
3.	DEAD LOADS	
	A. ROOF	8 PSF +10 PSF COLLATERAL
4.	LIVE LOADS	
	A. ROOF (NO REDUCTION)	20 PSF
5.	SNOW LOAD	
	A. GROUND SNOW, Pg	20 PSF
	B. FLAT ROOF SNOW LOAD, Pf	14 PSF
	C. MINIMUM ROOF SNOW LOAD, Pm	20 PSF
	D. EXPOSURE FACTOR, Ce	1.0
	E. IMPORTANCE FACTOR, Is	1.0
	F. THERMAL FACTOR, Ct	1.0
	G. RAIN ON SNOW	5 PSF
6.	WIND LOAD	
	A. BASIC WIND SPEED (3-SECOND GUST)	
	• ULTIMATE	109 MPH
	SERVICE	84.4 MPH
	B. IMPORTANCE FACTOR, Iw	1.0
	C. EXPOSURE	С
	D. INTERNAL PRESSURE COEFFICIENT	+\- 0.18 (ENCLOSED BUILDINGS

I HEREBY CERTIFY THAT THE DOCUMENTS INTENDED TO BE AUTHENTICATED BY MY SEAL ARE LIMITED TO \$1.1. I HEREBY DISCLAIM RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, AND OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ARCHITECTURAL OR ENGINEERING PROJECT.

EARL V. ROLLISON, PE

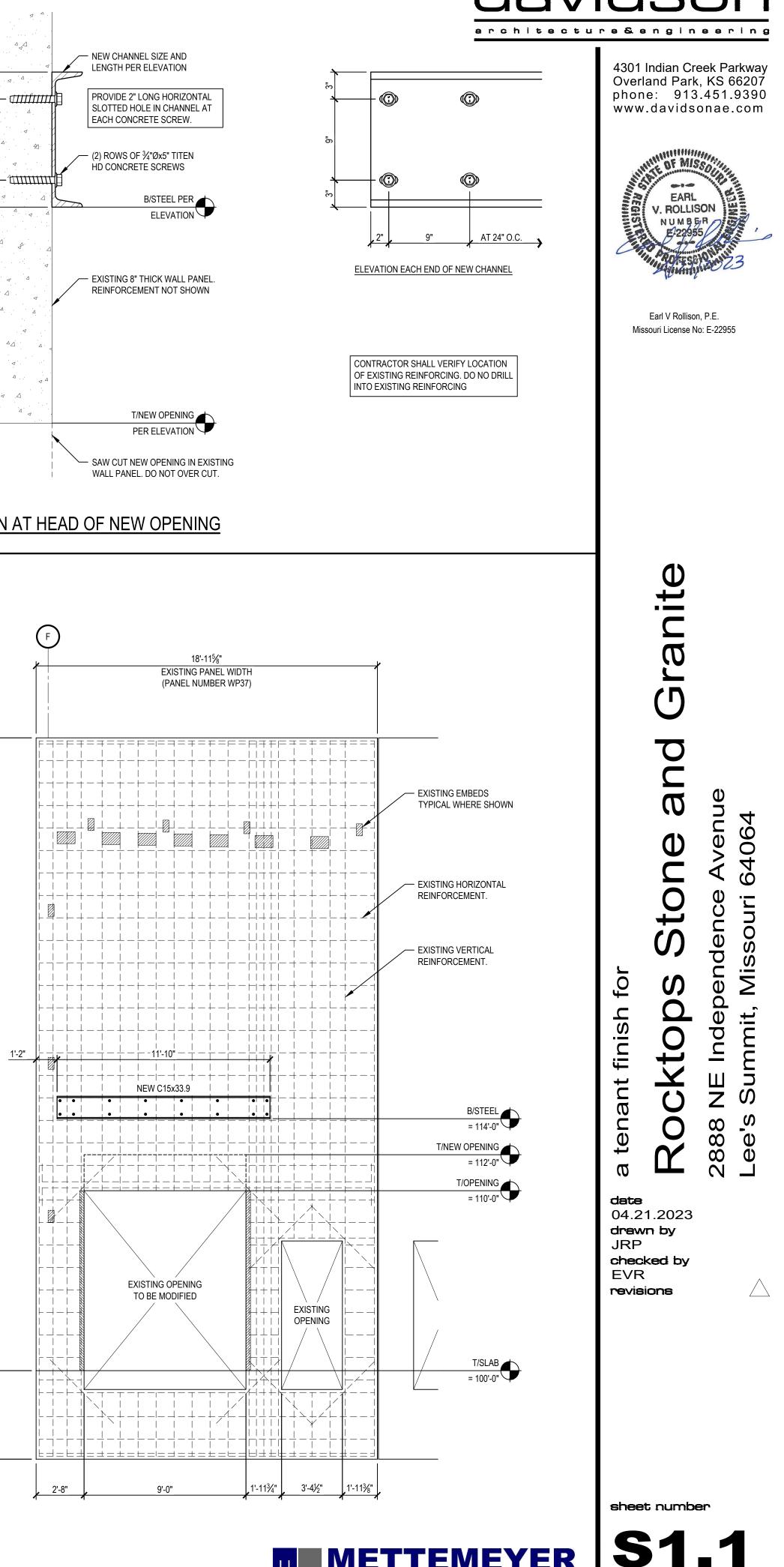
**MISSOURI LICENSE NO: E-22955** 

**BASIS FOR DESIGN** 

В S1.1	SEC 1 1/2" = 1'	

401"	EXISTING PANEL HEIGHT	35'-2"		1
د		4'-11" v	· · · · ·	

1/4" = 1'-0"



PARTIAL ELEVATION ALONG GRID 1.9

drawing type permit project number 23-0333

1500 NW VIVION ROAD, STE D, KANSAS CITY MO 816-587-0101 • www.mett-engr.com • MO C of A: 2002022445

### MECHANICAL SPECIFICATIONS

- 1. GENERAL PROVISIONS:
- A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE PLUMBING AND MECHANICAL SYSTEMS OUTLINED.
- B. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.
- C. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.
- D. ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK. E. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, PIPE, DUCT, ETC. SHALL BE COVERED, PLUGGED OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL
- ACCEPTANCE. F. PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY. PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED
- G. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE
- 2. OPERATION AND MAINTENANCE MANUALS: A. DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.
- B. ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATION AND MAINTENANCE MANUALS C. ALL LITERATURE LISTED ABOVE AND ALL PAPERS LISTING WARRANTIES, ETC. SHALL BE BOUND IN A
- 3-RING BINDER AND LABELED WITH THE PROJECT NAME, ADDRESS, ARCHITECT, ENGINEER, CONTRACTORS, ETC. 3. MANUFACTURERS:
- A. MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN, UNLESS NOTED OTHERWISE.
- 4. MOTORS
- A. PROVIDE THERMAL OVERLOAD PROTECTION FOR EACH MOTOR PROVIDED BY THIS WORK. 5. TESTING, BALANCING, AND CLEANING A. ALL PIPING SHALL BE TESTED FOR LEAKS BEFORE BEING CONCEALED IN WALL CONSTRUCTION OR
- COVERED WITH INSULATION B. SEWER AND VENT PIPING SHALL BE HYDROSTATICALLY TESTED WITH NO LESS THAN 10 FEET OF HEAD FOR A PERIOD OF NOT LESS THAN 15 MINUTES, PER THE LOCAL PLUMBING CODE, WITH NO LEAKS
- C. DOMESTIC WATER PIPING SHALL BE HYDROSTATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 60 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.
- D. DUCTWORK AND PIPING SHALL BE BALANCED BY QUALIFIED INDEPENDENT BALANCING PERSONNEL WHO HAVE PREVIOUS EXPERIENCE WITH BALANCING PROCEDURES AND ARE CERTIFIED BY THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). 1) BALANCING SHALL INCLUDE THE BALANCING OF THE EQUIPMENT AND AIR DISTRIBUTION SYSTEMS TO PROVIDE DESIGN QUANTITIES INDICATED AND VERIFICATION OF PERFORMANCE OF ALL EQUIPMENT AND AUTOMATIC CONTROLS.
- 2) WITH IN 30 DAYS OF THE COMPLETION OF THE TESTING AND BALANCING WORK, SUBMIT THE TEST AND BALANCING REPORT BEARING THE SIGNATURE OF THE TEST AND BALANCE ENGINEER. TH REPORTS SHALL BE CERTIFIED PROOF THAT THE SYSTEMS HAVE BEEN TESTED, ADJUSTED, AND BALANCED IN ACCORDANCE WITH THE REFERENCED STANDARDS; ARE AN ACCURATE REPRESENTATION OF HOW THE SYSTEMS HAVE BEEN INSTALLED AND ARE OPERATING. REPORTS SHALL BE BOUND IN A VINYL BINDER AND THE BINDER LABELED OR MAY BE AN ELECTRONIC PDF SUBMITTA
- E. BEFORE DOMESTIC WATER PIPING IS PLACED IN SERVICE, ALL DOMESTIC WATER DISTRIBUTION SYSTEMS, INCLUDING THOSE FOR COLD WATER AND HOT WATER SYSTEMS, SHALL BE FLUSHED STERILIZED AND CHLORINATED IN ACCORDANCE WITH HEALTH DEPARTMENT REGULATIONS. THE SYSTEMS SHALL BE THOROUGHLY FLUSHED OF ALL DIRT AND FOREIGN MATTER, THEN FILLED WITH WATER TREATED WITH 50 PPM OF CHLORINE. DURING THE FILLING PROCESS, VALVES AND FAUCETS SHALL BE OPENED SEVERAL TIMES TO ASSURE TREATMENT OF THE ENTIRE SYSTEM. THE TREATED WATER SHALL BE LEFT IN THE SYSTEM FOR 24 HOURS AFTER WHICH TIME THE SYSTEM SHALL BE FLUSHED; IF THE RESIDUAL CHLORINE IS NOT LESS THAN 10 PPM, THE FLUSHING SHALL BE REPEATED. AFTER STERILIZATION, SAMPLES OF WATER IN THE SYSTEM SHALL BE APPROVED BY THE BOARD OF HEALTH. 6. PLUMBING
- A. PROVIDE AN APPROVED WATER HAMMER ARRESTOR FOR EACH PLUMBING FIXTURE SUPPLY AS REQUIRED BY FIXTURE MANUFACTURER
- B. ALL EXPOSED WASTE PIPE SHALL BE CHROME PLATED BRASS PIPE, NO FERROUS PIPE.
- C. PROVIDE CLEANOUTS AT EACH CHANGE OF DIRECTION AND AT 100 FOOT INTERVALS IN STRAIGHT RUNS. D. PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES AND TRAPS.
- E. CLEANOUTS:
- 1) WALL: JR SMITH #4472, OR EQUAL, 24" ABOVE THE FLOOR. F. PROVIDE DIELECTRIC UNIONS WITH APPROPRIATE END CONNECTIONS TO MATCH THE PIPE SYSTEM IN
- WHICH INSTALLED (SCREWED, SOLDERED, OR FLANGED), PROVIDE DIELECTRIC UNIONS ON ALL PIPING CONNECTIONS TO HOT WATER HEATERS AND EXPANSION TANKS G. WATER HEATERS:
- 1) EVERY WATER HEATER SHALL HAVE AN APPROVED MEANS INSTALLED ON THE COLD WATER SUPPLY LINE ABOVE THE EQUIPMENT TO PREVENT SIPHONING OF A STORAGE WATER HEATER OR TANK. 2) BOTTOM FED WATER HEATERS AND TANKS CONNECT TO WATER HEATERS SHALL HAVE A VACCUM
- RELIEF VALVE INSTALLED. ANSI Z21.22. 3) STORAGE HEATERS OPERATING ABOVE ATMOSPHERIC PRESSURE SHALL HAVE AN APPROVED
- PRESSURE RELIEF VALVE AND/OR TEMPERATURE RELIEF VALVE. H. ALL SEWER PIPING LOCATED INSIDE THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES. 1) INSTALL 2-1/2" AND SMALLER PIPE AT 1/4" PER FOOT FALL.
- 7. PIPING: A. DOMESTIC COLD AND HOT WATER (ABOVEGROUND).
- 1) TYPE L HARD DRAWN COPPER TUBING, ASTM B-88 a) WROUGHT COPPER SOLDERED FITTINGS, ASTM B75 ALLOY C12200, ANSI B16.22, MS5 SP-104.
- b) MECHANICAL PRESS COPPER FITTINGS FOR USE IN PLUMBING OR MECHANICAL APPLICATIONS, ASME B16.22
- ASME B16.51. 2) PEX, HIGH-DENSITY CROSS-LINKED POLYETHYLENE TUBING SHALL BE MANUFACTURED TO THE
- REQUIREMENTS OF ASTM F876 AND MEET THE STANDARD GRADE HYDROSTATIC PRESSURE RATINGS FROM PLASTIC PIPE INSTITUTE IN ACCORDANCE WITH TR-4/03.
- a) PEX-A AND PEX-B MEETING ANSI/NSF61 AND ANSI/NSF372 STANDARDS FOR POTABLE WATER SAFETY AND LEAD-FREE STANDARDS AND MUST BE MARKED WITH "PW-G", "NSF-61-G" OR OTHER NSF-APPROVED
- MARKING, ASTM F2023 FOR USE WITH CHLORINATED WATER b) PEX MECHANICAL, CRIMP/INSERT OR EXPANSION FITTINGS INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PIPE SIZES GIVEN ON THE DRAWINGS ARE NOMINAL COPPER PIPE SIZE INCREASE PEX PIPING SIZE TO EQUAL OR EXCEED COPPER PIPE INSIDE DIAMETER FOR SUPPLY MAINS.
- 3) VALVES a) TO BE INSTALLED ON THE FIXTURE SUPPLY TO EACH PLUMBING FIXTURE. b) TO BE INSTALLED ON THE WATER SUPPLY SIDE TO EACH APPLIANCE OR MECHANICAL EQUIPMENT.
- C) TYPES . GATE VALVE: JOMAR T/S-301G OR EQUAL. LEAD-FREE NSF 61, ANSI B1.20.1.
- GLOBE VALVE: JOMAR TGG OR EQUAL 3. BALL VALVE: JOMAR JP100PXP OR EQUAL COMPACT LEAD FREE BRASS BALL VALVE UL842, CSA 3371-12 & 3371-92, FM, CALIFORNIA CODE AB1953, NSF61 ANNEX & APPROVED.
- 4. BALL VALVE: JOMAR T-100NE OR EQUAL. UL842, FM, CSA, NSF 61-8, MSS SP-110
- B. LEAD CONTENT OF WATER SUPPLY PIPE AND FITTINGS: 1) PIPE AND PIPE FITTINGS, INCLUDING VALVES AND FAUCETS, UTILIZED IN THE WATER SUPPLY SYSTEM SHALL NOT HAVE MORE THAN 8% LEAD CONTENT 2) PIPE, PIPE FITTINGS, JOINTS, VALVES, FAUCETS, AND FIXTURE FITINGS UTILIZED TO SUPPLY WATER FOR DRINKING OR COOKING PURPOSES SHALL COMPLY WITH NSF 372 AND SHALL HAVE A WEIGHTED AVERAGE LEAD CONTENT OF 0.25% OR LESS.
- C. SANITARY SEWER AND VENTS. (UNDERGROUND, INTERIOR TO THE BUILDING).
- 1) ABS PIPE AND FITTINGS: ABS PIPE AND FITTINGS SHALL COMPLY WITH NSF 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS," FOR PLASTIC PIPING COMPONENTS. INCLUDE MARKING WITH "NSF-DWV"
- FOR PLASTIC DRAIN, WASTE, AND VENT PIPING AND "NSF-SEWER" FOR PLASTIC SEWER PIPING. SOLID-WALL ABS PIPE: ASTM D 2661, SCHEDULE 40. ABS SOCKET FITTINGS: ASTM D 2661, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS. SOLVENT CEMENT: ASTM D 2235. 2) PVC PIPE AND FITTINGS: PVC PIPE AND FITTINGS SHALL COMPLY WITH NSF 14. "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS " FOR PLASTIC PIPING COMPONENTS, INCLUDE MARKING WITH "NSF-DWV"
- FOR PLASTIC DRAIN, WASTE, AND VENT PIPING AND "NSF-SEWER" FOR PLASTIC SEWER PIPING. SOLID-WALL PVC PIPE: ASTM D 2665, DRAIN, WASTE, AND VENT. PVC SOCKET FITTINGS: ASTM D 2665, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS AND TO FIT SCHEDULE 40 PIPE. ADHESIVE PRIMER: ASTM F 656. SOLVENT CEMENT: ASTM D 2564 3) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE
- MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL. 4) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.
- D. SANITARY SEWER AND VENTS (ABOVE GROUND, INTERIOR TO THE BUILDING).
- 1) ABS PIPE AND FITTINGS: ABS PIPE AND FITTINGS SHALL COMPLY WITH NSF 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS," FOR PLASTIC PIPING COMPONENTS. INCLUDE MARKING WITH "NSF-DWV" FOR PLASTIC DRAIN, WASTE, AND VENT PIPING AND "NSF-SEWER" FOR PLASTIC SEWER PIPING. SOLID-WALL ABS PIPE: ASTM D 2661, SCHEDULE 40. CELLULAR-CORE ABS PIPE: ASTM F 628, SCHEDULE 40.ABS SOCKET FITTINGS:
- ASTM D 2661, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS. SOLVENT CEMENT: ASTM D 2235. 2) PVC PIPE AND FITTINGS: PVC PIPE AND FITTINGS SHALL COMPLY WITH NSF 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS." FOR PLASTIC PIPING COMPONENTS. INCLUDE MARKING WITH "NSF-DWV" FOR PLASTIC DRAIN, WASTE, AND VENT PIPING AND "NSF-SEWER" FOR PLASTIC SEWER PIPING. SOLID-WALL PVC PIPE: ASTM D 2665 DRAIN. CELLULAR-CORE PVC PIPE: ASTM F 891. SCHEDULE 40. WASTE, AND VENT, PVC SOCKET
- FITTINGS: ASTM D 2665, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS AND TO FIT SCHEDULE 40 PIPE. ADHESIVE PRIMER: ASTM F 656. SOLVENT CEMENT: ASTM D 2564. 3) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301.
- HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL. 4) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS
- SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.
- E. ALL PIPE HANGERS AND SUPPORTS SHALL BE STANDARD PRODUCTS OF GRINNELL, FEE AND MASON, OR ELCEN. HANGER SPACING SHALL BE IN ACCORDANCE WITH MSS-SP-69

### MECHANICAL SPECIFICATIONS (

MECHANICAL SPECIFICATIONS (CONTINUED)	M
SLEEVES	E. INSTALLATION OF ME
<ol> <li>PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK. ALL SLEEVES SHALL BE OF SUFFICIENT SIZE TO PERMIT PIPE MOVEMENT DUE TO EXPANSION AND CONTRACTION AND TO ACCOMMODATE PIPE INSULATION.</li> </ol>	1) GENERAL: ASSEM PRACTICES WHICH OBJECTIONABLE 1

2) INTERIOR PARTITIONS: 16 GAGE GALVANIZED STEEL, PACK BETWEEN PIPE AND SLEEVE WITH FIRE SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALAN

- 3) ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WATERPROOF SEAL.
- COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY 4) PROTECTION AGAINST CONTACT: METALLIC PIPING, EXCEPT FOR CAST IRON, DUCTILE IRON AND GALVANIZED STEEL SHALL NOT BE PLACED IN DIRECT CONTACT WITH STEEL FRAMING MEMBERS, CONCRETE, OR CINDER WALLS AND FLOORS OR OTHER MASONRY. METALLIC PIPING SHALL NOT BE PLACED IN DIRECT CONTACT WITH CORROSIVE SOIL. SHEATHING USED TO PREVENT DIRECT CONTACT SHALL HAVE A THICKNESS OF GREATER THAN .008: AND THE SHEATHING SHALL BE MADE OF PLASTIC. ANY PIPE THAT PASSES THROUGH A FOUNDATION WALL OR FOOTING SHALL BE PROVIDED WITH A RELIEVING ARCH, OR A PIPE SLEEVE SHALL BE BUILT INTO THE FOUNDATION WALL. THE SLEEVE
- SHALL BE TWO SIZES GREATER THAN THE PIPE PASSING THOUGH THE WALL OR FOOTING. 5) PLUMBING VENTS: FLASH ROOF VENT INTO ROOFING SYSTEM AS REQUIRED BY THE ROOFING CONTRACTOR TO MAINTAIN EXISTING ROOF WARRANTY. ALL PLUMBING VENT TERMINALS SHALL TERMINATE A MINIMUM OF 12" ABOVE ROOF OR EQUAL TO HEIGHT OF PARAPET, WHICHEVER IS GREATER.
- G. PROVIDE CHROME PLATED ESCUTCHEONS ON ALL PIPE ENTERING FINISHED AREAS.
- 8. WATER HEATERS
- A. COMMERCIAL, LIGHT-DUTY, STORAGE, ELECTRIC, DOMESTIC-WATER HEATERS: 1. STANDARD: UL 174
- 2. STORAGE-TANK CONSTRUCTION: STEEL, VERTICAL ARRANGEMENT.
- a. PRESSURE RATING: 150 PSIG b. INTERIOR FINISH: COMPLY WITH NSF 61 AND NSF 372 BARRIER MATERIALS FOR POTABLE-WATER TANK LININGS, INCLUDING EXTENDING LINING MATERIAL INTO TAPPINGS.
- 3. FACTORY-INSTALLED, STORAGE-TANK APPURTENANCES:

- a. ANODE ROD: REPLACEABLE MAGNESIUM b. DIP TUBE: REQUIRED UNLESS COLD-WATER INLET IS NEAR BOTTOM OF TANK.
- C. DRAIN VALVE: CORROSION-RESISTANT METAL WITH HOSE-END CONNECTION.
- d. INSULATION: COMPLY WITH ASHRAE/IES 90.1 e. JACKET: STEEL WITH ENAMELED FINISH OR HIGH-IMPACT COMPOSITE MATERIAL.
- F. HEAT-TRAP FITTINGS: INLET TYPE IN COLD-WATER INLET AND OUTLET TYPE IN HOT-WATER OUTLET.
- a. HEATING ELEMENTS: ELECTRIC, SCREW-IN IMMERSION TYPE.
- h. TEMPERATURE CONTROL: ADJUSTABLE THERMOSTAT SAFETY CONTROL: HIGH-TEMPERATURE-LIMIT CUTOFF DEVICE OR SYSTEM
- I RELIFE VALVE: ASME RATED AND STAMPED FOR COMBINATION TEMPERATURE-AND-PRESSURE RELIFE VALVES, INCLUDE RELIEVING CAPACITY AT LEAST AS GREAT AS HEAT INPUT, AND INCLUDE PRESSURE SETTING LESS THAN WORKING-PRESSURE RATING OF DOMESTIC-WATER HEATER. SELECT RELIEF VALVE WITH SENSING ELEMENT THAT EXTENDS INTO STORAGE TANK.

F. SLEEVES

FACTORY-INSTALLED, BUTYL-RUBBER DIAPHRAGM. INCLUDE AIR PRECHARGE TO MINIMUM SYSTEM-OPERATING PRESSURE AT TANK.

- INCLUDE ASME B1.20.1 PIPE THREAD b. INTERIOR FINISH: COMPLY WITH NSF 61 AND NSF 372 BARRIER MATERIALS FOR POTABLE-WATER
- C. AIR-CHARGING VALVE: FACTORY INSTALLED.
- 3. CAPACITY AND CHARACTERISTICS:
- a. WORKING-PRESSURE RATING: 150 PSIG .
- A. ALL INSULATIONS AND ACCESSORIES SHALL HAVE A FIRE HAZARD CLASSIFICATION WITH A FLAME SPREAD RATING OF NOT OVER 25, A FUEL CONTRIBUTION RATING OF NOT OVER 50, AND A SMOKE DEVELOPED RATING OF NOT OVER 50, IN ACCORDANCE WITH NFPA.
- B. PIPE INSULATION ABOVE GRADE:
- 2) FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER, ASJ JACKET, FACTORY APPLIED
- COVERS. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- SENSITIVE ADHESIVE SYSTEM FOR CLOSURE AND VAPOR SEALING, EQUAL TO ARMSTRONG AP ARMAFLEX OR ARMAFLEX 2000.
- 4) FOR NON CIRCULATING SYSTEMS, THE FIRST & FEET OF INLET AND OUTLET PIPING BETWEEN THE TANK AND THE HEAT TRAP (INCLUDING THE HEAT TRAP) MUST BE INSULATED.
- 5) FOR CIRCULATING SYSTEMS, ALL HOT WATER PIPING IN THE CIRCULATION LOOP MUST BE INSULATED AS SPECIFIED BELOW.
- 6) INSULATION SCHEDULE: a) DOMESTIC COLD WATER
- 1" FOR PIPING UP TO 1-1/4" $\Phi$ b) DOMESTIC HOT WATER C. DUCTWORK: ACOUSTICAL INSULATION.
- SMACNA STANDARDS. a) DUCT LINING SCHEDULE:
- RECTANGULAR SUPPLY DUCT 1/2" : THROUGHOUT THE FIRST 10 FEET OF DUC 1/2" : THROUGHOUT THE FIRST 10 FEET OF DUCT.
- 1) DUCT LINING: 2 LB/CF, THICKNESS AS SCHEDULED, AIR STREAM SIDE COATED, INSTALL PER
- (2) ROUND SUPPLY DUCT
- 10. DUCTWORK:
- YPLYING WITH ASTM A 527, LOCKFORMING QUALITY, WITH G 90 ZINC COATING IN ACCORDANCE WITH ASTM A 525; AND MILL PHOSPHATIZED FOR EXPOSED LOCATIONS.
- B. WHERE DUCTWORK IS INDICATED TO BE EXPOSED TO VIEW IN OCCUPIED SPACES, PROVIDE MATERIALS WHICH ARE FREE FROM VISUAL IMPERFECTIONS INCLUDING PITTING, SEAM MARKS, ROLLER MARKS,
- C. DUCTWORK, METAL GAUGES, REINFORCING, ETC, SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," LATEST EDITION FOR A 2 INCH WATER GAUGE STATIC PRESSURE.
- 1) RECTANGULAR DUCT a) ELBOWS, UNLESS INDICATED OTHERWISE SHALL BE CONSTRUCTED WITH CENTERLINE RADIUS OF NOT LESS THAN 1.5 DUCT WIDTH OR SQUARE ELBOW WITH DOUBLE WALL STREAMLINE VANES. b) RETURN AIR ACOUSTICAL ELBOWS AND SOUND BOOTS SHALL BE A SQUARE ELBOW WITH NO
- TURNING VANES. c) SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 3. 2) ROUND AND OVAL SPIRAL SEAM DUCT
- a) PROVIDE RADIUS TYPE FITTINGS FABRICATED OF MULTIPLE SECTIONS WITH MAXIMUM 15 DEGREE CHANGE OF DIRECTION PER SECTION. UNLESS SPECIFICALLY DETAILED OTHERWISE, USE 45 DEGREE LATERALS FOR BRANCH TAKEOFF CONNECTIONS. WHERE 90 DEGREE BRANCHES ARE INDICATED PROVIDE CONICAL TYPE TEES.
- b) SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 3. c) AS AN OPTION, PROVIDE FACTORY-FABRICATED DUCT AND FITTINGS, IN LIEU OF SHOP-FABRICATED DUCT AND FITTINGS.
- (1) ELBOMS: ONE PIECE CONSTRUCTION FOR 90 DEGREES AND 45 DEGREE ELBOW 14" AND SMALLER. PROVIDE MULTIPLE GORE CONSTRUCTION FOR LARGER DIAMETERS WITH STANDING SEAM CIRCUMFERENTIAL JOINT.
- (2) DIVIDED FLOW FITTINGS: 90 DEGREE TEES, CONSTRUCTED WITH SADDLE TAP SPOT WELDED AND BONDED TO DUCT FITTING BODY. (1) ROUND LONGITUDINAL SEAM DUCT. USE FOR RIGID METAL DUCT ON LEAVING SIDE OF DUCT
- IN CONCEALED LOCATIONS FOR EXTENSION TO FLEX FOR DIFFUSERS, UNLESS OTHERWISE INDICATED.

D. DUCT SIZES SHOWN ON THE DRAWINGS ARE SHEETMETAL SIZES, ALLOWANCE FOR DUCT LINER HAS BEEN MADE WHERE APPLICABLE.

ASME B16.51, or ASME B16.18. MECHANICAL PRESS COPPER FITTINGS SHALL CONFORM TO IAPMO PS-117 OR

B. DOMESTIC-WATER EXPANSION TANKS: 1. DESCRIPTION: STEEL, PRESSURE-RATED TANK CONSTRUCTED WITH WELDED JOINTS AND

2. CONSTRUCTION: a. TAPPINGS: FACTORY-FABRICATED STEEL, WELDED TO TANK BEFORE TESTING AND LABELING.

- TANK LININGS, INCLUDING EXTENDING FINISH INTO AND THROUGH TANK FITTINGS AND OUTLETS.

- 9. INSULATION AND DUCT LINING:
- 1) THE PIPING INSULATION USED SHALL HAVE A THERMAL CONDUCTIVITY OF 0.27 Btu PER in/hr\*sqft\*F° OR LESS.
- PRESSURE SEALING LONGITUDE LAP JOINT. NO STAPLES, ZESTON PREMOLDED PVC FITTING
- 3) FLEXIBLE CLOSED CELL ELASTOMERIC THERMAL INSULATION, UNSLIT OR PRESLIT WITH PRESSURE

- 1) DUCT LINING: 2 LB/CF, THICKNESS AS SCHEDULED, AIR STREAM SIDE COATED, INSTALL PER
- (2) RETURN AIR DUCT D. DUCTWORK: THERMAL INSULATION.
- SMACNA STANDARDS.
- a) DUCT LINING SCHEDULE:
- (1) RECTANGULAR SUPPLY DUCT 1/2"
- (3) RETURN AIR DUCT 1/2"
- A. ALL DUCTWORK, UNLESS OTHERWISE INDICATED, SHALL BE FABRICATED FROM GALVANIZED SHEET STEEL
- STAINS AND DISCOLORATIONS, AND OTHER IMPERFECTIONS, INCLUDING THOSE WHICH WOULD IMPAIR

### IECHANICAL SPECIFICATIONS (CONTINUED)

### METAL DUCTWORK:

EMBLE AND INSTALL DUCTWORK IN ACCORDANCE WITH RECOGNIZED INDUSTRY CH WILL ACHIEVE AIR-TIGHT SYSTEMS (MAXIMUM 5% LEAKAGE), WITH NO .E NOISE, AND CAPABLE OF PERFORMING INDICATED SERVICE. INSTALL EACH RUN WITH MINIMUM NUMBER OF JOINTS. ALIGN DUCTWORK ACCURATELY WITH INTERNAL SURFACES SMOOTH. SUPPORT DUCTS RIGIDLY WITH SUITABLE STRAPS, BRACES, HANGERS AND ANCHORS IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" LATEST EDITION. DUCT HANGERS SHALL BE OF THE TYPE WHICH WILL HOLD DUCTS TRUE-TO-SHAPE AND TO PREVENT BUCKLING. SUPPORT VERTICAL DUCTS AT EVERY FLOOR. 2) AUXILIARY STEEL: PROVIDE AUXILIARY STEEL AS REQUIRED TO ADEQUATELY SUPPORT DUCTWORK.

3) ROUTING: LOCATE DUCTWORK RUNS EXCEPT AS OTHERWISE INDICATED VERTICALLY AND HORIZONTALLY AND AVOID DIAGONAL RUNS WHEREVER POSSIBLE. LOCATE RUNS AS INDICATED BY DIAGRAMS, DETAILS AND NOTATIONS OR, IF NOT OTHERWISE INDICATED, RUN DUCTWORK IN SHORTEST ROUTE WHICH DOES NOT OBSTRUCT USABLE SPACE OR BLOCK ACCESS FOR SERVICING BUILDING AND ITS EQUIPMENT. HOLD DUCTS CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS, AND OTHER STRUCTURAL AND PERMANENT ENCLOSURE ELEMENTS OF BUILDING. WHEREVER POSSIBLE IN FINISHED AND OCCUPIED SPACES, CONCEAL DUCTWORK FROM VIEW, BY LOCATING IN MECHANICAL SHAFTS, HOLLOW WALL CONSTRUCTION OR ABOVE SUSPENDED CEILINGS. DO NOT ENCASE HORIZONTAL RUNS IN SOLID PARTITIONS, EXCEPT AS SPECIFICALLY SHOWN. COORDINATE LAYOUT WITH SUSPENDED CEILING AND LIGHTING LAYOUTS AND SIMILAR FINISHED WORK. 4) DO NOT ROUTE DUCTWORK THROUGH ELECTRICAL EQUIPMENT SPACES AND ENCLOSURES, UNLESS INDICATED OTHERWISE.

a) WHERE DUCTS PASS THROUGH INTERIOR PARTITIONS OR EXTERIOR WALLS, AND ARE EXPOSED TO VIEW, CONCEAL SPACE BETWEEN OPENING AND DUCT OR DUCT INSULATION WITH SHEET METAL FLANGES OF SAME GAGE AS DUCT. OVERLAP OPENING ON 4 SIDES BY AT LEAST 1-1/2". FASTEN TO DUCT AND WAL

b) WHERE DUCTS PASS THROUGH FIRE-RATED FLOORS, WALLS, OR PARTITIONS, PROVIDE FIRESTOPPING BETWEEN DUCT AND WALL 6) COORDINATION: COORDINATE DUCT INSTALLATIONS WITH INSTALLATION OF ACCESSORIES DAMPERS, COIL FRAMES, EQUIPMENT, CONTROLS, AND OTHER ASSOCIATED WORK OF THE DUCTWORK

7) INSTALLATION: INSTALL METAL DUCTWORK IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", LATEST EDITION. F. EQUIPMENT CONNECTIONS:

1) CONNECT METAL DUCTWORK TO EQUIPMENT AS INDICATED, PROVIDE FLEXIBLE CONNECTION FOR EACH DUCTWORK CONNECTION TO EQUIPMENT MOUNTED ON VIBRATION ISOLATORS, AND/OR EQUIPMENT CONTAINING ROTATING MACHINERY. PROVIDE ACCESS DOORS AS REQUIRED. G. SEAL ALL CONCEALED DUCTWORK JOINTS WITH NON-HARDENING, NON-MIGRATING MASTIC SEALANT, AS

RECOMMENDED FOR SEALING SEAMS AND JOINTS IN DUCTWORK. OIL BASE CAULKING AND GLAZING COMPOUNDS SHALL NOT BE ACCEPTABLE. DUCTS SHALL BE SEALED TO THE CLASS LEVEL LISTED BELOW. 1) UNCONDITIONED SPACES CLASS B CLASS A CLASS C CLASS B 2) CONDITIONED SPACES (PLENUM) CLASS B CLASS B CLASS C CLASS C SUPPLY < 2" W.C. SUPPLY > 2" W.C. EXHAUST/DRYER RETURN

A. ATCO #086 (R-6), OR EQUAL.

5) PENETRATIONS

11. FLEXIBLE DUCT:

12. EXHAUST FANS:

13. CONTROL WIRING

CODES

CODES

14. REMODELING WORK:

FOR BELT DRIVEN FANS

B. FACTORY APPLIED INSULATION AND VAPOR BARRIER, 1-1/2" THICK. C. MAXIMUM LENGTH OF 5'-O".

A. CENTRIFUGAL TYPE FAN WITH CHARACTERISTICS AND CAPACITY AS SCHEDULED, ELECTRICALLY POWERED, SUITABLE FOR MOUNTING ON ROOF CURB, DIRECT OR BELT DRIVEN, HEAVY GAUGE SPUN-ALUMINUM WEATHERPROOF HOUSINGS OF THE HOODED DOME OR UPBLAST TYPE. PROVIDE PERMANENT SPLIT-CAPACITOR TYPE MOTOR FOR DIRECT DRIVEN FANS, AND CAPACITOR-START, INDUCTION-RUN TYPE MOTOR

B. CENTRIFUGAL CEILING EXHAUSTERS SHALL BE ELECTRICALLY POWERED CENTRIFUGAL TYPE FAN SUITABLE FOR MOUNTING IN THE CEILING WITH A PERFORATED OFF-WHITE METAL GRILLE WITH A THUMBSCREW ATTACHMENT FOR EASY ACCESS TO FAN HOUSING. UNIT SHALL CONSIST OF A GALVANIZED STEEL HOUSING LINED WITH ACOUSTICAL INSULATION AND SHALL INCLUDE AN INTEGRAL BACKDRAFT DAMPER ON FAN DISCHARGE. MOTOR SHALL BE A PERMANENT SPLIT-CAPACITOR TYPE MOTOR. PERMANENTLY LUBRICATED, WITH THERMAL OVERLOAD PROTECTION. PROVIDE DISCONNECT SWITCH OR OTHER MEANS OF DISCONNECT AT MOTOR IN FAN HOUSING.

A. ELECTRICAL WIRING AND WIRING CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE TEMPERATURE CONTROL SYSTEM, SHALL BE PROVIDED BY THIS CONTRACTOR, UNLESS SPECIFICALLY SHOWN ON THE ELECTRICAL DRAWINGS OR SPECIFICATIONS.

B. INSTALL CONTROL WIRING, WITHOUT SPLICES BETWEEN TERMINAL POINTS, COLOR CODED. INSTALL IN IT WORKMANLIKE MANNER, SECURELY FASTENED. INSTALL IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND THE ELECTRICAL SPECIFICATIONS 1) INSTALL CIRCUITS OVER 25 VOLT WITH COLOR CODED NUMBER 12 WIRE.

2) INSTALL CIRCUITS UNDER 25 VOLT WITH COLOR CODED NUMBER 18 WIRE WITH 0.031 INCH HIGH TEMPERATURE 105 DEGREES F PLASTIC INSULATION ON EACH CONDUCTOR AND PLASTIC SHEATH OVER

3) INSTALL ELECTRONIC CIRCUITS WITH COLOR CODED NUMBER 22 WIRE WITH 0.023 INCH POLYETHYLENE INSULATION ON EACH CONDUCTOR WITH PLASTIC JACKETED COPPER SHIELD OVER

4) INSTALL LOW VOLTAGE CIRCUITS, LOCATED IN CONCRETE SLABS AND MASONRY WALLS, OR EXPOSED IN OCCUPIED AREAS, IN ELECTRIC CONDUIT.

5) ALL WIRING IN AREAS USED AS AIR PLENUMS SHALL BE IN ELECTRIC CONDUIT EXCEPT THAT LOW VOLTAGE WIRING MAY BE TEFLON COATED, ALUMINUM SHEATHED CABLE OR OTHER WIRE SPECIFICALLY APPROVED FOR INSTALLATION IN AIR PLENUMS, WHERE ACCEPTABLE BY LOCAL

6) ALL WIRING IN AREAS NOT USED FOR AIR MOVEMENT SHALL BE IN ELECTRIC METALLIC TUBING EXCEPT LOW VOLTAGE WIRING MAY BE IN APPROVED SIGNAL CABLE WHERE ACCEPTED BY LOCAL

C. THERMOSTATIC CONTROLS TO HAVE A 5°F DEADBAND AND SETPOINT OVERLAP RESTRICTIONS. 1) TEMPERATURE CONTROLS SETBACK TO BE 55°F (HEAT) AND 85° (COOL), 2-HOUR OCCUPANT OVERRIDE, 10-HOUR BACKUP

A. DEMOLITION: DISCONNECT, DEMOLISH, AND REMOVE ABANDONED MECHANICAL MATERIALS AND EQUIPMENT INDICATED TO BE REMOVED AND NOT INDICATED TO BE SALVAGED OR REMAIN. B. EQUIPMENT TO BE SALVAGED:

1) DISCONNECT AND REMOVE EXISTING MECHANICAL EQUIPMENT INDICATED TO BE REMOVED AND SALVAGED. DELIVER EQUIPMENT TO THE LOCATION DESIGNATED BY THE OWNER FOR STORAGE 2) ALL MATERIALS AND EQUIPMENT DESIGNATED TO BE REUSED OR RELOCATED SHALL BE CAREFULLY REMOVED, AND STORED UNTIL NEEDED FOR REMODELING WORK. ALL ITEMS SHALL BE RESTORED TO "LIKE NEW" CONDITION WITH RUST OR CORROSION REMOVED, SURFACE PAINT TOUCHED UP OR REPAINTED AS REQUIRED TO MATCH NEW CONSTRUCTION, AND THOROUGHLY CLEANED AND INSPECTED ANY ITEMS WHICH BECOME DAMAGED BEYOND REPAIR AS A RESULT OF CONSTRUCTION OR DEMOLITION ACTIVITY SHALL BE REPLACED WITH NEW MATERIAL EQUIVALENT IN EVERY RESPECT C. DISPOSAL AND CLEANUP: REMOVE FROM THE SITE AND LEGALLY DISPOSE OF DEMOLISHED MATERIALS AND EQUIPMENT NOT INDICATED TO BE SALVAGED.

D. PROTECT ADJACENT MATERIALS INDICATED TO REMAIN. INSTALL AND MAINTAIN DUST AND NOISE BARRIERS TO KEEP DIRT, DUST, AND NOISE FROM BEING TRANSMITTED TO ADJACENT AREAS. REMOVE PROTECTION AND BARRIERS AFTER REMODELING OPERATIONS ARE COMPLETE. E. LOCATE, IDENTIFY, AND PROTECT MECHANICAL SERVICES PASSING THROUGH REMODELING AREA AND SERVING OTHER AREAS OUTSIDE THE REMODELING LIMITS MAINTAIN SERVICES TO AREAS OUTSIDE

REMODELING LIMITS. WHERE MECHANICAL SERVICES ARE LOCATED IN A WALL. ETC. TO BE DEMOLISHED, REPOUTE PIPING TO NEW OR EXISTING CONSTRUCTION TO MAINTAIN CONTINUITY OF THE SYSTEM. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS. F. REMOVE ALL PIPING TO BE DEMOLISHED BACK TO PIPE MAIN OR EDGE OF PROJECT AREA, AND CAP

G. PIPING AND DUCTS EMBEDDED IN FLOORS, WALLS, AND CEILINGS MAY REMAIN IF SUCH MATERIALS DO NOT INTERFERE WITH NEW INSTALLATIONS. PIPING AND DUCTS TO REMAIN SHALL BE APPROVED BY T ARCHITECT. REMOVE MATERIALS ABOVE ACCESSIBLE CEILINGS. DRAIN AND CAP PIPING AND DUCTS ALLOWED TO REMAIN ABOVE CEILING OR BELOW FLOOR, CONCEALED FROM VIEW, EXCEPT AS OTHERWISE NOTED. PATCH FLOOR TO MATCH EXISTING. H. PIPE AND DUCT SHALL BE CONCEALED WITH NEW OR EXISTING CONSTRUCTION WHENEVER POSSIBLE, UNLESS INDICATED OTHERWISE.

erchitecture&engineering



dete 4.20.23 drawn by **TPF/BMH** checked by EK/DS

revisions

С С

 $(\mathbf{1})$ 

(1)

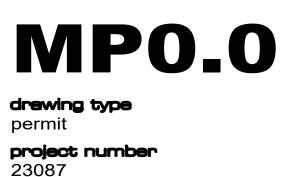
Ľ

σ

7

 $\infty$ 

sheet number

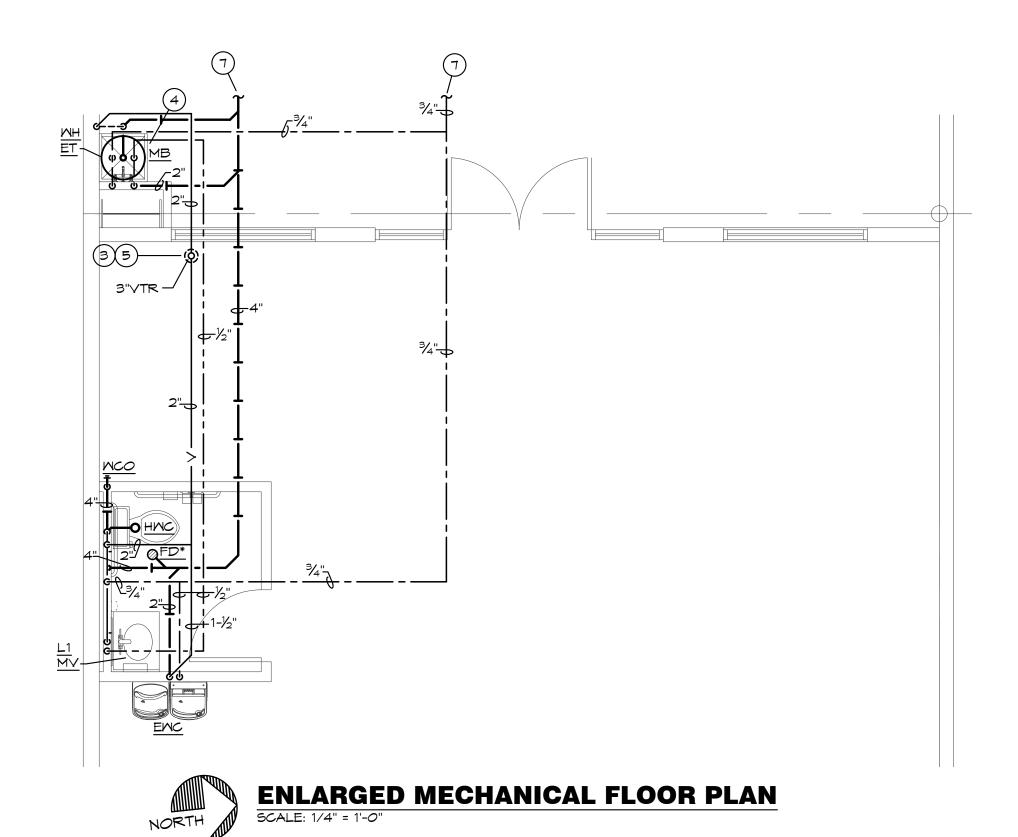


### PLUMBING GENERAL NOTES:

- HEIGHTS OF FIXTURES.
- STRUCTURE.

# FIRE PROTECTION NOTES:

- PRE-APPROVED BY THE OWNER/LANDLORD.



1. INSTALL ALL PIPE, ETC. AS HIGH AS POSSIBLE.

2. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.

3. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND MOUNTING

4. REFER TO ARCHITECTURAL & STRUCTURAL DRAWINGS FOR REQUIREMENTS FOR SUPPORTING PIPING, EQUIPMENT, ETC. FROM THE STRUCTURE. PROVIDE ADDITIONAL STEEL AS REQUIRED TO PROPERLY SUPPORT SYSTEMS FROM THE

5. SAWCUT EXISTING FLOOR AS REQUIRED FOR INSTALLATION OF UNDERFLOOR PIPING. PATCH FLOOR TO MATCH EXISTING.

6. NO PIPING SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.

THE EXISTING SPACE IS PROTECTED WITH AN EXISTING WET PIPE SPRINKLER SYSTEM. RELOCATE AND PROVIDE ADDITIONAL SPRINKLER HEADS AND PIPING AS REQUIRED FOR THE NEW CONSTRUCTION. SPRINKLER HEADS IN FINISHED CEILINGS SHALL BE SEMI-RECESSED PENDENT TYPE (VERIFY FINISH). SPRINKLER HEADS IN ROOMS WITHOUT CEILINGS SHALL BE UPRIGHT BRASS TYPE HEADS.

2. SPRINKLER WORK SHALL BE PERFORMED BY A LICENSED SPRINKLER CONTRACTOR

3. REFER TO THE ARCHITECTURAL DRAWINGS FOR NEW WALL CONSTRUCTION.

4. SPRINKLER PIPING SHALL MATCH EXISTING AND COMPLY WITH NFPA 13.

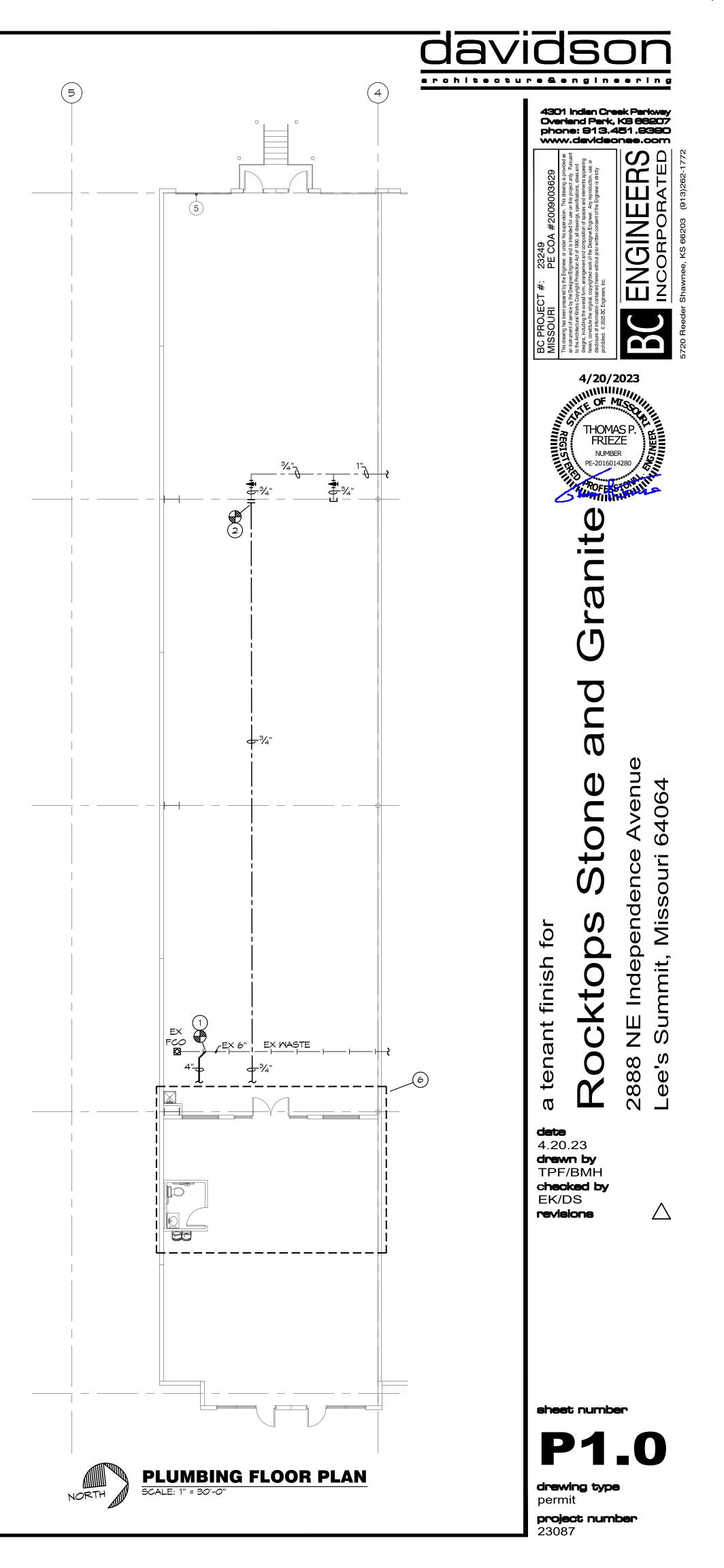
5. SPRINKLER SYSTEM (SHOP DRAWINGS) SHALL BE APPROVED BY THE LOCAL FIRE AUTHORITY AND OWNERS/LANDLORD'S INSURANCE CARRIER PRIOR TO START OF WORK.

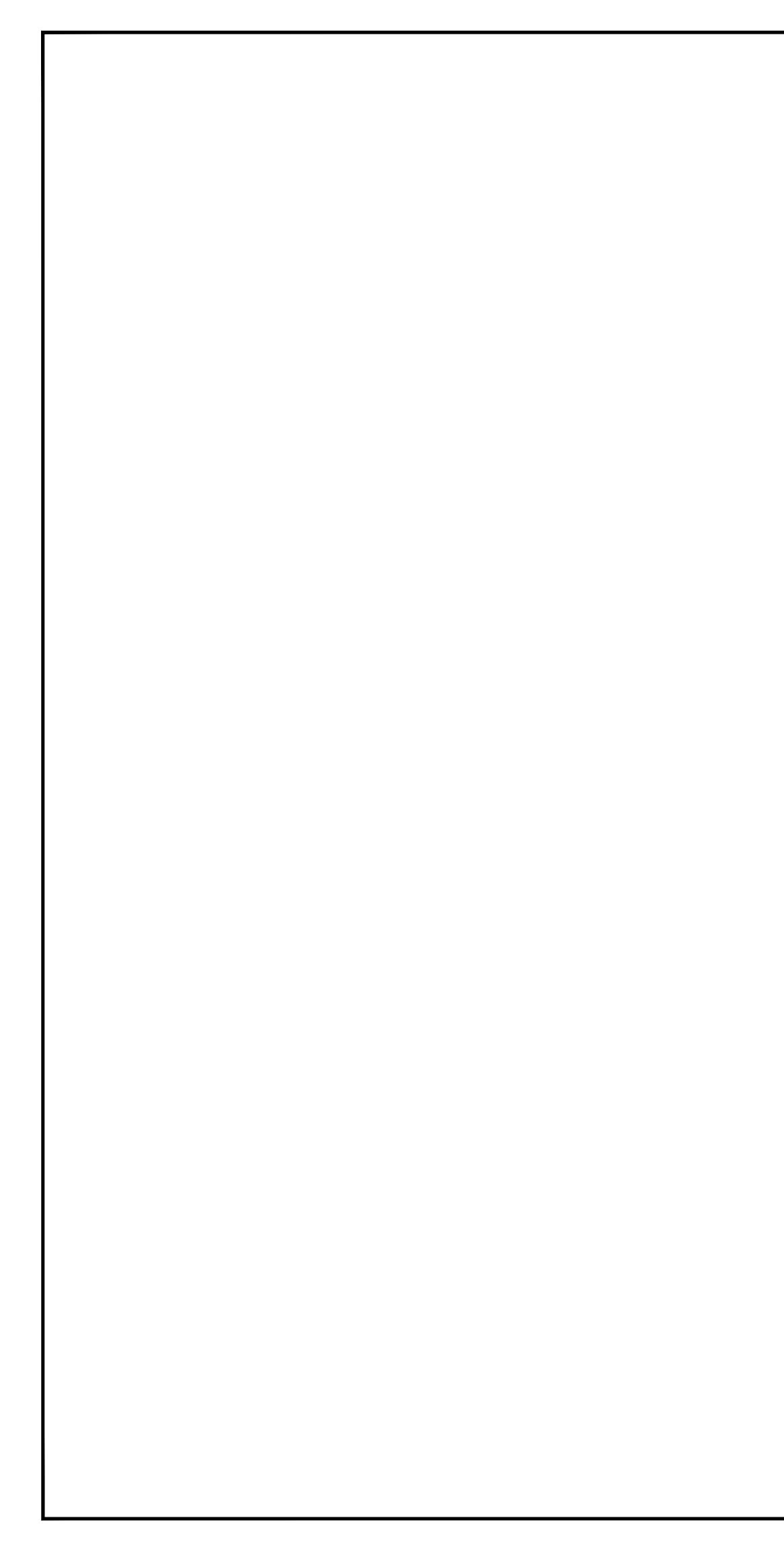
### PLUMBING PLAN NOTES:

- (1)CONNECT WASTE TO EXISTING SANITARY SEWER AS REQUIRED. VERIFY EXACT LOCATION AND ELEVATION PRIOR TO INSTALLATION OF ANY PIPING.
- 2 CONNECT CW TO EXISTING DOMESTIC CW AS REQUIRED. VERIFY EXACT LOCATION PRIOR TO INSTALLATION OF ANY PIPING.
- (3) LOCATION OF 3" VTR. VERIFY 10' CLEARANCE FROM ALL OUTDOOR AIR INTAKES. SEAL PENETRATION WEATHERTIGHT.
- 4 SUPPORT WATER HEATER ABOVE MOP BASIN FROM WALL OR ON SHELF AS REQUIRED BY MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- (5) CUT EXISTING ROOF AND FLASH INTO ROOF AS REQUIRED. ALL ROOFING WORK SHALL BE PERFORMED BY BUILDING OWNER'S ROOFING CONTRACTOR (AT THIS CONTRACTOR'S EXPENSE) TO MAINTAIN EXISTING ROOF WARRANTY. VERIFY APPROVED ROOFING CONTRACTOR WITH BUILDING OWNER PRIOR TO PERFORMING MORK.
- 6) REFER TO ENLARGED PLUMBING PLAN ON THIS SHEET FOR CONTINUATION.
- (7)REFER TO PLUMBING PLAN ON THIS SHEET FOR CONTINUATION.

### PLUMBING SYMBOLS

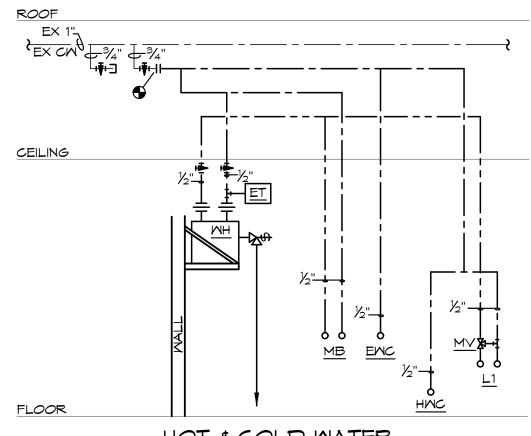
— <b>—</b> —	SOIL AND WASTE PIPING BELOW FLOOR/GRADE
	SOIL AND WASTE PIPING ABOVE FLOOR/GRADE
	SANITARY VENT PIPING ABOVE GRADE
	SANITARY VENT PIPING BELOW GRADE
	DOMESTIC COLD WATER PIPING
	DOMESTIC HOT WATER PIPING
C+	PIPING TURNING DOWN
+0	PIPING TURNING UP
, <sup>‡</sup> ,	TEE TOP CONNECTION
——  <b>—</b> —	UNION
FD⊘	FLOOR DRAIN
WC0 📕	WALL CLEAN OUT
—- <del>\</del> ¥-—-	VALVE
	CONNECT TO EXISTING
<b>-</b> , <b>b</b>	TEMPERATURE AND PRESSURE RELIEF VALVE
dw∕	VACUUM RELIEF VALVE



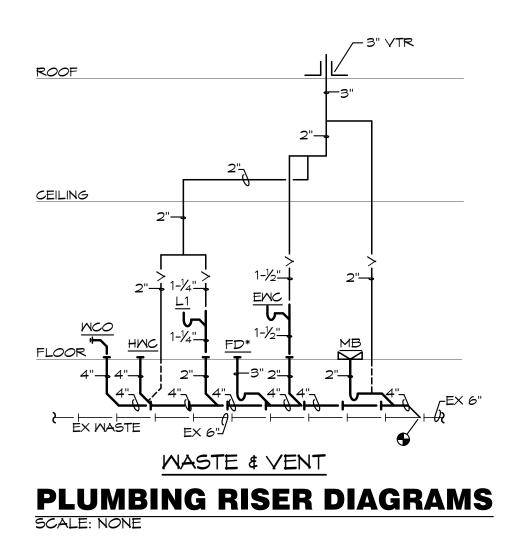


PLUMBING FIXTURE SCHEDULE:

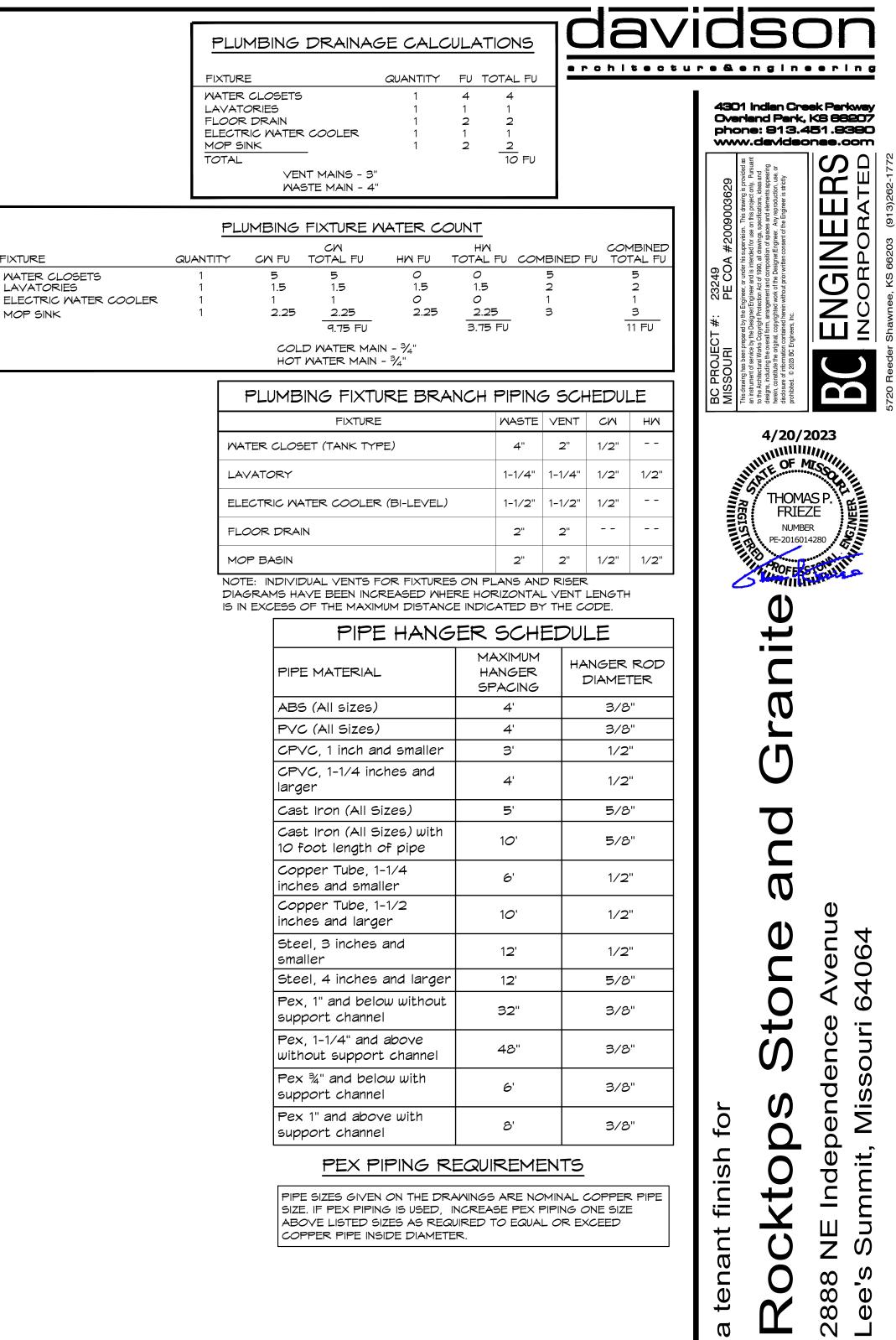
- HWC HANDICAP WATER CLOSET: TOTO, #CST744SL, "DRAKE CLOSE COUPLED TOILET", 1.6 GALLON FLUSH, 16-1/2" HIGH ELONGATED BOWL, FLOOR MOUNTED, FLOOR OUTLET, TANK TYPE, VITREOUS CHINA, SIPHON-JET ACTION, #SC534 OPEN FRONT SEAT WITH CHECK HINGE AND LESS COVER, CHROME PLATED ANGLE STOP AND RISER. HANDLE ON WIDE SIDE OF FIXTURE.
- HANDICAP LAVATORY, COUNTERTOP: TOTO, #LT501, VITREOUS CHINA, 20"X 17" OVAL L1 BASIN, DELTA #501 FAUCET WITH SINGLE METAL LEVER HANDLE, OFFSET GRID DRAIN WITH 1-1/4" TAILPIECE, CHROME PLATED P-TRAP(MOUNTED PARALLEL WITH WALL), CHROME PLATED ANGLE STOPS AND RISERS, INSULATE EXPOSED DRAIN, WATER SUPPLIES, AND VALVES WITH PROWRAP SEAMLESS MOLDED CLOSED CELL VINYL INSULATION.
- MOP BASIN: FIAT, #MSB-2424, MOLDED STONE MOP BASIN, 2" DRAIN, 24"X 24" BASIN, MB VINYL BUMPER GUARD, STERN WILLIAMS #T-10-VB FAUCET, SPRING CHECKS, VACUUM BREAKER, INTEGRAL STOPS, WALL BRACE & PAIL HOOK, WALL BRACKET WITH 30" HOSE.
- EWC ELECTRIC WATER COOLER: OASIS, #PG8ACSL, BARRIER FREE TWO-STATION WATER COOLER, 8.0 GPH, 50 DEGREES F WATER WITH 90 DEGREES F AIR TEMPERATURE, 120 VOLT, COLOR TO BE SELECTED BY ARCHITECT AFTER AWARD OF CONTRACT, FRONT AND SIDE ANTIMICROBIAL PUSH PADS, ANITMICROBIAL FLEX BUBBLERS, CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT, CHROME PLATED LOOSE KEY ANGLE STOP, FLOOR MOUNTED CARRIER AND CANE APRON.
- FD FLOOR DRAIN: JR SMITH, #2005-A, CAST IRON FLOOR DRAIN WITH ADJUSTABLE TOP, 6" NIKALOY STRAINER. PROVIDE WITH #2692 QUAD CLOSE TRAP SEAL DEVICE.
- MH HOT WATER HEATER: AO SMITH #DEL-20, 20 GALLON STORAGE, 120 VOLT, 1500 WATT ELEMENT, ASME TEMPERATURE AND PRESSURE RELIEF VALVE. SET TO 120°F.
- EΤ HOT WATER EXPANSION TANK: AMTROL, #ST-5, 2 GALLON EXPANSION TANK WITH DIAPHRAGM.
- MIXING VALVE: WATTS, #LFUSG-B, THERMOSTATIC CONTROLLED MIXING VALVE, LEAD MV FREE BRONZE BODY, LOCKED TEMPERATURE ADJUSTMENT CAP (VANDAL RESISTANT), COPPER ENCAPSULATED THERMOSTAT ASSEMBLY WITH BRASS SHUTTLE, STAINLESSSTEEL SPRINGS, INTEGRAL CHECK VALVES ON HOT AND COLD INLETS. (SET TO 110°F). ASSE 1070 LISTED.
- MCO WALL: JR SMITH #4472, OR EQUAL, 24" ABOVE THE FLOOR.







FIXTURE WATER CLOSETS LAVATORIES MOP SINK



 $\sim$ σ

Φ

 $\triangle$ 

date 4.20.23 drawn by **TPF/BMH** checked by EK/DS revisions

sheet number



drawing type permit project number 23087

## MECHANICAL SYMBOLS

 $\bowtie$ 

 $\square$ 

 $\bigcirc$ 

1 \_\_\_\_\_

32"x14"

6"Ф

 $\sim$ 

 $\sim$ 

RTU-1

NEW SUPPLY DIFFUSER
NEW RETURN AIR GRILLE
EXHAUST GRILLE/FAN
THERMOSTAT, MOUNTED AT 48" AFF
NEW DUCTWORK
SIZE OF RECTANGULAR DUCT
SIZE OF ROUND DUCT

FLEXIBLE DUCTWORK

FLEXIBLE CONNECTION TO FAN

MECHANICAL GENERAL NOTES:

- 1. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
- 2. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE MECHANICAL SYSTEMS.
- 3. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF DIFFUSERS.
- 4. INSTALL ALL DUCT, PIPE, ETC. AS HIGH AS POSSIBLE.
- 5. DUCT SIZES SHOWN ARE ACTUAL SHEET METAL SIZES AND INCLUDE AN ALLOWANCE FOR DUCT LINER WHERE APPLICABLE.
- 6. PROVIDE FLEXIBLE CONNECTION BETWEEN DUCTWORK AND ROOFTOP UNITS, EXHAUST FANS, AND OTHER MOTORIZED EQUIPMENT.
- 7. NO DUCT SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.
- 8. ALL MECHANICAL SYSTEMS SHALL BE BALANCED BY A CERTIFIED BALANCING CONTRACTOR. REFER TO SPECIFICATIONS FOR DETAILS.

--3 FLOOR PLAN NOTE DESIGNATION SUPPLY AIR S.A. RETURN AIR R.A. EXH. EXHAUST AIR TRANSITION IN DUCT SIZE Ē w -

ELBOW WITH TURNING VANES MANUAL VOLUME DAMPER

SUPPLY AIR DUCT UP/DOWN

RETURN AIR DUCT UP/DOWN

EXHAUST AIR DUCT UP/DOWN

SCHEDULED MECHANICAL EQUIPMENT

EXIST'G DUCT TO REMAIN

---- EXIST'G DUCT TO BE REMOVED EXISTING FLEXIBLE DUCTWORK 

MECHANICAL PLAN NOTES:

(1)

(4)

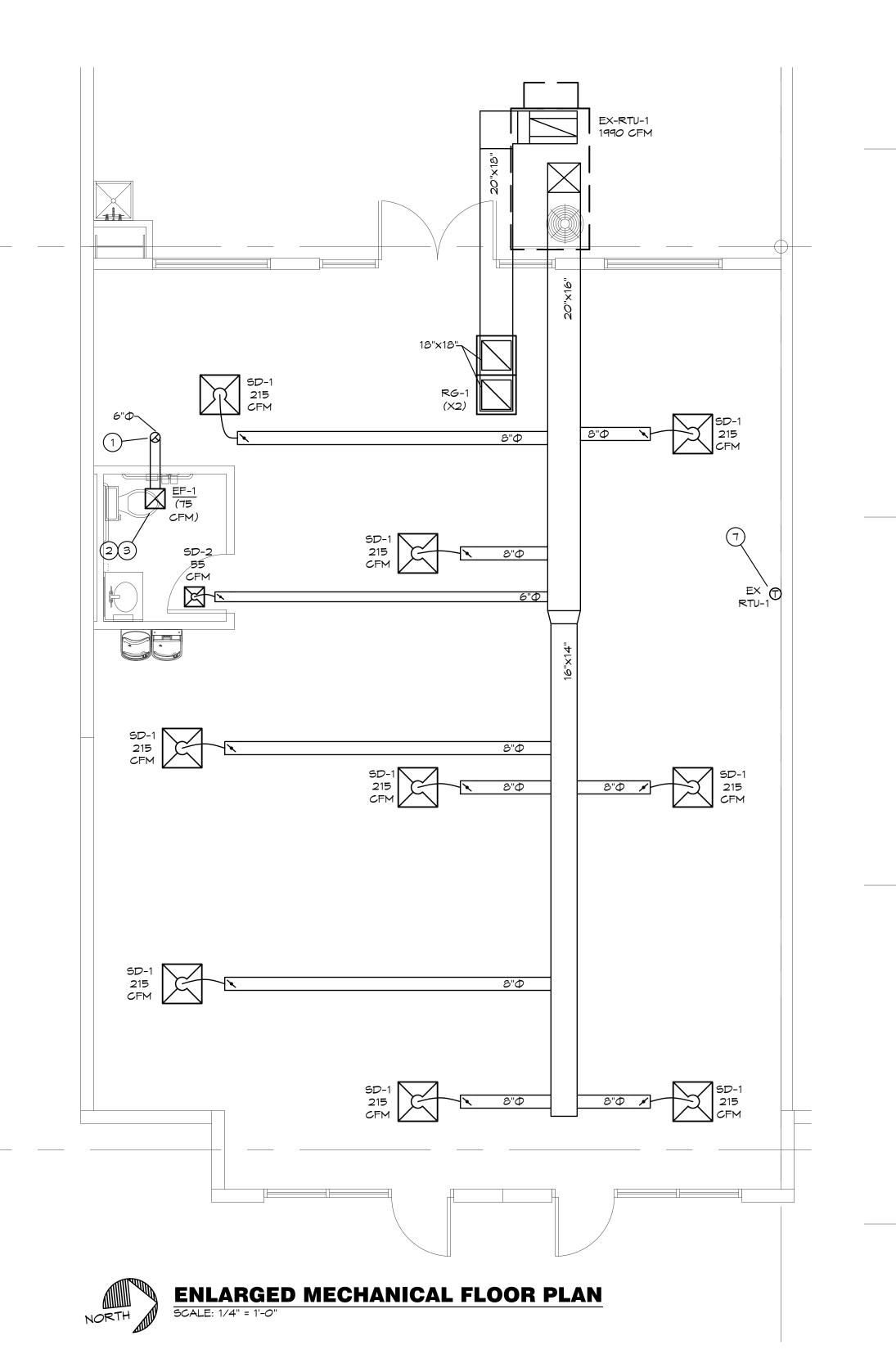
(5)

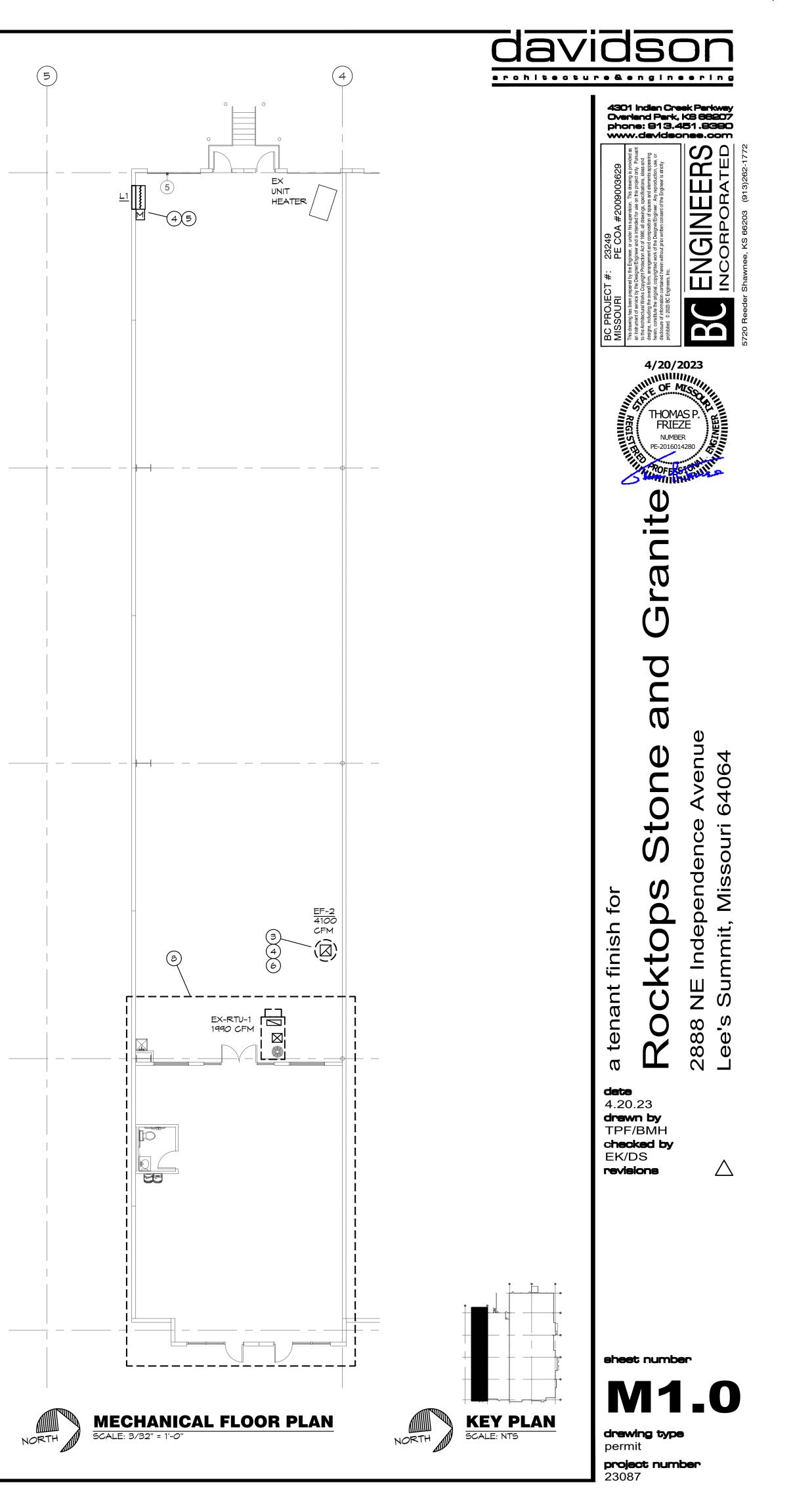
PROVIDE WEATHER HEAD CAP WITH BACKDRAFT DAMPER FOR EXHAUST FAN. SEAL PENETRATIONS WEATHERTIGHT.

- (2)SUPPORT FAN FROM STRUCTURE AS REQUIRED BY THE MANUFACTURER. (3) CUT EXISTING ROOF AND FLASH INTO ROOF AS REQUIRED. ALL ROOFING WORK SHALL BE
  - PERFORMED BY BUILDING OWNER'S ROOFING CONTRACTOR (AT THIS CONTRACTOR'S EXPENSE) TO MAINTAIN EXISTING ROOF WARRANTY. VERIFY APPROVED ROOFING CONTRACTOR WITH BUILDING OWNER PRIOR TO PERFORMING WORK.

(5)

- EF-2 & L-1, SHALL BE CONTROLLED TOGETHER. STARTER SHALL HAVE ON/OFF MODES.
- NORMALLY CLOSED MOTORIZED DAMPER, TO OPEN WHEN EF-2 STARTS. COORDINATE WITH E.C.
- MAINTAIN 10' CLEARANCE FROM ALL OUTDOOR AIR INTAKES.
- RELOCATE EXISTING THERMOSTAT TO LOCATION SHOWN. MOUNT THERMOSTAT AT 48" AFF. (ອ)
  - REFER TO ENLARGED MECHANICAL PLAN ON THIS SHEET FOR CONTINUATION.







/idso	Ua\									ULE	SCHED	UNIT	FTOP	G ROO	EXISTIN							
ture & engineer	erchitec			SEER	TOTAL	MINIMUM		RICAL	ELECT		(GAS)	HEATING			COOLING		EXT. STATIC P.	EVAP.	NOM.			
•		REMARKS	FREON	/EER	WEIGHT (LBS)	OUTDOOR AIR (CFM)		MIN. MCA (AMPS)	BLOWER MOTOR	/OLT/Ф/HZ	BTUH OUTPUT	BTUH NPUT		1B. EVAP. DB/V	ENS. BTUH A	TOTAL BTUH	IN. MG. (NOTE 2)	CFM	TONS	MODEL NO.	MFGR	ARK
4301 Indian Creek Pa Overland Park, K8 6		1	R-410a 1	14.0/11.8	925	165	20	14	1 HP	480/3/60				5 80/6	44,400 1	59,200	1.0	1,990	5	KGB06054B	LENNOX	RTU-1
phone: 913.451.8 www.devideonee			.IST.	HECK-UP L	ENANCE CH	ATIVE MAIN	E PREVENT	ANCE PER TH	VE MAINTEN	1 PREVENTA	O PREFORI	RACTOR	. CONTRA	REQUIRED	REPLACE AS	ON. REPAIR C	G CONDITIC	R MORKING	N PROPER	KISTING UNIT IS I	I. VERIFY E	DTES:
<b>329</b> g is provided as t cony. Pursuant ta appeaning ction, use, or is strictly	LOWING CRITERIA	INCLUDE THE FOLL						RS.	SE ALL FILTI	1. CHAI					TIONS	ALCULA	AIR CA	OR A	JTDO			
20090036; ision. This drawing it use on this project or ups, specifications, id spaces and element, id the Engineer is, in of the Engineer is		-	NER. RE VARIANO	CID CLEAN MPERATUR	TH A NON-A SUPPLY TEN	R COILS M R RETURN	CONDENSE (GUAGES C	INSATE DRAI PRATOR AND ANT CHARGE	N ALL EVAPO K REFRIGER	3. CLEA 4. CHEC	on Zone	ne distribu	zone	utdoor rate in Exhau hing airflow			Occupant Der		SSIFICATION	OCCUPANCY CLA	(sqft)	Ar
A #20) his supervision is all darges. a settion of super- tien consent of then consent of	TO WEAR.	RICATION ZERKS. AT ARE SUBJECT TO		COATED I	C/RUBBER	AND FABR	TS, HOSES	OF ALL BE	EPLACEMEN	6. THE	airflow (cfm)	22	airflow (V		(Rp) zone m/person cfm							
- C b ∺ S £ is is				, CONTACT	NNECTIONS	TRICAL C	EN ALL ELEC	HE INDOOR, OFF - TIGHTI	JNIT POWER	8. TURN	165	2 0.8	132	06	5 0.	5				ices	53 Office sp	·-1 -
23245 PE CO prime and is ment and of 19 ment and 19 ment	IKE ITEMS THAT TEND TO		•		,			AIR ALL ELEC ER TIME OR B			0	0.8	0	50/70	0	0				ms public	47 Toilet roo	
#: 5 by the Engine segmentEngine and therein with s, Inc.					EDED.	PAIR AS NE	NS AND REI	NGS CONNECTIC	SE ALL FITTI < DUCTMORI		I 165	Tot					-					
ECT #	ALL UNITS SHALL BE	DED IN THIS LIST. A	OT INCLUDI					CONTRACTO COOLING PR			395	6 0.8	316	06	0 0.	0				ses	265 Warehou	
OUR OUR OUR a has been t of servic actural Wo ucling the tinthe the o finitumetic finitumetic o 2023 BC	GYSTEM WHEN A CALL	ERATION OF THE S						DMIZER (IF EC MES FROM T			1 395	Tot		•	<b>I</b>	ł					•	•
BC PI MISS MISS MISS an instrument an instrument designs, included designs, included	OR TENANT'S	TON MANAGER & O			OR TO BID.	DLORD PR	BY THE LAN	REQUIRED I	Y ANY WOR	14. VER 15. ALL												
4/20/2023					DULE	N SCHE	JST FAI	EXHA														
THOMAS P.	NOTES	CONTROLS	YPE	FAN T		ELECTF	P. RPM	M STATIC	DEL CI		MFG	MARK										
THOMAS P. FRIEZE NUMBER	1	LIGHT SMITCH	EXH.	CEILING	29 W	120/1/60	750	5 0.1	128 7	K GO	<i>coc</i>	EF-1										
THOMAS P. FRIEZE NUMBER PE-2016014280	2	SWITCH	EXH.	ROOF I	0.75 HP	120/1/60	772	00 0.2	CEB 4,1	K 210	000	EF-2										
ROFE STON		N AND ABOVE CEIL TCH, BACKDRAFT				·	HER HEAD.	T AND WEAT	DISCONNE	RY MEANS C	FACTO	NOTES										
						LER.	D CONTRO	RIABLE SPEE	10UNTED VA	CREEN, UNIT	BIRD											
			SCHE	DUVER	LC		1															
	NOTES		SIZE	FRAME	ODEL	۶ N	< MFG	MAR														
		6" 1,2,3	48"x36'	STD				L-1														
0 I				OLOR.	I BIRD SCR D SELECT C	CHITECT T	2. AF	NOT														
		MALLY CLOSED.	PER, NORM	ZED DAMP	V, MOTORIZ								<b></b>									
							r sche						1									

HE	ATING (G	SAS)		ELECT	RICAL		MINIMUM	TOTAL	SEER			erchi	ltecture & engine e
BTUH INPUT		TUH TPUT	VOLT∕Φ∕HZ	BLOWER MOTOR	MIN. MCA (AMPS)	MIN. MOCI (AMPS)	AIR (CFM		/EER	FREON	REMARKS		
150,00	00 120,0	,000	480/3/60	1 HP	14	20	165	925	14.0/11.8	R-410a	1		4301 Indian Creek Overland Park, Kä
NTRACT	OR TO P	PREFORM	1 PREVENTAT	IVE MAINTEN	ANCE PER T	HE PREVEN	TATIVE MA	INTENANCE (	CHECK-UP L	IST.			phone: 813.45 www.davidsona
Breathing zone outdoor rflow (Vbz) 132 <i>O</i>	Zone air distribution effectivene ss (Ez) O.8 O.8 Total	Zone outdoor airflow (cfm) 165 0 165	1. CHAN 2. CLEA 3. CLEA 4. CHEC 5. PROV 6. THE F 7. CHEC 8. TURN 9. EXAM DETE 10. GREA	GE ALL FILT N ALL COND N ALL EVAP K REFRIGER (IDE COMPL 2EPLACEMEN K AMPS OF UNIT POWER INE AND RE RIORATE ON ISE ALL FITT	ERS. ENSATE DR, ORATOR AN ANT CHARG ETE LUBRICA T OF ALL B THE INDOOR OFF - TIGH PAIR ALL ELI ER TIME OR NGS	AIN PANS A D CONDENS E (GUAGES ITION OF AI ELTS, HOSE , OUTDOOF TEN ALL EL ECTRICAL V	ND FLUSH A SER COILS OR RETURI L SHAFTS S AND FAB MOTORS, ECTRICAL ( NIRING, CON	ALL CONDEN WITH A NON- N/SUPPLY TE AND BEARIN BRIC/RUBBER AND COMPE CONNECTION	SATE DRAIN ACID CLEA EMPERATUR IGS THAT H. RESSORS IS, CONTAC RTERS, RE	N LINES. NER. RE VARIAN AVE LUBR ITEMS THA TORS, ET( LAYS, CAF	CE). ICATION ZERKS. IT ARE SUBJECT C. PACITORS AND I	LOWING CRITERIA TO WEAR. LIKE ITEMS THAT TENI	<ul> <li>23249</li> <li>23249</li> <li>PE COA #2009003629</li> <li>rhe Engineer, or under his supervision. This drawing is provided as igner/Engineer and is intended for use on this project only. Pursuant it Protection Act of 1980, all drawings, specifications, ideas and arrangement and composition of spaces and elements appearing fibled work of the Designer (Engineer, Any reproduction, use, or I herein without prior written consent of the Engineer is strictly inc.</li> </ul>
316	<i>O.8</i> Total	395 395	12. NOTIF FUNC 13. CHEC FOR 14. VERIF 15. ALL F	Y GENERAL FIONING AND K THE ECON COOLING CO Y ANY WOR	CONTRACTO COOLING F OMIZER (IF E OMES FROM < REQUIRED O VALUES TO ECTOR.	OR OF ANY ROPERLY EQUIPPED) I THE THERM BY THE LA D BE NOTED	AT COMPLE FOR PROPE OSTAT. RE NDLORD P O AND PRO	PARTS OR I ETION OF JO ER FUNCTION EPAIR AND A RIOR TO BID VIDED TO T	B. I AND CORI IDJUST AS 1 D.	RECT OPE NEEDED.		ALL UNITS SHALL BE SYSTEM WHEN A CAL OR TENANT'S	BC PROJECT # MISSOURI This drawing has been prepared by an instrument of service by the Des to the Architectural Works Copyrid designs, including the overal form, berein, constitute the original, copy disclosure of information contained prohibited. © 2023 BC Engineers,
316			12. NOTIF FUNC 13. CHEC FOR 14. VERIF 15. ALL F	Y GENERAL FIONING AND K THE ECON COOLING CO Y ANY MOR INDINGS AN	CONTRACTO COOLING F OMIZER (IF E OMES FROM REQUIRED VALUES TO ECTOR.	DR OF ANY ROPERLY EQUIPPED) I THE THERM BY THE LAD DE NOTEI	REQUIRED AT COMPLE FOR PROPE OSTAT. RE NDLORD P AND PRO	PARTS OR I ETION OF JO ER FUNCTION PAIR AND A RIOR TO BID VIDED TO TO	B. I AND CORI IDJUST AS 1 D.	RECT OPE NEEDED.	RATION OF THE	SYSTEM WHEN A CAL	BC PROJECT # MISSOURI This drawing has been prepared by an instrument of service by the Des to the Architectural Works Copyrid designs, including the overal form, berein, constitute the original, copy disclosure of information contained prohibited. © 2023 BC Engineers,
			12. NOTIF FUNC 13. CHEC FOR 14. VERIF 15. ALL F MAINT	Y GENERAL FIONING AND K THE ECON COOLING CO Y ANY WOR FINDINGS AN TENANCE DIF	CONTRACTO COOLING F OMIZER (IF E OMES FROM < REQUIRED O VALUES TO ECTOR.	NAL CPERLY COPERLY COPERLY COPERLY CP. RPN	REQUIRED AT COMPLE FOR PROPE OSTAT. RE NDLORD P AND PRO	PARTS OR I ETION OF JO ER FUNCTION PAIR AND A RIOR TO BIL VIDED TO TO EDULE RICAL	B. I AND CORI IDJUST AS 1 D.	RECT OPE NEEDED. DNSTRUCTI	RATION OF THE	SYSTEM WHEN A CAL	The second secon
	Total	395	R MO	TONING AND FONING AND K THE ECON COOLING CO TY ANY WOR TINDINGS AN TENANCE DIF	CONTRACTO COOLING F OMIZER (IF E OMES FROM REQUIRED VALUES TO ECTOR. EXTER STAT	CR OF ANY ROPERLY EQUIPPED) I THE THERM BY THE LAD BE NOTEI	REQUIRED AT COMPLE FOR PROPE OSTAT. RE NDLORD P AND PRO	PARTS OR I TION OF JO ER FUNCTION PAIR AND A RIOR TO BID VIDED TO TO EDULE RICAL	B. I AND CORI DJUST AS 1 2. ENANT'S CC	RECT OPE NEEDED. DNSTRUCTI	RATION OF THE	SYSTEM WHEN A CAL	The second secon
	Total	395 MFG	R MO	TONING AND FIONING AND K THE ECON COOLING CO T ANY WOR INDINGS AN TENANCE DIF DEL C	CONTRACTO COOLING F OMIZER (IF E DMES FROM REQUIRED VALUES TO ECTOR. EXTER STATI	CR OF ANY ROPERLY EQUIPPED) I THE THERM BY THE LA D BE NOTED D BE NOTED UST FA	REQUIRED AT COMPLE FOR PROPE OSTAT. RE NDLORD P AND PRO N SCH ELECT VOLT/Ф. 120/1/6	PARTS OR I TION OF JO ER FUNCTION PAIR AND A RIOR TO BID VIDED TO TO EDULE RICAL	B. I AND CORI DJUST AS N D. ENANT'S CC FAN T	RECT OPE NEEDED. DNSTRUCTI YPE	CONTROLS	SYSTEM WHEN A CAL	PLANCE CONCOLECT # BC PROJECT # MISSOURI M
1	MARK EF-1 EF-2 OTES: 1.	395 MFG COO COO PROVI FACTO PROVI	R MO R MO DE CEILING G RY MEANS O	Y GENERAL FIONING AND K THE ECON COOLING CO Y ANY WOR INDINGS AN ENANCE DIF ENANCE DIF -128 ACEB 4, RILLE, INTEG DISCONNE 2 18" HIGH (A	CONTRACTO COOLING F OMIZER (IF E OMES FROM CREQUIRED OVALUES TO ECTOR. EXHA EXTER STATI IN. V 15 0. 00 0 RAL BACK I CT AND WEA T LOWEST F	CR OF ANY ROPERLY EQUIPPED) I THE THERM BY THE LAD DE NOTED USAFT FA	REQUIRED AT COMPLE FOR PROPE OSTAT. RE NDLORD P AND PRO AND AND PRO AND AND AND AND AND AND AND AND AND AND	PARTS OR I TION OF JO ER FUNCTION PAIR AND A RIOR TO BID VIDED TO TI EDULE RICAL /HZ PWR 50 29 W 50 0.75 HP -SPEED CON	B. I AND CORI DJUST AS N D. ENANT'S CO FAN T CEILING ROOF NTROLLER	RECT OPE NEEDED. DNSTRUCTI YPE EXH. EXH. (NEAR FAN NECT SWIT	CONTROLS	SYSTEM WHEN A CAL OR TENANT'S NOTES 1 2 EILING),	The second provide the second providence or se
1	MARK EF-1 EF-2 OTES: 1.	395 MFG COO COO PROVI FACTO PROVI	R MO R MO DE CEILING G DE INSULATEL	Y GENERAL FIONING AND K THE ECON COOLING CO Y ANY WOR INDINGS AN ENANCE DIF ENANCE DIF -128 ACEB 4, RILLE, INTEG DISCONNE 2 18" HIGH (A	CONTRACTO COOLING F OMIZER (IF E OMES FROM CREQUIRED OVALUES TO ECTOR. EXHA EXTER STATI IN. V 15 0. 00 0 RAL BACK I CT AND WEA T LOWEST F	CR OF ANY ROPERLY EQUIPPED) I THE THERM BY THE LAD DE NOTED USAFT FA	REQUIRED AT COMPLE FOR PROPE OSTAT. RE NDLORD P AND PRO AND AND PRO AND AND AND AND AND AND AND AND AND AND	PARTS OR I TION OF JO ER FUNCTION PAIR AND A RIOR TO BID VIDED TO TI EDULE RICAL /HZ PWR 50 29 W 50 0.75 HP -SPEED CON	B. I AND CORI DJUST AS N D. ENANT'S CO FAN T CEILING ROOF	RECT OPE NEEDED. DNSTRUCTI YPE EXH. EXH. (NEAR FAN NECT SWIT	CONTROLS	SYSTEM WHEN A CAL OR TENANT'S NOTES 1 2 EILING),	The second provide the second providence or se
1	MARK EF-1 EF-2 OTES: 1.	395 MFG COO COO PROVI FACTO PROVI	R MO R MO DE CEILING G DE INSULATEL	Y GENERAL FIONING AND K THE ECON COOLING CO Y ANY WOR INDINGS AN ENANCE DIF ENANCE DIF -128 ACEB 4, RILLE, INTEG DISCONNE 2 18" HIGH (A	CONTRACTO COOLING F OMIZER (IF E OMES FROM CREQUIRED OVALUES TO ECTOR. EXHA EXTER STATI IN. V 15 0. 00 0 RAL BACK I CT AND WEA T LOWEST F	OR OF ANY ROPERLY EQUIPPED) I THE THERM BY THE LAD DE NOTEI UST FA NAL C P. RPN IG. 1 750 2 772 DRAFT DAN THER HEAD OINT) PREF ED CONTR	REQUIRED AT COMPLE FOR PROPE OSTAT. RE NDLORD P AND PRO N SCH ELECT VOLT/Ф. 120/1/6 120/1/6 120/1/6 ABRICATEI OLLER.	PARTS OR I TION OF JO ER FUNCTION PAIR AND A RIOR TO BID VIDED TO TI EDULE RICAL /HZ PWR 50 29 W 50 0.75 HP -SPEED CON	B. I AND CORI DJUST AS N D. ENANT'S CO FAN T CEILING ROOF NTROLLER	RECT OPE NEEDED. DNSTRUCTI YPE EXH. EXH. (NEAR FAN NECT SWIT	CONTROLS	SYSTEM WHEN A CAL OR TENANT'S NOTES 1 2 EILING),	The second provide the second providence or se

	DIFFUSER SCHEDULE											
MARK MFGR MODEL BORDER TYPE NECK SIZE FACE SIZE FINISH DAMPER ACCESSORIES NO												
SD-1	TITUS	TMS	З	8" <b>Φ</b>	24"×24"	MHITE	_	-	-			
SD-2	TITUS	TMS	З	6"Ф	12"×12"	NHITE	-	_	-			
RG-1	TITUS	PAR	З	18"x18"	24"×24"	MHITE	-	-	-			

C and Avenue 64064 Stone Independence 2888 NE Independence Lee's Summit, Missouri Rocktops for finish a tenant

date 4.20.23 drawn by TPF/BMH checked by EK/DS revisions

 $\triangle$ 

sheet number



**drewing type** permit **project number** 23087

### ELECTRICAL SPECIFICATIONS

- 1. GENERAL PROVISIONS
- A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE ELECTRICAL SYSTEMS OUTLINED.
- B. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.
- C. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE NATIONAL ELECTRIC CODE (NEC), AND ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.

D. ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.

- E. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, CONDUIT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL ACCEPTANCE
- F. PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY, PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.
- G. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.
- H. CONTRACTOR SHALL PROVIDE ACCESS PANELS WHERE NECESSARY FOR CONCEALED ELECTRICAL COMPONENTS.
- 2. OPERATION AND MAINTENANCE MANUALS:
- A. DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.
- B. ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATION AND MAINTENANCE MANUALS.
- C. ALL LITERATURE LISTED ABOVE AND ALL PAPERS LISTING WARRANTIES, ETC. SHALL BE COLLATED AND LABELED WITH THE PROJECT NAME, ADDRESS, ARCHITECT, ENGINEER, CONTRACTORS, ETC CONTRACTORS, ETC. DOCUMENTS SHALL BE COMPILED AND BOUND IN DIGITAL FILE OR 3 RING BINDER.
- 3. MANUFACTURERS
- A. MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN, UNLESS NOTED OTHERWISE
- 4. TESTING, AND BALANCING:
- A. ALL CIRCUITS SHALL BE TESTED FOR CONTINUITY, SHORTS, AND GROUNDS BEFORE CONNECTING TO THE PROPER PHASE AS DESIGNED TO BALANCE THE LOADING BETWEEN PHASES B. POWER AND LIGHTING PANELS SHALL BE PROPERLY PHASED TO DISTRIBUTE THE LOAD AND SHALL BE
- CONNECTED AND ADJUSTED TO OPERATE AS SPECIFIED. C. ALL MOTORS AND SIMILAR EQUIPMENT SHALL BE CHECKED FOR PROPER PHASE ROTATION AND OPERATION.
- 5. RACEWAYS
- A. CONDUIT INSIDE THE BUILDING SHALL BE METALLIC TUBING (EMT), BEARING THE UL LABEL, WITH COMPRESSION TYPE FITTINGS OR SCREW SET FITTINGS
- B. CONDUIT EXPOSED TO THE WEATHER, INSTALLED UNDERGROUND, IN CONCRETE, OR USED FOR SERVICE
- ENTRANCE SHALL BE STANDARD RIGID CONDUIT (GALVANIZED) WITH THREADED FITTINGS . UNDERGROUND CONDUIT MAY BE POLYVINYL CHLORIDE WITH A DEFLECTION TEMPERATURE, UNDER LOAD AT 264 PSI, OF 78 DEGREES C, AND A TENSILE STRENGTH OF 5,200 PSI. JOINTS SHALL BE FLUSH SOLVENT WELDED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE EQUAL TO CARLON POWER AND COMMUNICATIONS DUCT TYPE DB (DIRECT BURIAL). CONDUIT AND FITTINGS SHALL BE PRODUCED BY THE SAME MANUFACTURER.
- D. FLEXIBLE METAL CONDUIT SHALL ONLY BE USED FOR CONNECTIONS TO MOTORS, TRANSFORMERS, AND LIGHT FIXTURES. MAXIMUM LENGTH SHALL BE 6'-0".
- 6. CONDUCTORS:
- A. WIRES SHALL BE CONTINUOUS WITHOUT SPLICES OR TAPS IN CONDUIT RUNS. ALL SPLICES SHALL BE MADE IN JUNCTION, PULL, OR OUTLET BOXES. ALL WIRE SHALL BE INSTALLED IN CONDUIT, WIREWAYS OR OTHER PROTECTIVE COVER SANCTIONED BY CODES.
- B. CONDUCTORS FOR LIGHTING AND POWER SHALL BE COPPER, MINIMUM NO. 12 A.M.G., 600 VOLT. C. NO. 10 GAUGE AND SMALLER CONDUCTORS SHALL BE TYPE THWN (WET LOCATIONS) OR THHN (DRY
- LOCATIONS), SOLID CONDUCTOR, UNLESS OTHERWISE INDICATED.
- D. NO. & GAUGE AND LARGER CONDUCTORS SHALL BE TYPE THWN (WET LOCATIONS) OR THHN (DRY LOCATIONS), STRANDED, UNLESS OTHERWISE INDICATED
- E. SERVICE ENTRANCE AND PANEL FEEDER CONDUCTORS, NO. 3 GAUGE AND LARGER SHALL BE TYPE XHHW-2 (MET LOCATIONS) OR THHN (DRY LOCATIONS), STRANDED COPPER, UNLESS OTHERWISE INDICATED. 7. MC CABLE:
- A. MC CABLE SHALL CONSIST OF INTERLOCK ARMORED CABLE MADE OF THREE OR FOUR TYPE 'HHN SOLID (#8 AWG AND LARGER MAY BE STRANDED) COPPER CONDUCTORS RATED 90°C FOR DRY LOCATIONS, WITH NYLON OR EQUIVALENT UL LISTED JACKET, PER UL STANDARD 83 THE THREE CONDUCTORS SHALL BE TWISTED TOGETHER WITH THE COPPER GROUNDING. CONDUCTOR, SUITABLE FILLERS, AND WRAPPED IN BINDER TAPE. THE ASSEMBLY SHALL BE ARMORED WITH SPIRALLY WRAPPED INTERLOCKED ARMOR OF ALUMINUM OR GALVANIZED
- B. CABLES SHALL BE TESTED IN ACCORDANCE WITH UL STANDARD 1569 FOR TYPE MC CABLE AND RATED AT 600 VOLTS, 90 DEG. C FOR DRY LOCATIONS AND 75 DEG. C FOR WET LOCATIONS. 8. WIRING DEVICES:
- A. WALL SWITCHES SHALL BE SPECIFICATION GRADE, QUIET TYPE, FLUSH TOGGLE SWITCH, RATED FOR 20 AMPS, WITH THERMOPLASTIC COVER PLATES.
- 1) SINGLE POLE: HUBBELL #CS1221-X, OR EQUAL. 2) THREE WAY: HUBBELL #CS1223-X, OR EQUAL.
- 3) AS SPECIFIED ON PLANS B. RECEPTACLES SHALL BE SPECIFICATION GRADE, DUPLEX, GROUNDING, THREE-WIRE TYPE, RATED
- FOR 20 AMPS, WITH THERMOPLASTIC COVER PLATES. HUBBELL #CR5352-X, OR EQUAL. C. GROUND FAULT INTERRUPTER RECEPTACLES (GFI) SHALL BE HUBBELL #GF20-XL. DEVICE COVER
- PLATES SHALL BE AS HEREINBEFORE SPECIFIED. D. ISOLATED GROUND RECEPTACLES (IG) SHALL BE HUBBELL #CR5352IG, ORANGE COLOR. DEVICE
- COVER PLATES SHALL BE AS HEREINBEFORE SPECIFIED.
- E. RECEPTACLES OUTSIDE BUILDING AND WHERE NOTED AS WEATHERPROOF, SHALL BE LISTED WEATHER-RESISTANT' HUBBEL #GFTR20-X OR EQUAL AND SHALL BE INSTALLED IN A WEATHERPROOF ENCLOSURE WHICH SHALL BE INTERMATIC #WP1010MXD OR #WP1010HMXD DIECAST METAL WEATHERPROOF RECEPTACLE COVER. COVER SHALL BE WEATHER PROOF RATED WHILE IN USE.
- F. VERIFY DEVICES AND DEVICE COVERPLATES COLOR AND STYLE WITH ARCHITECT. 9. BOXES:
- A. HOT DIPPED GALVANIZED STEEL BOXES. PROVIDE TYPE TO SUIT CONDITIONS FOR INSTALLATION.
- B. ALL BOXES SHALL BE FLUSH MOUNTED, UNLESS INDICATED OTHERWISE.
- 10 PANELBOARDS:
- A. FURNISH AND INSTALL CIRCUIT BREAKER PANELBOARDS AS SHOWN ON THE DRAWINGS. PANELBOARDS SHALL BE LISTED BY UL AND SO LABELED, AND SHALL BE FULLY RATED FOR THE VOLTAGE AND CURRENT CAPACITY INDICATED ON THE PANEL SCHEDULE. PANELBOARDS SHALL BE EQUAL TO SQUARE D TYPE NQ OR NF WITH BOLT IN TYPE BREAKERS. PANELBOARD LUGS SHALL BE RATED AT 75°C.
- 1) CIRCUIT BREAKER INTERRUPTING CAPACITIES SHALL MEET OR EXCEED THE AVAILABLE RMS SYMMETRICAL FAULT CURRENTS INDICATED AND AS REQUIRED TO MEET OR EXCEED THE AVAILABLE FAULT CURRENT FROM LOCAL UTILITY.
- B. CIRCUIT BREAKERS SHALL MEET APPLICABLE PORTIONS OF UL STANDARD 489 AND NEMA AB-L. CIRCUIT BREAKERS SHALL BE BOLT-ON, GROUP MOUNTED, AMBIENT MAGNETIC, WITH COMMON TRIP, UL RATED TO CARRY 80% OF NAMEPLATE RATING CONTINUOUSLY IN FREE AIR AT 40° C. CIRCUIT BREAKERS SHALL BE TRIP INDICATING AND FULLY INTERCHANGEABLE WITHOUT DISTURBING ADJACENT UNITS. WIRE TERMINALS SHALL BE RATED 75 DEGREES C. THE OPERATING MECHANISM SHALL BE TRIP-FREE SO THAT CONTACTS CANNOT BE HELD CLOSED AGAINST ANY ABNORMAL OVERCURRENT OR SHORT CIRCUIT CONDITION.
- a) BREAKERS SHALL MEET APPLICABLE NEMA AND/OR UL SPECIFICATIONS.
- 2. PANELBOARD BOXES SHALL BE GALVANIZED SHEET STEEL WITH AMPLE WIRING GUTTER SPACE IN ACCORDANCE WITH NEC. FRONTS SHALL BE OF SHEET STEEL PAINTED LIGHT GREY OVER A SUITABLE RUST INHIBITOR PRIMER, PANELBOARDS SHALL BE EQUIPPED WITH ONE PIECE DOOR, CYLINDER TUMBLER TYPE LOCK, DIRECTORY CARD-HOLDER AND QUARTER-TURN ADJUSTABLE TRIM CLAMPS
- D. PANELBOARD INTERIORS SHALL CONSIST OF REINFORCED GALVANIZED SHEET STEEL FRAMES WITH ALUMINUM BUS BARS AND CIRCUIT BREAKERS, PROPERLY SUPPORTED TO PREVENT VIBRATIONS AND BREAKAGE IN HANDLING. BUS BARS SHALL BE SEQUENCE PHASED. PANELBOARD SHALL HAVE A FULL SIZED SOLID ALUMINUM NEUTRAL AND GROUND BUS.
- E. BUS BAR BRACING SHALL BE UL LISTED AS INDICATED ON DRAWINGS. ADDITIONAL BRACING SHALL BE PROVIDED AS REQUIRED TO MEET OR EXCEED INDICATED AVAILABLE FAULT CURRENTS.
- F. DIRECTORY CARDS SHALL BE COMPLETELY FILLED IN BY TYPEWRITER, LISTING CIRCUIT NUMBERS AND LOAD SERVED, INCLUDING EXISTING CIRCUITS. CIRCUIT BREAKERS SHALL BE IDENTIFIED BY CIRCUIT NUMBER LABELS AS HEREINBEFORE SPECIFIED. 11. DISCONNECTS:
- A. DISCONNECTS SHALL BE EXTERNALLY OPERATED, QUICK-MAKE, QUICK-BREAK, SAFETY, WITH PROVISIONS FOR PAD LOCKING. FUSED AND NON-FUSED DISCONNECT SWITCHES SHALL BE PROVIDED AS INDICATED.
- B. INDOOR SWITCHES SHALL BE NEMA I AND OUTDOOR SWITCHES SHALL BE NEMA 3R, UNLESS INDICATED OTHERWISE.

12. FUSES:

- A. FUSES PROTECTING CIRCUIT BREAKER PANELS SHALL BE CURRENT LIMITING I WITH 200,000 AMPERES RMS SYM INTERRUPTING CAPACITY. FUSING ELEMEN RATINGS ABOVE 60 AMPERES
- B. ALL OTHER FUSES SHALL BE U.L. CLASS RK-5, DUAL-ELEMENT WITH A MINIMUM SECONDS AT 500% RATING. FUSES SHALL HAVE CURRENT-LIMITING SHORT-AMPERES RMS SYM INTERRUPTING CAPACITY. FUSING ELEMENTS SHALL BE 13. LIGHT FIXTURES:
- A. WHERE LIGHT FIXTURES ARE MOUNTED IN A LAY-IN CEILING, PROVIDE A MINIM ATTACHED DIRECTLY BETWEEN EACH LIGHT FIXTURE AND THE BUILDING STRU SHALL BE A MINIMUM OF 12 GAUGE GALVANIZED STEEL WIRE, SOFT ANNEALED
- B. FIXTURES ARE REQUIRED AT ALL LIGHTING OUTLETS SHOWN ON THE DRAWING FIXTURE WIRE IS REQUIRED IN ALL FIXTURES AND FIXTURE RACEWAYS. WEATH REQUIRED FOR EXTERIOR FIXTURES. ALL PARTS OF FIXTURES AND WIRING S WITH NEC REQUIREMENTS.
- C. ALL FIXTURES SHALL CARRY UL AND ETL LABELS.
- 14. SLEEVES:
- A. PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR TH B. INTERIOR PARTITIONS: 16 GAGE GALVANIZED STEEL, PACK BETWEEN CONDL
- SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT. C. ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE
- COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAI 15. GROUNDING
- A. GROUND ALL ELECTRICAL APPARATUS IN ACCORDANCE WITH THE NATIONAL AND ANY LOCAL REQUIREMENTS. INSURE CONTINUOUS BOND WHERE FLEXIBLE PROVIDE BONDING JUMPER INSIDE ALL FLEXIBLE CONDUIT.
- B. BOND METAL PIPING SYSTEMS IN COMPLIANCE WITH NEC 250.4(A)(4).
- 16. REMODELING WORK:
- A. DEMOLITION: DISCONNECT, DEMOLISH AND REMOVE ABANDONED ELECTRICA INDICATED TO BE REMOVED AND NOT INDICATED TO BE SALVAGED OR REM B. EQUIPMENT TO BE SALVAGED:
- 1) DISCONNECT AND REMOVE EXISTING ELECTRICAL EQUIPMENT INDICATED
- SALVAGED. DELIVER EQUIPMENT TO THE LOCATION DESIGNATED BY THE 2) ALL MATERIALS AND EQUIPMENT DESIGNATED TO BE REUSED OR RELOCA REMOVED AND STORED UNTIL NEEDED FOR REMODELING WORK. ALL IT "LIKE NEW" CONDITION WITH RUST OR CORROSION REMOVED SURFACE P REPAINTED AS REQUIRED TO MATCH NEW CONSTRUCTION AND THOROUGH ANY ITEMS WHICH BECOME DAMAGED BEYOND REPAIR AS A RESULT OF
- C. DISPOSAL AND CLEANUP: REMOVE FROM THE SITE AND LEGALLY DISPOSE ( EQUIPMENT NOT INDICATED TO BE SALVAGED.
- D. PROTECT ADJACENT MATERIALS INDICATED TO REMAIN. INSTALL AND MAIN BARRIERS TO KEEP DIRT, DUST, AND NOISE FROM BEING TRANSMITTED TO . PROTECTION AND BARRIERS AFTER REMODELING OPERATIONS ARE COMPL
- E. PROVIDE ALL ALTERATIONS AND REWORK INDICATED AND/OR REQUIRED FO AND OPERATION OF ALL EXISTING ELECTRICAL SYSTEMS, INTEGRATING THE LOCATE, IDENTIFY, AND PROTECT ELECTRICAL SERVICES PASSING THROUGH SERVING OTHER AREAS OUTSIDE THE REMODELING LIMITS. MAINTAIN SERVIC REMODELING LIMITS. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPO AFFECTED AREAS
- 1) ABANDONED CONDUIT SHALL HAVE WIRE REMOVED AND SHALL BE CAPPE WALLS OR PARTITIONS SHALL HAVE DEVICES AND WIRE REMOVED, AND
- 2) WHERE EXISTING CONDUITS TERMINATE AT AN EXISTING OUTLET IN A WALL TO BE REMOVED, DISCONNECT AND REMOVE DEVICE AND WIRE FROM C CUT BACK AND CAPPED (BELOW THE FLOOR OR ABOVE THE CEILING) SO OBSTRUCTION. PATCH FLOOR TO MATCH EXISTING.
- 3) WHERE EXISTING CIRCUITS EXTEND BEYOND THE OUTLET IN THE EXISTING FLOOR TO BE REMOVED, FURNISH AND INSTALL NEW CONDUIT AND WIRE T CIRCUIT OR FEED THE REMAINING OUTLET(S) FROM ANOTHER ELECTRICAL A MANNER AS NOT TO REVISE THE CIRCUIT. ALL REPOUTED CONDUIT SHAL ARCHITECT
- 4) WHERE EXISTING OUTLETS IN A WALL, CEILING, OR FLOOR TO BE REMOVE MAINTAIN OPERATION OF OTHER REMAINING OUTLETS RELOCATE THE OU LOCATION. EXISTING WIRING DEVICES SHALL NOT BE REUSED, UNLESS OT
- 5) WHERE LIGHTING FIXTURES ARE INDICATED TO BE DEMOLISHED, REMOVE EXISTING CONDUIT (IF APPLICABLE) FOR THE NEW LIGHTING. ALL UNUSED O REMOVED
- 6) WHERE A TELEPHONE CIRCUIT EXTENDS BEYOND AN OUTLET IN AN EXISTING FLOOR TO BE REMOVED, PROVIDE NECESSARY EMPTY CONDUIT AND NO REQUEST THE OWNER TO ARRANGE WITH THE TELEPHONE COMPANY FOR N REMAIN
- 7) WHERE EXISTING CONDUIT AND WIRE RUNS ARE LOCATED IN OR ATTACHED CEILING OR FLOOR TO BE REMOVED, THEY SHALL BE REROUTED IN EITHEI CONSTRUCTION TO MAINTAIN CONTINUITY OF CIRCUITS UNLESS OTHERWISE 8) CONDUIT SHALL BE CONCEALED WITHIN THE EXISTING BUILDING CONSTRUC
- POSSIBLE, EXCEPT WHERE OTHERWISE INDICATED.
- 9) EXISTING WIRE SHALL BE DISCONNECTED AND REMOVED WHEREVER EXIST ABANDONED.
- 17. BOXES IN FIRE RATED ASSEMBLIES:
- A. OUTLET BOXES THAT DO NOT EXCEED 16 SQUARE INCHES AND INSTALLED IN FIRE RATED WALL CLOSER THAN 24" HORIZONTAL INCHES TO OTHER OUTLET BOXES.
- B. IF BOXES MUST BE INSTALLED WITHIN 24" OF EACH OTHER THAN BOTH OUTL PROTECTED WITH LISTED PUTTY PADS, 3M FIRE BARRIER MOLDABLE PUTTY
- 18. FIRE ALARM SYSTEM: A. ELECTRICAL CONTRACTOR SHALL PROVIDE DESIGN BUILD ENERGINEERED ALARM SYSTEM TO BE INSTALLED. PROVIDE DEVICES, CONDUIT, WIRES, CA TESTING AS DIRECTED BY EQUIPMENT MANUFACTURER AND LOCAL FIRE DE
- COMPLIANT FIRE ALARM/DETECTION SYSTEM. MATERIALS, EQUIPMENT, AN PREVAILING CODES. THE SYSTEM SHALL BE COMPLETE AND OPERABLE. SYSTEM WITH SIZES AND BATTERY CALCULATIONS. EQUIPMENT TO BE NEW SIGNED, CALIBRATION AND TESTED BY FACTORY CERTIFIED TECHNICIAN. SHOWN FOR INTENT ONLY FOR PERMITTING PROCESS. CONTRACTOR IS RE
- BID/DESIGN ALL NECESSARY DEVICES (ANNUNCIATOR(S), NOTIFICATION APP DEVICES, AND ADDITIONAL COMPONENTS).
- 19. DRY TYPE TRANSFORMERS: A. DRY TYPE TRANSFORMERS SHALL BE ENCLOSED IN DRIPPROOF METALLIC E PROVIDE FOR AIR COOLING AND PREVENT ACCIDENTAL CONTACT WITH LIVE

AND VIBRATION.

- AND FINAL PERFORMANCE SHALL COMPLY WITH APPLICABLE IEEE, ANSI AND TRANSFORMERS SHALL BE FULLY RATED TWO WINDING UNITS CAPABLE OF CARRYING THE LOADS INDICATED. TRANSFORMERS SHALL BE EQUAL TO SQUARE D TYPE EP.
- IN A 40°C. AMBIENT WITHOUT EXCEEDING THE RATED AVERAGE WINDING TEMPERATURE RISE OF THE ANSI INSULATION USED. INSULATION SHALL BE CLASS L85C FOR TRANSFORMERS 5 KVA TO 25 KVA AND CLASS 220C FOR TRANSFORMERS 30 KVA TO 500 KVA. TRANSFORMERS SHALL BE UL APPROVED. TRANSFORMERS SHALL HAVE OVER-LOAD CAPACITY TO COMPLY WITH ANSI C57 960L WITH NORMAL LIFE MAINTAINED. SOUND RATINGS SHALL NOT EXCEED MAXIMUM VALUES FOR KVA RATINGS AS MEASURED PER ANSI C89.1
- C. TRANSFORMERS 30 KVA AND LARGER SHALL BE EQUIPPED WITH TWO 2-1/2% FULL CAPACITY TAPS ABOVE AND FOUR 2-1/2% TAPS BELOW NORMAL RATED VOLTAGE. IN ADDITION, TRANSFORMERS OF THESE RATINGS SHALL BE PROVIDED WITH CLAMP-TYPE SOLDERLESS CONNECTORS SUITABLE FOR USE WITH COPPER OR ALUMINUM CABLES. THE CONNECTORS SHALL BE MOUNTED ON A TERMINAL BOARD WITH HIGH-VOLTAGE AND LOW-VOLTAGE TERMINALS HELD IN A FIXED POSITION AND CLEARLY MARKED. TRANSFORMER LUGS SHALL

ELECTRICAL SPECIFICATIONS (CONTINUED)		ELECTRICAL SYMBOLS LIST			
SES:	CIRCUITING & NOTES				
FUSES PROTECTING CIRCUIT BREAKER PANELS SHALL BE CURRENT LIMITING U.L. CLASS RK-1 FUSES WITH 200,000 AMPERES RMS SYM INTERRUPTING CAPACITY. FUSING ELEMENTS SHALL BE SILVER FOR RATINGS ABOVE 60 AMPERES.	+46"	SPECIAL MOUNTING HEIGHT FOR ASSOCIATED DEVICE (CENTERLINE OF DEVICE)			
ALL OTHER FUSES SHALL BE U.L. CLASS RK-5, DUAL-ELEMENT WITH A MINIMUM TIME-DELAY OF 10 5ECONDS AT 500% RATING. FUSES SHALL HAVE CURRENT-LIMITING SHORT-CIRCUIT LINKS AND 200,000 AMPERES RMS SYM INTERRUPTING CAPACITY. FUSING ELEMENTS SHALL BE COPPER.	GFI	GROUND FAULT CIRCUIT INTERRUPTER DEVICE			
	MP	WEATHERPROOF ENCLOSURE ON DEVICE			
WHERE LIGHT FIXTURES ARE MOUNTED IN A LAY-IN CEILING, PROVIDE A MINIMUM OF 2 SUPPORT WIRES ATTACHED DIRECTLY BETWEEN EACH LIGHT FIXTURE AND THE BUILDING STRUCTURE. SUPPORT WIRES SHALL BE A MINIMUM OF 12 GAUGE GALVANIZED STEEL WIRE, SOFT ANNEALED.	MR	WEATHERPROOF RESISTANT DEVICE			
FIXTURES ARE REQUIRED AT ALL LIGHTING OUTLETS SHOWN ON THE DRAWINGS. APPROVED LIGHTING FIXTURE WIRE IS REQUIRED IN ALL FIXTURES AND FIXTURE RACEWAYS. WEATHERPROOF WIRING IS REQUIRED FOR EXTERIOR FIXTURES. ALL PARTS OF FIXTURES AND WIRING SHALL BE IN ACCORDANCE WITH NEC REQUIREMENTS.	(TIE)	PARTIAL HOMERUN. REFER TO PLANS FOR ADDITIONAL DEVICES CONNECTED TO THIS CIRCUIT.			
ALL FIXTURES SHALL CARRY UL AND ETL LABELS.	×	ELECTRICAL FLOOR PLAN NOTE WITH DESIGNATION			
EVES:	2 LP	CONDUIT CONCEALED WHERE POSSIBLE OR AS NOTED, ARROWS			
PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK.	LP	INDICATE HOME RUN TO PANEL. CIRCUIT NUMBERS INDICATED			
INTERIOR PARTITIONS: 16 GAGE GALVANIZED STEEL, PACK BETWEEN CONDUIT AND SLEEVE WITH FIRE 5AFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.		#12 WIRE IN CONDUIT, UNLESS NOTED OTHERWISE ON DRAWINGS OR			
ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WEATHERPROOF SEAL. COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY.		SPECIFICATION			
	$\sim$	GROUNDING CONDUCTOR, #12 WIRE UNLESS NOTED OTHERWISE ON DRAWINGS OR SPECIFICATION			
SROUND ALL ELECTRICAL APPARATUS IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC) 250, ND ANY LOCAL REQUIREMENTS. INSURE CONTINUOUS BOND WHERE FLEXIBLE CONDUIT IS USED. ROVIDE BONDING JUMPER INSIDE ALL FLEXIBLE CONDUIT.		CONDUIT ROUTED UNDER FLOOR/GRADE			
BOND METAL PIPING SYSTEMS IN COMPLIANCE WITH NEC 250.4(A)(4).	LIGHT	ÎNG			
MODELING WORK:		EMERGENCY TWIN HEAD LIGHT FIXTURE			
DEMOLITION: DISCONNECT, DEMOLISH AND REMOVE ABANDONED ELECTRICAL MATERIALS AND EQUIPMENT NDICATED TO BE REMOVED AND NOT INDICATED TO BE SALVAGED OR REMAIN.					
EQUIPMENT TO BE SALVAGED:	1821	EXIT LIGHT WITH DIRECTIONAL ARROWS INDICATED			
) DISCONNECT AND REMOVE EXISTING ELECTRICAL EQUIPMENT INDICATED TO BE REMOVED AND SALVAGED. DELIVER EQUIPMENT TO THE LOCATION DESIGNATED BY THE OWNER FOR STORAGE.		STRIP FIXTURE WITH TYPE DESIGNATION			
2) ALL MATERIALS AND EQUIPMENT DESIGNATED TO BE REUSED OR RELOCATED SHALL BE CAREFULLY REMOVED, AND STORED UNTIL NEEDED FOR REMODELING WORK. ALL ITEMS SHALL BE RESTORED TO "LIKE NEW" CONDITION WITH RUST OR CORROSION REMOVED, SURFACE PAINT TOUCHED UP OR	A •	RECESSED OR SURFACE MOUNTED FIXTURE WITH TYPE DESIGNATION			
REPAINTED AS REQUIRED TO MATCH NEW CONSTRUCTION, AND THOROUGHLY CLEANED AND INSPECTED. ANY ITEMS WHICH BECOME DAMAGED BEYOND REPAIR AS A RESULT OF CONSTRUCTION OR DEMOLITION ACTIVITY SHALL BE REPLACED WITH NEW MATERIAL EQUIVALENT IN EVERY RESPECT.		NIGHT LIGHT, CONNECT TO UNSWITCHED CIRCUIT			
DISPOSAL AND CLEANUP: REMOVE FROM THE SITE AND LEGALLY DISPOSE OF DEMOLISHED MATERIALS AND QUIPMENT NOT INDICATED TO BE SALVAGED.	۸Ŭ	CEILING OR RECESSED FIXTURE WITH TYPE DESIGNATION			
PROTECT ADJACENT MATERIALS INDICATED TO REMAIN. INSTALL AND MAINTAIN DUST AND NOISE BARRIERS TO KEEP DIRT, DUST, AND NOISE FROM BEING TRANSMITTED TO ADJACENT AREAS. REMOVE	^Q-	WALL MOUNTED FIXTURE WITH TYPE DESIGNATION			
ROTECTION AND BARRIERS AFTER REMODELING OPERATIONS ARE COMPLETE.	POWE	R DEVICES			
PROVIDE ALL ALTERATIONS AND REMORK INDICATED AND/OR REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF ALL EXISTING ELECTRICAL SYSTEMS, INTEGRATING THE NEW AND EXISTING AREAS. LOCATE, IDENTIFY, AND PROTECT ELECTRICAL SERVICES PASSING THROUGH REMODELING AREA AND SERVING OTHER AREAS OUTSIDE THE REMODELING LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE	<b>¢</b>	DUPLEX RECEPTACLE, BOTTOM OF BOX AT 16" AFF, UNLESS NOTED OTHERWISE FOURPLEX RECEPTACLE, BOTTOM OF BOX AT 16" AFF, UNLESS			
REMODELING LIMITS. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS.	ф	NOTED OTHERWISE			
) ABANDONED CONDUIT SHALL HAVE WIRE REMOVED AND SHALL BE CAPPED. ABANDONED OUTLETS IN WALLS OR PARTITIONS SHALL HAVE DEVICES AND WIRE REMOVED, AND SHALL BE COVERED.	♦₹	DEVICE MOUNTED ABOVE COUNTER AND/OR SPLASH GUARD			
I) WHERE EXISTING CONDUITS TERMINATE AT AN EXISTING OUTLET IN A WALL, CEILING, OR FLOOR TO BE REMOVED, DISCONNECT AND REMOVE DEVICE AND WIRE FROM CONDUIT. CONDUIT SHALL BE CUT BACK AND CAPPED (BELOW THE FLOOR OR ABOVE THE CEILING) SO NOT TO CREATE AN OBSTRUCTION. PATCH FLOOR TO MATCH EXISTING.		PANEL BOARD, TOP OF BOX 6'-O" AFF			
) WHERE EXISTING CIRCUITS EXTEND BEYOND THE OUTLET IN THE EXISTING WALL, CEILING, OR FLOOR TO BE REMOVED, FURNISH AND INSTALL NEW CONDUIT AND WIRE TO EITHER REROUTE THE		NON-FUSED DISCONNECT SWITCH			
CIRCUIT OR FEED THE REMAINING OUTLET(S) FROM ANOTHER ELECTRICAL SOURCE, BUT IN SUCH A MANNER AS NOT TO REVISE THE CIRCUIT. ALL REROUTED CONDUIT SHALL BE APPROVED BY THE ARCHITECT.		FUSED DISCONNECT SWITCH			
) WHERE EXISTING OUTLETS IN A WALL, CEILING, OR FLOOR TO BE REMOVED ARE ESSENTIAL TO MAINTAIN OPERATION OF OTHER REMAINING OUTLETS, RELOCATE THE OUTLET TO A NEW CONVENIENT		MOTOR WITH DESIGNATION			
LOCATION. EXISTING WIRING DEVICES SHALL NOT BE REUSED, UNLESS OTHERWISE INDICATED.	CONT				
EXISTING CONDUIT (IF APPLICABLE) FOR THE NEW LIGHTING. ALL UNUSED CONDUIT SHALL BE REMOVED.					
WHERE A TELEPHONE CIRCUIT EXTENDS BEYOND AN OUTLET IN AN EXISTING WALL, CEILING, OR FLOOR TO BE REMOVED, PROVIDE NECESSARY EMPTY CONDUIT AND NOTIFY THE OWNER WHO WILL REQUEST THE OWNER TO ARRANGE WITH THE TELEPHONE COMPANY FOR NEW WIRING TO OUTLETS THAT REMAIN.	5 5 <sub>P</sub>	SINGLE POLE WALL SWITCH, TOP OF BOX AT 48" AFF SINGLE POLE WALL SWITCH WITH PILOT LIGHT, TOP OF BOX AT 48" AFF			
) WHERE EXISTING CONDUIT AND WIRE RUNS ARE LOCATED IN OR ATTACHED TO AN EXISTING WALL, CEILING OR FLOOR TO BE REMOVED, THEY SHALL BE REROUTED IN EITHER NEW OR EXISTING	52	TWO POLE WALL SWITCH, TOP OF BOX AT 48" AFF			
CONSTRUCTION TO MAINTAIN CONTINUITY OF CIRCUITS UNLESS OTHERWISE INDICATED.	Sa	THREE-WAY WALL SWITCH, TOP OF BOX AT 48" AFF			
POSSIBLE, EXCEPT WHERE OTHERWISE INDICATED. ) EXISTING WIRE SHALL BE DISCONNECTED AND REMOVED WHEREVER EXISTING CIRCUITS ARE ABANDONED	Sm	MANUAL MOTOR STARTER WITH OVERLOADS			
XES IN FIRE RATED ASSEMBLIES:	COMM	IUNICATIONS			
OUTLET BOXES THAT DO NOT EXCEED 16 SQUARE INCHES AND INSTALLED IN FIRE RATED WALLS SHALL NOT BE INSTALLED CLOSER THAN 24" HORIZONTAL INCHES TO OTHER OUTLET BOXES.		DATA/TELEPHONE OUTLET WITH MINIMUM $\frac{3}{4}$ " CONDUIT STUBBED UP TO			
IF BOXES MUST BE INSTALLED WITHIN 24" OF EACH OTHER THAN BOTH OUTLET BOXES SHALL BE PROTECTED WITH LISTED PUTTY PADS, 3M FIRE BARRIER MOLDABLE PUTTY + OR EQUAL.		ABOVE ACCESSIBLE CEILING, BOTTOM OF BOX AT 16", UNLESS NOTED OTHERWISE. PROVIDE WITH PULL STRING			
RE ALARM SYSTEM:	<u> </u>	ALARM - FIRE ALARM SYSTEM IS EXISTING TO REMAIN. PROVIDE NAL COMPATIBLE DEVICES AND CONNECT TO EXISTING SYSTEM AS			
ELECTRICAL CONTRACTOR SHALL PROVIDE DESIGN BUILD ENERGINEERED SHOP DRAWINGS OF FIRE ALARM SYSTEM TO BE INSTALLED. PROVIDE DEVICES, CONDUIT, WIRES, CABLE, PROGRAMMING AND TESTING AS DIRECTED BY EQUIPMENT MANUFACTURER AND LOCAL FIRE DEPARTMENT FOR A CODE	REQUIRE				
COMPLIANT FIRE ALARM/DETECTION SYSTEM. MATERIALS, EQUIPMENT, AND WORKMANSHIP SHALL MEET PREVAILING CODES. THE SYSTEM SHALL BE COMPLETE AND OPERABLE. SUBMIT ONE LINE DIAGRAM OF SYSTEM WITH SIZES AND BATTERY CALCULATIONS, EQUIPMENT TO BE NEW AND SHALL BE STAMPED.	F	FIRE ALARM PULL STATION, TOP OF BOX AT 48" AFF			
SIGNED, CALIBRATION AND TEXTED BY FACTORY CERTIFIED TECHNICIAN. FIRE ALARM DEVICES ARE SIGNED, CALIBRATION AND TESTED BY FACTORY CERTIFIED TECHNICIAN. FIRE ALARM DEVICES ARE SHOWN FOR INTENT ONLY FOR PERMITTING PROCESS. CONTRACTOR IS RESPONSIBLE FOR INCLUDING IN BID/DESIGN ALL NECESSARY DEVICES (ANNUNCIATOR(S). NOTIFICATION APPLICANCES. INITIATING	X	FIRE ALARM HORN/STROBE COMBINATION SIGNAL, CENTERLINE AT 6'-8" AFF			
DEVICES, AND ADDITIONAL COMPONENTS).	X	FIRE ALARM VISUAL STROBE, CENTERLINE AT 6'-8" AFF			
Y TYPE TRANSFORMERS: DRY TYPE TRANSFORMERS SHALL BE ENCLOSED IN DRIPPROOF METALLIC ENCLOSURES DESIGNED TO PROVIDE FOR AIR COOLING AND PREVENT ACCIDENTAL CONTACT WITH LIVE CONDUCTORS. MATERIALS AND FINAL PERFORMANCE SHALL COMPLY WITH APPLICABLE IEEE, ANSI AND NEMA STANDARDS. TRANSFORMERS SHALL BE FULLY RATED TWO WINDING UNITS CAPABLE OF CARRYING THE LOADS INDICATED. TRANSFORMERS SHALL BE FOULD TO SOULARE D. TYPE FP.		EXISTING			

	LIGHT FIXTURE SCHEDULE										
MARK NO.	MANUFACTURER & CATALOG NUMBER	VOLTS WATTS	LIGHT SOURCE	DESCRIPTION	EQUIVALENT MANUFACTURERS						
A	LITHONIA CPANL-2X4-AL06-SWW7-M2	UN∨ 45	LED-3500K 5000 LUM	2'X4' LED FLAT PANEL WITH FIELD SELECTABLE LUMEN OUTPUT AND COLOR TEMPERATURE.	WILLIAMS, SIGNIFY OR EQUAL						
AE	LITHONIA CPANL-2X4-ALO6-SWW7-M2 W/ IOTA ILBLP-CP10-HE-SD-A	UNV 45	LED-3500K 5000 LUM	SAME AS TYPE A EXCEPT WITH EMERGENCY BATTERY BACK UP	WILLIAMS SIGNIFY OR EQUAL						
в	LED WAREHOUSE LIGHT TO BE SELECTED	UNV 150	LED 4000K	LED WAREHOUSE LIGHT TO BE SELECTED. COORDINATE MOUNTING WITH OWNER/ARCHITECT.							
BE	LED WAREHOUSE LIGHT WITH INTEGRAL EMERGENCY OPERATION TO BE SELECTED	UNV 150	LED 4000K	SAME AS TYPE B EXCEPT WITH INTEGRAL EMERGENCY OPERATION.							
188	LITHONIA LHQM-LED-R-HO-SD	UNV 3	INCL	COMBINATION EMERGENCY/EXIT LIGHT WITH LED LAMPS, RED LETTERS ON WHITE BACKGROUND, TWIN LED EMERGENCY LIGHT HEADS, UNIVERSAL MOUNT, BATTERY BACKUP	SURE-LITES LITHONIA OR EQUAL						
NOTES:				•							

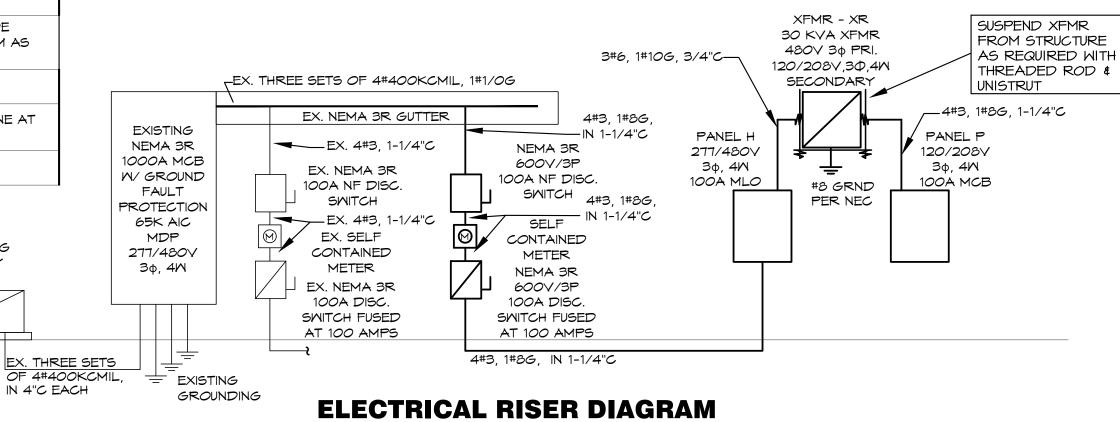
ELECTRICAL GENERAL NOTES

UTILITY

XFMR

- 1. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
- 2. WHERE CONDUIT IS SHOWN UNDER FLOOR, SAW CUT EXISTING FLOOR SLAB AS REQUIRED FOR INSTALLATION OF UNDER FLOOR CONDUIT. NO 13. ALL BRANCH CIRCUITS SHALL BE SIZED TO ALLOW FOR A MAXIMUM OF STRUCTURAL ELEMENTS SHALL BE SAW CUT. WHEN SAW CUTTING, PATCH 3% VOLTAGE DROP. ALL FEEDERS SHALL BE SIZED TO ALLOW FOR A FLOOR TO MATCH EXISTING SURFACE AS REQUIRED. MAXIMUM OF 2% VOLTAGE DROP. ELECTRICAL CONTRACTOR SHALL VERIFY WIRING INDICATED IS SUFFICIENT AND INCREASE CONDUCTOR 3. IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO PROPERLY SIZE AS REQUIRED BASED OFF ACTUAL INSTALLED LENGTH OF BALANCE ALL BRANCH CIRCUITS BETWEEN THE PHASES OF THE SYSTEM CONDUCTORS. REGARDLESS OF CIRCUITING INDICATED.
- 4. ALL EXPOSED RACEWAYS SHALL BE EMT CONDUIT, MC CABLE IS NOT PERMITTED IN EXPOSED AREAS.
- 5. ELECTRICAL CONTRACTOR SHALL REMOVE ALL EXISTING ELECTRICAL EQUIPMENT, FIXTURES, SYSTEMS, CONDUIT AND WIRE, ETC. NOT BEING REUSED. DO NOT JUST ABANDON.
- 6. ELECTRICAL CONTRACTOR TO COORDINATE MANUFACTURER ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT BEING FURNISHED WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. EQUIPMENT DISCONNECTS TO BE PROVIDED BY ELECTRICAL CONTRACTOR UNLESS NOTED OTHERWISE IN MECHANICAL SCHEDULES.
- REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LIGHT FIXTURES AND DEVICES.
- REFER TO ARCHITECTURAL & STRUCTURAL DRAWINGS FOR 8 REQUIREMENTS FOR SUPPORTING TRANSFORMERS, EQUIPMENT, ETC. FROM THE STRUCTURE. PROVIDE ADDITIONAL STEEL AS REQUIRED 10 PROPERLY SUPPORT SYSTEMS FROM THE STRUCTURE.
- 9. ALL ELECTRICAL DEVICES ARE EXISTING AND TO REMAIN UNLESS NOTED OTHERWISE OR CONFLICT WITH NEW CONSTRUCTION. MAINTAIN PROPER OPERATION OF ALL EXISTING ELECTRICAL.
- 10. ALL MATERIALS EXPOSED WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
- 11. EACH BRANCH CIRCUIT SHALL HAVE A DEDICATED NEUTRAL PER NEC 210.4.

SCALE: NONE



B. TRANSFORMERS SHALL BE CAPABLE OF OPERATING AT 100% NAMEPLATE KVA RATING CONTINUOUSLY WHILE

BE RATED AT 75°C. TRANSFORMERS 30 KVA AND LARGER SHALL BE PROVIDED WITH NEOPRENE RUBBER ISOLATION PADS MOUNTED BETWEEN THE CORE AND COIL ASSEMBLY AND ENCLOSURE TO ISOLATE SOUND

- 12. FIRE ALARM SYSTEM IS SHOWN FOR SCHEMATIC PURPOSES. THE FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR PROVIDING DESIGN AND SHOP DRAWINGS SUBMITTAL TO FIRE MARSHAL FOR APPROVAL AS REQUIRED BY THE FIRE MARSHAL. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE ADDITIONAL DEVICES, POWER SUPPLIES, ETC FOR COMPLIANCE WITH CODE.
- 14. WHEREVER POSSIBLE, CONDUIT SHALL BE RUN CONCEALED WITHIN WALLS, CEILINGS, SOFFITS, ETC. SURFACE MOUNTED CONDUIT IN FINISHED SPACES MUST BE APPROVED BY THE ENGINEER OR ARCHITECT PRIOR TO INSTALLATION. EXTERIOR CONDUIT SHALL NOT BE RUN EXPOSED IN PUBLICLY VISIBLE AREAS WITHOUT APPROVAL OF THE ARCHITECT OR ENGINEER.
- Ľ С С C fini 7 Ω Û 00 dete 4.20.23 drawn by **TPF/BMH** checked by EK/DS

Ĩ

(1)

eheet number

revisions



drewing type permit project number 23087

erchitecture&engineering

4301 Indian Creek Parkway

Overland Park, KS 88207

phone: 913.451.9390

www.devideonee.com

Ш

Ш

Ζ

**(**5

 $\overline{\phantom{a}}$ 

4/20/2023

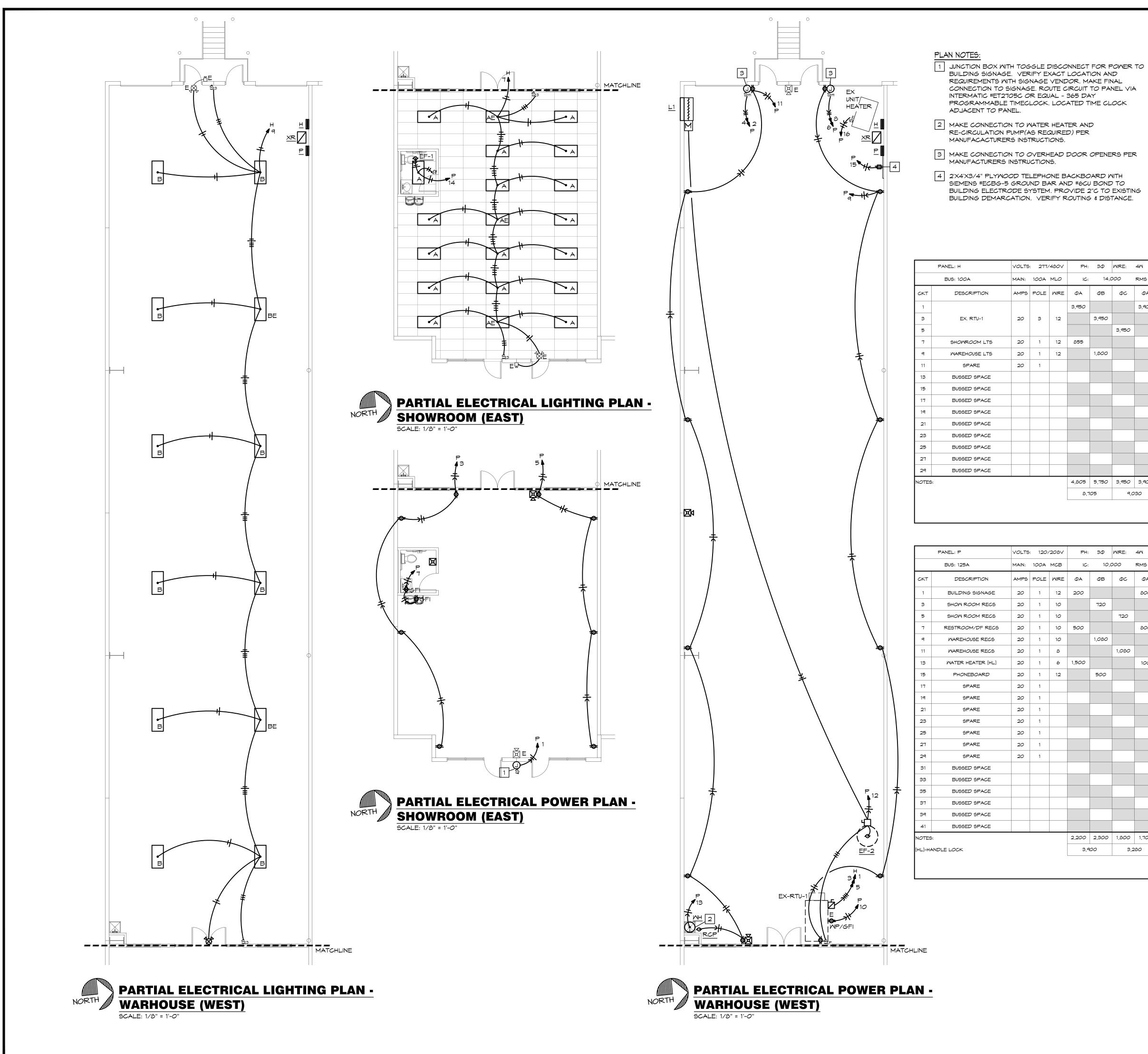
OF M

HERMANN

NUMBER

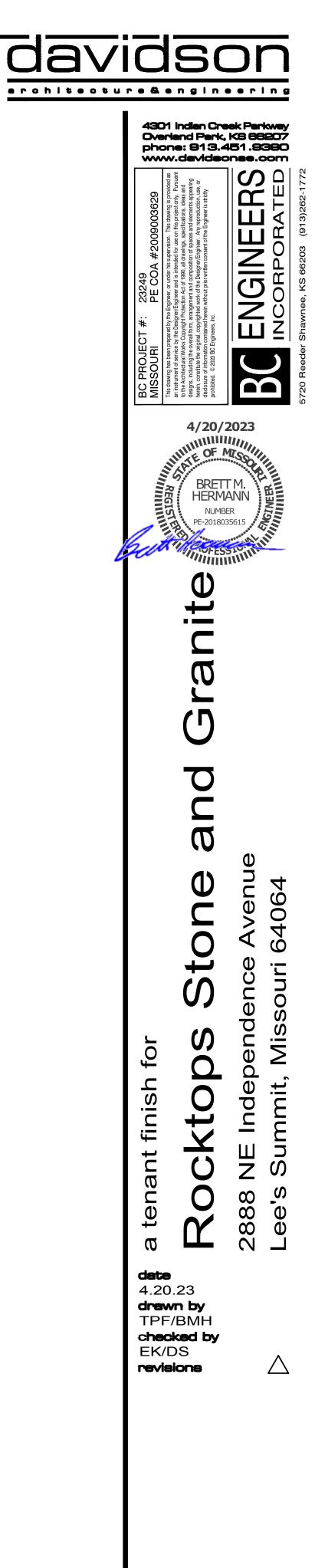
E-20180356

Ω



PH:	зΦ	MIRE:	4M	LOCATIC	N:	NM CO	RNER	NH	MOUNTING: SURFACE		
IC:	IC: 14,000 RMS SYM		1 AMPS					FEEDER:	SEE RISER DIAGRAM		
ΦΑ	ФВ	ФС	ΦΑ	ФВ	ФС	MIRE	POLE	AMPS	DES	BCRIPTION	CKT NO
3,950			3,900								2
	3,950			3,280		6	з	50	PANEL	P VIA XFMR	4
		3,950			5,456						6
855							1	20		SPARE	8
	1,800						1	20		SPARE	10
							1	20		SPARE	12
									BUSS	SED SPACE	14
									BUSS	SED SPACE	16
									BUSS	GED SPACE	18
									BUSS	SED SPACE	20
									BUSS	SED SPACE	22
									BUSS	SED SPACE	24
									BUSS	SED SPACE	26
									BUSS	SED SPACE	28
									BUSS	GED SPACE	30
4,805	5,750	3,950	3,900	3,280	5,456						
8,7	05	9,0	30	9,4	06		TOTAL	CONNE	27,141 VA		
							١	NEC DE	MAND LOAD:	28,205	VA
					DE	MAND A	AMPS @	480	VOLT / ЗФ:	33.93	A

PH:	зΦ	30 WIRE: 4W LOCATION:		N:	NM CO	RNER 1	NH	MOUNTING: SURFACE			
IC:	10,0	000	RMS SYI	M AMPS					FEEDER: SEE RISER DIAGRAM		
ΦΑ	ФВ	ФС	ΦΑ	ФВ	ФС	MIRE	POLE	AMPS	DESCRIPTION		CKT NO
200			800			12	2	20	OVERHEAD	2	
	720			800							
		720			800	12	2	20	OVERHEAD	DOOR OPENER	6
500			800								8
	1,080			180		12	1	20	RC	DOF REC	10
		1,080			1,656	6	1	25		EF-2	12
,500			100			12	1	20	RESTR	OOM LT/FAN	14
	500						1	20	SPARE		16
					1,200	12	1	20	EX. UNIT HEATER		18
							1	20	SPARE		20
							1	20	SPARE		22
							1	20	SPARE		24
							1	20	SPARE		26
							1	20	9	SPARE	28
							1	20	9	SPARE	30
									BUSS	ED SPACE	32
									BUSS	ED SPACE	34
									BUSSED SPACE		36
									BUSS	ED SPACE	38
									BUSS	ED SPACE	40
									BUSS	ED SPACE	42
,200	2,300	1,800	1,700	980	3,656						
3,9	00	3,2	280	5,4	156	TOTAL CONNECTED LOAD				12,636 VA	
						NEC DEMAND LOAD: 13,036					> ∨A
DEMAND AMPS @ 208 VOLT / 3Φ:         36.18											ð A



sheet number



drawing type permit **project number** 23087