500 SW 3RD ST. UNIT A LEE'S SUMMIT, MO 64063

PERMIT DOCUMENTS 16 JULY 2024 COLLINS WEBB #: 24036



OWNER

SERENITEA BOUTIQUE 500 SW 3RD ST. UNIT A LEE'S SUMMIT, MO 64063 P: 816.786.9506 sereniteaboutiquellc@gmail.com

VIO 64063 | 816.249.2270 | www.collinsandwebb.com summit S ee's S Market SW 307B



SereniTea Boutique

OWNER

THE PAPERBACK BAKERY 500 SW 3RD ST. UNIT A LEE'S SUMMIT, MO 64063 P: 816.786.9506 thepaperbackbakery@gmail.com

CONTRACTOR

P: 816.200.3118

MORGAN JACOBS GENERAL CONTRACTING LLC 11420 E PUTNAM ST. SUGAR CREEK, MO 64054-1120

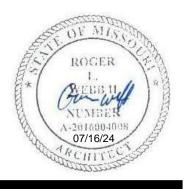
ARCHITECT COLLINS | WEBB ARCHITECTURE

307B SW MARKET ST. LEE'S SUMMIT, MO 64063 P: 816.249.2270 www.collinsandwebb.com

SHEET NUMBER	SHEET NAME
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G003	LIFE SAFETY PLAN, WALL TYPES, AND PROJECT INFORMATIO
G500	GENERAL PROJECT SPECIFICATIONS
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M201	MECHANICAL PLAN
M301	MECHANICAL SPECIFICATIONS
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MEP ENGINEER

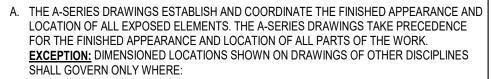
ENGINEERED BUILDING SOLUTIONS, LLC 11320 W 79TH ST. OVERLAND PARK, KS 66214 P: 913.735.5654 www.ebsolutionskc.com



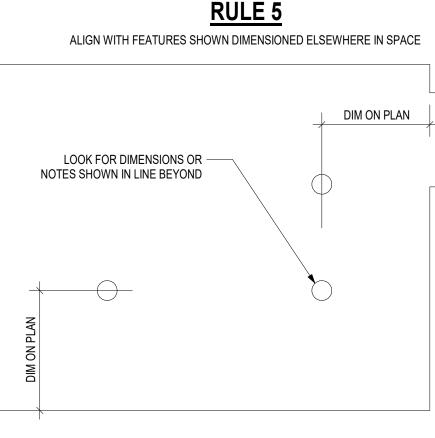
						,	
	ARCHITECTURAL ABBREVIATIONS						
			/			0110	
&	AND	E	EAST	ID	INSIDE DIAMETER	PA	PUBLIC ADDRESS
■	ANGLE	EA	EACH	IN	INCH	PART	PARTIAL
	ANCHOR BOLT T ACOUSTIC(AL)	EDR EG	EQUIPMENT DRAWING EDGE GUARD	INCAND INCL	INCANDESCENT INCLUDE, INCLUDING	PBD PBX	PARTICLEBOARD PRIVATE TELEPHONE
ACT	ACOUSTICAL CEILING TILE	EIFS	EXTERIOR INSULATION FINISH SYSTEM	INFO	INFORMATION	PCF	POUNDS PER CUBIC
ACP ACS PNL	ACOUSTICAL CEILING PANEL ACCESS PANEL	EJ EL	EXPANSION JOINT ELEVATION	INSUL INTR	INSULATION INTERIOR	PCI PERF	POUNDS PER CUBIC PERFORATED
AD	AREA DRAIN	ELAST	ELASTOMERIC	INV	INVERT	PERIM	PERIMETER
ADDL ADH	ADDITIONAL ADHESIVE	ELEC ELEV	ELECTRICAL ELEVATOR	IVT	INTRAVENOUS TRACK	PERM PERP	PERMANENT PERPENDICULAR
ADJ	ADJUSTABLE	EMER	EMERGENCY			PI	POINT OF INTERSEC
ADJ AFF	ADJACENT ABOVE FINISH FLOOR	ENCL ENGR	ENCLOSURE ENGINEER			PL PLAM	PLATE PLASTIC LAMINATE
AFG	ABOVE FINISH GRADE	EOS	EDGE OF SLAB	JAN	JANITOR	PLAS	PLASTER, PLASTIC
AFS AGGR	ABOVE FINISH SLAB AGGREGATE	EP EPB	ELECTRICAL PANEL ELECTRICAL PANEL BOARD	JST JT	JOIST JOINT	PLBG PLF	PLUMBING POUNDERS PER LINE
AUM, AL	AUMINUM	EPDM	ETHYLENE PROPYLENE DIENE MONOMER	51	30111	PLYWD	PLYWOOD
ALT ANOD	ALTERNATE ANODIZED	EQ EQL SP	EQUAL EQUALLY SPACED			PNEU PNL	PNEUMATIC PANEL
APPROX	APPROXIMATE(LY)	EQUIP	EQUIPMENT			PNL BD	PANEL BOARD
ARCH J ASPH	ARCHITECT(URAL)	EQUIV ESCAL	EQUIVALENT ESCALATOR	KG KIT	KILOGRAM KITCHEN	PNT, P PORT	PAINT PORTABLE
ASPH ASPH	ASPHALT AT	ESCAL	ESCALATOR ESTIMATED(D)	KPL	KICHEN	PORT	PUSH PLATE
AVG	AVERAGE	EWC	ELECTRIC WATER COOLER	KS	KNEE SPACE	PPM	PARTS PER MILLION
		EXC EXH	EXCAVATED EXHAUST			PR PRCST	PAIR PRECAST
BB	BULLETIN BOARD	EXIST, (E)	EXISTING			PREP	PREPARATION
BD BTWN	BOARD BETWEEN	EXP EXP JT	EXPANSION EXPANSION JOINT	L	LENGHT, LONG	PREFAB PRKG	PREFABRICATION PARKING
BITUM	BITUMINOIUS	EXT	EXTERIOR	LAB	LABORATORY	PROJ	PROJECT
BLK / BLKG BLDG	BLOCK / BLOCKING BUILDING	EX-BR	EXISTING BRICK	LAM LAV	LAMINATE, LAMINATION LAVATORY	PROP PSF	PROPERTY POUNDS PER SQUAF
BM	BENCHMARK			LB	POUND	PSI	POUNDS PER SQUAF
BMD BO	BOTTOM OF METAL DECK BOTTOM OF / BY OTHERS	F/F FA	FACE TO FACE FIRE ALARM	LED LF	LIGHT EMITTING DIODE LINEAR FOOT	PT / PTD PTN	POINT, PAINT / PAINT PARTITION
BOT	BOTTOM	FAS	FIRE ALARM STATION	LF	LENGTH	PTS	PNEUMATIC TUBE ST
BOS BRG	BOTTOM OF STEEL BEARING	FB FCU	FLAT BAR	LIN LL	LINEAR LEAD LINED	PVC	POLYVINYL CHLORID
BSMT	BASEMENT	FD	FAN COIL UNIT FLOOR DRAIN	LL LPT	LOW POINT	PVG PVMT	PAVING PAVEMENT
BUR	BUILT UP ROOFING SYSTEM	FDC	FIRE DEPARTMENT CONNECTION		LIGHT	PWR	POWER
H		FDN FEC	FOUNDATION FIRE EXTINGUISHER CABINET	LT WT LTG	LIGHT WEIGHT LIGHTING		
[CHANNEL	FE	FIRE EXTINGUISHER	LVR	LOUVER		
CAB CPT	CABINET CARPET	FF FG	FINISH FACE FINISH GRADE			QT	QUARRY TILE
CI	CAST IRON	FHC	FIRE HOSE CABINET			QTR	QUARTER
CB CCR	CATCH BASIN CARD CONTROL READER	FH/FEC FHMS	FIRE HOSE / EXTINGUISHER CABINET FLAT HEAD MACHINE SCREW	М	METERS	QTY	QUANTITY
CSWK	CASEWORK	FHWS	FLAT HEAD WOOD SCREW	MACH	MACHINE		
CCT CCTV	CUBICLE CURTAIN TRACK CLOSED CIRCUIT TELEVISION	FHY FIN	FIRE HYDRANT FINISH, FINISHED	MATL MATV	MATERIAL MASTER ANTENNA TELEVISION SYSTEM		
CSP	COMBINATION STAND PIPE	FLAM	FLAMMABLE	MAX	MAXIMUM	R	RISER
CG CEM	CORNER GUARD CEMENT, CEMENTITIOUS	FLASH FLEX	FLASHING FLEXIBLE	MB MC	MACHINE BOLT MEDICINE CABINET	RA RAD	RETURN AIR RADIUS
CER	CERAMIC	FLR	FLOOR	MDO	MEDIUM DENSITY OVERLAY	RB	RESILIENT BASE
CT CH BD	CERAMIC TILE CHALKBOARD	FLUOR FO	FLUORESCENT FACE OF	MECH MED	MECHANICAL MEDIUM	RCP RCPT	REFLECTED CEILING RECEPTACLE
CL	CENTER LINE	FO	FIRE RETARDANT TREATMENT	MET, MTL		RD	ROOF DRAIN
CLG	CEILING	FRZ FSB	FREEZER FOLDING SHOWER BENCH		MEMBRANE MANUFACTURER	RECT REF	RECTANGULAR REFERENCE
G CLR ■ CLO	CLEAR CLOSET	FSD FSTNR	FASTENER	MFR/MFG	MANUFACTORER	REFR	REFRIGERATOR
CMU	CONCRETE MASONRY UNIT	FT	FOOT, FEET	MIN MISC		REG	REGISTER
CRSC CW	COLD ROLLED STEEL CHANNEL COLD WATER	FTG FURN	FOOTING FURNITURE	MISC	MISCELLANEOUS MOLDING	reinf Reqd	REINFORCE (D) (ING) REQUIRED
COL	COLUMN	FXTR	FIXTURE	MM	MILLIMETERS	REQT	REQUIREMENT
CNTR CSK	COUNTER COUNTERSUNK			MO MOD	MASONRY OPENING MODULE, MODULAR	RESIL RET	RESILIENT RETURN
CONC	CONCRETE	G	GAS	MTD	MOUNTED	REV	REVISION
CONF CONN	CONFERENCE CONNECTION	GA GAL	GAUGE, GAGE GALLON	MTG MVBL	MOUNTING MOVABLE	RF RH	RESILIENT FLOORING
CONSTR	CONSTRUCTION	GALV	GALVANIZED	MULL	MULLION	RHMS	ROUND HEAD MACH
CONT CONTR	CONTINUOUS CONTRACTOR	GB GC	GRAB BAR GENERAL CONTRACTOR			RHWS RM	ROUND HEAD WOOD ROOM
CJ	CONTROL JOINT	GFCI	GROUND FAULT CIRCUIT INTERRUPTER			RND	ROUND
CG CORR	CORNER GUARD CORRUGATED, CORRIDOR	GFRC GFRG	GLASS FIBER REINFORCED CONCRETE GLASS FIBER REINFORCED GYPSUM	(N)	NEW	RO ROW	ROUGH OPENING RIGHT OF WAY
CU	CUBIC	GL	GLASS	Ν	NORTH	RWL	RAIN WATER LEADER
• F		GLU LAM GLZ	GLUE LAMINATED GLAZING	NA NAT	NOT APPLICABLE NATURAL		
∎ D	DEPTH	GR	GRADE OR GRADING	NE	NORTHEAST		
DBL DBL ACT	DOUBLE DOUBLE ACTING	GVL GYP	GRAVEL GYPSUM	NIC NO	NOT IN CONTRACT NUMBER	S	SOUTH
DEG	DEGREE	GYP BD	GYPSUM BOARD	NOM	NOMINAL	SA	SUPPLY AIR
DEMO DEPT	DEMOLISH DEPARTMENT	GYP PLAS	GYPSUM PLASTER	NRC NTS	NOICE REDUCTION COEFFICIENT NOT TO SCALE	SB SC	SPLASH BLOCK SOLID CORE
DEFI	DETAIL			NW	NORTHWEST	SCHED	SCHEDULE
DF		Н				SCRN	SCREEN
DIA DIAG	DIAMETER DIAGONAL	HB HC	HOSE BIBB HOLLOW CORE			SD SE	STORM DRAIN SOUTHEAST
DIFF	DIFFUSER	HD	HEAD	<u></u>		SECT	SECTION
DIM DIM PT	DIMENSION DIMENSION POINT	HDBD HDW, HDWR	HARDBOARD HARDWARE	OC OA	ON CENTER OVERALL	SEG SEP	SEGMENT SEPARATION OR SEF
DISP	DISPENSER	HDWD	HARDWOOD	OD	OUTSIDE DIAMETER	SEP JT	SEPARATION JOINT
DIST DK	DISTANCE DECK	HGT, HT HM	HEIGHT HOLLOW METAL	OFCI OFOI	OWNER FURNISHED-CONTRACTOR INSALLEI OWNER FURNISHED-OWNER INSTALLED) SHT SHWR	SHEET, SHEETING SHOWER
DN	DOWN	HNDRL	HANDRAIL	OPNG	OPENING	SHV	SHELVES, SHELVING
DR F DS	DRAIN, DOOR DOWNSPOUT	HORIZ HPT	HORIZONTAL HIGH POINT	OPP ORD	OPPOSITE OVERFLOW ROOF DRAIN	SIM SK	SIMILAR SINK
DSP	DRY STANDPIPE	HR	HOUR	OVHD	OVERHEAD	SMS	SHEET METAL SCEW
DT	DRAPERY TRACK DETAIL	HVAC	HEATING-VENTILATION-AIR CONDITIONING	OZ	OUNCE	SP SPEC	SPACE, SPACED, SPACED, SPACE,
DTL DW	DETAIL DISHWASHER	HW	HOT WATER			SPEG	SPECIFICATION

TYPICAL RULES FOR DETERMINING REFLECTED CEILING PLAN LOCATIONS, DIMENSIONS, AND CONFIGURATIONS

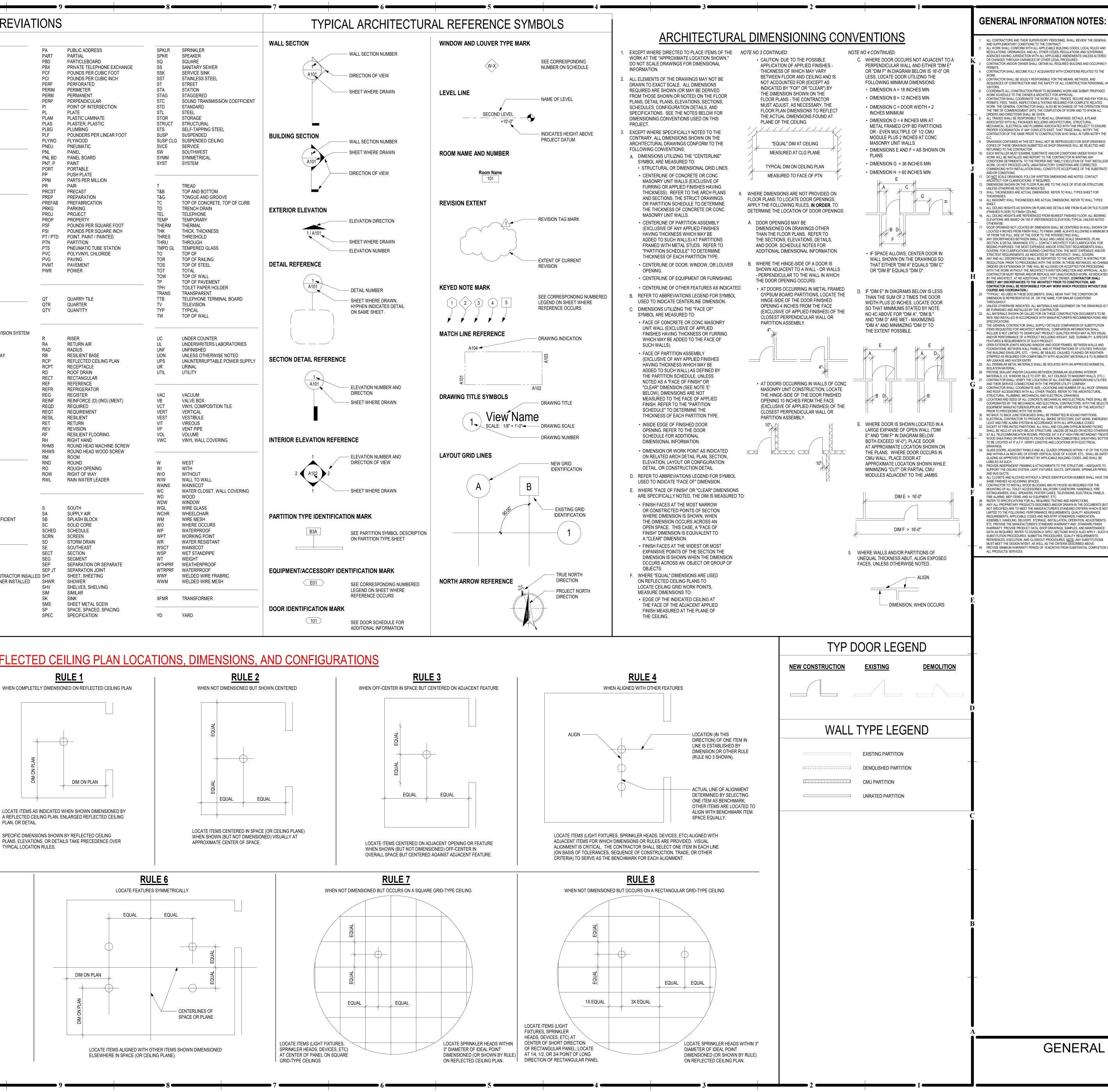
GENERAL NOTES



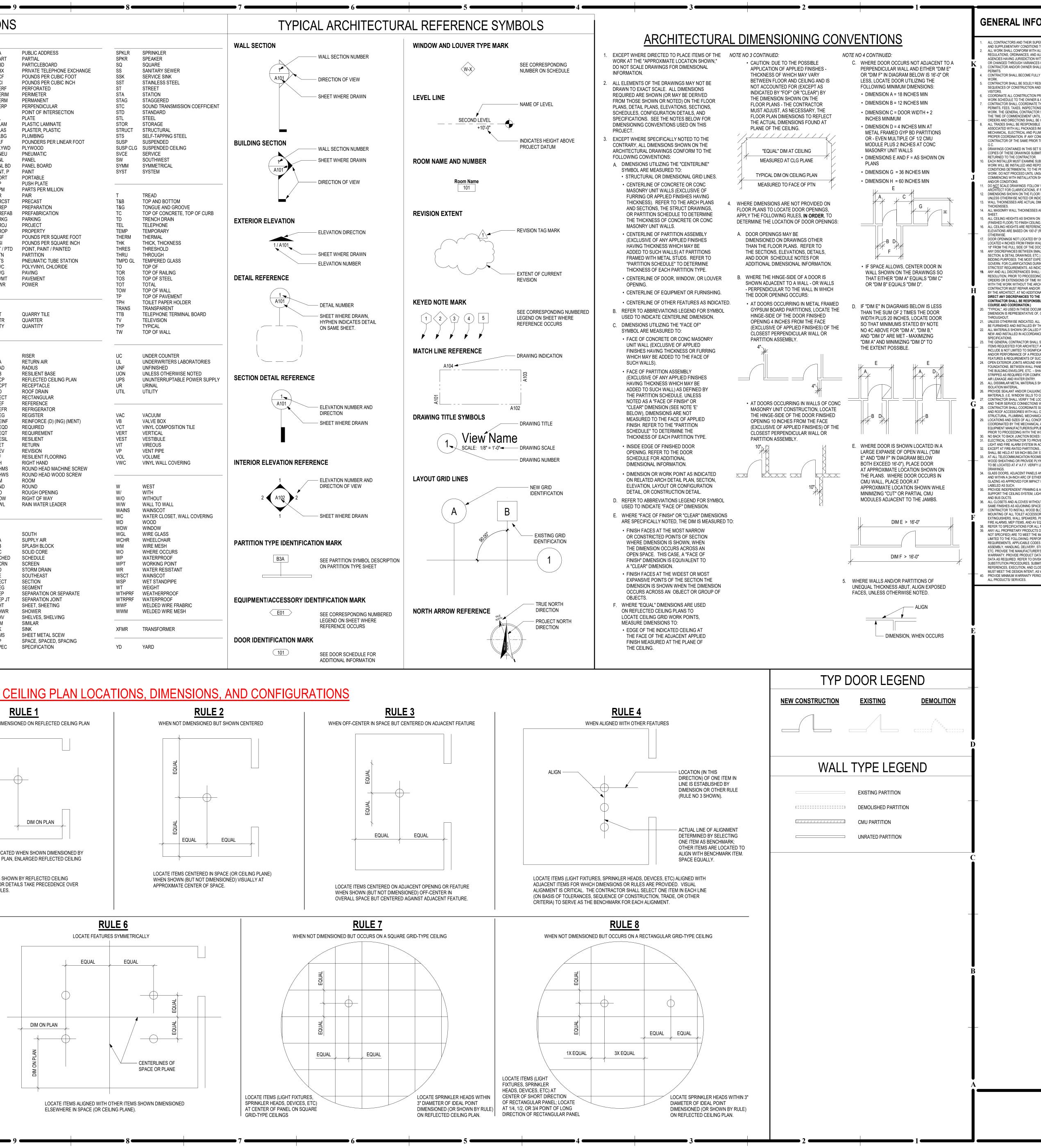
- 1. SPECIFICALLY AND INDIVIDUALLY INDICATED BY SYMBOL, KEYED NOTE, OR NOTATION ON THE ARCHITECTURAL DRAWINGS. 2. OCCURRING WITHIN A ROOM OR OTHER IDENTIFIABLE SPACE FOR WHICH ARCH SHEET OR SCHEDULE NOTES INDICATE THAT DIMENSIONS PROVIDED ELSEWHERE SHALL GOVERN.
- B. THE PURPOSE OF THIS SHEET IS TO ILLUSTRATE THE TYPICAL RULES WHICH GOVERN THE LOCATION, CONFIGURATION IN RELATIONSHIP TO OTHER ELEMENTS OF THE WORK, AND FINISHED ALIGNMENT OF ALL ITEMS OCCURRING ON REFLECTED CEILING PLANS OF THE PROJECT.
- C. THE A-SERIES FLOOR PLANS, REFLECTED CEILING PLANS, SECTIONS, ELEVATIONS, AND DETAILS ILLUSTRATE THE DIMENSIONED LOCATION OF MANY - BUT NOT ALL - EXPOSED PARTS OF THE WORK. APPLY THE RULES ON THIS SHEET - IN ORDER - TO DETERMINE THE LOCATION OF EXPOSED PART OF THE WORK. 1. WHEN UNIQUELY AND SPECIFICALLY DIMENSIONED ON THE A-SERIES PLANS, SECTIONS, OR ELEVATIONS (OR COMBINATION THEREOF), LOCATE AS DIMENSIONED.
- 2. IF NOT SHOWN, OR IF SHOWN BUT NOT DIMENSIONED, BY THE A-SERIES PLANS OR ELEVATIONS, LOCATE AS INDICATED BY THE APPLICABLE RULE. D. REFER TO THE "ARCHITECTURAL GENERAL NOTES" FOR ADDITIONAL NOTES WHICH MAY
- BE APPLICABLE TO THE WORK SHOWN ON THIS SHEET. E. FOR MANY SPACES, THE ARCHITECTURAL REFLECTED CEILING PLANS ESTABLISH AN IDEAL PATTERN FOR LOCATING SPRINKLER HEADS. IN SPACES WHERE HEADS ARE SHOWN, FOLLOW PATTERN ESTABLISHED BY THE DRAWINGS. WHERE ADDL HEADS ARE
- REQUIRED TO CONFORM WITH CODE, PROVIDE HEADS IN GENERAL CONFORMITY WITH PATTERN ESTABLISHED BY THE DRAWINGS. F. IN SPACES WHERE SPRINKLER HEADS ARE NOT SHOWN BY THE ARCHITECTURAL REFLECTED CEILING PLANS, PROVIDE HEADS AS REQUIRED BY CODE.



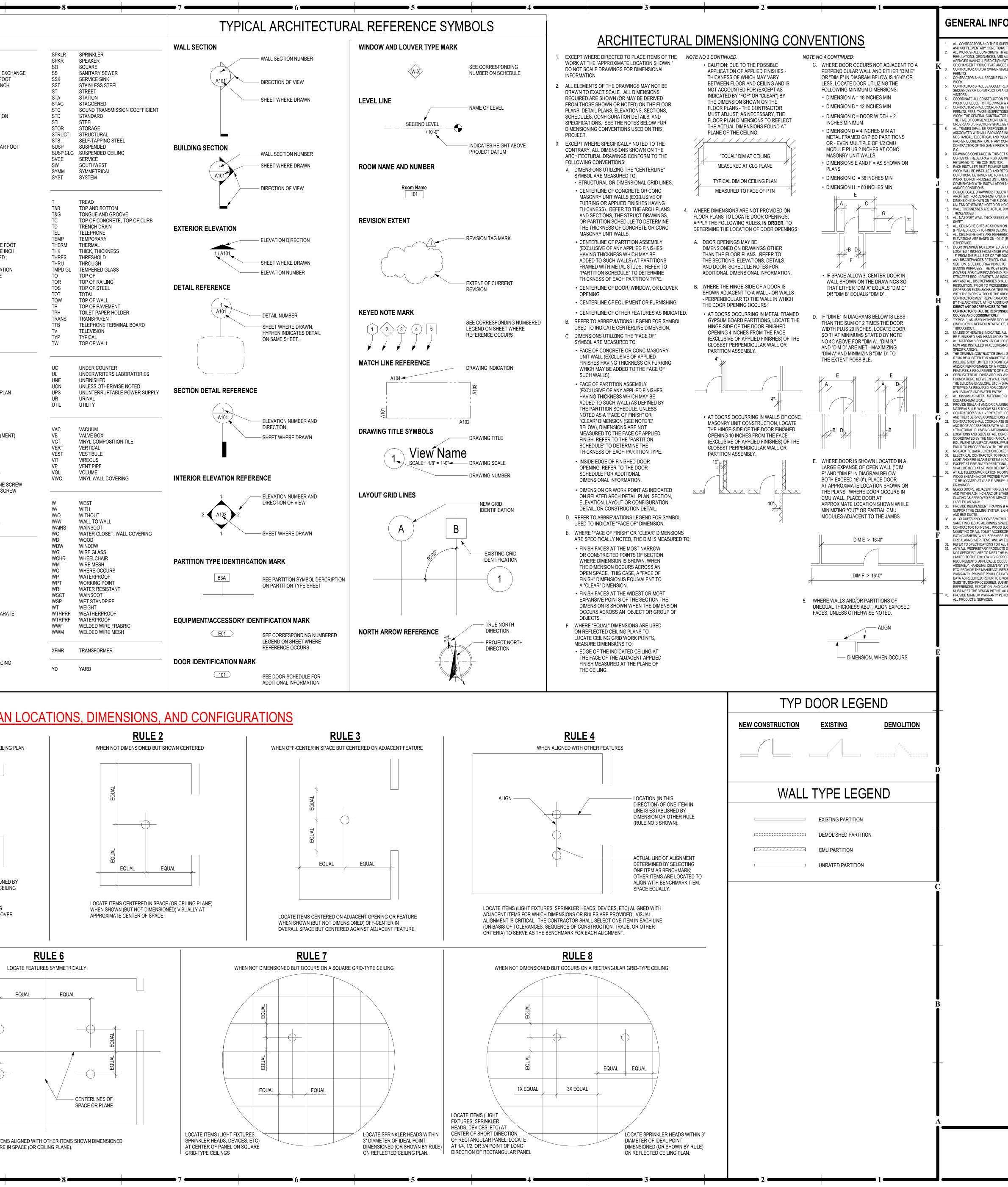
LOCATE ITEMS ALIGNED WITH OTHER ITEMS SHOWN DIMENSIONED ELSEWHERE IN SPACE (OR CEILING PLANE).



PLAN, OR DETAIL. SPECIFIC DIMENSIONS SHOWN BY REFLECTED CEILING



DWG / DWGS DRAWING / DRAWINGS



GENERAL INFORMATION NOTES:

ALL CONTRACTORS AND THEIR SUPERVISORY PERSONNEL SHALL REVIEW THE GENERAL AND SUPPLEMENTARY CONDITIONS TO THE CONTRACT. ALL WORK SHALL CONFORM WITH ALL APPLICABLE BUILDING CODES, LOCAL RULES AND REGULATIONS, ORDINANCES, AND ALL OTHER CODES, REGULATIONS AND GOVERNING AGENCIES HAVING JURISDICTION WITH ALL APPLICABLE AMENDMENTS UNLESS ALTERE CONTRACTOR AND/OR OWNER SHALL OBTAIN ALL REQUIRED BUILDING AND OCCUPANC' CONTRACTOR SHALL BECOME FULLY ACQUAINTED WITH CONDITIONS RELATED TO THE

COORDINATE ALL CONSTRUCTION PRIOR TO BEGINNING WORK AND SUBMIT PROPOSED WORK SCHEDULE TO THE OWNER & ARCHITECT FOR APPROVAL. CONTRACTOR SHALL COORDINATE THE WORK OF ALL TRADES, SECURE AND PAY FOR AL PERMITS, FEES, TAXES, INSPECTIONS & TESTING REQUIRED FOR COMPLETE RELATED WORK. THE GENERAL CONTRACTOR SHALL ALSO BE IN CHARGE OF THE OPERATION FRO THE TIME OF COMMENCEMENT UNTIL THE COMPLETION OF WORK AND TO WHOM ALL

MECHANICAL, ELECTRICAL AND PLUMBING ASSOCIATED WITH THIS PROJECT TO ENSUR PROPER COORDINATION. IF ANY CONFLICTS EXIST, THAT TRADE SHALL NOTIFY THE CONTRACTOR OF THE SAME PRIOR TO CONSTRUCTION WHO SHALL IN TURN NOTIFY TH DRAWINGS CONTAINED IN THIS SET SHALL NOT BE REPRODUCED FOR SHOP DRAWINGS COPIES OF THESE DRAWINGS SUBMITTED AS SHOP DRAWINGS WILL BE REJECTED AND EACH INSTALLER MUST EXAMINE SUBSTRATE AND/OR CONDITIONS UNDER WHICH THE WORK WILL BE INSTALLED AND REPORT TO THE CONTRACTOR IN WRITING ANY CONDITIONS DETRIMENTAL TO THE PROPER AND TIMELY EXECUTION OF THAT INSTALLER WORK, DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED. COMMENCING WITH INSTALLATION SHALL CONSTITUTE ACCEPTANCE OF THE SUBSTRATE

DIMENSIONS SHOWN ON THE FLOOR PLAN ARE TO THE FACE OF STUD OR STRUCTURE, WALL THICKNESSES ARE ACTUAL DIMENSIONS. REFER TO WALL TYPES SHEET FOR 14. ALL MASONRY WALL THICKNESSES ARE ACTUAL DIMENSIONS. REFER TO WALL TYPES

15. ALL CEILING HEIGHTS AS SHOWN ON PLANS AND DETAILS ARE FROM SLAB OR TILE FLOOR ALL CEILING HEIGHTS ARE REFERENCED FROM NEAREST FINISHED FLOOR. ALL BEARING ELEVATIONS ARE BASED ON 100'-0" (REFERENCED ELEVATION) TYPICAL UNLESS NOTED DOOR OPENINGS NOT LOCATED BY DIMENSION SHALL BE CENTERED IN WALL SHOWN OR LOCATED 4 INCHES FROM FINISH WALL TO FINISH JAMB, ALWAYS ALLOWING A MINIMUM OI 18" FROM THE PULL SIDE OF THE DOOR TO THE INTERSECTING WALL. ANY DISCREPANCIES BETWEEN SMALL SCALE AND LARGE SCALE DRAWINGS, (PLAN,

BIDDING PURPOSES: THE MOST EXPENSIVE AND/OR STRICTEST REQUIREMENTS SHALL GOVERN, FOR CLARIFICATIONS DURING CONSTRUCTION: THE MOST EXPENSIVE AND/OF STRICTEST REQUIREMENTS, AS INDICATED BY THE ARCHITECT, SHALL GOVERN. 19. ANY AND ALL DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT IN WRITING FOR RESOLUTION, PRIOR TO PROCEEDING WITH THE WORK. IN THESE INSTANCES: NO CHAN ORDERS OR EXTENSIONS OF TIME WILL BE ALLOWED OR ACCEPTED FOR PROCEEDING WITH THE WORK WITHOUT THE ARCHITECT'S WRITTEN DIRECTION AND APPROVAL. ALS CONTRACTOR MUST REPAIR AND/OR REPLACE ANY UNAUTHORIZED WORK AS INDICAT Y THE ARCHITECT, AT NO ADDITIONAL COST TO THE OWNER. (CONTRACTOR SHALL DIRECT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO CONSTRUCTION. AND CONTRACTOR SHALL BE RESPONSIBLE FOR ANY WORK WHICH PROCEEDS WITHOUT DU

ALL MATERIALS SHOWN OR CALLED FOR ON THESE CONSTRUCTION DOCUMENTS TO BE NEW AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AN THE GENERAL CONTRACTOR SHALL SUPPLY DETAILED COMPARISON OF SUBSTITUTION TEMS REQUESTED FOR ARCHITECT APPROVAL. COMPARISON INFORMATION SHALL INCLUDE & NOT LIMITED TO SIGNIFICANT PRODUCT QUALITIES WHICH MAY ALTER VISUA AND/OR PERFORMANCE OF A PRODUCT INCLUDING WEIGHT, SIZE, DURABILITY, & SPECIFIC OPEN EXTERIOR JOINTS AROUND WINDOW AND DOOR FRAMES, BETWEEN WALLS AND FOUNDATIONS, BETWEEN WALL PANELS, AND AT PENETRATIONS OF UTILITIES THROUG

STRIPPED AS REQUIRED FOR COMPATIBILITY WITH ADJACENT MATERIALS & TO ELIMINA ALL DISSIMILAR METAL MATERIALS SHALL BE ISOLATED WITH AN APPROVED NONMETA PROVIDE SEALANT AND/OR CAULKING BETWEEN DISSIMILAR ADJOINING INTERIOR MATERIALS. (I.E. WINDOW SILLS TO GYP. BD., ACT CEILINGS TO MASONRY WALLS, ETC CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING UNDERGROUND UTILITI

AND ROOF ACCESSORIES WITH ALL OTHER TRADES. REFER TO THE ARCHITECTURAL, LOCATIONS AND SIZES OF ALL CONCRETE MECHANICAL AND ELECTRICAL PADS SHALL E COORDINATED BY THE MECHANICAL AND ELECTRICAL CONTRACTORS. WITH THE SELE PRIOR TO PROCEEDING WITH THE WORK.

LIGHT AND FIRE ALARM SYSTEM IN ACCORDANCE WITH ALL APPLICABLE CODES. EXCEPT AT FIRE-RATED PARTITIONS, ALL WALL AND COLUMN GYPSUM BOARD FACING SHALL BE HELD AT 5/6 INCH BELOW STRUCTURE, UNLESS DETAILED OR NOTED OTHERV AT ALL TELECOMMUNICATION ROOMS: PROVIDE 3/4" X 8-0" HIGH FIRE-RETARDANT-TRE/ WOOD SHEATHING OR PROVIDE PLYWOOD OVER NON-COMBUSTIBLE SHEATHING; BOT TO BE LOCATED AT 4" A.F.F. VERIFY LENGTHS AND LOCATIONS WITH ELECTRICAL

AND WITHIN A 24-INCH ARC OF FITHER VERTICAL EDGE OF A DOOR FTC. SHALL BE S GLAZING AS APPROVED FOR IMPACT BY APPLICABLE BUILDING CODES, AND SHALL BE PROVIDE INDEPENDENT FRAMING & ATTACHMENTS TO THE STRUCTURE – ADEQUATE TO SUPPORT THE CEILING SYSTEM, LIGHT FIXTURES, DUCTS, DIFFUSERS, SPRINKLER PIPING

SAME FINISHES AS ADJUINING SPACES. CONTRACTOR TO INSTALL WOOD BLOCKING AND PLYWOOD AS REQUIRED FOR THE MOUNTING OF ALL TOILET ACCESSORIES, MILLWORK/ CASEWORK, HANDRAILS, FIRE

REFER TO SPECIFICATIONS FOR ALL REQUIRED TESTING AND INSPECTIONS. ANY/ ALL PROPRIETARY PRODUCTS DESCRIBED AND/OR DRAWN IN THE DOCUMENTS (BU NOT SPECIFIED) ARE TO MEET THE MANUFACTURER'S STANDARD CRITERIA WHICH IS LIMITED TO THE FOLLOWING: PERFORMANCE REQUIREMENTS, QUALITY ASSURANCE REQUIREMENTS, APPLICABLE CODES AND INDUSTRY STANDARDS, FABRICATION, ASSEMBLY, HANDLING, DELIVERY, STORAGE, INSTALLATION, OPERATION, ADJUSTMENT ETC. PROVIDE THE MANUFACTURER'S STANDARD WARRANTY AND STANDARD FINISH WARRANTY. PROVIDE PRODUCT DATA, SHOP DRAWINGS, SAMPLES, AND MAINTENANC DATA AS REQUIRED. REFER TO DIVISION 01 SPEC. SECTIONS WHICH ALSO APPLY - SI SUBSTITUTION PROCEDURES, SUBMITTAL PROCEDURES, QUALITY REQUIREMENTS

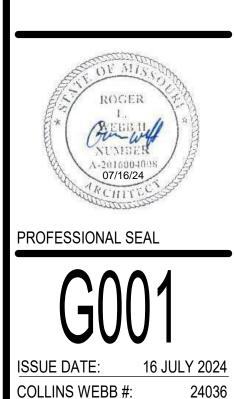
PROVIDE MINIMUM WARRANTY PERIOD OF 18 MONTHS FROM SUBSTANTIAL COMPLETION



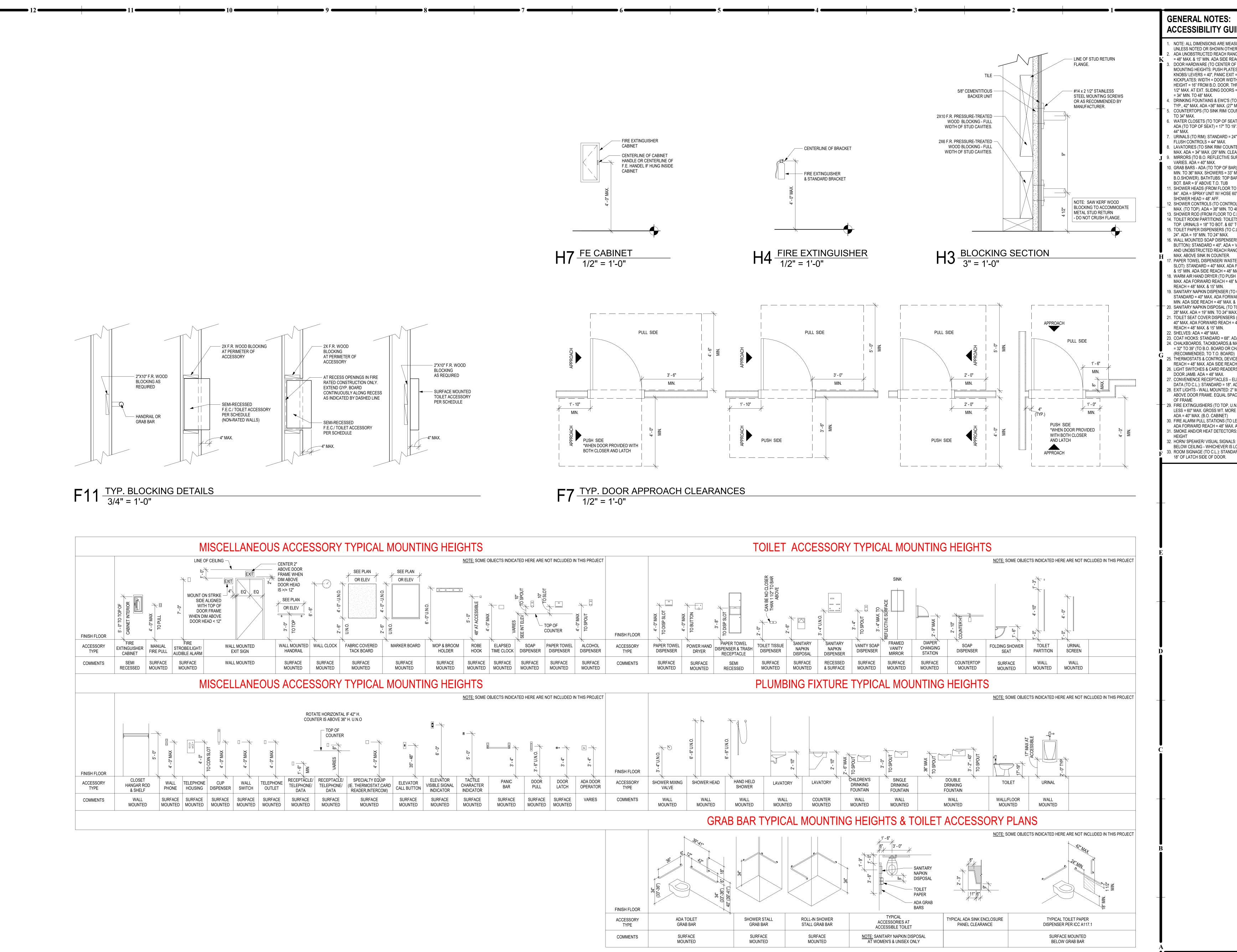
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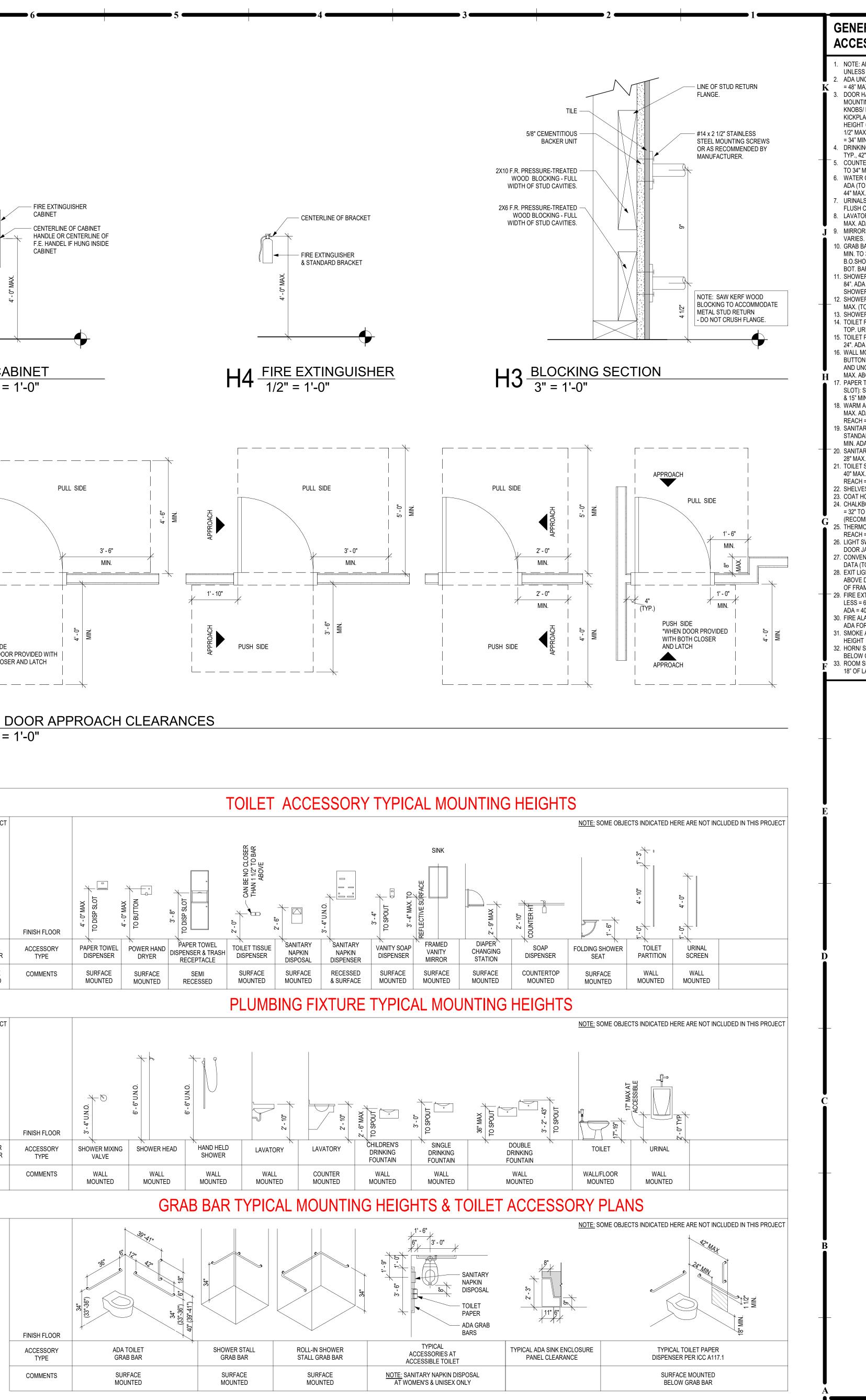


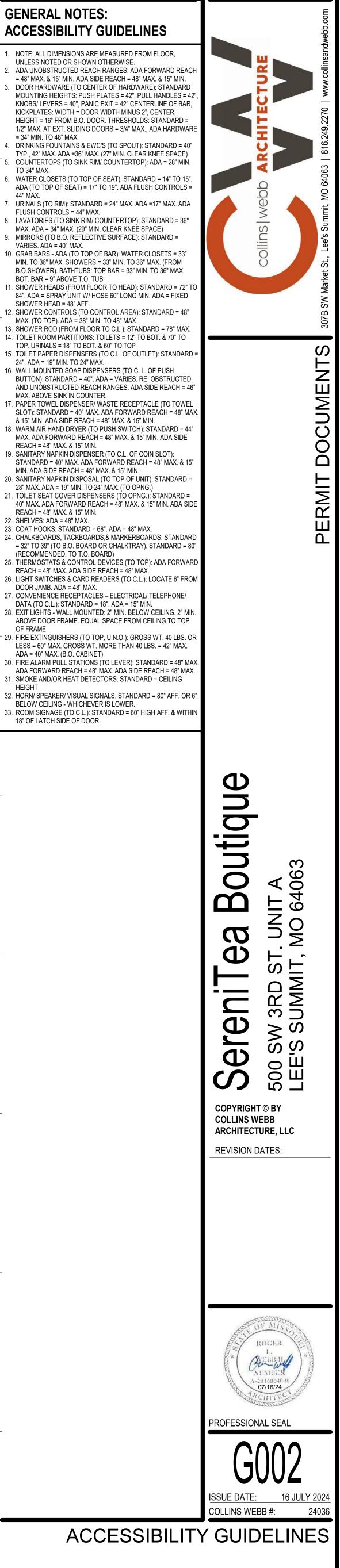
COLLINS WEBB ARCHITECTURE, LLC **REVISION DATES:**



GENERAL INFORMATION

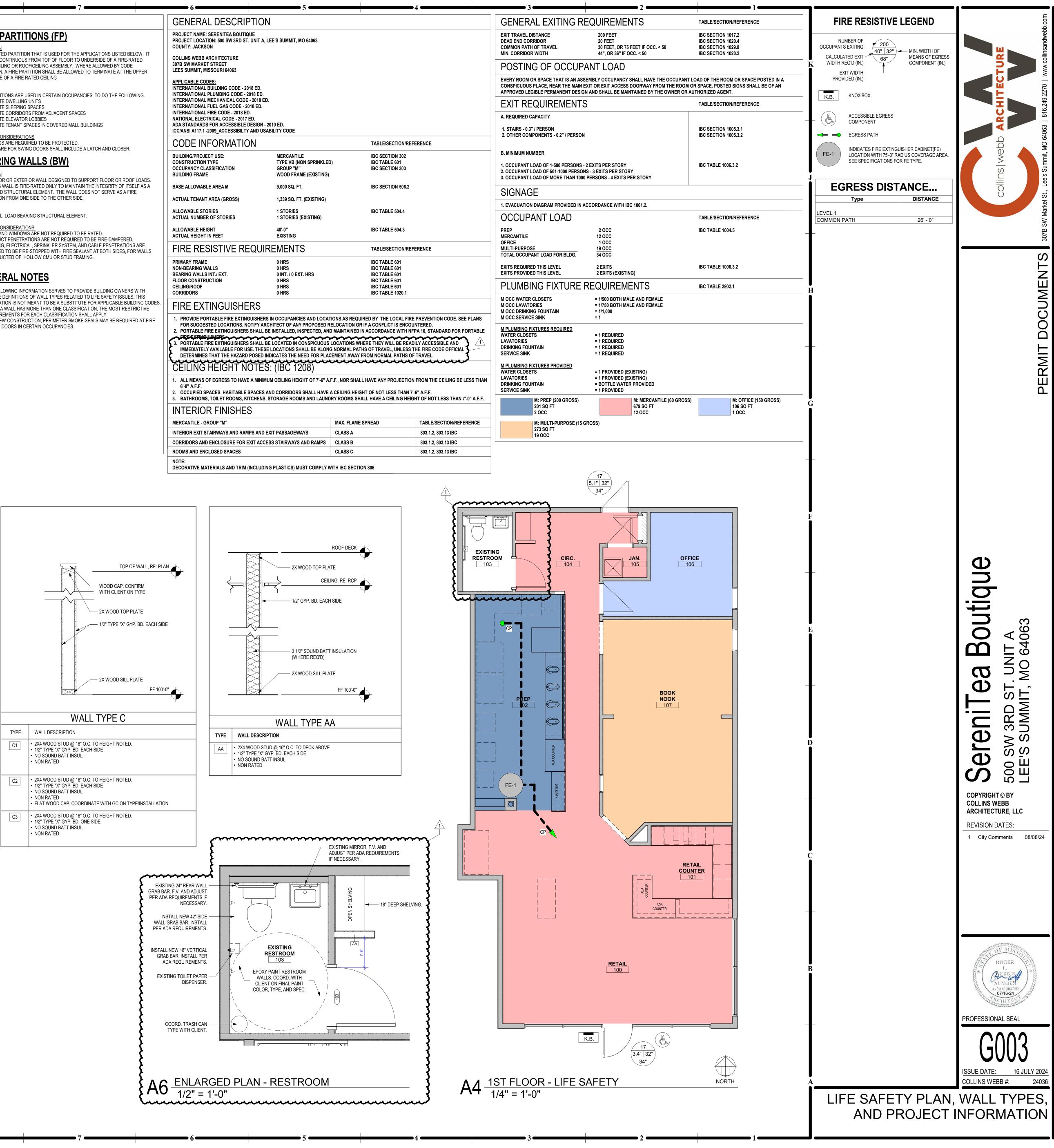






12	11	9
	WALL PRIORITY LEGEND	FIRE & SMOKE RESISTIVE L
	NOTE: THIS LEGEND IS FOR GRAPHIC REPRESENTATION ONLY.	FIRE WALLS (FW)
	FOUR HOUR FIRE WALL (4FW) THREE HOUR FIRE WALL (3FW) TWO HOUR FIRE WALL (2FW)	DEFINITION A FIRE RATED WALL THAT IS CONTINUOUS VERTICAL TO SEPARATE CONSTRUCTION INTO SEPARATE BUIL
	FOUR HOUR FIRE BARRIER (4FB) THREE HOUR FIRE BARRIER (3FB)	USE FIRE WALLS SERVE TO CREATE SEPARATE BUILDING REASONS.
	TWO HOUR FIRE BARRIER (2FB) <i>(INCLUDES THE FOLLOWING)</i> • TWO HOUR SHAFT ENCLOSURE (2SE)	CONSTRUCTION TYPE VARIES FROM ONE BUILDING COMPLIANCE WITH MAXIMUM ALLOWABLE AREA R TO SEPARATE BUILDINGS WITH DIFFERENT LEVELS
	ONE HOUR FIRE BARRIER (1FB) <i>(INCLUDES THE FOLLOWING)</i> • ONE HOUR SHAFT ENCLOSURE (1SE)	TO ADDRESS A PROPERTY LINE DEFINING DIFFERE
	 SMOKE TIGHT PARTITION (X) (INCLUDES THE FOLLOWING) SMOKE TIGHT PARTITION TO SMOKE TIGHT CEILING (XC) SMOKE TIGHT PARTITION WITHIN PLENUM ABOVE CEILING (XP) SMOKE TIGHT PARTITION SEPARATION OF INTERSTITIAL SPACES (XI) 	 SPECIAL CONSIDERATIONS THE FIRE WALL REQUIRES SUFFICIENT STRUCTUR CONDITIONS TO ALLOW THE COLLAPSE OF CONST WITHOUT COLLAPSE OF THE WALL. OPENINGS ARE REQUIRED TO BE PROTECTED. OPENINGS ARE LIMITED BASED ON A PERCENTAGE EXTENDING THE FIRE WALL THROUGH THE ROOF N
	DETAIL ABUTMENT OF DISSIMILAR WALL	 FOR SOME CONSTRUCTION CLASSIFICATIONS. THE REQUIRED FIRE RATING OF A FIRE WALL IS BA AND CLASS OF CONSTRUCTION. HARDWARE FOR SWING DOORS SHALL INCLUDE A
	HIGHER PRIORITY WALLS SHALL PASS THROUGH A LOWER PRIORITY WALL	FIRE BARRIERS (FB)
	INTERSECTION OF RATED WALLS TAPE & JOINT COMPOUND (TYP) LOWER PRIORITY WALL	DEFINITION A FIRE RATED WALL CONSTRUCTED TO RESTRICT TH CONTINUITY SHALL BE MAINTAINED FROM TOP OF FL FLOOR OR ROOF DECK ABOVE.
	TAPE & SEAL HIGHER PRIORITY WALL BEHIND INTERSECTING LOWER PRIORITY WALL (TYP) HIGHER PRIORITY WALL TAPE & JOINT COMPOUND (TYP) HIGHER PRIORITY WALL B	USE FIRE BARRIERS HAVE THE FOLLOWING APPLICATION • TO CREATE HORIZONTAL EXITS. • TO SEPARATE EXIT PASSAGEWAYS. • OCCUPANCY SEPARATIONS. • TO SEPARATE INCIDENTAL USE AREAS. • ISOLATION OF HAZARDS. • TO SEPARATE ROOMS WITH DIFFERENT LEVELS O • SMOKE BARRIERS AND SHAFT ENCLOSURES ARE F REQUIREMENTS.
	LOWER PRIORITY WALL TAPE & JOINT COMPOUND (TYP) HIGHER PRIORITY WALL HIGHER PRIORITY WALL (TYP) HIGHER PRIORITY WALL (TYP) HIGHER PRIORITY WALL (TYP)	 SPECIAL CONSIDERATIONS WITHIN SOME CONSTRUCTION CLASSIFICATIONS, (STRUCTURAL SUPPORT OF A FIRE BARRIER IS REC HOURLY FIRE RATING AS THE FIRE BARRIER, OR BI OPENINGS ARE REQUIRED TO BE PROTECTED. HARDWARE FOR SWING DOORS SHALL INCLUDE A
	LOWER PRIORITY WALL (TYP)	SHAFT ENCLOSURES (SE)
		DEFINITION A SHAFT ENCLOSURE IS A FIRE BARRIER FORMING T SHAFT.
	TAPE & JOINT COMPOUND (TYP)	USE PROTECT OPENINGS IN FIRE RATED FLOOR/CEILING
	E HIGHER PRIORITY WALL	 <u>SPECIAL CONSIDERATIONS</u> PENETRATIONS IN SHAFT ENCLOSURES ARE PROF FOR THE FUNCTION OF THE SHAFT. WHERE ALLON TO BE PROTECTED.
	 NOTES: 1. REFER TO WALL TYPES ON SHEET G121-TI FOR WALL COMPONENTS, NUMBER OF GYPSUM BOARD LAYERS, TYPE OF GYPSUM BOARD, AND OTHER SIMILAR INFO. 2. THE HIGHER PRIORITY WALL SHALL PASS THROUGH THE LOWER PRIORITY WALL. 3. TAPING AND SEALING OF HIGHER PRIORITY WALLS SHALL BE CONTINUOUS. 4. ALTERNATE LAYERS OF GYPSUM BOARD SHALL OVERLAP AT CORNER INTERSECTIONS OF MULTI-LAYERED RATED GYPSUM BOARD PARTITIONS. 	 DUCT PENETRATIONS REQUIRE COMBINATION SMO FOR EXISTING CONDITIONS THAT ARE GRANDFATH HARDWARE FOR SWING DOORS SHALL INCLUDE A PERIMETER SMOKE SEALS.

8	7	6	 5 	
	ONS	GENERAL DESCRIPTION		I
	FIRE PARTITIONS (FP)	PROJECT NAME: SERENITEA BOUTIQUE PROJECT LOCATION: 500 SW 3RD ST. UNIT A, L COUNTY: JACKSON		
ALLY FROM FOUNDATION TO ROOF JILDINGS.		COLLINS WEBB ARCHITECTURE 307B SW MARKET STREET LEES SUMMIT, MISSOURI 64063		
NGS FOR THE FOLLOWING	MEMBRANE OF A FIRE RATED CEILING	APPLICABLE CODES:		
NG TO ANOTHER. REQUIREMENTS. ELS OF FIRE PROTECTION. RENT OWNERSHIP. JRAL STABILITY UNDER FIRE	USE FIRE PARTITIONS ARE USED IN CERTAIN OCCUPANCIES TO DO THE FOLLOWING. • SEPARATE DWELLING UNITS • SEPARATE SLEEPING SPACES • SEPARATE CORRIDORS FROM ADJACENT SPACES • SEPARATE ELEVATOR LOBBIES • SEPARATE TENANT SPACES IN COVERED MALL BUILDINGS	INTERNATIONAL BUILDING CODE - 2018 ED. INTERNATIONAL PLUMBING CODE - 2018 ED. INTERNATIONAL MECHANICAL CODE - 2018 ED. INTERNATIONAL FUEL GAS CODE - 2018 ED. INTERNATIONAL FIRE CODE - 2018 ED. NATIONAL ELECTRICAL CODE - 2017 ED. ADA STANDARDS FOR ACCESSIBLE DESIGN - 2		
STRUCTION ON EITHER SIDE	SPECIAL CONSIDERATIONS	ICC/ANSI A117.1 -2009_ACCESSIBILTY AND USA	BILITY CODE	
GE OF WALL LENGTH. F WITH A PARAPET IS REQUIRED	 OPENINGS ARE REQUIRED TO BE PROTECTED. HARDWARE FOR SWING DOORS SHALL INCLUDE A LATCH AND CLOSER. 			
BASED ON OCCUPANCY GROUPS	BEARING WALLS (BW)	BUILDING/PROJECT USE: CONSTRUCTION TYPE OCCUPANCY CLASSIFICATION	MERCANTILE TYPE VB (NON SPRINKLEI GROUP "M"	IBC SECTION
A LATCH AND CLOSER.	DEFINITION AN INTERIOR OR EXTERIOR WALL DESIGNED TO SUPPORT FLOOR OR ROOF LOADS. A BEARING WALL IS FIRE-RATED ONLY TO MAINTAIN THE INTEGRITY OF ITSELF AS A	BUILDING FRAME BASE ALLOWABLE AREA M	WOOD FRAME (EXISTING) 9,000 SQ. FT.	IBC SECTION
	FIRE RATED STRUCTURAL ELEMENT. THE WALL DOES NOT SERVE AS A FIRE SEPARATION FROM ONE SIDE TO THE OTHER SIDE.	ACTUAL TENANT AREA (GROSS)	1,339 SQ. FT. (EXISTING)	
THE SPREAD OF FIRE. FLOOR TO UNDERSIDE OF THE	<u>USE</u> A VERTICAL, LOAD BEARING STRUCTURAL ELEMENT.	ALLOWABLE STORIES ACTUAL NUMBER OF STORIES	1 STORIES 1 STORIES (EXISTING)	IBC TABLE 5
DNS.	 <u>SPECIAL CONSIDERATIONS</u> DOORS AND WINDOWS ARE NOT REQUIRED TO BE RATED. HVAC DUCT PENETRATIONS ARE NOT REQUIRED TO BE FIRE-DAMPERED. 	ALLOWABLE HEIGHT ACTUAL HEIGHT IN FEET	40'-0" EXISTING	IBC TABLE 5
	 PLUMBING, ELECTRICAL, SPRINKLER SYSTEM, AND CABLE PENETRATIONS ARE REQUIRED TO BE FIRE-STOPPED WITH FIRE SEALANT AT BOTH SIDES, FOR WALLS CONSTRUCTED OF HOLLOW CMU OR STUD FRAMING. 	FIRE RESISTIVE REQUIR	REMENTS	TABLE/SECT
OF FIRE PROTECTION. E FIRE BARRIERS. SEE ADDITIONAL	GENERAL NOTES	PRIMARY FRAME NON-BEARING WALLS BEARING WALLS INT./ EXT. FLOOR CONSTRUCTION	0 HRS 0 HRS 0 INT. / 0 EXT. HRS 0 HRS	IBC TABLE 6 IBC TABLE 6 IBC TABLE 6 IBC TABLE 6
S, CONSTRUCTION THAT PROVIDES	 THE FOLLOWING INFORMATION SERVES TO PROVIDE BUILDING OWNERS WITH CONCISE DEFINITIONS OF WALL TYPES RELATED TO LIFE SAFETY ISSUES. THIS INFORMATION IS NOT MEANT TO BE A SUBSTITUTE FOR APPLICABLE BUILDING CODES WHEN A WALL HAS MORE THAN ONE CLASSIFICATION, THE MOST RESTRICTIVE 	CEILING/ROOF CORRIDORS FIRE EXTINGUISHERS	0 HRS 0 HRS	IBC TABLE 6 IBC TABLE 1
A LATCH AND CLOSER.	REQUIREMENTS FOR EACH CLASSIFICATION SHALL APPLY. 3. FOR NEW CONSTRUCTION, PERIMETER SMOKE-SEALS MAY BE REQUIRED AT FIRE RATED DOORS IN CERTAIN OCCUPANCIES.	1. PROVIDE PORTABLE FIRE EXTINGUISHERS FOR SUGGESTED LOCATIONS. NOTIFY ARC 2. PORTABLE FIRE EXTINGUISHERS SHALL BE	CHITECT OF ANY PROPOSED R E INSTALLED, INSPECTED, ANI	RELOCATION OR IF A CONFLICT IS D MAINTAINED IN ACCORDANCE
		3. PORTABLE FIRE EXTINGUISHERS SHALL BE IMMEDIATELY AVAILABLE FOR USE. THESE		
THE BOUNDARY OF A VERTICAL		CEILING HEIGHT NOTES		
G ASSEMBLIES.		1. ALL MEANS OF EGRESS TO HAVE A MINIMU 6'-8" A.F.F.		
OHIBITED UNLESS NECESSARY OWED, OPENINGS ARE REQUIRED		2. OCCUPIED SPACES, HABITABLE SPACES A 3. BATHROOMS, TOILET ROOMS, KITCHENS, S		
MOKE AND FIRE DAMPERS EXCEPT THERED.				
A LATCH, CLOSER, AND		MERCANTILE - GROUP "M" INTERIOR EXIT STAIRWAYS AND RAMPS AND E		MAX. FLAME SPREAD
		CORRIDORS AND ENCLOSURE FOR EXIT ACCE ROOMS AND ENCLOSED SPACES		CLASS B CLASS C
		NOTE: DECORATIVE MATERIALS AND TRIM (INCLUDIN	G PLASTICS) MUST COMPLY V	



SPECIFICATIONS - PRODUCT & INSTALLATION GENERAL REQUIREMENTS	DIVISION 6 - WOOD AND PLASTICS 06 1000 - ROUGH CARPENTRY
GENERAL REQUIREMENTS APPLICABLE TO ALL MATERIALS FOR THE PROJECT: 1. NO SUBSTITUTIONS OF MATERIALS WITHOUT COMPLETION OF A SUBSTITUTION REQUEST FORM & APPROVAL OF	 PROVIDE SUFFICIENT FIRE RETARDANT TREATED WOOD BLOCKING AT ALL STUDS FOR SECURING OF WAL CEILING ITEMS, WHETHER FURNISHED BY OWNER OR CONTRACTOR. CONCEALED WOOD IS TO BE FIRE RETARDANT TREATED UNLESS NOTED OTHERWISE.
SUBSTITUTION BY BOTH ARCHITECT & OWNER PROJECT MANAGER. FORM CAN BE REQUESTED FROM ARCHITECT. 2. A CONDENSED SET OF SPECIFICATIONS ARE PROVIDED FOR THE PROJECT. STRICT ADHEARANCE TO MANUFACTURER REQUIREMENTS AND INSTALLATION ARE REQUIRED TO BE FOLLOWED WITH SECTIONS PROVIDED	 PRESERVATIVE TREATED LUMBER IS REQUIRED FOR ALL ITEMS TO REMAIN IN CONTACT WITH CONCRETE MASONRY TO CONFORM TO AWPA STANDARD 5. PLYWOOD SHALL BE CD GRADE APA FIR OR YELLOW PINE. ALL PLY-WOOD TO BE FIRE RATED WHERE WAL
WITHIN. IF REQUIRED THE ARCHITECT WILL ISSUE ADDITIONAL SECTIONS TO PROVIDE CLARITY TO PRODUCTS OR INSTALLATION REQUIREMENTS.	INDICATED AS RATED CONSTRUCTION. 5. BLOCKING SHALL BE CLOSELY FITTED, ACCURATELY SET TO REQUIRED LINES & LEVELS, SECURELY CONN & RIGIDLY FIXED IN PLACE, USING NAILS, SCREWS, &/OR BOLTS AS INDICATED OR REQUIRED BY GOOD PRA
 <u>DIVISION 1 - GENERAL REQUIREMENTS</u> SEE ADMINISTRATIVE SPECIFICATION FOR GENERAL REQUIREMENTS RELATED TO ADMINISTATION OF THIS CONTRACT. 	AND MANUFACTURER'S RECOMMENDATIONS. 06 2000 - FINISH CARPENTRY
A. <u>CONTRACTOR LICENSES</u> : 1. THE CONTRACTOR AND ALL SUBCONTRACTORS INVOLVED IN THE PROJECT SHALL BE REQUIRED TO OBTAIN AND	 A. <u>SUBMITTALS</u>: SAMPLES OF FINISH MATERIALS, CATALOG CUTS OF HARDWARE, AND SHOP DRAWINGS INCL DIMENSIONED PLANS, ELEVATIONS, AND SECTIONS. B. <u>QUALITY STANDARD</u>: ARCHITECTURAL WOODWORK INSTITUTE'S "ARCHITECTURAL WOODWORK QUALITY
PAY FOR ALL NECESSARY LICENSES AS REQUIRED BY ANY LAW OR AGENCIES HAVING JURISDICTION (AHJ) OVER THE PROJECT.	STANDARDS" C. <u>MATERIALS</u> : 1. SOFTWOOD LUMBER: MAXIMUM MOISTURE CONTENT OF 6 PERCENT; WITH VERTICAL GRAIN, OF QU
 B. <u>BUILDING PERMITS</u>: 1. THE GENERAL CONTRACTOR WILL PAY FOR ALL PERMITS REQUIRED BY ANY AGENCY HAVING JURISDICTION (AHJ) OVER THE PROJECT FOR ALL WORK TO BE PREFORMED BY THE GENERAL CONTRACTOR. 	SUITABLE FOR SCHEDULED FINISH. 2. HARDWOOD LUMBER:MAXIMUM MOISTURE CONTENT OF 6 PERCENT; WITH VERTICAL GRAIN, OF QU SUITABLE FOR SCHEDULED FINISH.
C. <u>UTILITY FEES</u> : 1. THE CONTRACTOR SHALL PAY THE NECESSARY FEES TO CONNECT TO EXISTING UTILITIES AT THE PROPERTY	 SHEET MATERIALS: SOFTWOOD PLYWOOD, EXPOSED TO VIEW: FACE SPECIES AS INDICATED, PLAI SAWN, MEDIUM DENSITY FIBERBOARD CORE; PS 1 GRADE A-B, GLUE TYPE AS RECOMMENDED FOR APPLICATION.
LINE OR IN ADJACENT STREETS AND RIGHT OF WAY AS SPECIFIED, NECESSARY, AND/OR INCLUDED IN THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL PAY ALL UTILITY COSTS (BILLS) DURING CONSTRUCTION UNTIL OWNER TAKES POSSESSION OF THE FACILITY OR THE FACILITY IS CERTIFIED AS SUBSTANTIALLY	 D. <u>INTERIOR WOODWORK</u>: 1. COMPLETE FABRICATION BEFORE SHIPPING TO PROJECT SITE TO MAXIMUM EXTENT FEASIBLE. DISASSEMBLE ONLY AS NEEDED FOR SHIPPING AND INSTALLING. WHERE NECESSARY FOR FITTING
COMPLETE.	PROJECT SITE, PROVIDE FOR SCRIBING AND TRIMMING. 2. BACKOUT AND GROOVE BACKS OF FLAT MEMBERS, KERF BACKS OF OTHER WIDE, FLAT MEMBERS EXCEPT WHERE ENDS WILL BE EXPOSED IN FINISHED WORK.
 IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT FINISHED SURFACES. PROTECTION FOR FINISHES SUCH AS DOORS, WALLS AND FLOORS SHOULD BE PROVIDED AS REQUIRED. ANY DAMAGES TO THESE AREAS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR OR REPLACE. 	 E. <u>INSTALLATION</u>: 1. DO NOT DELIVER OR INSTALL WOODWORK UNTIL BUILDING IS ENCLOSED, WET WORK IS COMPLETINVAC IS OPERATING, AND WOODWORK IS CONDITIONED TO PREVAILING CONDITIONS OF SPACE W
E. <u>GENERAL CONDITIONS</u> : 1. ANY DISCREPANCY OR CONFLICT WITHIN OR BETWEEN DRAWINGS AND ANY DISCREPANCY OR CONFLICT	 INSTALLED. MAINTAIN TEMPERATURE BETWEEN 55 F. AND 75 F. FOR 72 HOURS BEFORE BEGINNING INSTALLATION AND FOR DURATION OF PROJECT. INSTALL WOODWORK LEVEL AND PLUMB AND SHIM AS REQUIRED WITH CONCEALED SHIMS TO 8
BETWEEN ANY DRAWING AND ANY SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. NOTWITHSTANDING, DISCREPANCIES OR CONFLICTS NOT BROUGHT TO THE ARCHITECT'S AND/ OWNERS ATTENTION AND CLARIFIED DURING THE BIDDING OF THE PROJECT WILL BE DEEMED TO HAVE BEEN BID OR	TOLERANCE OF 1 "/96" AND TO COMPLY WITH REFERENCED QUALITY STANDARD FOR GRADE SPEC 3. SCRIBE AND CUT WOODWORK TO FIT ADJOINING WORK, SEAL CUT SURFACES, AND REPAIR DAMAG FINISH AT CUTS.
PROPOSED IN THE MORE COSTLY OR DIFFICULT MANNER, AND THE BETTER QUALITY OR GREATER QUANTITY OF THE WORK SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH ARCHITECT'S INTERPRETATION. 2. THE GENERAL CONTRACTOR SHALL KEEP A COMPLETE SET OF DOCUMENTS ON THE PROJECT SITE AT ALL TIMES	 INSTALL TRIM WITH MINIMUM NUMBER OF JOINTS POSSIBLE USING FULL-LENGTH PIECES TO GREA EXTENTPOSSIBLE. STAGGER JOINTS IN ADJACENT AND RELATED MEMBERS. LUMBER FOR TRANSPARENT FINISH (STAINED OR CLEAR): USE PIECES MADE OF SOLID LUMBER S⁻
FOR REFERENCE DURING CONSTRUCTION. 3. THE GENERAL CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK, USING THE CONTRACTOR'S BEST SKILLS AND ATTENTION. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND HAVE CONTROL OVER	 LUMBER FOR PAINTED FINISH: AT CONTRACTOR'S OPTION, USE PIECES WHICH ARE EITHER GLUED MADE OF SOLID LUMBER STOCK. DISCARD UNITS OF MATERIAL WHICH ARE UNSOUND, WARPED, BOWED, TWISTED, IMPROPERLY TR
CONSTRUCTION MEANS AND METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT. 4. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND HAVE CONTROL OVER ALL JOB SITE	NOT ADEQUATELY SEASONED OR TOO SMALL TO FABRICATE WORK WITH MINIMUM OF JOINTS OR OPTIMUM JOINTING ARRANGEMENTS, OR WHICH ARE DEFECTIVELY MANUFACTURED WITH RESPECTIVELY MANUFACTURED WITH
SAFETY PROCEDURES AND POLICIES. THE GENERAL CONTRACTOR SHALL HAVE A SAFETY COORDINATOR AND BE RESPONSIBLE TO HOLD REGULARLY SCHEDULED SAFETY TRAINING WITH ALL JOB SITE PERSONNEL, INCLUDING ALL SUB CONTRACTOR PERSONNEL.	 INSTALL THE WORK PLUMB, LEVEL, TRUE AND STRAIGHT WITH NO DISTORTIONS. SHIM AS REQUIR USING CONCEALED SHIMS. SCRIBE AND CUT WORK TO FIT ADJOINING WORK, AND REFINISH CUT SURFACES OR REPAIR DAMA
 NEITHER THE ARCHITECT'S OR THE OWNERS INSPECTION NOR FAILURE TO INSPECT SHALL RELIEVE THE CONTRACTOR OF ANY OBLIGATION HEREUNDER. IF ANY WORK FAILS TO CONFORM TO THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PROMPTLY REMEDY AND/OR REPLACE THE SAME AT THE CONTRACTOR'S 	 FINISH AT CUTS. 10. SAND WORK SMOOTH AND SET EXPOSED NAILS AND SCREWS. 11. APPLY WOOD FILLER IN EXPOSED NAIL AND SCREW INDENTATIONS.
EXPENSE. NO ACCEPTANCE OR PAYMENT BY THE OWNER OR ARCHITECT SHALL CONSTITUTE A WAIVER OF THE FOREGOING AND NOTHING HEREIN SHALL EXCLUDE OR LIMIT ANY WARRANTIES IMPLIED BY LAW. 6. THE GENERAL CONTRACTOR SHALL SO CONDUCT ITS OPERATIONS AS NOT TO UNREASONABLY INTERFERE WITH	 FINISH WORK SHALL BE SMOOTH, FREE FROM ABRASION, TOOL MARKS, RAISED GRAIN MARKINGS, SIMILAR DEFECTS ON EXPOSED SURFACES.
 THE GENERAL CONTRACTOR SHALL SO CONDUCT ITS OPERATIONS AS NOT TO UNREASONABLE INTERPERE WITH TRAFFIC ON PUBLIC THOROUGHFARES ADJACENT OR NEAR TO THE PROJECT SITE. DO NOT SCALE DRAWINGS. 	06 4100 - ACHITECTURAL WOOD CASEWORK A. <u>SUBMITTALS</u> : SAMPLES OF FINISH MATERIALS, CATALOG CUTS OF HARDWARE, AND SHOP DRAWINGS INCL
 F. <u>PROJECT REQUIREMENTS</u>: 1. THE GENERAL CONTRACTOR REPRESENTS THAT IT POSSESSES THE SKILLS REQUIRED FOR THE WORK, 	DIMENSIONED PLANS, ELEVATIONS, AND SECTIONS. INDICATE COMPONENT PROFILES, FASTENING METHO JOINTING DETAILS, AND ACCESSORIES. 1. SCALE OF DRAWINGS: 1-1/2 INCH TO 1 FOOT, MINIMUM.
ASSUMES THE RESPONSIBILITIES OF AN EMPLOYER FOR PERFORMANCE OF THE WORK, AND ACTS AS AN EMPLOYER OF ONE OR MORE EMPLOYEES BY PAYING WAGES, DIRECTING ACTIVITIES AND PERFORMING OTHER SIMILAR FUNCTIONS. THE GENERAL CONTRACTOR IS AN INDEPENDENT CONTRACTOR, FREE TO DETERMINE THE	 PROVIDE THE INFORMATION REQUIRED BY AWI/AWMAC/WI (AWS) OR AWMAC/WI (NAAWS). SAMPLES: SUBMIT ACTUAL SAMPLES OF ARCHITECTURAL CABINET CONSTRUCTION, MINIMUM 12 IN SQUARE, ILLUSTRATING PROPOSED CABINET, COUNTERTOP, AND SHELF UNIT SUBSTRATE AND FIN UNITY STANDARD ADDIVISION AND SAMPLES OF ARCHITECTURAL WOODWOOD (COUNTERT)
 MANNER IN WHICH THE WORK IS PERFORMED. 2. THE GENERAL CONTRACTOR SHALL PROVIDE, AND MAINTAIN IN GOOD WORKING ORDER, THE FOLLOWING ITEMS FOR USE BY THE PROJECT SUPERINTENDENT DAILY DURING THE ENTIRE DURATION OF THE PROJECT: 	 B. <u>QUALITY STANDARD</u>: ARCHITECTURAL WOODWORK INSTITUTE'S "ARCHITECTURAL WOODWORK QUALITY STANDARDS" C. <u>QUALITY ASSURANCE</u>:
 A. LAPTOP WITH INTERNET ACCESS. B. DIGITAL CAMERA WITH 'DATE STAMP' CAPABILITY AND WITH PROPER CABLES TO ATTACH TO LAPTOP. C. EMAIL ACCESS THROUGH THE LAPTOP. 	 FABRICATOR QUALIFICATIONS: COMPANY SPECIALIZING IN FABRICATING THE PRODUCTS SPECIFIE THIS SECTION WITH MINIMUM FIVE YEARS OF DOCUMENTED EXPERIENCE. D. <u>CABINETS</u>:
 D. A PRINTER/SCANNER/FAX MACHINE WITH PROPER CABLES TO ATTACH TO LAPTOP. E. CELL PHONE. F. PROJECT INTERNET CLOUD BASED SITE FOR MANAGEMENT OF PROJECT INFORMATION. SITE WILL BE 	 QUALITY STANDARD: CUSTOM GRADE, IN ACCORDANCE WITH AWI/AWMAC/WI (AWS) OR AWMAC/W (NAAWS), UNLESS NOTED OTHERWISE. WOOD VENEER FACED CABINET: CONCEALED SURFACES: MANUFACTURER'S OPTION.
USED FOR SUBMITTAL OF SHOP DRAWINGS, RFI'S & PHOTOS. SITE SHALL BE PROCORE OR EQUAL FUNCTIONALITY. 3. THE GENERAL CONTRACTOR SHALL HAVE A CONSTRUCTION SUPERINTENDENT ASSIGNED TO THIS PROJECT,	 PLASTIC LAMINATE FACED CABINETS: CUSTOM GRADE WITH WHITE MELAMINE INTERIOR, MATCHIN PLASTIC LAMINATE EDGEBANDING. <u>MATERIALS / ACCESSORIES / HARDWARE</u>:
AND THIS SUPERINTENDENT SHALL BE ON SITE EVERY DAY THERE IS ANY CONSTRUCTION ON THIS PROJECT. THE SUPERINTENDENT SHALL BE REACHABLE BY PHONE DURING NORMAL BUSINESS HOURS. ONCE ASSIGNED, THE SUPERINTENDENT SHALL NOT BE REMOVED OR REPLACED WITHOUT WRITTEN APPROVAL FROM OWNER &	 LAMINATES AS INDICATED IN SCHEDULES. COMPLY WITH MANUFACTURER INSTRUCTIONS. ADHESIVE: TYPE RECOMMENDED BY FABRICATOR TO SUIT APPLICATION. FASTENERS: SIZE AND TYPE TO SUIT APPLICATION.
 ARCHITECT, UNLESS SPECIFICALLY REQUESTED TO BE REPLACED BY OWNER. 4. THE SUPERINTENDENT WILL BE REQUIRED TO PROVIDE PHOTOGRAPHS (VIA EMAIL USING A DIGITAL CAMERA) TO THE OWNER & ARCHITECT EACH FRIDAY BY NOON CST, SHOWING THE PROGRESS OF CONSTRUCTION. THE 	 BOLTS, NUTS, WASHERS, LAGS, PINS, AND SCREWS: OF SIZE AND TYPE TO SUIT APPLICATION; GALVANIZED OR CHROME-PLATED FINISH IN CONCEALED LOCATIONS AND STAINLESS STEEL OR CH PLATED FINISH IN EXPOSED LOCATIONS.
GENERAL CONTRACTOR IS ENCOURAGED TO TAKE PHOTOS SEVERAL TIMES EACH WEEK TO HELP MAINTAIN PROOF OF CONSTRUCTION PROGRESS, RECORD UNCOVERED CONDITIONS, RECORD CONDITION AND AMOUNTS OF VENDOR GOODS UPON RECEIPT, AND RECORD CONSTRUCTION THAT VARIES FROM THE CD'S (AS PART OF	 CONCEALED JOINT FASTENERS: THREADED STEEL. GROMMETS: STANDARD PLASTIC, PAINTED METAL, OR RUBBER GROMMETS FOR CUT-OUTS, IN CO MATCH ADJACENT SURFACE.
THE AS-BUILTS). ALL PHOTOS WILL HAVE A 'DATE STAMP'.	 HARDWARE: BHMA A156.9, TYPES AS RECOMMENDED BY FABRICATOR FOR QUALITY GRADE SPECIES. ADJUSTABLE SHELF SUPPORTS: STANDARD SIDE-MOUNTED SYSTEM USING RECESSED METAL SH STANDARDS OR MULTIPLE HOLES FOR PIN SUPPORTS AND COORDINATED SELF RESTS, POLISHED
 IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OVERSEE CONSTRUCTION OF THE PROJECT, CONTINUALLY INSPECTING THE WORK, MATERIALS, AND WORKMANSHIP PROVIDED BY ALL OF HIS TRADESMEN, SUBCONTRACTORS, AND SUPPLIERS. EXCELLENCE IN QUALITY OF CONSTRUCTION CAN ONLY BE ACHIEVED IF 	CHROME FINISH, FOR NOMINAL 1 INCH SPACING ADJUSTMENTS. 9. DRAWER SLIDES: TYPE: EXTENSION TYPES AS INDICATED. 10. HINGES: EUROPEAN STYLE CONCEALED SELF-CLOSING TYPE,[<>] STEEL WITH POLISHED FINISH.
THE CONTRACTOR ENFORCES HIGH STANDARDS OF ACCEPTABILITY. THE GENERAL CONTRACTOR CANNOT DELEGATE HIS RESPONSIBILITY TO THE SUBCONTRACTORS, BUT MUST CONTINUALLY MONITOR THE WORK OF EACH TRADE ON THE PROJECT.	 SOFT CLOSE ADAPTER: CONCEALED, FRAME-MOUNTED, SCREW-ADJUSTABLE DAMPER; STEEL WI POLISHED FINISH. FINISH WORK IN ACCORDANCE WITH AWI/AWMAC/WI (AWS) OR AWMAC/WI (NAAWS).
 IT IS THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE AND SCHEDULE ALL AGENCIES HAVING JURISDICTION (AHJ) INSPECTIONS NECESSARY TO OBTAIN THE CERTIFICATE OF OCCUPANCY (CERTIFICATE OF COMPLIANCE). PRIOR TO THE DATE OF THE AGENCY INSPECTION, THE GENERAL CONTRACTOR SHOULD INSPECT THE PROJECT 	 F. <u>INSTALLATION</u>: 1. INSTALL NO INTERIOR FINISH CARPENTRY OR MILLWORK UNTIL SPACES ARE ENCLOSED, DRY, AND CAPABLE OF BEING HEATED. MAINTAIN TEMPERATURE BETWEEN 55 F. AND 75 F. FOR 72 HOURS BE
TO INSURE THAT CONSTRUCTION COMPLIES WITH THE AGENCY REQUIREMENTS. SCHEDULING FINAL INSPECTIONS WITH AGENCY REPRESENTATIVES WHEN THE PROJECT IS NOT COMPLETE MUST BE AVOIDED. COPIES OF FINAL INSPECTIONS MUST BE PROVIDED TO OWNER & ARCHITECT AS THEY ARE AVAILABLE.	BEGINNING INSTALLATION AND FOR DURATION OF PROJECT.2. VERIFY ADEQUACY OF BACKING AND SUPPORT FRAMING.3. VERIFY LOCATION AND SIZES OF UTILITY ROUGH-IN ASSOCIATED WITH WORK OF THIS SECTION.
 PRIOR TO REQUESTING THE SUBSTANTIAL COMPLETION INSPECTION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT HIS OWN PRE-SUBSTANTIAL COMPLETION INSPECTION OF THE CONSTRUCTION FOR QUALITY OF CONSTRUCTION AND COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS. 	 SET AND SECURE CUSTOM CABINETS IN PLACE, ASSURING THAT THEY ARE RIGID, PLUMB, AND LEV USE FIXTURE ATTACHMENTS IN CONCEALED LOCATIONS FOR WALL MOUNTED COMPONENTS. USE CONCEALED JOINT FASTENERS TO ALIGN AND SECURE ADJOINING CABINET UNITS.
 4. THE FOLLOWING PEOPLE SHOULD BE IN ATTENDANCE FOR THE SUBSTANTIAL COMPLETION INSPECTION: A. GENERAL CONTRACTOR B. GENERAL CONTRACTOR SUPERINTENDENT 	 CAREFULLY SCRIBE CASEWORK ABUTTING OTHER COMPONENTS, WITH MAXIMUM GAPS OF 1/32 IN NOT USE ADDITIONAL OVERLAY TRIM FOR THIS PURPOSE. SECURE CABINETS TO FLOOR USING APPROPRIATE ANGLES AND ANCHORAGES.
C. MECHANICAL CONTRACTOR D. ELECTRICAL CONTRACTOR E. PLUMBING CONTRACTOR	9. CLEAN CASEWORK, COUNTERS, SHELVES, HARDWARE, FITTINGS, AND FIXTURES.
 F. PAINTING CONTRACTOR G. FLOORING CONTRACTOR 5. ITEMS TO BE SUBMITTED AS A PREREQUISITE TO THE REQUEST FOR THE CERTIFICATE OF SUBSTANTIAL 	06 4250 - INTERIOR ARCHITECTURAL WOODWORK A. <u>SUBMITTALS</u> : SAMPLES OF FINISH MATERIALS, CATALOG CUTS OF HARDWARE, AND SHOP DRAWINGS INC DIMENSIONED PLANS, ELEVATIONS, AND SECTIONS. INDICATE COMPONENT PROFILES, FASTENING METHO
COMPLETION AND OWNER / ARCHITECT OBSERVATION OF ITEMS TO BE COMPLETED AND CORRECTED. A. GENERAL CONTRACTOR'S PUNCH LISTS B. HVAC TEST AND BALANCE REPORT	JOINTING DETAILS, AND ACCESSORIES. 1. SCALE OF DRAWINGS: 1-1/2 INCH TO 1 FOOT, MINIMUM. 2. PROVIDE THE INFORMATION REQUIRED BY AWI/AWMAC/WI (AWS) OR AWMAC/WI (NAAWS).
 C. SPRINKLER SYSTEM ACCEPTANCE INSPECTION REPORT D. COPY OF VIDEO OF COMPLETED SEWER SYSTEM 6. THE REVIEW TEAM SHOULD PROCEED IN AN ORGANIZED MANNER THROUGHOUT THE BUILDING INSPECTING 	 SAMPLES: SUBMIT ACTUAL SAMPLES OF ARCHITECTURAL CABINET CONSTRUCTION, MINIMUM 12 IN SQUARE, ILLUSTRATING PROPOSED CABINET, COUNTERTOP, AND SHELF UNIT SUBSTRATE AND FIN SHOW LOCATIONS AND SIZES OF FURRING, BLOCKING, AND HANGING STRIPS, INCLUDING CONCEA
EACH SPACE OR ROOM. THE PUNCH LIST GENERATED BY THE SUBSTANTIAL COMPLETION INSPECTION TOUR IS TO BE PREPARED BY THE CONTRACTOR. ALONG WITH THE PUNCH LIST, THE ARCHITECT SHALL PREPARE THE "CERTIFICATE OF SUBSTANTIAL COMPLETION."	BLOCKING AND REINFORCEMENT SPECIFIED IN OTHER SECTIONS. B. <u>QUALITY STANDARD</u> : ARCHITECTURAL WOODWORK INSTITUTE'S "ARCHITECTURAL WOODWORK QUALITY STANDARDS"
7. IMMEDIATELY AFTER RECEIPT OF THE PUNCH LIST, THE GENERAL CONTRACTOR AND SUBCONTRACTORS ARE EXPECTED TO BEGIN CORRECTION OF THE OUTSTANDING ITEMS. AFTER COMPLETION OF PUNCHLIST, THE CONTRACTOR SHALL NOTIFY OWNER & ARCHITECT IN WRITTING THAT FULL LIST OF ITENMS TO BE COMPLETED	 C. <u>QUALITY ASSURANCE</u>: 1. FABRICATOR QUALIFICATIONS: COMPANY SPECIALIZING IN FABRICATING THE PRODUCTS SPECIFIE THIS SECTION WITH MINIMUM FIVE YEARS OF DOCUMENTED EXPERIENCE.
AND OR CORRECT IS FINALIZED. H. <u>RECORD (CLOSE-OUT) DOCUMENTS</u> :	 D. <u>PROJECT CONDITIONS</u>: 1. ENVIRONMENTAL LIMITATIONS: DO NOT DELIVER OR INSTALL WOODWORK UNTIL BUILDING IS ENCL WET WORK IS COMPLETE, AND HVAC SYSTEM IS OPERATING AND MAINTAINING TEMPERATURE BET
 THE OWNER REQUIRES THE GENERAL CONTRACTOR AND SUBCONTRACTORS TO MAINTAIN AN ACCURATE, CURRENT SET OF RECORD DOCUMENTS (AS-BUILTS) AS CONSTRUCTION PROGRESSES. ALL PERTINENT INFORMATION RELATING TO THE PROJECT MUST BE TIMELY MAINTAINED ON THE AS-BUILTS. THE AS-BUILTS 	 60 AND 90 DEG F (16 AND 32 DEG C) AND RELATIVE HUMIDITY BETWEEN 25 AND 55 PERCENT DURING REMAINDER OF THE CONSTRUCTION PERIOD. 2. FIELD MEASUREMENTS: WHERE WOODWORK IS INDICATED TO FIT TO OTHER CONSTRUCTION, VER DURING AND AND AND AND AND AND AND AND AND AND
MUST BE MAINTAINED ON-SITE IN THE GENERAL CONTRACTOR'S OFFICE AND WILL NOT BE USED FOR ANY OTHER PURPOSE. SINCE THE OWNER WILL OWN AND OPERATE THE FACILITY, IT IS IMPERATIVE THAT ALL PARTIES MAINTAIN ACCURATE INFORMATION REGARDING THE ACTUAL CONSTRUCTION OF THE PROJECT.	DIMENSIONS OF OTHER CONSTRUCTION BY FIELD MEASUREMENTS BEFORE FABRICATION, AND INI MEASUREMENTS ON SHOP DRAWINGS. COORDINATE FABRICATION SCHEDULE WITH CONSTRUCTI PROGRESS TO AVOID DELAYING THE WORK.
ALL DEVIATIONS FROM THE CONTRACT SET OF DRAWINGS MUST BE NOTED ON THE AS-BUILTS IN RED WITH CLOUDS FOR CLEAR IDENTIFICATION. THE OWNER WILL REVIEW THE AS-BUILTS FOR ACCURACY AND	 LOCATE CONCEALED FRAMING, BLOCKING, AND REINFORCEMENTS THAT SUPPORT WOODWORK B MEASUREMENTS BEFORE BEING ENCLOSED, AND INDICATE MEASUREMENTS ON SHOP DRAWINGS <u>MATERIALS</u>:
COMPLETENESS MONTHLY, DURING THE PAYMENT APPLICATION REVIEW PROCESS. FAILURE TO POST CHANGES TO THE PROJECT ON THE AS BUILTS AS IDENTIFIED DURING THE ON-SITE MONTHLY REVIEW WILL BE CAUSE TO SUSPEND PAYMENT UNTIL RECTIFIED. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO ENFORCE THE	 GENERAL: PROVIDE MATERIALS THAT COMPLY WITH REQUIREMENTS OF AWI'S QUALITY STANDARI EACH TYPE OF WOODWORK AND QUALITY GRADE SPECIFIED, UNLESS OTHERWISE INDICATED. INTERIOR WOODWORK GRADE: UNLESS OTHERWISE INDICATED, PROVIDE CUSTOM-GRADE INTER
TIMELY POSTING OF AS-BUILT CHANGES WITH THE SUBCONTRACTORS.	OODWORK COMPLYING WITH REFERENCED QUALITY STANDARD. 3. PRODUCTS: COMPLY WITH DRAWING DETAILS AND SPECIES OF WOOD OR LAMINATED PRODUCTS DENTIFIED.
 WITHIN THIRTY (30) CALENDAR DAYS AFTER THE FINAL PROJECT SUBSTANTIAL COMPLETION, THE GENERAL CONTRACTOR SHALL COMPILE ALL CLOSE-OUT DOCUMENTS AND SUBMIT THEM TO THE OWNER FOR REVIEW. IF THE CONTRACTOR FAILS TO COMPLETE ITS REQUIREMENTS WITHIN THIS TIMELINE NOTED ABOVE THE 	 COMPONENTS AND THEIR ASSEMBLY SHALL MEET STRUCTURAL PERFORMANCE OF INTENDED PROUSE. IN THE ABSENCE OF SPECIFIED THICKNESS VALUES, ALL COMPONENTS AND ASSEMBLIES SHALL M
CONTRACTOR MAY BE SUBJECT TO ADDITONAL ADMINISTATION FEES.	THE MINIMUM THICKNESS AND MATERIAL REQUIREMENTS OF THOSE TESTED AND USED TO ESTAB THE STRUCTURAL PERFORMANCE VALUES. 6. FURRING, BLOCKING, SHIMS, AND HANGING STRIPS: SOFTWOOD OR HARDWOOD LUMBER, KILN DF
 THE CATEGORIES LISTED BELOW SHOULD BE SUBMITTED AT THE SAME TIME. A DISK WITH ALL PHOTOS TAKEN DURING CONSTRUCTION. CHANGE ORDERS AND ALL ADDENDA ATTACHED AND POSTED TO THE AS-BUILT DRAWINGS. 	LESS THAN 15 PERCENT MOISTURE CONTENT. 7. ANCHORS: SELECT MATERIAL, TYPE, SIZE, AND FINISH REQUIRED FOR EACH SUBSTRATE FOR SEC ANCHORAGE.PROVIDE NONFERROUS-METAL OR HOT-DIP GALVANIZED ANCHORS AND INSERTS ON
 C. AS-BUILT DRAWINGS: ONE HARD COPY TO REMAIN ON SITE AND IN PLAN TUBE; ONE ELECTRONIC COPY TO BE SENT WITH CLOSE-OUT PAPERWORK. D. MATERIALS SELECTION DATA - PROVIDE ALL APPROVED SUBMITTALS. 	 FACE OF EXTERIOR WALLS AND ELSEWHERE AS REQUIRED FOR CORROSION RESISTANCE. PROVI TOOTHED-STEEL OR LEADEXPANSION SLEEVES FOR DRILLED-IN-PLACE ANCHORS. 8. ADHESIVES, GENERAL: ADHESIVES SHALL NOT CONTAIN UREA FORMALDEHYDE.
 E. OPERATION AND MAINTENANCE MANUALS (0&M) - PROVIDE 0&M MANUALS BOXED AND BOUND. THIS ITEM IS OF SIGNIFICANT IMPORTANCE TO MSI FUTURE MAINTENANCE ACTIVITIES. F. ALL HVAC TEST AND BALANCE REPORTS. 	F. <u>INSTALLATION</u> : 1. BEFORE INSTALLATION, CONDITION WOODWORK TO AVERAGE PREVAILING HUMIDITY CONDITIONS INSTALLATION AREAS.
 F. ALL HVAC TEST AND BALANCE REPORTS. G. RELEASE OF LIEN (AIA FORM 706A), PAYMENT OF DEBT (AIA FORM 706), 1. WARRANTIES, CERTIFICATES, AFFIDAVITS: 2. ALL INFORMATION INCLUDED IN THIS CATEGORY WILL BE FURNISHED IN ONE (1) COPY AND BOUND 	 VERIFY ADEQUACY OF BACKING AND SUPPORT FRAMING. INSTALL WOODWORK LEVEL, PLUMB, TRUE, AND STRAIGHT. SHIM AS REQUIRED WITH CONCEALED INSTALL LEVEL AND PLUMB (INCLUDING TOPS) TO A TOLERANCE OF 1/8 INCH IN 96 INCHES (3 MM IN
2. ALL INFORMATION INCLUDED IN THIS CATEGORY WILL BE FURNISHED IN ONE (1) COPY AND BOUND IN A STURDY THREE-RING BINDER WITH A LABEL ON THE OUTSIDE READING "GENERAL CLOSE-OUT DOCUMENTS" TO INCLUDE AN INDEX OF THE CONTENTS. ALL AIA DOCUMENTS WILL BE ORIGINAL (WITH RED LETTERING ON THE BOTTOM OF THE FORM) AND NOTARIZED. IF THE ELECTRONIC	 MM). 4. VERIFY LOCATION AND SIZES OF UTILITY ROUGH-IN ASSOCIATED WITH WORK OF THIS SECTION. 5. USE FIXTURE ATTACHMENTS IN CONCEALED LOCATIONS FOR WALL MOUNTED COMPONENTS.
VERSION IS USED A COPY WITH ORIGINAL SIGNATURES WILL BE SUBMITTED. THE GENERAL CONTRACTOR AND EACH SUBCONTRACTOR WILL HAVE SEPARATE TABS IDENTIFYING EACH BY	 USE CONCEALED JOINT FASTENERS TO ALIGN AND SECURE ADJOINING CABINET UNITS. CAREFULLY SCRIBE CASEWORK ABUTTING OTHER COMPONENTS, WITH MAXIMUM GAPS OF 1/32 IN NOT USE ADDITIONAL OVERLAY TRIM FOR THIS PURPOSE. REFINISH CUT SURFACES, AND REPAIR
NAME. THE GENERAL CONTRACTOR WILL LIST EACH SUBCONTRACTOR ALPHABETICALLY AND WILL CHECK TO INSURE THAT A "RELEASE OF LIEN" - AIA FORM G706A AND A "PAYMENT OF DEBT-AIA FORM G706 IS INCLUDED FOR HIMSELF AND EACH SUBCONTRACTOR. THE GENERAL CONTRACTOR WILL INCLUDE A "CONSENT OF SUBETY" - AIA FORM G707. IN ADDITION, THE GENERAL	DAMAGED FINISH AT CUTS. 8. ANCHOR WOODWORK TO ANCHORS OR BLOCKING BUILT IN OR DIRECTLY ATTACHED TO SUBSTRA' SECURE WITH COUNTERSUNK, CONCEALED FASTENERS AND BLIND NAILING AS REQUIRED FOR
WILL INCLUDE A "CONSENT OF SURETY" - AIA FORM G707. IN ADDITION, THE GENERAL CONTRACTOR WILL INCLUDE BEHIND HIS TAB THE FOLLOWING INFORMATION: A. A LIST OF NAMES, BUISNESS ADDRESSES, PHONE NUMBERS AND EMAIL ADRESSES FOR THE CENERAL CONTRACTOR AND EACH SUBCONTRACTOR	COMPLETE INSTALLATION. USE FINE FINISHING NAILS OR FINISHING SCREWS FOR EXPOSED FASTE COUNTERSUNK AND FILLED FLUSH WITH WOODWORK AND MATCHING FINAL FINISH IF TRANSPARE FINISH IS INDICATED.
THE GENERAL CONTRACTOR AND EACH SUBCONTRACTOR. B. AN ANNOTATED COPY OF THE SUBSTANTIAL COMPLETION PUNCH LIST INDICATING ACTION TAKEN ON EACH ITEM.	 REPAIR DAMAGED AND DEFECTIVE WOODWORK, WHERE POSSIBLE, TO ELIMINATE FUNCTIONAL AN VISUAL DEFECTS; WHERE NOT POSSIBLE TO REPAIR, REPLACE WOODWORK. ADJUST JOINERY FO UNIFORM APPEARANCE.
C. WARRANTIES, CERTIFICATES AND AFFIDAVITS SHALL BE INCLUDED FOR ANY EQUIPMENT, MATERIALS OR SYSTEMS, COMBINED WITH ALL OF THE ABOVE INFORMATION AND PLACED BEHIND THE TAB OF THE CONTRACTOR THAT ISSUED IT.	UNIFORM APPEARANCE. 10. CLEAN WOODWORK ON EXPOSED AND SEMIEXPOSED SURFACES. TOUCH UP SHOP-APPLIED FINIS RESTORE DAMAGED OR SOILED AREAS.

DIVISION 7 - THERMAL AND MOISTURE PROTECTION 07 8400 - FIRESTOPPING 08 1416 - FLUSH WOOD DOORS R SECURING OF WALL & A. <u>SUBMITTALS</u>: PRODUCT DATA: PROVIDE DATA ON PRODUCT CHARACTERISTICS, PERFORMANCE RATINGS, AND I IMITATIONS CORRESPONDING TO THOSE USED IN CONSTRUCTION DOCUMENTS. B. <u>MANUFACTURER</u> 1. 3M FIRE PROTECTION PRODUCTS: HTTPS://WWW.3M.COM/3M/EN_US/P/C/BUILDING-CT WITH CONCRETE OR MATERIALS/FIREPROTECTION/ DOORS: COORDINATE FINAL SELECTION OF DOOR TYPE/MAUF. WITH GC OR CLIENT. E RATED WHERE WALLS ARE 2. HILTI, INC: HTTPS://WWW.HILTI.COM/C/CLS_FIRESTOP_PROTECTION_7131 D. FABRICATION AND FINISHING MATERIALS: LS, SECURELY CONNECTED 1. FIRESTOPPING MATERIALS: ANY MATERIALS MEETING REQUIREMENTS. WITH NFPA 80 FOR FIRE-RESISTANCE RATED DOORS. UIRED BY GOOD PRACTICE 2. PRIMERS, SLEEVES, FORMS, INSULATION, PACKING, STUFFING, AND ACCESSORIES: PROVIDE TYPE OF MATERIALS AS REQUIRED FOR TESTED FIRESTOPPING ASSEMBLY. 3. FIRE RATINGS: REFER TO DRAWINGS FOR REQUIRED SYSTEMS AND RATINGS. 4. LITE KITS: MATCHING WOOD STOPS ASSEMBLY REQUIREMENTS: SHOP DRAWINGS INCLUDING 1. HEAD-OF-WALL JOINT SYSTEM FIRESTOPPING AT JOINTS BETWEEN FIRE-RATED WALL ASSEMBLIES AND NON-RATED HORIZONTAL ASSEMBLIES: USE SYSTEM THAT HAS BEEN TESTED ACCORDING TO ASTM E2837 POLYURETHANE. OODWORK QUALITY TO HAVE FIRE RESISTANCE F RATING EQUAL TO REQUIRED FIRE RATING OF FLOOR OR WALL, WHICHEVER <u>INSTALLATION</u>: IS GREATER 2. FLOOR-TO-FLOOR, WALL-TO-WALL, AND WALL-TO-FLOOR JOINTS, EXCEPT PERIMETER, WHERE BOTH ARE CLIENT FIRE-RATED: USE SYSTEM THAT HAS BEEN TESTED ACCORDING TO ASTM E1966 OR UL 2079 TO HAVE FIRE RTICAL GRAIN, OF QUALITY RESISTANCE "F" RATING EQUAL TO REQUIRED FIRE RATING OF THE ASSEMBLY IN WHICH THE JOINT RTICAL GRAIN, OF QUALITY OCCURS **DIVISION 9 - FINISHES** 3. THROUGH PENETRATION FIRESTOPPING: USE SYSTEM THAT HAS BEEN TESTED ACCORDING TO ASTM S AS INDICATED, PLAIN E814 TO HAVE FIRE RESISTANCE F RATING EQUAL TO REQUIRED FIRE RATING OF PENETRATED ASSEMBLY. 09 2116 - GYPSUM BOARD ASSEMBLIES RECOMMENDED FOR . INSTALLATION: 1. INSTALLATIONS SHALL CONFORM TO UL REQUIREMENTS OF THE ASSEMBLY WHICH FIRESTOPPING IS TO CONSTRUCTION DRAWINGS AND AS FOLLOWS: BECOME PART OF THE BUILT ASSEMBLY. XTENT FEASIBLE. RESISTANT ZINC COATING. ESSARY FOR FITTING AT 07 9200 - JOINT SEALANTS A. <u>SUBMITTALS</u>: PRODUCT DATA, AND SCHEDULE OF LOCATIONS FOR EACH TYPE OF SEALANT SUBMITTED. STRAND OF .0475" DIAMETER WIRE. VIDE, FLAT MEMBERS, 1. JOINT-SEALANT SCHEDULE: INCLUDE THE FOLLOWING INFORMATION: A. JOINT-SEALANT APPLICATION, JOINT LOCATION, AND DESIGNATION. B. JOINT-SEALANT MANUFACTURER AND PRODUCT NAME. LENGTHS AVAILABLE TO MINIMIZE END-TO-END BUTT JOINTS AND AS FOLLOWS: WORK IS COMPLETED, . JOINT-SEALANT FORMULATION. DITIONS OF SPACE WHERE D. JOINT-SEALANT COLOR SURFACES S BEFORE BEGINNING ENVIRONMENTAL LIMITATIONS: DO NOT PROCEED WITH INSTALLATION OF JOINT SEALANTS WHEN AMBIENT AND SUBSTRATE TEMPERATURE CONDITIONS ARE OUTSIDE LIMITS PERMITTED BY JOINT SEALANT MANUFACTURER OR EALED SHIMS TO 8 ARE BELOW 40 deg F (4.4 deg C). ACCESSORIES: RD FOR GRADE SPECIFIED. COMPATIBILITY: PROVIDE JOINT SEALANTS, JOINT FILLERS, AND OTHER RELATED MATERIALS THAT ARE COMPATIBLE 1. TRIM: ASTM 1047, FORMED FROM GALVANIZED OR ALUMINUM COATED STEEL SHEET, ROLLED ZINC, OR , AND REPAIR DAMAGED WITH ONE ANOTHER AND WITH JOINT SUBSTRATES UNDER SERVICE AND APPLICATION CONDITIONS. PLASTIC JOINT SEALANTS TH PIECES TO GREATEST 1. COLORS OF EXPOSED JOINT SEALANTS: AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE. INTERIOR JOINTS IN CERAMIC TILE AND OTHER HARD SURFACES IN KITCHENS, TOILET ROOMS, AND AROUND OF SOLID LUMBER STOCK. PLUMBING FIXTURES: SINGLE COMPONENT, MILDEW-RESISTANT SILICONE SEALANT, ASTM C 920, TYPE S; H ARE EITHER GLUED-UP OR GRADE NS. CLASS 25: USES NT. G. A. AND O: FORMULATED WITH FUNGICIDE ARCHITECT FOR LOCATIONS IF NOT INDICATED. INTERIOR JOINTS AROUND PERIMETERS OF DOORS AND FRAMES: LATEX SEALANT, SINGLE COMPONENT, 2. SOUND-ATTENUATION BLANKETS: ASTM C 665, TYPE I (UNFACED) TED, IMPROPERLY TREATED, NONSAG, MILDEW-RESISTANT, PAINTABLE, ACRYLIC EMULSION SEALANT COMPLYING WITH ASTM C 834. IIMUM OF JOINTS OR 3. ACOUSTICAL SEALANT FOR EXPOSED INTERIOR JOINTS: NONSAG, PAINTABLE, NONSTAINING, LATEX SEALANT INSTALLATION: TURED WITH RESPECT TO COMPLYING WITH ASTM C 834 4. ACOUSTICAL SEALANT FOR CONCEALED JOINTS: NONDRYING, NONHARDENING, NONSKINNING, NONSTAINING, NS. SHIM AS REQUIRED GUNNABLE, SYNTHETIC-RUBBER SEALANT RECOMMENDED FOR SEALING INTERIOR CONCEALED JOINTS TO IMPOSED BY STRUCTURAL MOVEMENT AND PROVIDE BRACING AS NECESSARY FOR PROPER SUPPORT REDUCE TRANSMISSION OF AIRBORNE SOUND. WHETHER INDICATED OR NOT. CES OR REPAIR DAMAGED 5. EXTERIOR CONCRETE PANELS, NATURAL STONES, MASONRY, ALUMINUM CURTAINWALLS, METAL PANELS AND WINDOW PERIMETERS. A. BASIS OF DESIGN PRODUCTS: TREMCO INCORPORATED; SPECTREM 1. D GRAIN MARKINGS, OR DOW CORNING CORPORATION; 790. PECORA CORPORATION; 890NST. 6. EXTERIOR JOINTS IN HORIZONTAL TRAFFIC SURFACES. ISOLATION AND CONTRACTION JOINTS IN CAST-IN-PLACE CONCRETE SLABS. URETHANE JOINT SEALANT: MULTICOMPONENT, NONSAG, TRAFFIC GRADE, CLASS SHOP DRAWINGS INCLUDING , FASTENING METHODS, 7. FIRESTOP SEALANTS: INSTALL AT FIRE RATED ASSEMBLIES AND AS DIRECTED WITHIN UL REFERENCES A. BASIS OF DESIGN PRODUCTS: HILTI • 3M CTION, MINIMUM 12 INCHES JOINT SEALANT BACKING: SUBSTRATE AND FINISH. 1. GENERAL: PROVIDE SEALANT BACKINGS OF MATERIAL THAT ARE NONSTAINING: ARE COMPATIBLE WITH JOINT OODWORK QUALITY SUBSTRATES, SEALANTS, PRIMERS, AND OTHER JOINT FILLERS; AND ARE APPROVED FOR APPLICATIONS 09 5100 - ACOUSTICAL CEILINGS INDICATED BY SEALANT MANUFACTURER BASED ON FIELD EXPERIENCE AND LABORATORY TESTING. A. SUBMITTALS: PRODUCT DATA ONLY 2. CYLINDRICAL SEALANT BACKINGS: ASTM C 1330, TYPE C (CLOSED-CELL MATERIAL WITH A SURFACE SKIN), PRODUCTS SPECIFIED IN AND OF SIZE AND DENSITY TO CONTROL SEALANT DEPTH AND OTHERWISE CONTRIBUTE TO PRODUCING _ABELED FOR STORAGE OPTIMUM SEALANT PERFORMANCE. 3. BOND-BREAKER TAPE: POLYETHYLENE TAPE OR OTHER PLASTIC TAPE RECOMMENDED BY SEALANT I (AWS) OR AWMAC/WI 4. MANUFACTURER FOR PREVENTING SEALANT FROM ADHERING TO RIGID, INFLEXIBLE JOINT-FILLER MATERIALS OR JOINT SURFACES AT BACK OF JOINT. PROVIDE SELF-ADHESIVE TAPE WHERE APPLICABLE. . MISCELLANEOUS MATERIALS: E INTERIOR, MATCHING AND OTHER HIGH-HUMIDITY AREAS. 1. PRIMER: MATERIAL RECOMMENDED BY JOINT-SEALANT MANUFACTURER WHERE REQUIRED FOR ADHESION OF SEALANT TO JOINT SUBSTRATES INDICATED, AS DETERMINED FROM PRECONSTRUCTION JOINT-SEALANT-DIRECT HUNG UNLESS OTHERWISE INDICATED. SUBSTRATE TESTS AND FIELD TESTS. STRUCTIONS. 2. CLEANERS FOR NONPOROUS SURFACES: CHEMICAL CLEANERS ACCEPTABLE TO MANUFACTURERS OF SEALANTS AND SEALANT BACKING MATERIALS, FREE OF OILY RESIDUES OR OTHER SUBSTANCES CAPABLE OF STAINING OR HARMING JOINT SUBSTRATES AND ADJACENT NONPOROUS SURFACES IN ANY WAY, AND IT APPLICATION; FORMULATED TO PROMOTE OPTIMUM ADHESION OF SEALANTS TO JOINT SUBSTRATES. AINLESS STEEL OR CHROME-3. BOND-BREAKER TAPE: POLYETHYLENE TAPE OR OTHER PLASTIC TAPE RECOMMENDED BY SEALANT MFR. FOR 4. HOLD-DOWN CLIPS: PROVIDE HOLD-DOWN CLIPS ON CEILING TILE IN ENTRANCE VESTIBULES, COMPUTER PREVENTING SEALANT FROM ADHERING TO RIGID, INFLEXIBLE JOINT-FILLER MATERIALS OR JOINT SURFACES AT BACK OF JOINT. FOR CUT-OUTS, IN COLOR TO 4. MASKING TAPE: NONSTAINING, NONABSORBENT MATERIAL COMPATIBLE WITH JOINT SEALANTS AND SURFACES ADJACENT TO JOINTS. JALITY GRADE SPECIFIED. . INSTALLATION: COMPLY WITH ASTM C 1193; ASTM C 919 FOR ACOUSTICAL JOINTS; AND AS FOLLOWS: IS COMPLETED, TESTED, AND APPROVED RECESSED METAL SHELF 1. REMOVE ALL LOOSE MATERIAL, CLEAN AND PRIME JOINTS IN ACCORDANCE WITH MANUFACTURER'S 2. INSTALL CEILING GRID AS INDICATED TO BE SYMMETRICAL ABOUT BOTH AXES OF EACH ROOM USING NOT LF RESTS, POLISHED INSTRUCTIONS, AND PROTECT ADJACENT SURFACES. 2. INSTALL BOND-BREAKER TAPE WHERE JOINT BACKINGS ARE NOT USED. 3. INSTALL SEALANT TOOLED CONCAVE, FREE OF AIR POCKETS, FOREIGN EMBEDDED MATTER, RIDGES, AND H POLISHED FINISH. SAGS, AND PROTECT UNTIL FULLY CURED. SEALANT WITH DUST AND DEBRIS EMBEDDED IN SURFACE SHALL SUPPORT FIXTURES INDEPENDENTLY. DAMPER ; STEEL WITH BE CAUSE FOR REJECTION. AT ROUND OR CURVED OBSTRUCTIONS. **DIVISION 8 - OPENINGS** ENCLOSED, DRY, AND 6. FIELD-CUT EDGES SHALL MATCH PROFILE OF FACTORY EDGES. 5 F. FOR 72 HOURS BEFORE 08 0671 - DOOR HARDWARE A. <u>SUBMITTALS</u>: PRODUCT DATA AND HARDWARE SCHEDULE INDICATING HARDWARE ITEM, FINISH, AND QUANTITY 09 9000 - PAINTING AND COATING LOCATED ON EACH DOOR WITH DOOR AND HARDWARE SET NUMBERING CORRESPONDING TO THOSE USED IN OF THIS SECTION. CONSTRUCTION DOCUMENTS. REFER TO ARCHITECTURAL PLANS AND HARDWARE SCHEDULES PROVIDED. IGID, PLUMB, AND LEVEL. 1. HARDWARE SUPPLIER SHALL SUBMIT FOUR COPIES OF FINAL HARDWARE SCHEDULE AT EARLIEST LABELED AND SEALED. COMPONENTS. POSSIBLE DATE PARTICULARLY WHERE ACCEPTANCE OF HARDWARE SCHEDULE MUST PRECEDE ET UNITS. FABRICATION OF OTHER WORK WHICH IS CRITICAL IN THE PROJECT CONSTRUCTION SCHEDULE. MUM GAPS OF 1/32 INCH. DO INCLUDE WITH SCHEDULE SHOP DRAWINGS OF OTHER WORK AFFECTED BY BUILDERS HARDWARE, AND OTHER INFORMATION ESSENTIAL TO THE COORDINATE REVIEW OF HARDWARE SCHEDULE. SUBSTRATES. 2. KEYING SCHEDULE. SUBMIT SEPARATE DETAILED SCHEDULE INDICATING CLEARLY HOW THE OWNER'S D. PAINT SYSTEMS FINAL INSTRUCTIONS ON KEYING OF LOCKS HAS BEEN FULFILLED. ALL KEYING SHALL BE COORDINATED WITH THE OWNER. INDUSTRIES, PRATT & LAMBERT OR APPROVED EQUAL . <u>PRODUCTS</u>: REFER TO HARDWARE SCHEDULE AND ARCHITECTURAL DRAWINGS. 1. STRIKES. PROVIDE MANUFACTURER'S STANDARD WROUGHT BOX STRIKE FOR EACH LATCH OR LOCK HOP DRAWINGS INCLUDING BOLT, WITH STRIKE PLATES FOR INTERIOR DOORS WHERE WOOD DOOR FRAMES ARE USED. FASTENING METHODS, 2. IN GENERAL, HARDWARE FINISH SHALL BE US15 (SATIN NICKEL) UNLESS SPECIFIED DIFFERENTLY ON THE ARCHITECT. HARDWARE SCHEDULE. E. APPLICATION / INSTALLATION 3. SUPPLY CAL ROYAL HDFS3 FLEXIBLE DOOR STOPS IN THE APARTMENT DWELLING UNITS. USE 2 IVHP-23 HINGE STOPS WHERE FLEXIBLE STOPS CANNOT BE USED. CTION, MINIMUM 12 INCHES 4. SUPPLY OUT SWINGING EXTERIOR DOORS WITH NON REMOVABLE PINS. SUBSTRATE AND FINISH. . <u>INSTALLATION</u>: AND CEILINGS , INCLUDING CONCEALED 1. MOUNT HARDWARE UNITS AT HEIGHTS INDICATED IN "RECOMMENDED LOCATIONS FOR BUILDERS HARDWARE FOR STANDARD STEEL DOORS AND FRAMES" BY THE DOOR AND HARDWARE INSTITUTE, OODWORK QUALITY EXCEPT AS SPECIFICALLY INDICATED OR REQUIRED TO COMPLY WITH GOVERNING REGULATIONS, AND EXCEPT AS MAY BE OTHERWISE DIRECTED BY ARCHITECT. MOUNT HARDWARE IN UNITS DESIGNATED FOR USE BY THE HANDICAPPED AT HEIGHTS RECOMMENDED FOR USE BY THE HANDICAPPED. PRODUCTS SPECIFIED IN . INSTALL EACH HARDWARE ITEM IN COMPLIANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. WHEREVER CUTTING AND FITTING IS REQUIRED TO INSTALL HARDWARE ONTO OR INTO SURFACES WHICH ARE LATER TO BE PAINTED OR FINISHED IN ANOTHER WAY, COORDINATE ONE COAT OF PRIMER AND TWO FINAL COATS ON MATERIALS. APPLY PRODUCTS TO MATERIALS NTIL BUILDING IS ENCLOSED, REMOVAL, STORAGE AND REINSTALLATION OR APPLICATION OF SURFACE PROTECTIONS WITH FINISHING G TEMPERATURE BETWEEN APPROVED BY MANUFCTURER PRODUCT DATA SHEETS. WORK SPECIFIED IN THE DIVISION 9 SECTIONS. DO NOT INSTALL SURFACE MOUNTED ITEMS UNTIL 55 PERCENT DURING THE FINISHES HAVE BEEN COMPLETED ON THE SUBSTRATE. INTERIOR WORK: 3. SET UNITS LEVEL, PLUMB AND TRUE TO LINE AND LOCATION. ADJUST AND REINFORCE THE ATTACHMENT CONSTRUCTION, VERIFY SUBSTRATE AS NECESSARY FOR PROPER INSTALLATION AND OPERATION. 1. GYPSUM BOARD WALLS EXCEPT IN ABRICATION, AND INDICATE 4. DRILL AND COUNTERSINK UNITS WHICH ARE NOT FACTORY PREPARED FOR ANCHORAGE FASTENERS. KITCHENS, BATHROOMS, LAUNDRIES AND E WITH CONSTRUCTION SPACE FASTENERS AND ANCHORS IN ACCORDANCE WITH INDUSTRY STANDARDS. COMMON AREA CORRIDORS, UNLESS 5. METAL THRESHOLDS SHALL BE SET IN A SOLID BED OF NON STAINING THIOKOL BASE CAULKING. SCHEDULED FOR WALLCOVERING PORT WOODWORK BY FIELD 6. ADJUST AND CHECK EACH OPERATING ITEM OF HARDWARE AND EACH DOOR, TO ENSURE PROPER ON SHOP DRAWINGS. 2. GYPSUM BOARD WALLS IN KITCHENS, OPERATION 7. OR FUNCTION OF EVERY UNIT. REPLACE UNITS WHICH CANNOT BE ADJUSTED TO OPERATE FREELY AND S QUALITY STANDARD FOR BATHROOMS, AND LAUNDRIES UNLESS SMOOTHLY AS INTENDED FOR THE APPLICATION MADE. WISE INDICATED. SCHEDULED FOR WALLCOVERING OR TILE. 8. FINAL ADJUSTMENT: WHEREVER HARDWARE INSTALLATION IS MADE MORE THAN ONE MONTH PRIOR TO JSTOM-GRADE INTERIOR ACCEPTANCE OR OCCUPANCY OF A SPACE OR AREA, RETURN TO THE WORK DURING THE WEEK PRIOR TO ACCEPTANCE OR OCCUPANCY, AND MAKE FINAL CHECK AND ADJUSTMENT OF ALL HARDWARE ITEMS 3. GYPSUM BOARD WALLS IN COMMON MINATED PRODUCTS IN SUCH SPACE OR AREA. CLEAN OPERATING ITEMS AS NECESSARY TO RESTORE PROPER FUNCTION AREA CORRIDORS AND FINISH OF HARDWARE AND DOORS. ADJUST DOOR CONTROL DEVICES TO COMPENSATE FOR FINAL ICE OF INTENDED PRODUCT OPERATION OF HEATING AND VENTILATING EQUIPMENT. ASSEMBLIES SHALL MEET 4. (CMU) - CONCRETE MASONRY UNIT WALLS. AND USED TO ESTABLISH OD LUMBER, KILN DRIED TO SUBSTRATE FOR SECURE ORS AND INSERTS ON INSIDE RESISTANCE. PROVIDE 5. GYPSUM BOARD CEILINGS. UMIDITY CONDITIONS IN 6. DOOR CASINGS, BASE, WOOD, MILL-WORK, ETC. (PRE-PRIMED.) ED WITH CONCEALED SHIMS. N 96 INCHES (3 MM IN 2400 7. PRIMED HARDWOOD DOORS.

COMPONENTS. ET UNITS. MUM GAPS OF 1/32 INCH. DO FACES, AND REPAIR ACHED TO SUBSTRATES. AS REQUIRED FOR

FOR EXPOSED FASTENING, FINISH IF TRANSPARENT NATE FUNCTIONAL AND ADJUST JOINERY FOR

SHOP-APPLIED FINISHES TO

8. ALL MISCELLANEOUS FERROUS METAL

GRILLES, REGISTERS, ETC.

10. ANY OTHER PAINTING WORK REQUIRED

9. ANY OPEN STRUCTURE PAINTING

BY THE DRAWINGS.

A. SUBMITTALS: PRODUCT DATA, PREFINISHED DOOR SKIN SAMPLES, AND DOOR SCHEDULE INDICATING DOOR AND FRAME SIZES. TYPES, ELEVATIONS, DETAILS, AND HARDWARE WITH DOOR AND HARDWARE NUMBERING B. BASIS OF DESIGN: RE: SHEET A101, DETAIL A6 FOR GENERAL NOTE REGARDING DOOR SCHEDULE REMARKS

1. FACTORY FIT DOORS TO SUIT FRAME OPENINGS TO COMPLY WITH REFERENCED STANDARD. COMPLY 2. FACTORY MACHINE DOORS FOR HARDWARE THAT IS NOT SURFACE APPLIED. 3. CUT AND TRIM OPENINGS TO COMPLY WITH REFERENCED STANDARDS.

5. FACTORY FINISH DOORS FOR TRANSPARENT FINISH WITH STAIN AND MANUFACTURER'S STANDARD FINISH COMPARABLE TO AWI, SYSTEM TR-4, CONVERSION VARNISH OR AWI SYSTEM TR-6, CATALYZED

I. REFER TO DOOR INSTALLATION INSTRUCTIONS ONCE DOOR TYPE/MANUF. HAS BEEN SELECTED BY GC OR

A. <u>STEEL FRAMING MEMBERS</u>: COMPLY WITH ASTM C754 IN DEPTHS AND GAGES AS INDICATED IN THE

1. STEEL SHEET COMPONENTS: COMPLY WITH ASTM C645 WITH MANUFACTURER'S STANDARD CORROSION-2. TIE WIRE: ASTM A 641/A 641M, CLASS 1 ZINC COATING, SOFT TEMPER. .0625" DIAMETER OR DOUBLE

3. WIRE HANGERS: ASTM A 641/A 641M, CLASS 1 ZINC COATING, SOFT TEMPER. .0162" DIAMETER. PANEL PRODUCTS: PROVIDE IN THICKNESS AND TYPE INDICATED IN THE CONSTRUCTION DRAWINGS IN MAXIMUM 1. GYPSUM WALLBOARD: ASTM C 36, TYPE 'X' WITH TAPERED EDGES, SAG-RESISTANT TYPE FOR CEILING

2. WATER-RESISTANT GYPSUM BACKING BOARD: ASTM C 630, TYPE 'X' ON ALL TOILET ROOM AND SHOWER ROOM WALLS, BEHIND ALL PLUMBING FIXTURES, AND AS INDICATED.

A. OUTSIDE CORNERS: PROVIDE CORNER BEAD UNLESS NOTED OTHERWISE B. EXPOSED PANEL EDGES: PROVIDE LC-BEAD (J-BEAD) UNLESS NOTED OTHERWISE; USE TEAR-AWAY BEAD WHERE GYP. BD. MEETS WINDOW FRAMES OR CEILING GRID. C. CONTROL JOINTS: PROVIDE WHERE INDICATED OR APPROXIMATELY 30'-0" MAX. CONTACT

3. ACOUSTICAL SEALANT: COMPLY WITH ASTM C 834, NONSAG, PAINTABLE, NONSTAINING LATEX. 1. FRAMING: COMPLY WITH ASTM C 754 AND ASTM C 840 AND WITH U.S. GYPSUM'S "GYPSUM CONSTRUCTION HANDBOOK" ISOLATE FRAMING FROM BUILDING STRUCTURE TO PREVENT TRANSFER OF LOADING

2. GYPSUM PANELS AND FINISH: COMPLY WITH ASTM C 840 AND GA-216. ISOLATE GYPSUM BOARD ASSEMBLIES FROM ABUTTING STRUCTURAL AND MASONRY WORK AND FINISH AS FOLLOWS: A. LEVEL 1 (EMBED TAPE AT JOINTS): AT CONCEALED AREAS UNLESS A HIGHER LEVEL IS INDICATED OR REQUIRED FOR FIRE-RESISTANCE-RATED ASSEMBLY. B. LEVEL 2 (EMBED TAPE AND APPLY SEPARATE FIRST COAT OF JOINT COMPOUND TO TAPE. FASTENERS, AND TRIM FLANGES AND SAND SMOOTH AFTER EACH COAT): AT SUBSTRATES BEHIND

C. LEVEL 4 (EMBED TAPE AND APPLY SEPARATE FIRST, FILL, AND FINISH COATS OF JOINT COMPOUND TO TAPE. FASTENERS, AND TRIM FLANGES AND SAND SMOOTH AFTER EACH COAT): AT ALL WALLS RECEIVING FLAT, EGGSHELL, OR SATIN SHEEN PAINT OR WALLCOVERING) D. LEVEL 5 (EMBED TAPE, APPLY SEPARATE FIRST, FILL, AND FINISH COATS OF JOINT COMPOUND TO TAPE, FASTENERS, AND TRIM FLANGES, AND APPLY THIN SKIM COAT OF JOINT COMPOUND OVER ENTIRE SURFACE AND SAND SMOOTH AFTER EACH COAT): AT ALL WALLS RECEIVING SEMI-GLOSS OR GLOSS SHEEN PAINT, AND ALL GYPSUM BOARD CEILINGS).

B. ATTIC STOCK: FURNISH 2% OF EACH TYPE OF CEILING TILE PACKAGED WITH PROTECTIVE COVERING AND C. <u>ACOUSTICAL TILE PRODUCTS</u>: PROVIDE CEILING TILE IN TYPE AND SIZES INDICATED IN THE CONSTRUCTION OCUMENTS COMPLYING WITH ASTM E 1264. CLASS A MATERIALS. TESTED PER ASTM E 84. D. SUSPENSION SYSTEM: PROVIDE HEAVY DUTY, DIRECT-HUNG, SUSPENSION SYSTEMS AS INDICATED IN THE DNSTRUCTION DOCUMENTS COMPLYING WITH ASTM C 635. FURNISH ALUMINUM GRID IN SHOWERS, KITCHENS 1. ATTACHMENT DEVICES: SIZE FOR FIVE (5) TIMES THE DESIGN LOAD INDICATED IN ASTM C 635, TABLE 1,

2. WIRE HANGERS, BRACES, AND TIES: ZINC-COATED CARBON-STEEL WIRE; ASTM A 641/ (A 641 M), CLASS 1 ZINC COATING, SOFT TEMPER WITH A YIELD STRENGTH AT LEAST THREE (3) TIMES THE HANGER DESIGN LOAD (ASTM C 635, TABLE 1, DIRECT HUNG), BUT NOT LESS THAN 0.135" DIAMETER WIRE. 3. SEISMIC STRUTS: MANUFACTURER'S STANDARD PRODUCT DESIGNED TO ACCOMMODATE SEISMIC

ROOMS EMPLOYING DRY CHEMICAL FIRE-SUPPRESSION SYSTEMS, AND OTHER AREAS AS INDICATED. . INSTALLATION: COMPLY WITH ASTM C 636 AND CISCA'S "CEILING SYSTEMS HANDBOOK". SEQUENCE WORK TO ENSURE ACOUSTICAL CEILINGS ARE NOT INSTALLED UNTIL BUILDING IS ENCLOSED, SUFFICIENT HEAT IS PROVIDED, DUST GENERATION ACTIVITIES HAVE TERMINATED, AND OVERHEAD WORK

LESS THAN HALF-SIZE TILE UNLESS INDICATED OTHERWISE ON THE REFLECTED CEILING PLAN. SUPPORT SUSPENSION SYSTEM INDEPENDENTLY OF DUCTS, PIPES, AND CONDUITS. 4. SUPPORT FIXTURE LOADS USING SUPPLEMENTARY HANGERS LOCATED WITHIN 6" OF EACH CORNER OR

5. PROVIDE MATCHING PERIMETER MOLDING INSTALLED IN BEAD OF ACOUSTICAL SEALANT AT ALL LOCATIONS WHERE CEILING INTERSECTS VERTICAL SURFACES. USE MATCHING PRE-FORMED CLOSURES

A. SUBMITTALS: PRODUCT DATA AND THREE (3) DRAW-DOWN SAMPLES OF EACH COLOR AND SHEEN SPECIFIED. B. ATTIC STOCK: FURNISH ONE (1) GALLON OF EACH PAINT COLOR AND SHEEN, IN CONTAINERS, PROPERLY C. PRODUCTS: PROVIDE MANUFACTURER'S BEST QUALITY PAINTS OF COLOR AND SHEEN AS INDICATED IN THE CONSTRUCTION DOCUMENTS THAT ARE FORMULATED AND RECOMMENDED BY MANUFACTURER FOR APPLICATION INDICATED. PROVIDE MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER AND WITH

1. ALL PAINT, STAIN, AND VARNISH SHALL BE PRODUCTS OF DEVOE, KWAL, SHERWIN WILLIAMS, PPG 2. ALL MATERIAL SHALL BE OF THE STANDARD RESIDENTIAL GRADE OF THE TYPES DESIGNATED. 3. ALL MATERIAL SHALL BE DELIVERED TO THE JOB SITE IN THE ORIGINAL, UNOPENED, LABELED CONTAINERS. COLORS NOT SPECIFICALLY CALLED FOR IN THE PAINT SCHEDULE WILL BE SELECTED BY

EQUIPMENT: APPLY COATINGS BY BRUSH, ROLLER, SPRAY, OR OTHER APPLICATORS ACCORDING TO COATING MANUFACTURER'S WRITTEN INSTRUCTIONS. WHEN SPRAYED, EXTERIOR COATINGS SHALL BE BACK-ROLLED FOLLOWING SPRAY APPLICATION. USE ROLLERS FOR FINISH COAT ON INTERIOR WALLS 2. PREPARE CONCRETE MASONRY BLOCK TO BE COATED. REMOVE EFFLORESCENCE, CHALK, DUST, DIRT, GREASE, OILS, AND RELEASE AGENTS. ROUGHEN AS REQUIRED TO REMOVE GLAZE. IF HARDENERS OR SEALERS HAVE BEEN USED TO IMPROVE CURING, USE MECHANICAL METHODS TO PREPARE SURFACES. 3. PIGMENTED (OPAQUE) FINISHES: COMPLETELY COVER SURFACES TO PROVIDE A SMOOTH, OPAQUE SURFACE OF UNIFORM APPEARANCE. PROVIDE A FINISH FREE OF CLOUDINESS, SPOTTING, HOLIDAYS, LAPS, BRUSH MARKS, RUNS, SAGS, ROPINESS, OR OTHER SURFACE IMPERFECTIONS. 4. APPLY PRODUCTS PER MANUFACTURER RECOMMENDED GUIDELINES. PRODUCT COVERAGE MINIMUM

> ONE COAT OF PRIME LATEX PAINT AND ONE FINISH COAT OF LATEX EGGSHELL WALL PAINT. (TWO COATS IF REQUIRED TO ACHIEVE FULL COVERAGE.)

ONE COAT OF EPOXY COMPATABLE PRIMER PAINT AND ONE FINISH COAT OF EPOXY EGGSHELL WALL PAINT. (TWO COATS IF REQUIRED TO ACHIEVE FULL COVERAGE.)

ONE COAT OF PRIME LATEX PAINT AND ONE FINISH COAT OF SCRUBABLE LATEX FLAT WALL PAINT. (TWO COATS IF REQUIRED TO ACHIEVE FULL COVERAGE.)

BLOCK FILLER: PPG PAINTS; 6-15XI SPEEDHIDE INTERIOR/EXTERIOR HI FILL ACRYLIC MASONRY BLOCK FILLER/PRIMER. APPLIED AT A DRY FILM THICKNESS OF NOT LESS THAN 7.0 MILS. TWO FINISH COATS ACRYLIC EGGSHELL FINISH OVER PRIMER.

TWO COATS OF LATEX FLAT PAINT. TWO COATS OF CLASS II VAPOR RETARDER PAINT AT CEILINGS ADJACENT TO ATTICS.

ONE PRIME COAT OF LATEX PAINT, ONE COAT LATEX PAINT AND ONE FINISH COAT OF SEMI-GLOSS PAINT.

ONE COAT OF LATEX PAINT AND ONE FINISH COAT OF LATEX SEMI-GLOSS PAINT. TWO COATS METAL PAINT TO MATCH INCLUDING

ADJACENT SURFACES UNLESS FACTORY PREFINISHED WHITE.

ONE COAT APPLICABLE PRIMER FOR SURFACES TO BE PAINTED UNLESS FACTORY PRIMED; TWO COATS OF DRYFALL PAINT SPRAY APPLIED. FINISH TO MATCH SIMILAR CONDITIONS.

09 9600 HIGH PERFORMACE COATINGS PART 1

1.1 SUBMITTALS 1. SUBMIT UNDER PROVISIONS OF SECTION 01300. PRODUCT DATA: MANUFACTURER'S DATA SHEETS INCLUDING;

A. INSTALLATION GUIDE B. PRODUCT DATA SHEET

C SDS D. HPD (HEALTH PRODUCT DECLARATION) E. PFAS-PFC LETTER

1. SELECTION SAMPLES: PROVIDE (2) SETS OF APPLICABLE COLOR CHARTS OR CHIPS REPRESENTING ALL STANDARD COLORS AVAILABLE FROM THE MANUFACTURER.

2. VERIFICATION SAMPLES: PROVIDE VERIFICATION SAMPLES OF EACH PRODUCT SPECIFIED ON A MINIMUM SIZE OF 6" SQUARE SHOWING ACTUAL PRODUCTS, COLORS, AND TEXTURE. 3. INSTALLER QUALIFICATIONS: SUBMIT LIST OF SUCCESSFULLY COMPLETED PROJECTS WITH

REFERENCES OF SAME OR SIMILAR SCOPE OF WORK. 1.2 QUALITY ASSURANCE:

A. QUALIFICATIONS: SUCCESSFUL EXPERIENCE WITH OTHER PROJECTS OF THE SCOPE AND SCALE OF THE WORK DESCRIBED IN THIS SECTION. B. TRAINING: CONFIRMATION BY MANUFACTURER THAT THE INSTALLER HAS SUCCESSFULLY COMPLETED

AN AUTHORIZED TRAINING WORKSHOP OF THE FLOORING SYSTEM(S). C. MOCK-UP: PROVIDE A MOCK-UP DEMONSTRATING ACTUAL SURFACE PREPARATION METHODS TO BE

USED THEN PRODUCE ACTUAL FINISHES TO CONFIRM ACCEPTABLE APPEARANCE AND WORKMANSHIP. AREA TO BE DETERMINED BY ARCHITECT APPROVALS OF EACH COMPLETED PHASE MUST BE ACCEPTED PRIOR TO PROCEEDING.

. REFINISH, IF APPLICABLE TO RECEIVE FINAL APPROVALS. 1.3 <u>DELIVERY</u>, STORAGE & HANDLING:

A. DELIVERY: DELIVER MATERIALS IN MANUFACTURER'S ORIGINAL, UNOPENED, UNDAMAGED CONTAINERS WITH IDENTIFICATION LABELS INTACT. B. STORAGE & PROTECTION: STORE MATERIALS PROTECTED FROM EXPOSURE TO HARMFUL

ENVIRONMENTAL CONDITIONS AND AT A MINIMUM TEMPERATURE OF 50 DEGREES F AND AT A MAXIMUM TEMPERATURE OF 90 DEGREES F. DO NOT FREEZE! C. HANDLING: ALL CONTAINERS MUST BE TIGHTLY CLOSED WHEN NOT IN USE TO PREVENT ACCIDENTAL CONTAMINATION BY FOREIGN ELEMENTS.

1.4 PROJECT/SITE CONDITIONS MAINTAIN ENVIRONMENTAL CONDITIONS (TEMPERATURE, HUMIDITY, VENTILATION) ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS. DO NOT INSTALL AN EXTERIOR PROJECT WHEN RAIN IS IMMINENT WITHIN THE FIRST 24 HOURS.

A. PROJECT WARRANTY: REFER TO CONDITIONS OF THE CONTRACT FOR PROJECT WARRANTY PROVISIONS. B. MANUFACTURER'S WARRANTY: SUBMIT FOR OWNERS ACCEPTANCE, MANUFACTURER'S STANDARD LIMITED WARRANTY AGAINST MANUFACTURER DEFECTS EXECUTED BY AUTHORIZED COMPANY

OFFICIAL. MANUFACTURER'S WARRANTY IS IN ADDITION TO, AND NOT A LIMITATION OF, OTHER RIGHTS OWNER MAY HAVE UNDER CONTRACT DOCUMENTS. PART 2 PRODUCTS 2.1 MANUFACTURER:

ACCEPTABLE MANUFACTURERS: A. ECO SAFETY, INC. D/B/A ECO SAFETY PRODUCTS 2921 W CULVER STREET, #4B, PHOENIX, AZ. 85009

TELEPHONE: 602.305.9397 FAX: 602.305.6431 EMAIL: HYPERLINK "MAILTO:INFO@ECO-SAFETY.COM"INFO@ECO-SAFETY.COM WEBSITE:

HYPERLINK "HTTP://WWW.ECOSAFETYPRODUCTS.COM"WWW.ECOSAFETYPRODUCTS.COM PRODUCT SUBSTITUTIONS: SUBSTITUTIONS: SUBMIT INFO ON ALTERNATE MANUFACTURERS FOR REVIEW BY ARCHITECT.

2.4 W.B. BIO-BASED POLYURETHANE FLOOR COATING: A. PRODUCT: ECO-TUFF FLOOR COATING

- 1. TEXTURE OPTIONS: FINE RECYCLED GLASS POWDER (NS-80) B. DESCRIPTION: A HIGH PERFORMANCE INTERIOR/EXTERIOR WATER-BASED ACRYLIC-URETHANE SAFETY COATING UTILIZING RENEWABLE RESOURCE AND RECYCLED INGREDIENTS. CONTAINS A GLASS POWDER FOR A SLIP RESISTANT, YET NON ABRASIVE TEXTURE. ENGINEERED FOR HIGH TRAFFIC AND
- EXTREME WEATHER ENVIRONMENTS. SURFACE PREPARATION: REMOVE ALL BOND BREAKERS AND PREPARE SUBSTRATE FOR OPTIMUM BONDING AND PENETRATION BY MECHANICAL GRINDING AND/OR CHEMICAL ETCHING AND CLEANING. A MINIMUM SURFACE PROFILE OF CSP-1 TO CSP-3 IS REQUIRED AS WITH ANY HIGH TRAFFIC TEXTURED COATING

1. COLOR PIGMENT OPTIONS: STANDARD AND I.R. (INFRARED REFLECTIVE) D. ECO-TUFF SYSTEM PRODUCTS & SURFACE PREPARATION CLEANERS (FOR CLEAR CONCRETE WITH AGGREGATE TEXTURE)

1. SURFACE PREP 1: EE3-8000 ECO-ETCH PRO ETCHER & CLEANER 2. SURFACE PREP 2: EF-500 ECOFAST 500 DEGREASER/CLEANER CONCENTRATE

3. PRIMER COAT: ET-6900 ECO-TUFF QUICK PRIME PRIMER SEALER 4. 1ST COAT: ET-6900 ECO-TUFF CLEAR COAT

RECYCLED GLASS FINE POWDER: NS-RG80 5. FINISH COAT: ET-6900 ECO-TUFF CLEAR COAT

E. ECO-TUFF SYSTEM PRODUCTS & SURFACE PREPARATION CLEANERS (FOR CLEAR CONCRETE, SMOOTH TEXTURE) 1. SURFACE PREP 1: EE3-8000 ECO-ETCH PRO ETCHER & CLEANER 2. SURFACE PREP 2: EF-500 ECOFAST 500 DEGREASER/CLEANER CONCENTRATE

3. PRIMER COAT: ET-6900 ECO-TUFF QUICK PRIME PRIMER SEALER 4. 1ST COAT: ET-6900 ECO-TUFF CLEAR COAT 5. FINISH COAT: ET-6900 ECO-TUFF CLEAR COAT

F. ECO-TUFF SYSTEM PRODUCTS & SURFACE PREPARATION CLEANERS (FOR COLOR WITH AGGREGATE TEXTURE, MATTE FINISH) 1. SURFACE PREP 1: EE3-8000 ECO-ETCH PRO ETCHER & CLEANER 2. SURFACE PREP 2: EF-500 ECOFAST 500 DEGREASER/CLEANER CONCENTRATE

3. PRIMER COAT: ET-7007 ECO-TUFF WHITE PRIMECOAT 4. 1ST COAT: ET-6800 ECO-TUFF FLOOR COATING

 RUBBER AGGREGATE: NS-RBR-F (OR) RECYCLED GLASS FINE POWDER: NS-RG80

5. FINISH MATERIAL: ET-6800 ECO-TUFF FLOOR COATING G. ECO-TUFF SYSTEM PRODUCTS & SURFACE PREPARATION CLEANERS (FOR COLOR WITH AGGREGATE TEXTURE, GLOSS FINISH)

1. SURFACE PREP 1: EE3-8000 ECO-ETCH PRO ETCHER & CLEANER 2. SURFACE PREP 2: EF-500 ECOFAST 500 DEGREASER/CLEANER CONCENTRATE 3. PRIMER COAT: ET-7007 ECO-TUFF WHITE PRIMECOAT 4. 1ST COAT:

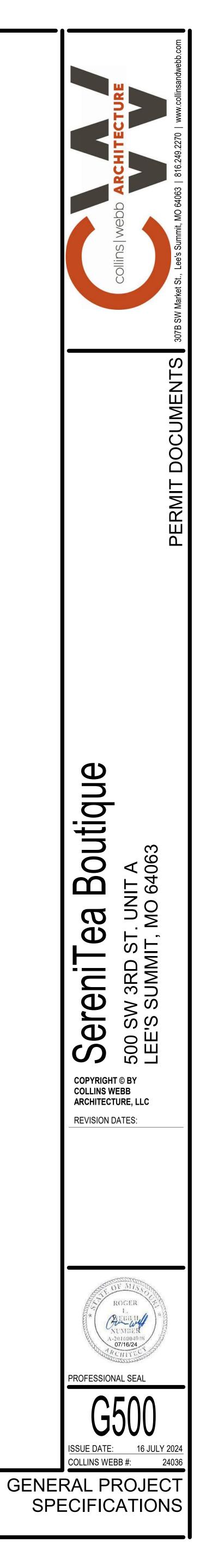
 ET-6800 ECO-TUFF FLOOR COATING RUBBER AGGREGATE: NS-RBR-F

(OR) RECYCLED GLASS FINE POWDER: NS-RG80 5. 2ND COAT: ET-6800 ECO-TUFF FLOOR COATING

6. FINISH MATERIAL: ET-6900 ECO-TUFF CLEAR COAT H. ECO-TUFF SYSTEM PRODUCTS & SURFACE PREPARATION CLEANERS (FOR COLOR WITH SMOOTH

TEXTURE, MATTE FINISH) 1. SURFACE PREP 1: EE3-8000 ECO-ETCH PRO ETCHER & CLEANER 2. SURFACE PREP 2: EF-500 ECOFAST 500 DEGREASER/CLEANER CONCENTRATE

3. PRIMER COAT: ET-7007 ECO-TUFF WHITE PRIMECOAT 4. 1ST COAT: ET-6800 ECO-TUFF FLOOR COATING 5. FINISH MATERIAL: ET-6800 ECO-TUFF FLOOR COATING



	S - PRODUCT & INSTALLATION GENERAL REQUIREMENTS
DIVISION 9 - FINISHES	<u>} (CONT.)</u>
PART 3 EXECUTION (3.1 MANUFACTURER	09 9600 HIGH PERFORMANCE COATINGS CONT.) 'S INSTRUCTIONS:
A. COMPLY WITH 3.2 EXAMINATION:	H THE INSTRUCTIONS AND RECOMMENDATIONS OF THE FLOORING SURFACE MANUFACTURER.
THE FLOORIN	ATION OF CONDITIONS: VERIFY THAT SUBSTRATE CONDITIONS ARE SUITABLE FOR INSTALLATION O IG SURFACE SYSTEM.
3.3 SURFACE PREPA	CEED WITH INSTALLATION UNTIL UNSUITABLE CONDITIONS ARE CORRECTED. <u>RATION:</u> :: IT IS VERY IMPORTANT WHEN USING A DEGREASER THAT THE CLEAN-UP IS ABSOLUTELY
THOROUGH A	IT IS VERY IMPORTANT WHEN USING A DEGREASER THAT THE CLEAN-OP IS ABSOLUTELY IND COMPLETE AND THAT NO DISSOLVED RESIDUE, FAT, OILS, GREASE, DUST, ETC. IS LEFT ON THE IIS IS FURTHER ACHIEVED BY REPEATING RINSES OF WATER.
1. EF-50	0 ECO-FAST 500 DEGREASER CONCENTRATE 000 ECO-ETCH PRO ETCH & CLEAN CONCENTRATE
ENSURE OPT	THE CONCRETE SURFACE SHOULD BE HAND TROWELED OR WITH A BRUSH/BROOM FINISH TO IMUM POROSITY FOR ADHESION. OTHERWISE PROPER SURFACE PROFILING IS REQUIRED. NEW
CONCRETE IS	EEDS AT LEAST 28 DAYS TO CURE PROPERLY, PRIOR TO PRIMER APPLICATION. UNLESS THE NEW S DRY, ADHESION PROBLEMS WILL BE EXPERIENCED. ILE AND CLEAN THE CONCRETE FOR MAXIMUM BONDING AND PENETRATION BY USING ECO ETCH
PRO (SURF, ECO E TO PF	CONCENTRATE IN FULL STRENGTH OR 1:1. IF PERFORMING MECHANICAL ABRASION, BE SURE THE ACE TEXTURE DOES NOT ALTER EXPECTED RESULTS. VERY DENSE SURFACE STILL MAY REQUIRE / ETCH PRO APPLICATION TO OPEN THE PORES ADEQUATELY. TEST FOR OPTIMUM POROSITY PRIOR ROCEEDING. A CSP-1 TO CSP-3 SURFACE PROFILE IS REQUIRED DEPENDENT UPON SURFACE
2. CONC	JRE, FINISH, AND ENVIRONMENT. RETE SHOULD BE COMPLETELY CLEAN AND DRY. TEST FOR PROPER PH LEVELS AND MOISTURE R TRANSMISSION PER INDUSTRY STANDARDS FOR COATING APPLICATIONS.
3. PATC	H ALL IMPERFECTIONS, CRACKS, ETC WITH CONCRETE PATCH FILLER AND FLEXIBLE JOINT FILLERS DT USE SILICONE PRODUCTS. THE PRODUCT WILL NOT ADHERE TO SILICONE.
CURE	E WITH ET-6900 OR ET-7007 AS PER MANUFACTURER INSTRUCTIONS. WHEN PRIMER HAS PROPERLY D, PERFORM TEST PATCH TO ENSURE ADHESION.
COMPLETELY	ECT THOROUGHLY FOR EXCESSIVE MOISTURE AND TANNIN BLEED. ALL WOOD SPECIES MUST BE 7 DRY AND FREE FROM BLEED. WOOD IF NECESSARY TO REMOVE ALL BOND BREAKERS, LOOSE PARTICLES AND OTHER SURFACE
CONT	WOOD IF NECESSARY TO REMOVE ALL BOND BREARERS, LOOSE PARTICLES AND OTHER SURFACE AMINANTS. EASE WITH SOY-IT DEGREASER TO REMOVE SURFACE OILS, GRIME. ENSURE THAT ALL RESIDUE AN
DUST	IS COMPLETELY REMOVED. O SHOULD BE COMPLETELY CLEAN AND DRY BEFORE APPLYING COATING MATERIALS.
AND CORROS	E METALS WITH AN APPLICABLE STANDARD WATER-BASED RUST INHIBITING PRIMER TO INHIBIT RUS SION PRIOR TO COATING APPLICATION. HIGH TRAFFIC AREAS WITH STEEL GRATES, DIAMOND PLATE SHOULD BE ACID WASHED AND/OR GRIND TO PROVIDE OPTIMUM PROFILE FOR COATING ADHESION RIME COAT.
A. TYPES OF AP	PLICATIONS ER APPLICATION
	USE A 3/8" NAP ROLLER WHEN APPLYING THE PRIMER, FLOOR COATING, OR CLEAR COATING. USE A FOAM TEXTURED ROLLER WHEN APPLYING THE ECO-TUFF FLOOR COATING WITH RUBBER
	AGGREGATE. OTHER ROLLERS MAY NOT PICK UP AND SPREAD THE PRODUCT EVENLY. THE FOAN TEXTURED ROLLER MUST BE CAPABLE OF LIFTING THE RUBBER CRUMB WITHIN THE PRODUCT TO
В	THE SURFACE. ALL OTHER PRODUCTS ARE SUITABLE USE TRADITIONAL AND APPLICABLE SIZED NAP FOR THE INTENDED SUBSTRATE AND TEXTURE. SOAK ROLLER IN WATER – REMOVE EXCESS WATER PRIOR TO APPLICATION.
	POUR PRODUCT INTO PAINT TRAY OR HANG ROLLER GRID INTO 5 GALLON BUCKET. MAKE SURE 1 COMPLETELY SATURATE ROLLER WITH PRODUCT, LEAVING NO BARE SPOTS ON ROLLER.
	APPLY THE PRIMER COAT AS A THIN COAT AND ALLOW TO DRY TO BE TACK FREE USUALLY WITH 1 HOUR AND NOT TO EXCEED 24 HOURS.
E.	RESATURATE ROLLER AFTER EACH PASS. MAKE 4-5 CONSECUTIVE PASSES IN THE SAME DIRECTION, WITH EACH PASS RIGHT NEXT TO THE OTHER. WHEN APPLYING, ROLL IN ONE DIRECTION FIRST, THEN ROLL IN THE OPPOSITE DIRECTION IN ORDER TO PROPERLY BLEND THE
F.	PRODUCT AND CREATE A UNIFORM SURFACE. ONCE AN AREA IS COVERED, RUN THE ROLLER VERY LIGHTLY OVER IT TO ENSURE EVEN
G	DISTRIBUTION OF COLOR AND RUBBER CRUMB IF APPLICABLE. WHEN DRY TO THE TOUCH, APPLY 2 ND COAT. IF INSTALLING NON SKID AGGREGATE, APPLY THE
	ECOTUFF FLOOR COATING WITHOUT AGGREGATE OR APPLY THE ECOTUFF CLEAR COAT AS THE FINISH COAT TO HELP ENCAPSULATE OR REGULATE THE FINAL TEXTURE. REPEAT IF A 3 RD COAT I DESIRED.
	Y APPLICATIONS MASK OFF AREAS AS NEEDED
	1. WHEN SPRAY APPLYING ECO-TUFF FLOOR COATING WITH RUBBER AGGREGATE MIXED, USE A HOPPER TYPE GRACO BRAND "TEX-SPRAY COMPACT" OR EQUIVALENT.
	2. WHEN SPRAY APPLYING ECO-TUFF CLEAR COATING USE A STANDARD AIRLESS WITH A # 12-#15 TIP AS APPLICABLE TO THE FINISH AND MIL THICKNESS REQUIRED.
C.	ATTACH SPRAY GUN TO A COMPRESSOR AIRLINE GIVING PRESSURE OF AT LEAST 40 PSI. SPRAY ALL WATER OUT OF THE GUN TO PRIME. BEFORE STARTING THE JOB, SPRAY A FEW SHORT BURSTS AWAY FROM THE SURFACE TO TEST
	THAT EVERYTHING IS WORKING PROPERLY. HOLDING GUN APPROXIMATELY 12-24" AWAY FROM SURFACE, SPRAY AN EVEN, LIGHT COAT OVER
	THE ENTIRE SURFACE. DO NOT APPLY TOO THICK. KEEP SPRAY GUN AT A 90 DEGREE ANGLE TO THE SURFACE.
G.	IF USING THE HOPPER SPRAY GUN FOR THE NON-SKID COATING, IT SHOULD MAKE A SLIGHT "SPITTING" SOUND. THIS IS A CHARACTERISTIC OF THE GUNS AND IS NECESSARY FOR AN EVEN
н	TEXTURE. THE PRODUCT WILL SELF LEVEL TO A CERTAIN EXTEND, BUT DO NOT ALLOW TO PUDDLE. WHEN SURFACE BECOMES TOUCH DRY, SPRAY SUBSEQUENT COATS.
I.	WHILE SPRAYING THE ECO-TUFF FLOOR COATING WITH RUBBER AGGREGATE, BE CAREFUL NOT TO BLOW RUBBER CRUMB AWAY FROM THE AREA YOU ARE WORKING ON AS THIS CAN ACCUMULATE IN OTHER AREAS OF THE JOB THAT WILL PREVENT THE COATING FROM BONDING WITH THE SUBSTRATE.
K.	IF THE RUBBER CRUMB IS BOUNCING BACK AT YOU, LOWER THE PRESSURE OR HOLD GUN FURTHER FROM THE SURFACE. THE FURTHER AWAY FROM THE SURFACE YOU HOLD THE GUN, THE GREATER THE TEXTURE, THE CLOSER, THE FINER. REMOVE ANY OVER SPRAY <u>IMMEDIATELY</u> WITH CLOTH AND WATER. TEMPERATURE AND CURING TIME
CAN E AMOU AND C MINIM	R NORMAL WORKING CONDITIONS, THE PRODUCT WILL BE DRY TO THE TOUCH WITHIN 1 HOUR AND BE SUBJECTED TO LIGHT FOOT TRAFFIC WITHIN 24 HOURS. FULL CURING TIME ONLY AFFECTS THE INT OF TIME REQUIRED TO WAIT BEFORE SUBJECTING THE SURFACE TO CLEANING, HEAVY LOADS CHEMICAL EXPOSURE. SURFACE CAN BE SUBJECTED TO NORMAL LOADS WELL BEFORE THIS IUM TIME REQUIREMENT.
FULLY SUBM TEMP	COATING SHOULD NOT BE SUBJECTED TO CLEANING, HEAVY LOADS, OR CHEMICAL EXPOSURE UNT (CURED AFTER 7 DAYS, LESS IN HOT-HUMID CONDITIONS, MORE IN COLD, DRY WEATHER. (ERSED APPLICATIONS SHOULD ALLOW A 7-14 DAYS. DRY TIMES IN THIS MANUAL ARE BASED ON A ERATURE OF 77 DEGREES F AND 50% HUMIDITY. THE PRODUCT SHOULD NOT BE USED UNDER 40 (EES F. DO NOT ALLOW PRODUCT TO FREEZE.
	DT USE ANY SOLVENTS, SOLVENT BASED ALCOHOLS, THINNERS OR LACQUERS TO THIN PRODUCT.
PROTECT THE INSTITUTE THE SITE.	STALLED SURFACE FROM DAMAGE RESULTING FROM SUBSEQUENT CONSTRUCTION ACTIVITY ON
SHOULD BE U B. THE EVAPOR CONTENT HA	RTIALLY USED CANS, SEAL CAN WELL (AIRTIGHT) AND PLACE IN COOL, DRY PLACE. THE CONTENTS ISEABLE FOR AT LEAST 12 MONTHS. ATION OF THE WATER WITHIN THE PRODUCT WILL CAUSE THE PRODUCT TO CURE. IF SOME WATEF S EVAPORATED, RECONSTITUTION WITH CLEAN WATER MAY RESTORE PRODUCT VIABILITY IF THE
3.7 <u>Repairing</u> :	CESS WITHIN THE CAN IS NOT TOO ADVANCED.
BONDING.	AT THE PRODUCT IS DAMAGED, IT CAN EASILY BE REPAIRED OR OVER-COATED, DUE TO SELF- DAMAGED PRODUCT. USE A SHARP KNIFE SUCH AS A UTILITY KNIFE TO MAKE A WELL-DEFINED ARE
SUCH AS A SO B. SAND AREA V BEVEL THE EI GO SLIGHTLY	QUARE AND ELIMINATE UNEVEN EDGES. VITH 36 OR 40 GRIT SANDPAPER SO THAT THE NEW APPLICATION CAN GET A GOOD GRIP. SLIGHTLY DGES OF THE EXISTING PRODUCT SO THAT THE NEW PRODUCT CAN FILL IN THE CUTOUT AREA ANI ' ONTO THE EXISTING.
C. CLEAN AREA D. TEST FOR AD 3.8 MAINTENANCE:	WITH WATER. HESION FIRST, BEFORE COMPLETING JOB. THEN APPLY THE PRODUCT TO THE AFFECTED AREA.
A. MOST GENER	AL NEUTRAL PH FLOOR CLEANERS HAVE BEEN TESTED AND WILL WORK WELL. WE RECOMMEND DEGREASER CONCENTRATE.
B. <u>DO NOT</u> USE C. FOR BEST RE	CONCENTRATED BLEACH OR CAUSTICS. SULTS ON THE ECO-TUFF FLOOR COATING WITH TEXTURED AGGREGATES, USE A STIFF BRISTLE
OTHERS USE	TO AGITATE CLEANER ON THE SURFACE. RINSE THOROUGHLY TO REMOVE ALL RESIDUE. ALL A WET/DRY MICROFIBER MOP.
ONE PASS, PI	AN ALSO BE CLEANED WITH THE USE OF AUTOMATIC SCRUBBERS. THESE ARE MACHINES WHICH, II JT DOWN THE WASHING SOLUTION, SCRUB THE FLOOR WITH A LIGHT PAD OR BRUSH ATTACHMENT T THE DIRTY WATER. IT SHOULD BE POINTED OUT THAT THE PAD PRESSURE USED IN THE SCRUBBE

ATION GENERAL REQUIREMENTS

DIVISION 10 - SPECIALTIES

10 4400 - FIRE PROTECTION SPECIALTIES

A. REFERENCE CONSTRUCTION DRAWINGS FOR TYPE, SIZE AND LOCATIONS OF FIRE EXTINGUISHERS AND CABINETS B. <u>SUBMITTALS</u>: PRODUCT DATA ONLY

C. FIELD CONDITIONS: DO NOT INSTALL EXTINGUISHERS WHEN AMBIENT TEMPERATURE MAY D. <u>MANUFACTURERS</u>: 1. FIRE EXTINGUISHERS:

A. ANSUL, A TYPO BUSINESS: WWW.ANSUL.COM/. B. KIDDE, A UNIT OF UNITED TECHNOLOGIES CORP.: WWW.KIDDE.COM/. . NYSTROM. INC.: WWW.NYSTROM.COM/.

D. SUBSTITUTIONS: SEE SECTION 106000 - PRODUCT REQUIREMENTS. 2. FIRE EXTINGUISHER CABINETS AND ACCESSORIES:

A. ACTIVAR CONSTRUCTION PRODUCTS GROUP - JL INDUSTRIES: WWW.ACTIVARCPG.COM B. ANSUL, A TYCO BUSINESS: WWW.ANSUL.COM C. LARSEN'S MANUFACTURING CO.: WWW.LARSENSMFG.COM

D. NYSTROM, INC.: WWW.NYSTROM.COM . PYRO-CHEM, A TYCO BUSINESS: WWW.PYROCHEM.COM F. SUBSTITUTIONS: SEE SECTION 106000 - PRODUCT REQUIREMENTS

E. FIRE EXTINGUISHERS: 1. FIRE EXTINGUISHERS - GENERAL: COMPLY WITH PRODUCT REQUIREMENTS OF NFPA 10 AND APPLICABLE

CODES, WHICHEVER IS MORE STRINGENT. 2. MULTIPURPOSE DRY CHEMICAL TYPE FIRE EXTINGUISHERS: CARBON STEEL TANK, WITH PRESSURE GAUGE. A. CLASS: A:B:C TYPE.

B. SIZE: 10 POUND (4.54 kg) . FINISH: BAKED POLYESTER POWDER COAT, COLOR AS SELECTED

D. TEMPERATURE RANGE: MINUS 40 DEGREES F TO 120 DEGREES F. 3. DRY CHEMICAL TYPE FIRE EXTINGUISHERS: STAINLESS STEEL TANK, WITH PRESSURE GAUGE. A. CLASS: K TYPE B. SIZE: 2.5 POUND (1.13 kg)

C. FINISH: POLISHED STAINELSS STEEL D. TEMPERATURE RANGE: MINUS 20 DEGREES F TO 120 DEGREES F.

FIRE EXTINGUISHER CABINETS: 1. FIRE RATING: LISTED AND LABELED IN ACCORDANCE WITH ASTM E814 REQUIREMENTS FOR FIRE RESISTANCE REATING OF WALLS WHERE BEING INSTALLED.

2. CABINET CONSTRUCTION: NON-FIRE RATED. A. FORMED STAINELSS STEEL SHEET; 0.036 INCH THICK BASE METAL.

3. FIRE RATED CABINET CONSTRUCTION: ONE-HOUR FIRE RATED. A. STEEL; DOUBLE WALL OR OUTER ADN INNER BOXES WITH 5/8 INCH THICK FIRE BARRIER MATERIAL. 4. CABINET CONFIGURATION: RECESSED TYPE. A. SIZE TO ACCOMMODATE ACCESSORIES.

B. TRIMLESS TYPE. C. PROVIDE CABINET ENCLOSURE WITH RIGHT ANGLE INSIDE CORNERS AND SEAMS, AND WITH

FORMED PERIMETER TRIM AND DOOR STILES. 5. DOOR: 0.036 INCH METAL THICKNESS, REINFORCED FOR FLATNESS AND RIGIDITY WITH NYLON CATCH

HINGE DOORS FOR 180 DEGREE OPENING WITH TWO BUTT HINGE. 6. DOOR GLAZING: ACRYLIC PLASTIC, CLEAR, 1/8 INCH THCK, FLAT SHAPE AND SET IN RESILIENT CHANNEL GLAZING GASKET.

7. CABINET MOUNTING HARDWARE: APPROPRIATE TO CABINET, WITH PRE-DRILLED HOLES FOR PLACEMENT OF ANCHORS.

8. FINISH OF CABINET EXTERIOR TRIM AND DOOR: NO. 4 - BRUSHED STAINLESS STEEL. 9. FINISH OF CABINET INTERIOR: WHITE COLORED ENAMEL.

G. <u>ACCESS</u>ORIES: 1. EXTINGUISHER BRACKETS: FORMED STEEL, CHROME-PLATED

H. INSTALLATION: 1. INSTALL IN ACCORDANCE WITH MFG'S INSTRUCTIONS. 2. SECURE RIGIDLY IN PLACE.

DIVISION 11 - EQUIPMENT

11 3000 - APPLIANCES

A. REFERENCE CONSTRUCTION DRAWINGS FOR QUANTITY, AND LOCATION OF APPLIANCES TO BE FURNISHED BY OWNER.

DIVISION 12 - FURNISHINGS

12 3661 COUNTERTOPS A. REFERENCE CONSTRUCTION DRAWINGS & SCHEDULES FOR TYPE, QUANTITY, AND LOCATIONS OF TOILET AND BATH ACCESSORIES. B. SUBMITTALS: INCLUDE PLANS, SECTIONS, DETAILS, AND ATTACHMENTS TO OTHER WORK:

1. PRODUCT DATA :FOR EACH STONE, STONE ACCESSORY, AND MANUFACTURED PRODUCT. 2. STORAGE AND HANDLING REQUIREMENTS AND RECOMMENDATIONS. 3. SAMPLES: FOR EACH STONE TYPE INDICATED.

. FIELD CONDITIONS: 1. FIELD MEASUREMENTS: VERIFY DIMENSIONS OF CONSTRUCTION TO RECEIVE STONE COUNTERTOPS BY FIELD MEASUREMENTS BEFORE FABRICATION.

 D. <u>PRODUCTS</u>:
 • SOURCE LIMITATIONS FOR STONE: OBTAIN FROM A SINGLE SOURCE TO PROVIDE MATERIALS OF CONSISTENT QUALITY IN APPEARANCE AND PHYSICAL PROPERTIES.

E. <u>COUNTERTOPS</u>: 1. QUALITY STANDARD: PREMIUM GRADE, IN ACCORDANCE WITH AWI/AWMAC/WI (AWS) OR AWMAC/WI (NAAWS), UNLESS NOTED OTHERWISE.

2. QUALITY STANDARD: SEFA 3 FOR LABORATORY WORKSURFACES. 3. PLASTIC LAMINATE COUNTERTOPS: HIGH-PRESSURE DECORATIVE LAMINATE (HPDL) SHEET BONDED TO SUBSTRATE. A. LAMINATE SHEET: NEMA LD 3, GRADE HGS, 0.048 INCH NOMINAL THICKNESS.

B. EXPOSED EDGE TREATMENT: AS NOTED, SUBSTRATE BUILT UP TO MINIMUM 1-1/4 INCH THICK; COVERED WITH MATCHING LAMINATE. C. BACK AND END SPLASHES: SAME MATERIAL, SAME CONSTRUCTION. D. FABRICATE IN ACCORDANCE WITH AWI/AWMAC/WI (AWS) OR AWMAC/WI (NAAWS), SECTION 11 -

COUNTERTOPS, CUSTOM GRADE. E. MANUFACTURERS: A. REFER TO FINISH LEGEND.

4. NATURAL QUARTZ AND RESIN COMPOSITE COUNTERTOPS: SHEET OR SLAB OF NATURAL QUARTZ AND PLASTIC RESIN OVER CONTINUOUS SUBSTRATE. A. FLAT SHEET THICKNESS: 1-1/4 INCH, MINIMUM. B. NATURAL QUARTZ AND RESIN COMPOSITE SHEETS, SLABS AND CASTINGS: COMPLYING WITH ISFA

3-01 AND NEMA LD 3; ORTHOPHTHALIC POLYESTER RESIN, MINERAL FILLER, AND PIGMENTS; HOMOGENOUS, NON-POROUS AND CAPABLE OF BEING WORKED AND REPAIRED USING STANDARD WOODWORKING TOOLS; NO SURFACE COATING; COLOR AND PATTERN CONSISTENT THROUGHOUT THICKNESS.

C. MANUFACTURERS: A. REFER TO FINISH LEGEND FOR SOLID SURFACE AND CORIAN QUARTZ DESCRIPTIONS. MANUFACTURERS, PRODUCT NUMBERS, COLORS, SIZES AND CONTACT INFORMATION. D. FACTORY FABRICATE COMPONENTS TO THE GREATEST EXTENT PRACTICAL IN SIZES AND SHAPES INDICATED; COMPLY WITH THE MIA DIMENSION STONE DESIGN MANUAL.

E. FINISH ON EXPOSED SURFACES: POLISHED. F. COLOR AND PATTERN: AS INDICATED ON DRAWINGS.

5. CULTURED MARBLE AND RESIN COMPOSITE VANITY COUNTERTOP WITH INEGRATED BOWL OVER CONTINUOUS SUBSTRATE. A. CULTURED MARBLE AND RESIN COMPOSITE SHEETS, SLABS AND CASTINGS: ORTHOPHTHALIC

POLYESTER RESIN, MINERAL FILLER, AND PIGMENTS; HOMOGENOUS, NON-POROUS AND CAPABLE OF BEING WORKED AND REPAIRED USING STANDARD WOODWORKING TOOLS; NO SURFACE COATING; COLOR AND PATTERN CONSISTENT THROUGHOUT THICKNESS. B. MANUFACTURERS:

A. REFER TO FINISH LEGEND FOR DESCRIPTIONS, MANUFACTURERS, PRODUCT NUMBERS, COLORS, SIZES AND CONTACT INFORMATION. C. FINISH ON EXPOSED SURFACES: POLISHED. D. COLOR AND PATTERN: AS INDICATED ON DRAWINGS.

F. INSTALLATION: 1. SECURELY ATTACH COUNTERTOPS TO CABINETS OR SUPPORTS USING CONCEALED FASTENERS. MAKE FLAT SURFACES LEVEL; SHIM WHERE REQUIRED.

2. ATTACH PLASTIC LAMINATE COUNTERTOPS USING SCREWS WITH MINIMUM PENETRATION INTO SUBSTRATE BOARD OF 5/8 INCH. 3. SEAL JOINT BETWEEN BACK/END SPLASHES AND VERTICAL SURFACES.

4. GENERAL: INSTALL COUNTERTOPS OVER PLYWOOD SUBTOPS WITH FULL SPREAD OF WATER CLEANABLE EPOXY ADHESIVE. 5. GENERAL: INSTALL COUNTERTOPS BY ADHERING TO SUPPORTS WITH WATER CLEANABLE EPOXY

ADHESIVE. 6. SET STONE TO COMPLY WITH REQUIREMENTS INDICATED. SHIM AND ADJUST STONE TO LOCATIONS INDICATED, WITH UNIFORM JOINTS OF WIDTHS INDICATED AND WITH EDGES AND FACES ALIGNED

ACCORDING TO ESTABLISHED RELATIONSHIPS. 7. SPACE JOINTS WITH 1/16• INCH GAP FOR FILLING WITH SEALANT. USE TEMPORARY SHIMS TO ENSURE UNIFORM SPACING. CLAMP UNITS TO TEMPORARY BRACING, SUPPORTS, OR EACH OTHER TO ENSURE

THAT COUNTERTOPS ARE PROPERLY ALIGNED AND JOINTS ARE OF SPECIFIED WIDTH. 8. COMPLETE CUTOUTS NOT FINISHED IN SHOP. MASK AREAS OF COUNTERTOPS ADJACENT TO CUTOUTS TO PREVENT DAMAGE WHILE CUTTING. USE POWER SAWS WITH DIAMOND BLADES TO CUT STONE. MAKE CUTOUTS TO ACCURATELY FIT ITEMS TO BE INSTALLED, AND AT RIGHT ANGLES TO FINISHED SURFACES

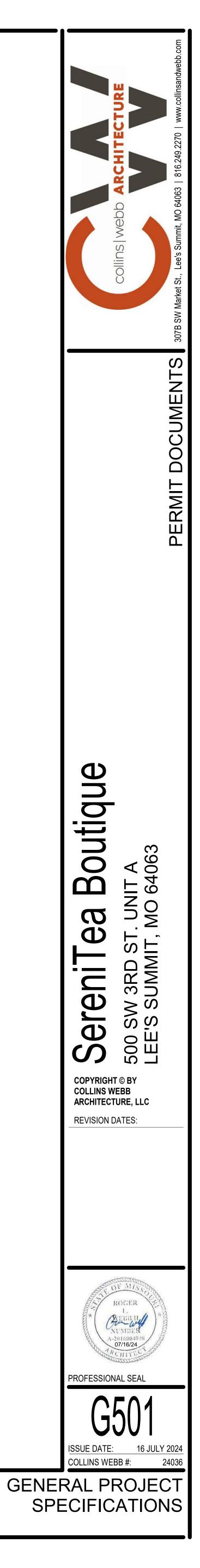
UNLESS BEVELING IS REQUIRED FOR CLEARANCE. EASE EDGES SLIGHTLY TO PREVENT SNIPPING. 9. INSTALL BACKSPLASHES AND END SPLASHES BY ADHERING TO WALL WITH WATER • CLEANABLE EPOXY ADHESIVE. LEAVE 1/16• INCH GAP BETWEEN COUNTERTOP AND SPLASHES FOR FILLING WITH SEALANT. USE TEMPORARY SHIMS TO ENSURE UNIFORM SPACING.

10. GROUT JOINTS TO COMPLY WITH ANSI A108.10. REMOVE TEMPORARY SHIMS BEFORE GROUTING. TOOL GROUT UNIFORMLY AND SMOOTHLY WITH PLASTIC TOOL. 11. APPLY SEALANT TO JOINTS AND GAPS SPECIFIED FOR FILLING WITH SEALANT: COMPLY WITH SECTION 079200 "JOINT SEALANTS." REMOVE TEMPORARY SHIMS BEFORE APPLYING SEALANT.

12. ASSURE THAT SEAMS ARE SMOOTH, LEVEL AND TIGHT. SEAMS SHALL BE FILLED ENTIRELY SO FLUSH WITH COUNTERTOP, POLISH SURFACE AT SEAM, ASSURE THAT FILLER IS "NON YELLOWING." 13. CLEANING: CLEAN COUNTERTOPS AS WORK PROGRESSES. REMOVE ADHESIVE, GROUT, MORTAR, AND SEALANT SMEARS IMMEDIATELY. CLEAN STONE COUNTERTOPS NO FEWER THAN SIX DAYS AFTER

COMPLETION OF INSTALLATION, USING CLEAN WATER AND SOFT RAGS. DO NOT USE WIRE BRUSHES. ACID TYPE CLEANING AGENTS, CLEANING COMPOUNDS WITH CAUSTIC OR HARSH FILLERS, OR OTHER MATERIALS OR METHODS THAT COULD DAMAGE STONE. 14. SEALER APPLICATION: APPLY STONE SEALER TO COMPLY WITH STONE PRODUCER'S AND SEALER

MANUFACTURER'S WRITTEN INSTRUCTIONS.





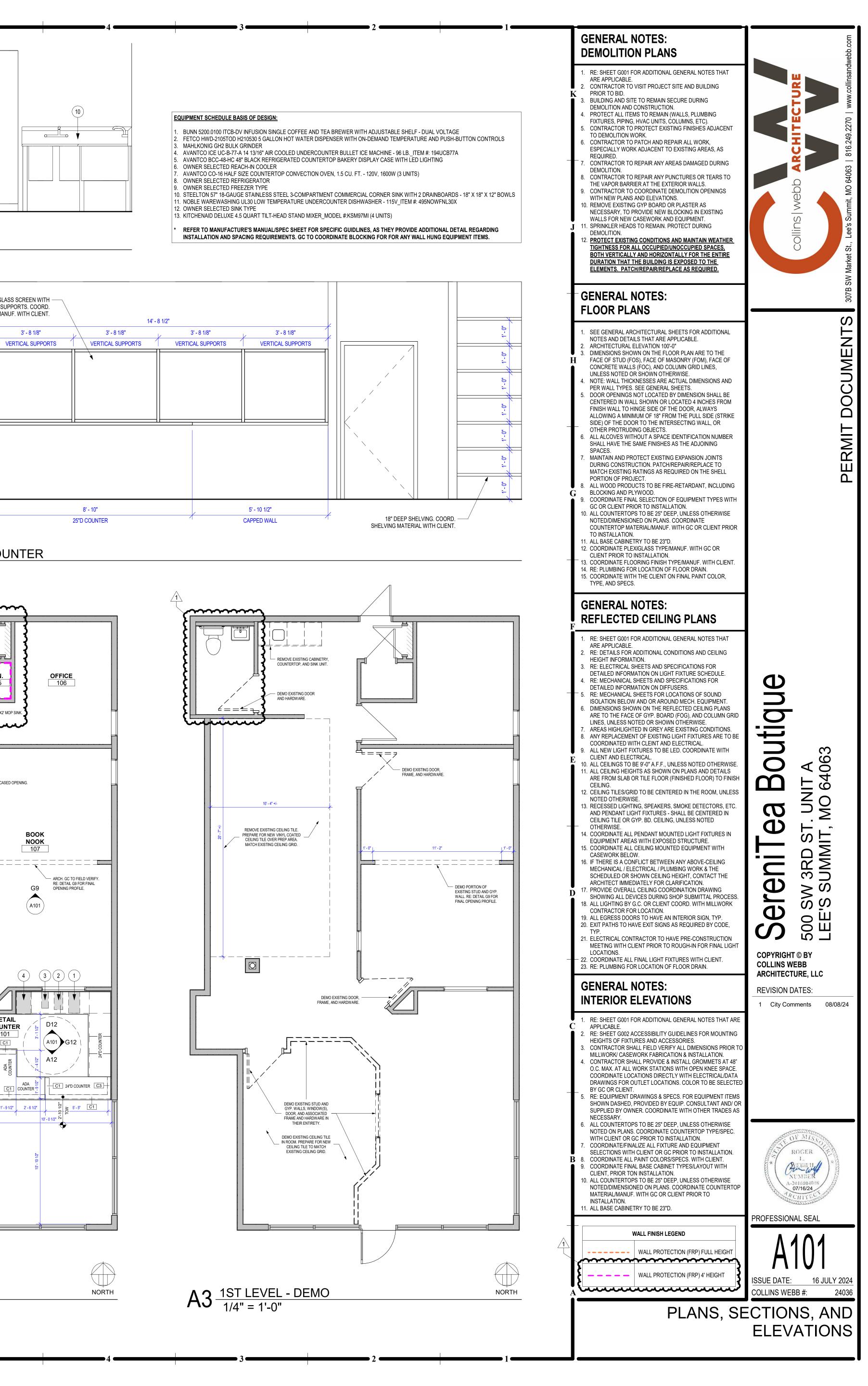
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— 11 ———	10
MECHA	NICAL ABBREVIATIONS
	(ALPHABETICAL BY ABBREVIATION)
ABBREVIATION	LONG FORM ABOVE
ADV AC OR ACU	ABOVE
AHAP	AS HIGH AS POSSIBLE
AHU	AIR-HANDLING UNIT
AUTO	AUTOMATIC
BLW	BELOW
С	CHILLER
CD	CONDENSATE
CF	CABINET FAN
CFM	CUBIC FEET PER MINUTE
СН	CABINET HEATER
СНР	CHILLED WATER PUMP
CLNG OR CLG	CEILING
CONC	CONCRETE
CP OR CWP	CONDENSER WATER PUMP
CS	CONDENSER WATER SUPPLY
CR	
CRAC OR CACU	
CREF	
CRU CT	CONDENSATE (STEAM) RETURN UNIT
сти	COOLING TOWER CELL CONDENSATE (STEAM) TRANSFER UNIT
CU	CONDENSING UNIT
DV	CONSTANT VOLUME TERMINAL BOX
DEF	DISHWASER EXHAUST FAN
DMPR	DAMPER
DN	DOWN
EA	EACH
EBH	ELECTRIC BASEBOARD HEATER
EDH	ELECTRIC DUCT-MOUNTED HEATER
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ER	EXHAUST REGISTER
EUH	ELECTRIC UNIT HEATER
EXH	EXHAUST
FD	
FCU	FAN-COIL UNIT
FF	
FFCH	FORCED-FLOW CABINET HEATER
FP	FAN PILLER ONT
GPM	GALLONS PER MINUTE
НС	HEATING COIL
HUM	HUMIDIFIER
HWP OR HP	HEATING WATER PUMP
НХ	HEAT EXCHANGER
KEF	KITCHEN (GREASE HOOD) EXHAUST FAN
KW	KILOWATTS
LD	LINEAR SUPPLY DIFFUSER
MOT	MOTORIZED
MTD	MOUNTED
MUAF	MAKE-UP AIR FAN
MUAHU	MAKE-UP AIR-HANDLING UNIT
OA	OUTSIDE AIR
OAF	OUTSIDE AIR FAN

	CONT.	SINGLE	R TO SPECIFICATIONS SECTIONS 15815 AND 15820 FOR ADDITIONAL IN	
	(ALPHABETICAL BY ABBREVIATION)	LINE	DESCRIPTION	LINE
ABBREVIATION	LONG FORM PRE-FILTER		ROUND ELBOW DOWN	
PLNM	PLENUM		ROUND ELBOW UP	
RA	RETURN AIR		OFFSET TO CHANGE ELEVATION (AT 30° WHEN	
RAF			POSSIBLE. ARROW SLOPES DN, U.N.O.)	
RAG OR RG	RETURN AIR GRILLE RETURN AIR REGISTER	-1	ROUND RADIUS ELBOW	
RAS	RETURN AIR SILENCER			
RE:	IN REFERENCE TO		90° STRAIGHT TEE	
RTU	ROOFTOP UNIT		90° CONICAL TEE	
SA				
SAF OR SF	SUPPLY AIR FAN SUPPLY AIR GRILLE		45° LATERAL TAP	
SAR OR SR	SUPPLY AIR REGISTER			
SAS	SUPPLY AIR SILENCER		45° LATERAL CONICAL TEE	
SCHP	SECONDARY CHILLED WATER PUMP		SIZE OR SHAPE TRANSITION	8773
SD	SMOKE DAMPER OR DETECTOR			
SPCHP TA	SPECIAL PROCESS CHILLED WATER PUMP THROW AWAY (FILTER TYPE)		ROUND FLEXIBLE DUCT	
TDEF	TRUCK DOCK EXHAUST FAN		RECTANGULAR ELBOW DOWN	
TEF	TOILET EXHAUST FAN	┥┝── <u></u>		
TRANS	TRANSITION OR TRANSFER		RECTANGULAR ELBOW UP	
TYP	TYPICAL	── <u>-</u> -	OFFSET TO CHANGE ELEVATION (AT 30° WHERE	
UH	UNIT HEATER		POSSIBLE. ARROW SLOPES DN., U.N.O.)	<u> </u>
UNO VF	UNLESS NOTED OTHERWISE VENTILATION FAN	-1	RECTANGULAR RADIUS ELBOW	
/FD	VARIABLE FREQUENCY DRIVE			<u> </u>
VV	VARIABLE VOLUME TERMINAL BOX		RECTANGULAR ELBOW WITH TURNING VANES	
N/	WITH			<u> </u>
XFMR OR TFMR	TRANSFORMER		SPLIT BRANCH TAKE-OFF WITH SQUARE ELBOW	
XT OR EX NOT ALL ABB	EXPANSION TANK REVIATIONS ON THIS LIST ARE NECESSARILY USED ON THIS PROJECT		& SPLITTER DAMPER	
			SPLIT BRANCH TAKE-OFF WITH RADIUS ELBOW	
			& SPLITTER DAMPER	
		l III	SPLIT BRANCH TAKE-OFF TEE WITH STATIONARY	一些
			SPLITTER DAMPER	
				」 」 近 工 山
			BRANCH TAKE-OFF WITH 45° LEAD IN TAP	
			INSULATED/LINED DUCTWORK (U.N.O.)	j
			SQUARE FACED CEILING DIFFUSER 4-WAY DIRECTIONAL THROW (U.N.O.)	
			ROUND FACED CEILING DIFFUSER	
			CEILING RETURN OR EXHAUST AIR GRILLE	
			OR REGISTER	
		4	SIDEALL SUPPLY GRILLE OR REGISTER	
			SUPPLY DUCT RISER	
				<u> </u>
			RETURN, EXHAUST OR OUTSIDE AIR DUCT RISER	
				т^т
		<u> </u>	MANUAL BALANCING DAMPER	
			AUTOMATIC (MOTOR-OPERATED) DAMPER	
		+∎	FIRE DAMPER	
			GRAVITY BACKDRAFT DAMPER	
			COMBINATION FIRE AND SMOKE DAMPER WITH	
			SMOKE DETECTOR	
		_ + ∘	SMOKE DAMPER (AUTOMATIC) WITH SMOKE DETECTOR	
		<u>S</u> -		

	S
Μ	ECHA
SYMBOL	
	GATE VALVE
	BALL VALVE
	GLOBE VALVE
	BUTTERFLY VALV
	PLUG VALVE
	ANGLE VALVE
	CHECK VALVE
	AUTOMATIC CON
	AUTOMATIC CON
*	AUTOMATIC CON
i	AUTOMATIC CON
	SOLENOID VALVE
	PRESSURE REDU
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□	IMMERSION THE
	MANUAL AIR VEN
	AUTOMATIC AIR
FS	FLOW SWITCH
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Ū	EXPANSION JOIN
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STANDARD	
ANICAL SYMBOLS	
DESCRIPTION	
ALVE	
ONTROL VALVE (STRAIGHT THROUGH)	
ONTROL VALVE (3-WAY)	
ONTROL VALVE (ANGLE)	
ONTROL VALVE (STRAIGHT THROUGH)	
LVE	
EDUCING VALVE	
ELIEF VALVE	
AUGE WITH GAUGE COCK	
R	
R WELL	
E SENSOR	
INSOR	
PRESSURE SWITCH	
HERMOSTAT	
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	GS, &
	VALVES, FITTINGS, & DEVICES
THRU WALL OR FLOOR	/ES, F
	VAL/
JOINT	
IYPE)	
SKET TYPE)	
REDUCER	
EDUCER	
FLOW	
SLOPE	
ONTROLLER	
NATER SUPPLY	Q
NATER RETURN	PIPING
DRAIN THIS LIST ARE NECESSARILY USED ON THIS PROJECT	

HER SYMBOLS DESCRIPTION

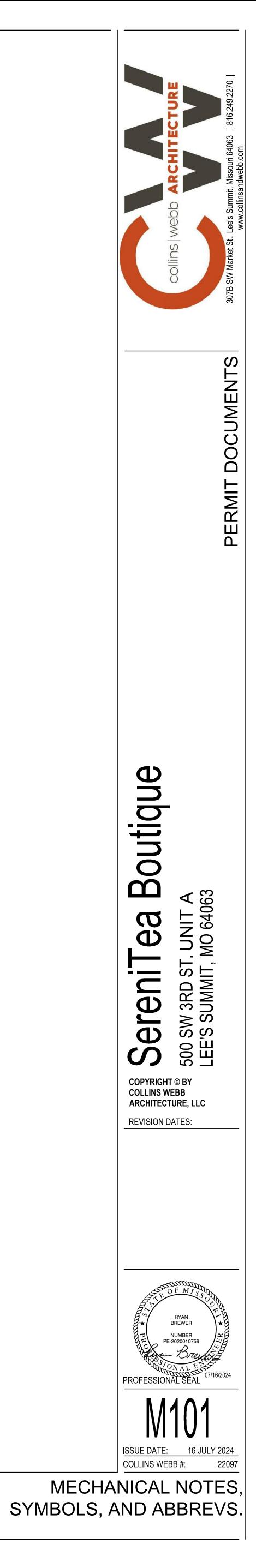
NNECTION TO EXISTING DUCT OR PIPE

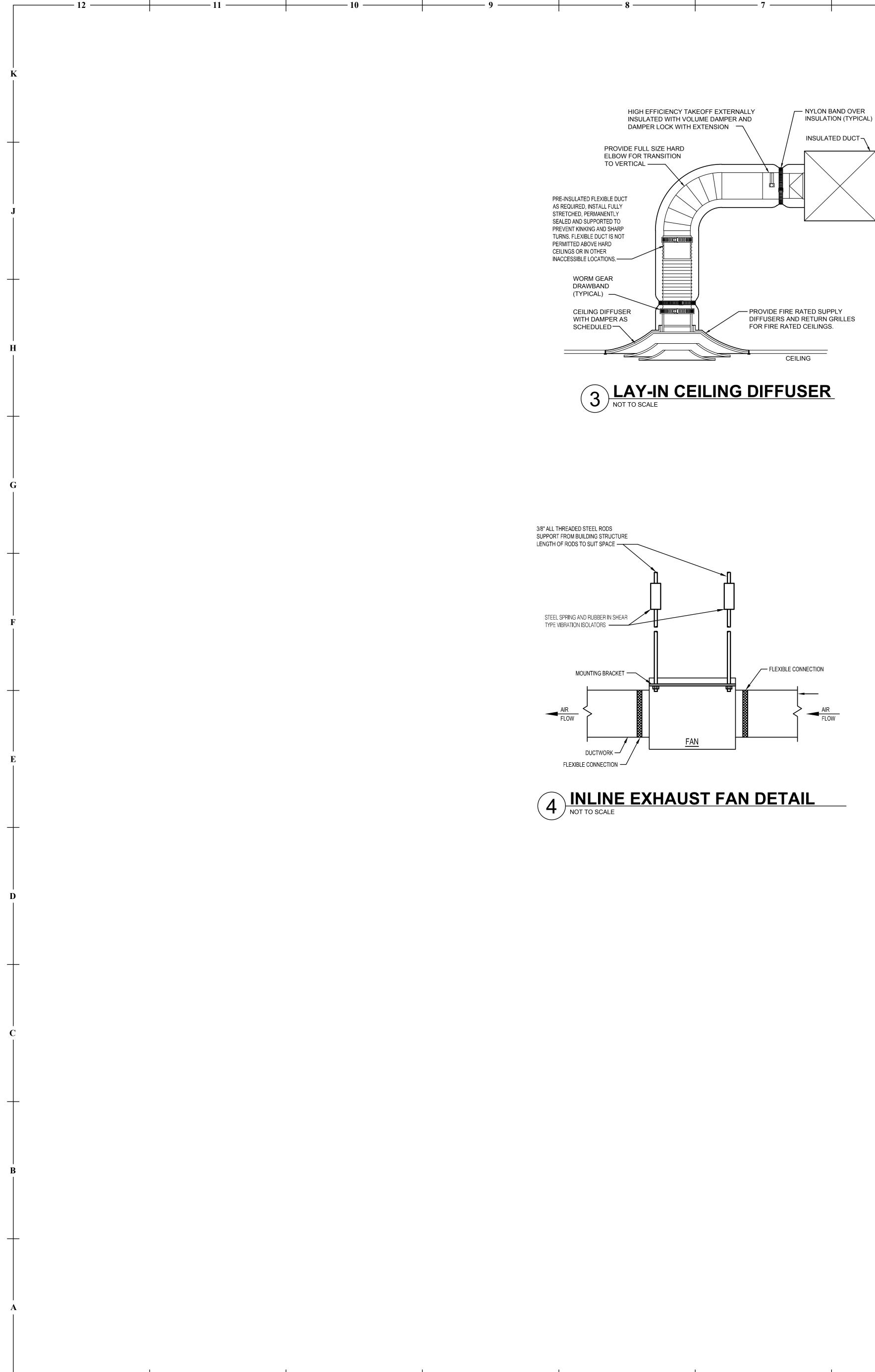
1.	PRIOR TO SUBMITTING BID, VISIT THE SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING
	CONDITIONS OF THE PROJECT. REVIEW GENERAL NOTES, SPECIFICATIONS AND ALL OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS WHICH MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF
	THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER AND/OR OWNER OF ANY CONFLICTS
	OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
2.	COORDINATE THE INSTALLATION OF MECHANICAL SYSTEMS WITH OTHER TRADES TO ENSURE A NEAT
	AND ORDERLY INSTALLATION. DUCTWORK AND PIPING SHALL BE ROUTED TO AVOID CONFLICTS WITH
`	ELECTRICAL PANELS, LIGHTING FIXTURES, ETC.
3.	TAKE NECESSARY PRECAUTIONS TO AVOID DAMAGING EXISTING SURFACES AND EQUIPMENT TO REMAIN FOR NEW INSTALLATION DURING WORK. REPAIR ANY DAMAGE CAUSED DURING
	CONSTRUCTION AT NO COST TO THE OWNER.
4.	ALL MECHANICAL EQUIPMENT SHOWN ON THE MECHANICAL PLANS SHALL BE PROVIDED BY THE
	MECHANICAL CONTRACTOR UNLESS OTHERWISE NOTED.
5.	NEW MECHANICAL EQUIPMENT, DUCTWORK AND PIPING IS SHOWN AT APPROXIMATE LOCATIONS. FIELD
	MEASURE FINAL DUCTWORK AND PIPING LOCATIONS PRIOR TO FABRICATION AND SHALL MAKE
	ADJUSTMENTS AS REQUIRED TO FIT THE DUCTWORK AND PIPING WITHIN THE AVAILABLE SPACE. FIELD
	VERIFY FINAL LOCATIONS TO INSTALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS REGARDING SERVICE CLEARANCE AND PROPER AIRFLOW CLEARANCE AROUND
	EQUIPMENT.
ô.	REFER TO ARCHITECTURAL DRAWINGS FOR ALL RELATED CONSTRUCTION DETAILS AS APPLICABLE TO
	THE HVAC SYSTEM. CHASE AND PENETRATIONS INTENDED FOR DUCTWORK AND PIPING SHALL BE
	VERIFIED WITH ARCHITECTURAL DRAWINGS PRIOR TO INSTALLATION.
7.	COORDINATE LOCATION OF ROOF PENETRATIONS WITH THE EXISTING CONDITIONS AND
n	ARCHITECTURAL DRAWINGS.
8.	SEAL ALL PENETRATIONS THROUGH THE BUILDING COMPONENTS IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS. FIREPROOF ALL PENETRATIONS THROUGH FIRE RATED
	COMPONENTS IN ACCORDANCE WITH U.L. REQUIREMENTS.
9.	COORDINATE THE EXACT MOUNTING SIZE AND FRAME TYPE OF DIFFUSERS, REGISTERS AND GRILLES
-	WITH THE SUPPLIER TO MEET THE CEILING, WALL, AND DUCT INSTALLATION REQUIREMENTS.
10.	LOCATION OF CEILING DIFFUSERS, REGISTERS, AND GRILLES SHALL BE ADJUSTED AS REQUIRED TO
	ACCOMMODATE FINAL CEILING AND LIGHTING LOCATIONS.
11.	DUCTWORK CROSSING FIRE RATED WALL OR OTHER FIRE RATED ASSEMBLIES SHALL BE MINIMUM 26
12.	GAUGE SHEET METAL. PROVIDE FIRE AND/OR FIRE/SMOKE DAMPERS IN DUCTWORK AT CEILINGS AND WALLS AS REQUIRED BY
12.	BUILDING CODE AUTHORITY HAVING JURISDICTION. FIRE AND FIRE/SMOKE DAMPERS SHALL CONFORM
	TO NFPA AS APPLICABLE.
13.	PROVIDE WALL AND/OR DUCT ACCESS PANELS OR DOORS FOR ACCESS TO ALL FIRE AND/OR
	FIRE/SMOKE DAMPERS. ACCESS PANEL OR DOOR SHALL BE MINIMUM SIZE OF 6"x6" AND SHALL BE
	INSTALLED WITH 12" OF DAMPER. PROVIDE A REMOVABLE DUCT SECTION WHERE DUCT SIZE IS TOO
	SMALL FOR A 6"X6" ACCESS DOOR.
14.	THERMOSTATS AND HUMIDISTATS SHALL BE LOCATED AND SET BY MECHANICAL CONTRACTOR AND WIRED IN CONDUIT BY ELECTRICAL CONTRACTOR. VERIFY EXACT LOCATIONS WITH ARCHITECT PRIOR
	TO INSTALLATION. MOUNTING HEIGHTS SHALL BE 48" AFF TO MEET ADA REQUIREMENTS UNLESS
	OTHERWISE NOTED ON PLANS.
15.	COORDINATE THE LOCATION AND ELEVATION OF WALL-MOUNTED DEVICES WITH ANY WALL MOUNTED
	ITEMS INDICATED ON THE ARCHITECTURAL DRAWINGS. CONTRACTOR WILL NOT BE REIMBURSED FOR
	RELOCATION OF ANY WALL-MOUNTED DEVICES CAUSED BY A LACK OF COORDINATION.
16.	ALL BRANCH DUCT CONNECTIONS AND TAKE-OFFS TO INDIVIDUAL DIFFUSERS, REGISTERS, AND
	GRILLES SHALL HAVE A PREFABRICATED 45 DEGREE, HIGH EFFICIENCY. RECTANGULAR/ROUND BRANCH DUCT TAKEOFF FITTING WITH MANUAL BALANCING DAMPER AND LOCKING QUADRANT.
17.	BRANCH DUCTWORK TO AIR OUTLETS SHALL BE SAME SIZE AS OUTLET NECK SIZE UNLESS OTHERWISE
	NOTED.
18.	RIGID DUCTWORK INSULATION: PROVIDE R-6 MINIMUM INSULATION WRAP ON ALL CONCEALED
	DUCTWORK. PROVIDE R-6 MINIMUM INTERNAL DUCT LINER ON ALL EXPOSED DUCTWORK. DUCT SIZES
	ON MECHANICAL PLANS INDICATE CLEAR INSIDE DIMENSIONS, SHEET METAL SIZES SHALL INCREASE
	ACCORDINGLY. PROVIDE R-12 MINIMUM INSULATION ON ALL DUCTWORK INSTALLED IN UNCONDITIONED SPACES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
19.	FLEXIBLE DUCT WORK SHALL BE THERMAFLEX TYPE MKE, FLEXMASTER TYPE 8M, OR APPROVED EQUAL,
	SHALL BE LISTED UNDER 181 AS CLASS 1 AIR DUCT AND SHALL BE PROVIDED WITH INTEGRAL R-6
	MINIMUM FIBERGLASS INSULATION. FLEXIBLE DUCTWORK SHALL NOT EXCEED 5'-0" IN LENGTH AND
	SHALL BE INSTALLED AND SUPPORT TO AVOID SHARP BENDS AND SAGGING.
20.	WALL MOUNTED DIFFUSERS AND GRILLES SHALL BE PROVIDED WITH SUITABLE MOUNTING FRAME TO
	MATCH WALL CONSTRUCTION. COORDINATE WITH ARCHITECTURAL DRAWINGS.

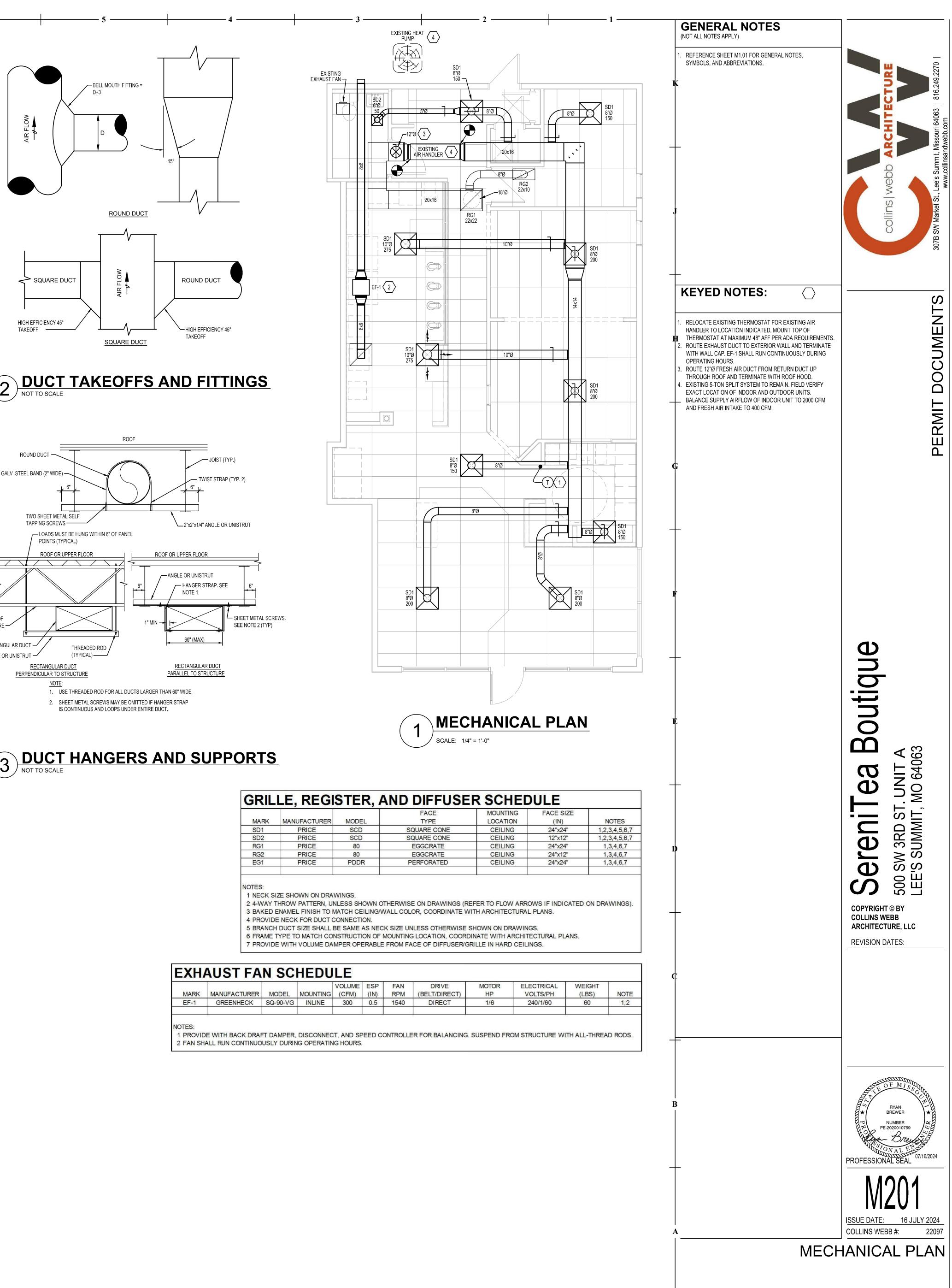
- 1. REFER TO ARCHITECTURAL PLANS FOR RATED WALLS AND PARTITIONS. VERIFY FIRE AND/OR SMOKE DAMPER LOCATIONS AT DUCTS OR OPENINGS PENETRATING THESE WALLS.
- 2. REFER TO ARCHITECTURAL PLANS FOR ROOM NAMES AND NUMBERS. 3. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF CEILING
- DIFFUSERS, REGISTERS, AND GRILLES. 4. VERIFY LOCATIONS OF THERMOSTATS WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION.
- 5. VERIFY LOCATIONS OF EXPOSED DUCTS WITH ARCHITECT PRIOR TO INSTALLATION. 6. DUCT DIMENSIONS INDICATED ON PLANS ARE FREE AREA DIMENSIONS. 7. SUPPLY AND RETURN AIR DUCT SHALL BE INTERNALLY LINED WHERE SPECIFIED.
- 8. ALL LOUVER SIZES ON MECHANICAL PLANS ARE GIVEN IN FREE AREA REQUIRED. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS AND LOCATIONS. 9. COORDINATE TERMINAL BOX AND BALANCING DAMPER LOCATIONS CAREFULLY TO INSURE PROPER AND ADEQUATE ACCESS TO FILTERS, MOTORS, CONTROL VALVES, CONTROL PANLES, ETC. PROVIDE ACCESS PANELS AS SPECIFIED WHERE REQUIRED TO ASSURE THIS
- ACCESS. 10. CEILING PLENUM SPACE IS VERY TIGHT. WHERE REQUIRED, DUCTS OR PIPES SHALL BE ROUTED BETWEEN LIGHT FIXTURES AND UP AND OVER OTHER DUCTS OR PIPES USING THE SPACES BETWEEN STRUCTURAL JOISTS OR BEAMS WHERE APPLICABLE. CONTRACTOR SHALL BE RESPONSIBLE FOR CAREFULLY COORDINATING ALL TRADES. EXISTING UNKNOWN CONDITIONS MAY AFFECT EXACT DUCT OR PIPE ROUTING, OR EXISTING CONDITIONS MAY NEED TO BE MODIFIED TO ACCOMMODATE DUCTS AND PIPES.

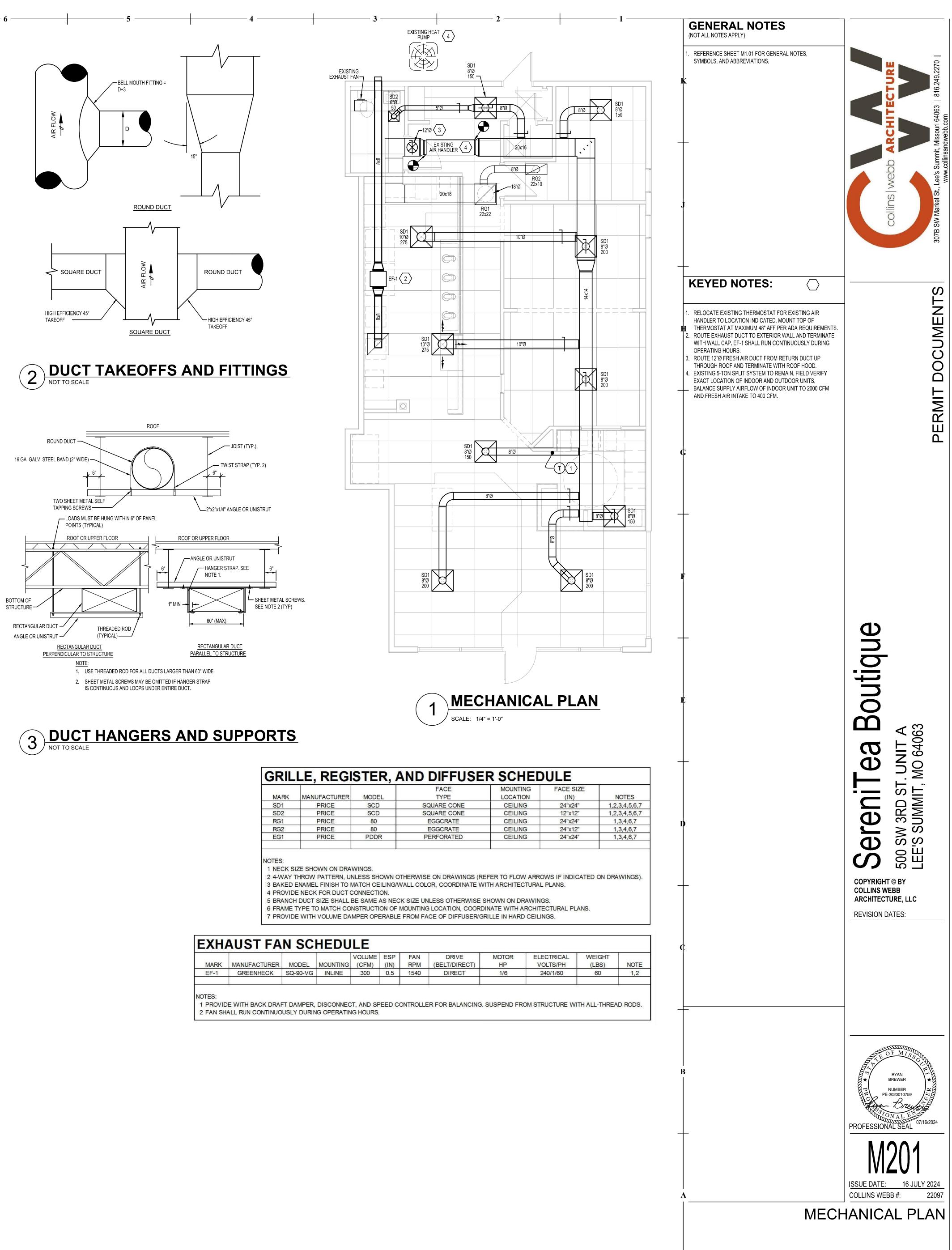
ERAL EQUIPMENT - EQUIPMENT ABBREVIATION

HU-R-2 - SCHEDULE DESIGNATION NUMBER. LEVEL OR BUILDING:









EXH/	EXHAUST FAN SCHEDULE										
MADIC		MODEL	MOUNTING	VOLUME		FAN		MOTOR	ELECTRICAL	WEIGHT	NOTE
MARK	MANUFACTURER	MODEL	MOUNTING	(CFM)	(IN)	RPM	(BELT/DIRECT)	HP	VOLTS/PH	(LBS)	NOTE
EF-1	GREENHECK	SQ-90-VG	INLINE	300	0.5	1540	DIRECT	1/6	240/1/60	60	1,2
	E WITH BACK DRAF					ONTROLLE	R FOR BALANCING	6. SUSPEND FRO	M STRUCTURE W	I ITH ALL-THREA	D RODS.

15000 - BASIC MECHANICAL REQUIREMENTS

DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ALL OTHER SPECIFICATION SECTIONS, APPLY TO THIS AND THE OTHER SECTIONS OF DIVISION 15.

READ THE SPECIFICATIONS AND REVIEW DRAWINGS FOR ALL DIVISIONS OF WORK AND COORDINATE AND THE WORK OF SUBCONTRACTORS WITH ALL DIVISIONS OF WORK. PROVIDE SUBCONTRACTORS WITH A COMPLETE SET OF BID DOCUMENTS.

SCHEDULE THE COMPLETION AND INSPECTION OF WORK AND THE WORK OF SUBCONTRACTORS WORK TO COMPLY WITH THE SCHEDULE AND THE PROJECT COMPLETION DATE.

VISIT THE SITE PRIOR TO SUBMITTAL OF BID TO DETERMINE CONDITIONS AFFECTING THE WORK. ANY ITEMS WHICH ARE NOT COVERED IN THE BID DOCUMENTS OR ANY PROPOSED SUBSTITUTIONS SHALL BE LISTED SEPARATELY AND QUALIFIED IN THE BID. SUBMITTAL OF BID SHALL SERVE AS EVIDENCE OF KNOWLEDGE OF EXISTING CONDITIONS AND ANY MODIFICATIONS WHICH ARE REQUIRED TO MEET THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. FAILURE TO VISIT THE SITE DOES NOT RELIEVE RESPONSIBILITY IN PERFORMANCE OF WORK.

READ ALL RELEVANT DOCUMENTS, BECOME FAMILIAR WITH THE JOB, SCOPE OF WORK, TYPE OF GENERAL CONSTRUCTION, AND THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS. ALSO UNDERSTAND THE PURPOSE FOR MATCH EXISTING STRUCTURE. EXISTING ABANDONED PIPES, DUCTS, OR EQUIPMENT IN WHICH THESE DOCUMENTS HAVE BEEN PREPARED AND BECOME COGNIZANT OF ALL THE DETAILS INVOLVED. COORDINATE WORK WITH THAT OF OTHERS.

DEFINITIONS:

FURNISH - PURCHASE AND DELIVER TO PROJECT SITE COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT. INSTALL - UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY TO ESTABLISH SECURE MOUNTING AND CORRECT OPERATION AT THE PROPER PERFORM ALL CUTTING AND PATCHING AS REQUIRED FOR THE INSTALLATION OF THE LOCATION IN THE PROJECT

GENERAL REQUIREMENTS

PROVIDE - FURNISH AND INSTALL

PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE MECHANICAL SYSTEM AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS. ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE OTHERS SHALL BE PROVIDED. CLOSELY COORDINATE THE ENTIRE INSTALLATION WITH THE ARCHITECT-ENGINEER, AS REQUIRED.

THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER AND ANY MATERIAL OR LABOR CALLED FOR IN ONE SHALL BE FURNISHED AND INSTALLED EVEN PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY MATERIAL OR LABOR WHICH IS NEITHER SHOWN ON THE DRAWINGS NOR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR. IS OBVIOUSLY NECESSARY TO COMPLETE THE WORK, AND WHICH IS USUALLY INCLUDED IN WHICH SHALL EXTEND 2" ABOVE THE FLOOR. COORDINATE THROUGH THE ARCHITECT ANY WORK OF SIMILAR CHARACTER, SHALL BE FURNISHED AND INSTALLED AS PART OF CONTRACT

WHERE THE DRAWINGS OR SPECIFICATIONS CALL FOR ITEMS WHICH EXCEED CODES OR THE OWNERS CRITERIA, PROVIDE THE SYSTEM WITH THE MORE STRINGENT REQUIREMENTS AS DESIGNED AND DESCRIBED ON THESE DRAWINGS, UNLESS SPECIFICALLY NOTED OTHERWISE.

ALL MECHANICAL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING, AND REPAIRING, THIS CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUFFICIENT SERVICE ACCESS TO ALL EQUIPMENT

ALL WORK SHALL BE PERFORMED IN A NEAT PROFESSIONAL MANNER USING GOOD ENGINEERING PRACTICES.

UNLESS SPECIFICALLY NOTED OTHERWISE, MATERIALS, PRODUCTS, AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW, UNDERWRITERS LABORATORIES LISTED AND LABELED AND SIZED IN CONFORMITY WITH REQUIREMENTS OF STATE AND LOCAL CODES, WHICHEVER IS MORE STRINGENT.

ALL WORK SHALL CONFORM TO THE OWNER'S CRITERIA, THE STATE'S, COUNTY'S, CITY'S AND LOCAL CODES AND ORDINANCES. SAFETY AND HEALTH CODES, NFPA CODES, ENERGY METHODS ARE ALSO SUBJECT TO LANDLORD CRITERIA. CODES AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS, INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS. INCLUDE ANY CHANGES REQUIRED BY CODES IN THE BID AND IF THESE CHANGES ARE NOT INCLUDED IN THE BID. THEY MUST BE QUALIFIED AS A SEPARATE LINE ITEM IN THE BID. AFTER CONTRACT IS ISSUED, NO ADDITIONAL COST DUE TO CODE ISSUES SHALL BE REIMBURSED BY THE OWNER.

LICENSES, PERMITS, COMMISSIONING, INSPECTIONS & FEES

OBTAIN AND PAY FOR ALL LICENSES, PERMITS, COMMISSIONING, INSPECTIONS, AND FEES REQUIRED OR RELATED TO THIS WORK.

PROVIDE TO THE OWNER-ARCHITECT A COMMISSIONING PLAN, PRELIMINARY COMMISSIONING REPORT, FINAL COMMISSIONING REPORT, AND CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT COMPLETION OF PROJECT.

TRADE NAMES, MANUFACTURERS AND SHOP DRAWINGS

WHERE TRADE NAMES AND MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE USED AS A MINIMUM FOR THE BASE BID. MANUFACTURERS CONSIDERED AS AN EQUAL OR BETTER IN ALL ASPECTS TO THAT SPECIFIED WILL BE SUBJECT TO APPROVAL IN WRITING BY ARCHITECT-ENGINEER PRIOR TO BID THROUGH SHOP DRAWING SUBMITTAL PROCESS, FOR ACCEPTANCE PRIOR TO INSTALLATION. ANY CHANGES TO ELECTRICAL SERVICE, STRUCTURAL FRAMING, ETC. OR ANY OTHER MODIFICATION THAT IS REQUIRED BY THE USE OF ALTERNATE EQUIPMENT SHALL BE COORDINATED WITH OTHER TRADES AND SHALL INCLUDE ALL COSTS IN BID FOR THE REQUIRED CHANGES. THE USE THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT NO EXPENSE TO THE OWNER.

GUARANTEE

GUARANTEE ALL MATERIALS AND WORK PROVIDED UNDER THIS CONTRACT AND MAKE GOOD, REPAIR OR REPLACE AT NO EXPENSE TO THE OWNER, ANY DEFECTIVE WORK, MATERIAL, OR EQUIPMENT WHICH MAY BE DISCOVERED WITHIN A PERIOD OF TWELVE (12) MONTHS FROM THE DATE OF ACCEPTANCE (IN WRITING) OF THE INSTALLATION. EXTENDED DELAYS OR CONFLICTS IN THE PROJECT'S PROGRESS. WARRANTIES ARE AS SPECIFIED WITH INDIVIDUAL EQUIPMENT.

QUALITY ASSURANCE

INDUSTRY STANDARDS AND CODES: UNLESS MODIFIED BY THESE SPECIFICATIONS, THE DESIGN, MANUFACTURER, TESTING AND METHOD OF INSTALLING ALL MATERIALS, APPARATUS AND EQUIPMENT SHALL CONFORM TO THE FOLLOWING: 1. ARI CODE FOR REFRIGERATION APPARATUS

2. ANSI B9.1 SAFETY CODE FOR MECHANICAL REFRIGERATION 3. STANDARDS OF NATIONAL FIRE PROTECTION ASSOCIATION

4. SMACNA 5. ASHRAE

RECORD DRAWINGS

DISCREPANCIES IN DOCUMENTS

MAINTAIN ONE COPY OF DRAWINGS ON THE JOB SITE TO RECORD DEVIATIONS FROM CONTRACT DRAWINGS, SUCH AS: LOCATION OF CONCEALED PIPING VALVES AND DUCTS, REVISIONS, ADDENDUMS, AND CHANGE ORDERS, AND SIGNIFICANT DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS, AND CONTRACTOR'S COORDINATION WITH OTHER TRADES.

AT COMPLETION OF THE PROJECT AND BEFORE FINAL APPROVAL, MAKE ANY FINAL CORRECTIONS TO DRAWINGS AND CERTIFY THE ACCURACY OF EACH PRINT BY SIGNATURE THEREON. A SET OF REPRODUCIBLE DRAWINGS ALONG WITH ONE SET OF BLULINES OF THE MOST RECENT SET OF DRAWINGS WITH TEMPERATURE CONTROL DRAWINGS INCLUDED SHALL BE DELIVERED TO THE ARCHITECT UPON COMPLETION OF THE WORK AND PRIOR TO FINAL ACCEPTANCE OF THE PROJECT.

GENERAL LOCATION AND INTENT OF THE MECHANICAL SYSTEMS. WHERE DRAWINGS. EXISTING SITE CONDITIONS, SPECIFICATIONS OR OTHER TRADES CONFLICT OR ARE

ADDITIONAL COMPENSATION PERMITTED.

PHASING REQUIREMENTS

HVAC, PLUMBING OR FIRE PROTECTION SYSTEMS.

OTHER. COORDINATE ANY EXISTING EQUIPMENT REQUIRED TO BE LEFT INTACT.

BID PROPOSAL <u>UTTING AND PATCHIN</u>

WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER OR ARCHITECT. PATCHING SHALL BE OF THE SAME WORKMANSHIP, MATERIAL AND FINISH AND SHALL THE ARCHITECT.

CONDITION SUITABLE TO THE ARCHITECT.

CORE DRILLING OR CUTTING OF OPENINGS IN MASONRY FLOORS OR WALLS.

ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND/OR FLOORS SHALL BE FIRE SEALED WITH CALCIUM SILICATE, SILICONE "RTV" FOAM, "3M" FIRE RATED SEALANTS OR EQUAL, SO AS TO RETAIN THEIR FIRE RATING.

SLEEVES IN BEARING AND MASONRY WALLS, FLOORS, AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILINGS, OR FOR CONCEALED VERTICAL PIPING, SLEEVES SHALL BE NO. 22 U.S.G. GALVANIZED STEEL MINIMUM.

INSTALLATION OF WORK

POWER WIRING FROM PANELS TO MOTOR CONTROLLERS AND FROM CONTROLLERS TO MOTORS IS SPECIFIED IN DIVISION 16. MOTOR STARTERS NOT SPECIFIED TO BE HANGERS SHALL BE FASTENED TO BUILDING STEEL, CONCRETE, OR MASONRY, BUT NOT TO PIPING. HANGING FROM METAL DECK IS NOT PERMITTED. HANGERS MUST BE WIRING DIAGRAMS FOR APPROVAL AND FURNISH APPROVED DIAGRAMS TO THE ATTACHED TO UPPER CHORD OF BAR JOIST. WHERE INTERFERENCES OCCUR. AND IN ELECTRICAL CONTRACTOR FOR COORDINATION, ELECTRICAL CONTROL WIRING FOR ORDER TO SUPPORT DUCTWORK OR PIPING, INSTALL TRAPEZE TYPE HANGERS OR CONNECTION OF TEMPERATURE CONTROLLERS, PUSH BUTTONS, INTERLOCKS IN MOTOR SUPPORTS WHICH SHALL BE LOCATED WHERE THEY DO NOT INTERFERE WITH ACCESS TO CONTROLLERS, AND LIKE ITEMS IS SPECIFIED IN THE CONTROL SECTION(S) IN THIS FIRE DAMPERS, VALVES, AND OTHER EQUIPMENT. HANGER TYPES AND INSTALLATION DIVISION. FURNISH ALL EQUIPMENT WITH COMPLETE INTERNAL CONTROL WIRING. ELECTRICAL WORK SPECIFIED IN THIS DIVISION SHALL CONFORM TO APPLICABLE PROVISIONS OF DIVISION 16. ALL CONTROL WIRING SHALL BE IN CONDUIT. PROVIDE HANGERS FOR ALL INSULATED PIPING SHALL BE SIZED AND INSTALLED FOR THE OUTER MOTORS CONFORMING TO CHARACTERISTICS SHOWN ON ELECTRICAL DRAWINGS.

DIAMETER OF INSULATION. INSTALL 6" LONG SPLIT CIRCLE GALVANIZED SADDLE BETWEEN THE HANGER AND THE PIPE INSULATION.

HANGERS AND PIPING OF DISSIMILAR METALS SHALL BE DI-ELECTRICALLY SEPARATED. PROVIDE SWAY AND SEISMIC BRACING WHERE REQUIRED BY CODE.

DTECT MATERIALS, APPARATUS AND EQUIPMENT FROM DAMAGE, MOISTURE, DIRT, DEBRIS AND WORK OF OTHER TRADES.

OPERATION MANUALS AND INSTRUCTIONS

PROVIDE OPERATING AND MAINTENANCE INSTRUCTIONS AT THE COMPLETION OF THE PROJECT. SUBMIT THREE HARD BOUND COPIES TO ARCHITECT.

DETAILED INFORMATION ON THE OPERATING AND MAINTENANCE OF EQUIPMENT.

SUBMIT WITHIN THIRTY (30) DAYS AFTER THE DATE OF NOTICE TO PROCEED AND BEFORE PURCHASING ANY MATERIALS OR EQUIPMENT, SUBMIT TO THE ARCHITECT FOR REVIEW, A COMPLETE LIST, IN SIX (6) COPIES, OF ALL MATERIALS INCORPORATED IN THE WORK. THIS LISTING SHALL BE ARRANGED BY THE ORDER OF OCCURRENCE IN THE SPECIFICATIONS, FOLLOWED BY THE ITEMS ON THE DRAWING NOT SPECIFICALLY INCLUDED IN THE SPECIFICATIONS.

AFTER THE LIST HAS BEEN PROCESSED BY THE ARCHITECT, SUBMIT COMPLETE SHOP DRAWINGS AND PRODUCT DATA OF ALL EQUIPMENT. THESE SUBMITTALS SHALL BE SUBMITTED WITHIN THIRTY (30) DAYS AFTER THE PROCESSING DATE OF THE ORIGINAL SUBMITTAL LIST. SUBMISSIONS SHALL BE MADE EARLY ENOUGH IN PROJECT TO ALLOW FOR (10) WORKING DAYS FOR REVIEW BY ARCHITECT-ENGINEER WITHOUT CAUSING

ALL SUBMITTALS SHALL BE COMPLETE AND SHALL BE IN THREE-RING, LOOSE -LEAF BINDERS, NO CONSIDERATION WILL BE GIVEN TO PARTIAL SUBMITTALS, UNLESS NOTED OTHERWISE BY ARCHITECT. EACH ITEM SHALL HAVE A COVER PAGE STATING PROJECT, SPECIFICATION AND PARAGRAPH REFERENCE NUMBER, OR DRAWING REFERENCE NUMBER, AND SCHEDULED EQUIPMENT IDENTIFICATION NUMBER, IF APPLICABLE.

THE REVIEW OF SUBMITTALS DOES NOT RELIEVE RESPONSIBILITY OF SHOP DRAWING ERRORS IN DETAILS, SIZES, QUANTITIES, WIRING DIAGRAM ARRANGEMENTS AND DIMENSIONS WHICH DEVIATE FROM THE SPECIFICATIONS, CONTRACT DRAWINGS AND/OR JOB CONDITIONS AS THEY EXIST.

IF APPARATUS OR MATERIALS ARE SUBSTITUTED FOR THOSE SPECIFIED UNDER THIS SECTION, AND SUCH SUBSTITUTIONS NECESSITATE CHANGES IN OR ADDITIONAL CONNECTIONS, PIPING SUPPORTS OR CONSTRUCTIONS, SAME SHALL BE PROVIDE AT NO ADDITIONAL COST TO THE OWNER. ASSUME COST AND ENTIRE RESPONSIBILITY THEREOF. ARCHITECT'S PERMISSION TO MAKE SUCH SUBSTITUTION SHALL NOT RELIEVE FULL RESPONSIBILITY FOR WORK.

TEST AND BALANCE REPORT: SUBMIT AT FINAL INSPECTION OPERATION AND MAINTENANCE EACH PIECE OF EQUIPMENT; HOW TO SET THE TEMPERATURE CONTROL SYSTEM FOR MANUALS: SUBMIT COPIES IN COMPLIANCE WITH SECTION, OPERATION AND MAINTENANCE NORMAL OPERATION AND NORMAL RESTARTING PROCEDURES, CAUTION AND WARNING MANUALS.

15400 - HEATING VENTILATION AND & AIR CONDITIONING

ALL MATERIALS AND EQUIPMENT SHALL BE NEW. SYSTEMS SHALL FUNCTION CORRECTLY AS A WHOLE, AND IN ALL ITS PARTS, UP TO THE SPECIFIED CAPACITY, SYSTEMS OR DEVICES FAILING TO MEET PERFORMANCE REQUIREMENTS SHALL BE REPLACED, ALTERED DRAWINGS (PLANS, SPECIFICATIONS, AND DETAILS) ARE DIAGRAMMATIC AND INDICATE THE OR REPAIRED AS REQUIRED TO BRING PERFORMANCE UP TO SPECIFIED REQUIREMENTS. WORK DAMAGED OR MARRED BY SUCH REPLACEMENTS, ALTERATIONS, OR REPAIRS SHALL BE RESTORED TO PRIOR CONDITIONS, AT NO ADDITIONAL COST TO THE OWNER. WHERE

UNCLEAR, ADVISE THE ARCHITECT-ENGINEER IN WRITING, OF VARIATIONS TO CONTRACT DOCUMENTS PRIOR TO SUBMISSION OF BID. OTHERWISE, ARCHITECT-ENGINEER'S INTERPRETATION OF CONTRACT DOCUMENTS OR CONDITIONS SHALL BE FINAL WITH NO

INCLUDE IN BID ALL NECESSARY SERVICE REQUIRED TO KEEP THE OPERATING PHASE OF THE PROJECT'S HVAC, PLUMBING AND SPRINKLER SERVICE IN OPERATION. IF APPLICABLE, SCHEDULE IN WRITING WITH ARCHITECT ONE WEEK PRIOR TO ANY SHUT DOWN OF THE

COORDINATE THE DEMOLITION OF EXISTING WORK AND THE DEMOLITION PROVIDED B

VERIFY SCOPE OF AND THE REMOVAL OF ALL EXISTING FIRE PROTECTION, PLUMBING FIXTURES, PIPING, HVAC UNITS, REFRIGERANT RECAPTURE, EXHAUST FANS, ETC. AND ASSOCIATED ROOF CURBS NOT TO BE REUSED ON THIS PROJECT, UNLESS SPECIFICALLY NOTED OTHERWISE. VERIFY ALL PRESUMED ABANDONED EQUIPMENT, PIPES, DUCTWORK, AND EQUIPMENT PRIOR TO REMOVAL. ROOF CURBS SHALL BE REMOVED AND THE ROOF PATCHED. ALL EXTRANEOUS ITEMS IN THE SPACE OR ON THE ROOF NOT APPLICABLE TO THE NEW WORK MUST BE REMOVED AND ROOF/WALL/FLOOR PATCHED/REPAIRED TO THE FLOOR, EMBEDDED IN CONCRETE, OR OTHERWISE INACCESSIBLE ARE TO BE CUT OFF AND SEALED BELOW OR WITHIN FLOOR OR WALL LEVEL WHEN THEY ARE NOT TO BE POINT OF ORIGIN. CONFIRM THE EXTENT OF DEMOLITION PRIOR TO BID AND INCLUDE IN

WORK UNDER THIS SPECIFICATION. NO CUTTING OF THE STRUCTURE SHALL BE PERMITTED

MATCH ACCURATELY ALL SURROUNDING CONSTRUCTION IN A MANNER SATISFACTORY TO

EXISTING UTILITIES, ETC. THAT ARE DAMAGED DURING THE CONSTRUCTION PERIOD, WHETHER OR NOT DUE TO NEGLIGENCE SHALL BE REPAIRED OR REPLACED AND LEFT IN A

SLEEVE SHALL EXTEND THROUGH ITS RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL CHANGES SHALL TAKE EFFECT.

HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL SUCH AS ANGLE IRON, BANDS, C-CLAMPS WITH RETAINING CLIPS, CHANNELS, HANGER RODS, ETC., NECESSARY FOR THE

SCHEDULE A MEETING WITH THE OWNER'S REPRESENTATIVE AT THE SITE TO PROVIDE

MULTIPLE ITEMS OF EQUIPMENT OR MATERIALS ARE REQUIRED. THEY SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER. BEFORE ORDERING EQUIPMENT, THE PHYSICAL DIMENSIONS SHALL BE CHECKED TO VERIFY FIT IN SPACES ALLOTTED ON THE DRAWINGS. INSERTS, PIPE SLEEVES, AND SUPPORTS OF AIR CONDITIONING EQUIPMENT SHALL BE PROVIDED AS SPECIFIED. WHERE SUCH ITEMS ARE TO BE SET OR EMBEDDED IN CONCRETE, MASONRY OR SIMILAR WORK, THE ITEMS SHALL BE FURNISHED AT THE PROPER TIME FOR SETTING OR EMBEDMENT SO AS TO CAUSE NO DELAY. DUCTWORK AND EQUIPMENT ASSEMBLIES SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC. ADDITIONAL DUCTWORK AND APPURTENANCES REQUIRED FOR PROPER OPERATION OF EQUIPMENT

SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST. CTURER'S NAMES AND CATALOG NUMBE

MODEL OR CATALOG NUMBERS. THIS DOES NOT INDICATE THAT THE MATERIAL AND EQUIPMENT SPECIFIED IS NECESSARILY AN "OFF THE SHELF" ITEM; REQUIREMENTS FOR SPECIFIC FINISHES, MATERIALS OR OTHER MODIFICATIONS MAY INTRODUCE VARIANCES FROM MANUFACTURER'S STANDARDS. ASCERTAIN THAT SUCH MODIFICATIONS ARE FULLY CONSIDERED

DIAGRAMS, NAMEPLATES AND LABELS EACH MAJOR COMPONENT OF EQUIPMENT SHALL HAVE THE MANUFACTURER'S NAME, ADDRESS AND CATALOG NUMBER ON A PLATE SECURELY AFFIXED IN A CONSPICUOUS PLACE. THE NAMEPLATE OF A DISTRIBUTING AGENT WILL NOT BE ACCEPTED. ALL PIECES OF EQUIPMENT, VALVES, STARTERS, DISCONNECTS, AND ALL PNEUMATIC AND ELECTRIC CONTROL INSTRUMENTS AND APPARATUS SHALL BE IDENTIFIED WITH 1/16" THICK BLACK LAMINATED PLASTIC NAMEPLATES, WITH 3/16" HIGH WHITE LAMINATED LETTERS. SIMILAR AND LIKE EQUIPMENT SHALL BE DESIGNATED WITH NUMERICAL SUFFIX (EXAMPLE: REUSED IN THIS PROJECT. ABANDONED PIPING AND/OR DUCTWORK MUST BE REMOVED TO THERMOSTAT, T-1). THE NAMEPLATE IDENTIFICATIONS SHALL COINCIDE WITH ITEMS APPEARING ON DIAGRAMS. PROVIDE A LABEL FOR THE MECHANICAL SYSTEM STATING: (NAME, ADDRESS AND PHONE NUMBER OF CONTRACTOR). LETTERS SHALL BE 1/4" HIGH AND LOCATED IN A CONSPICUOUS PLACE NEAR THE HVAC EQUIPMENT.

INSTALLATION AND WORKMANSH

THE WORK SHALL BE PERFORMED BY QUALIFIED MECHANICS. ALL MATERIALS, APPARATUS AND EQUIPMENT SHALL BE INSTALLED IN NEAT, WORKMANLIKE MANNER. MATERIALS, DEVICES OR EQUIPMENT WHICH. IN THE OPINION OF THE ARCHITECT-ENGINEER. IS AT NO ADDITIONAL COST TO THE OWNER. THE WORK SHALL BE COORDINATED WITH THE PRESSURE WORK OF OTHER TRADES. WHERE THE WORK IS DEPENDENT UPON WORK OF OTHER TRADES OR WORK ALREADY IN PLACE, SUCH OTHER WORK AND WORK IN PLACE SHALL BE SWING CHECK VALVES (2-INCH AND SMALLER): CLASS 150, CAST BRONZE BODY AND CAP EXAMINED AND SHALL BE IN PROPER CONDITION AND STATE OF COMPLETION BEFORE CONTINUING THE INSTALLATION. THE INSTALLATION OF WORK SHALL, IN GENERAL, BE AS HIGH AS POSSIBLE AND LOCATED IN ACCORDANCE WITH THE DRAWINGS. DUCTWORK INDICATED SHALL BE FOLLOWED AS ACCURATELY AS POSSIBLE. ANY NECESSARY DEVIATIONS SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT-ENGINEER. PROVIDE DRAWINGS SHOWING PROPOSED CHANGES. APPROVAL IS REQUIRED BEFORE

LAYOUT OPENINGS FOR CUTTING BY OTHER TRADES AS REQUIRED. CUTTING OF STEEL, CONCRETE OR ANY OTHER STRUCTURAL PART MUST BE APPROVED IN WRITING BY ARCHITECT-ENGINEER PRIOR TO CUTTING.

DO NOT CUT OR PENETRATE WATERPROOFED SURFACES, OR WATERPROOFING MEMBRANES, WITHOUT FIRST MAKING ARRANGEMENTS FOR REPAIR BY A METHOD APPROVED BY ARCHITECT-ENGINEER.

PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.

CESS DOORS (ACCESS PANELS ROVIDE ACCESS REQUIRED FOR MAINTENANCE, ADJUSTMENT, REMOVAL AND REPAIR OF VALVES, CONTROLS, DAMPERS, EQUIPMENT AND LIKE ITEMS. PROVIDE ACCESS DOORS (ACCESS PANELS) CONFORMING TO REQUIREMENTS OF DIVISION 8 SPECIFICATIONS. PANELS SHALL BE LOCATED TO MAKE ALL ITEMS EASILY ACCESSIBLE.

REFER TO GENERAL CONDITIONS FOR CLEAN-UP. CLEAN ALL MATERIALS AND EQUIPMENT OF DIRT, DUST, PAINT, SPOTS AND STAINS, SOIL MARKS AND OTHER FOREIGN MATTER.

GIVE NOTICE TO THE ARCHITECT-ENGINEER THAT THE WORK IS READY FOR FINAL INSPECTION.

1. SUBMIT TEST AND BALANCE REPORT AND COMPLETE REQUIREMENTS AS NOTED. 2. SUBMIT LETTER FROM CONTROL MANUFACTURER CERTIFYING THAT CONTROLS HAVE BEEN CHECKED FOR OPERATION AND CALIBRATION, AND THAT THE SYSTEM IS OPERATING AS INTENDED.

FURNISH NECESSARY MECHANICS TO OPERATE SYSTEM, MAKE NECESSARY ADJUSTMENTS AND ASSIST WITH FINAL INSPECTION.

INSTRUCTION OF OWNER'S OPERATING PERSONNE INCLUDE THE COST OF THE SERVICES OF QUALIFIED INSTRUCTOR(S) TO INSTRUCT THE OWNER'S OPERATING PERSONNEL IN THE OPERATION, ADJUSTMENT, CARE AND MAINTENANCE OF ALL HVAC EQUIPMENT AND SYSTEMS. INSTRUCTION SHALL BE PERFORMED AT A TIME APPROVED BY THE OWNER AND AFTER ALL HVAC EQUIPMENT AND SYSTEMS ARE INSTALLED, COMPLETE, ADJUSTED AND OPERATING TO SPECIFIED REQUIREMENTS. NOTIFY THE ARCHITECT-ENGINEER WHEN INSTRUCTIONS WILL BE GIVEN. QUALIFICATIONS OF INSTRUCTORS SHALL BE SUBJECT TO APPROVAL OF THE OWNER AND EQUIPMENT MANUFACTURER. ADDITIONAL REQUIREMENTS CONCERNING OPERATION AND MAINTENANCE OF MECHANICAL EQUIPMENT AND SYSTEMS MAY BE SPECIFIED IN OTHER SECTIONS. TWO COPIES OF ACKNOWLEDGMENT OF ALL REQUIRED INSTRUCTIONS TO OWNER'S OPERATING PERSONNEL, SIGNED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE, SHALL BE SUBMITTED TO THE ARCHITECT-ENGINEER PRIOR TO SUBMITTING APPLICATION FOR FINAL PAYMENT. AN ADDITIONAL COPY OF THIS ACKNOWLEDGMENT IS REQUIRED IN EACH COPY OF OPERATION AND MAINTENANCE

OPERATION AND MAINTENANCE MANUALS

FURNISH THREE COPIES OF COMPLETE OPERATION AND MAINTENANCE MANUALS TO THE ARCHITECT-ENGINEER, FOR APPROVAL AND FOR THE OWNER, ON ALL EQUIPMENT AND SYSTEMS. THE MANUALS SHALL BE BOUND IN HARD-BACK, THREE RING LOOSE-LEAF BINDERS. MANUALS SHALL CONTAIN A TITLE SHEET WITH JOB NAME, AND THE NAMES, ADDRESSES AND PHONE NUMBERS OF THE CONTRACTOR, SUBCONTRACTOR, CONTROL SUBCONTRACTOR, RELATED CONTRACTORS AND MATERIAL AND EQUIPMENT SUPPLIERS.

MANUALS REQUIRED IN THE SECTION, OPERATION AND MAINTENANCE MANUALS.

A COPY OF ACKNOWLEDGMENT OF INSTRUCTION TO THE OWNER'S OPERATING PERSONNEL IN THE OPERATION OF ALL MECHANICAL EQUIPMENT AND SYSTEMS, SIGNED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE. TYPEWRITTEN OPERATING INSTRUCTIONS FOR THE OWNER'S PERSONNEL DESCRIBING HOW TO STOP AND START NOTICES. APPROVED SHOP DRAWINGS, PRODUCT DATA AND PARTS AND MAINTENANCE BOOKLET FOR EACH ITEM OF MATERIAL AND EQUIPMENT FURNISHED UNDER DIVISION 15000. RECORD DRAWINGS OF ALL SYSTEMS INCLUDING ELECTRICAL AND CONTROL DIAGRAMS. TEST AND BALANCE REPORT. COPIES OF CERTIFICATES OF INSPECTION. GUARANTEES, INCLUDING EXTENDED GUARANTEES.

DELIVER THE MANUALS TO THE OWNER PRIOR TO SUBMITTING APPLICATION FOR FINAL PAYMENT

HVAC/HYDRONIC PIPING

CONDENSATE DRAIN

PROVIDE CONDENSATE DRAINS FOR ALL AIR CONDITIONING UNITS AND PIPE AS DENOTED ON DRAWINGS. CONDENSATE DRAIN PIPING SHALL BE INSTALLED WITH TRAP AT THE COIL CONNECTION AND SHALL HAVE A MINIMUM SEAL DEPTH EQUAL TO THE RESPECTIVE AIR HANDLING UNIT FAN STATIC PRESSURE. DEPTH SHALL BE A MINIMUM OF 2".

PROVIDE SUPPLY AND RETURN CONDENSER WATER PIPING AS SHOWN ON DRAWINGS AND SPECIFIED HEREIN. HYDRONIC PIPING FOR CHILLED WATER, CONDENSER WATER AND/OR HEATING WATER SHALL BE ASTM A-120, SCHEDULE 40, ERW, BLACK STEEL PIPE WITH PLAIN ENDS. INSTALL STEEL PIPE WITH WELDED JOINTS WHERE PIPE IS 2-1/2 INCH AND LARGER. INSTALL STEEL PIPE WITH THREADED JOINTS AND FITTINGS FOR 2 INCH AND SMALLER PIPE. MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR ON ALL PARTS AND FIVE (5) PROVIDE DIELECTRIC UNIONS BETWEEN DISSIMILAR METALS. ALL PIPING SHALL BE IN SPECIFIC REFERENCES HAVE BEEN MADE TO ONE OR MORE MANUFACTURER'S NAMES AND STRICT CONFORMANCE WITH ASTM, AND ASA, WHICHEVER IS MOST STRINGENT. UNIONS OR FLANGES MUST BE USED AT EQUIPMENT CONNECTIONS WHERE SERVICE OR REMOVAL MAY BE REQUIRED.

> ALL PIPING AND EQUIPMENT SHALL BE PRESSURE TESTED WITHOUT LEAKAGE AT A MINIMUM PRESSURE OF 125 PSI.

ALL HYDRONIC PIPING AND EQUIPMENT CONNECTED TO THE HVAC PIPING SYSTEM SHALL BE CLEANED AND FLUSHED. REMOVE, CLEAN, AND REPLACE STRAINER SCREENS. FILL TENANT'S SYSTEM WITH DOMESTIC WATER OR PER LANDLORD'S REQUIREMENTS AND VENT ALL PIPING AND EQUIPMENT PRIOR TO CONNECTION TO THE LANDLORD'S SYSTEM. DO NOT FILL SYSTEM WITH WATER FROM THE BASE BUILDING SYSTEM UNLESS SPECIFICALLY INSTRUCTED TO DO SO.

PRIOR TO CONNECTION TO THE BASE BUILDING SYSTEM, OBTAIN WRITTEN CONFIRMATION THAT ALL TESTING, FLUSHING, AND PROPER FILLING OF THE SYSTEM HAS BEEN COMPLETED IN ACCORDANCE TO THE BASE BUILDING REQUIREMENTS AND THAT THE SYSTEM IS READY TO BE CONNECTED TO THE BASE BUILDING SYSTEM.

GATE VALVES (2-INCH AND SMALLER): CLASS 150, BODY AND UNION BONNET OF ASTM B 62 CAST BRONZE WITH THREADED OR SOLDER ENDS, INTEGRAL SEAT, RENEWABLE SOLID BRONZE WEDGE DISC, RISING STEM, SCREWED BONNET AND RE-PACKABLE UNDER PRESSURE. BALL VALVES ARE ACCEPTED AS AN EQUAL SUBSTITUTION.

GATE VALVES (2-1/2 INCH AND LARGER); CLASS 125 CAST IRON BODY, RENEWABLE BRONZE SERVICING OF FAN MOTOR. THE MOTOR SHALL BE THREE SPEED PSC TYPE AND BE IMPROPERLY INSTALLED SHALL BE REMOVED AND REINSTALLED IN AN APPROVED MANNER SEATS AND SOLID WEDGE DISC, RISING STEM, FLANGED ENDS, AND RE-PACKABLE UNDER

CONFORMING TO ASTM B 62 WITH HORIZONTAL SWING, Y-PATTERN, RENEWABLE BRONZE DISC, AND HAVING THREADED OR SOLDERED ENDS.

SWING CHECK VALVE (2-1/2 INCH AND LARGER): CLASS 125 CAST IRON BODY AND BOLTED CAP, HORIZONTAL SWING, RENEWABLE BRONZE DISC, FLANGED ENDS AND CAPABLE OF BEING REFITTED WHILE THE VALVE REMAINS IN THE LINE.

COMBINATION BALANCING AND SHUT-OFF VALVES: BELL & GOSSETT CIRCUIT SETTER WITH LOCKING SET POINT. A CIRCUIT SETTER BALANCE WHEEL MUST BE INCLUDED WITH O & M MANUAL. TACO OR GRISWALD ARE CONSIDERED AS EQUAL.

PRESSURE/TEMPERATURE TEST PLUGS (PETE'S PLUG) - 1/4 INCH NPT FITTINGS TO RECEIVE EITHER A TEMPERATURE OR PRESSURE PROBE, 1/8 INCH O.D. FITTING AND CAPS SHALL BE BRASS WITH VALVE CORE OF NORDEL, RATED AT 400 PSIG, 0°F TO 200°F.

STRAINERS - "Y" PATTERN STRAINERS, 125 PSIG, CAST IRON BODY WITH PERFORATED STAINLESS STEEL SCREEN THREADED FOR 2 INCHES AND SMALLER FLANGED FOR 2-1/2 INCHES AND LARGER. SCREEN OPENING SIZE AT 0.033 INCH FOR HEATING AND 1/8 INCH FOR CHILLED OR CONDENSER WATER. PROVIDE WITH BLOWDOWN VALVE WITH HOSE END FITTING.

THERMOFLO INDICATOR - BELL & GOSSETT MODEL "TFI".

LL HYDRONIC PIPING FOR CHILLED WATER AND/OR HEATING WATER (NOT INCLUDING FURNISHED WITH THE MOTORS FROM THE FACTORY ARE SPECIFIED IN DIVISION 16. SUBMIT CONDENSER WATER UNLESS SPECIFICALLY NOTED OTHERWISE). VALVES. FITTINGS. AND ACCESSORIES SHALL BE INSULATED. FOR PIPE SIZES UP TO 2 INCHES, INSULATE WITH 1 INCH THICK (K=0.23 @ 75 F) FIBERGLASS INSULATION WITH ALL SERVICE JACKET AND VAPOR BARRIER. FOR PIPE SIZES 2-1/2 INCHES AND LARGER, INSULATE WITH 1-1/2 INCH THICK (K=0.23 @ 75 F) FIBERGLASS INSULATION WITH ALL SERVICE JACKET AND VAPOR BARRIFR

> INSULATION AT ALL HANGERS FOR PIPING 2 1/2 INCHES AND LARGER SHALL BE HARD AND PREVENT TRANSMISSION OF VIBRATIONS. MAKE FLEXIBLE CONNECTION A MINIMUM OF 4 NON-COMPRESSIBLE

ALL INSULATION SHALL HAVE A FLAME SPREAD RATING OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING OF NO HIGHER THAN 50 TO CONFORM WITH THE REQUIREMENTS OF THE NFPA. PROVIDE ZESTON OR EQUAL INSULATION FITTINGS FOR ALL TEES, ELLS OR SPECIALTY FITTINGS.

INSTALL WATER MAINS WITHOUT PITCH. USE ECCENTRIC REDUCING COUPLINGS AT CHANGES IN SIZE WITH THE TOP OF PIPES AT SAME ELEVATION.

BRANCHES TO UNITS BELOW MAINS TO BE TAKEN FROM BOTTOM OF MAINS AT A 45° ANGLE, PITCH DOWNWARDS TOWARDS UNITS. BRANCHES TO UNITS ABOVE MAINS TO BE TAKEN FROM TOP OF MAINS AT A 45° ANGLE PITCHED UPWARDS TOWARDS UNITS. PITCH NOT LESS THAN 1" TO 10 FEET.

SEE MECHANICAL DETAIL DRAWINGS FOR APPLICABLE DETAILS.

HVAC INSULATION

W PRESSURE DUCTWORK INSULATION XTERNAL INSULATION SHALL BE R-6 MINIMUM SCHULLER TYPE SMALLLITE, FSK SPIN-GLAS PAINTING: PAINT INTERIOR OF DUCTWORK FLAT BLACK WHERE VISIBLE THROUGH GRILLES OR APPROVED EQUAL WITH AN EMBOSSED ALUMINUM FOIL FACING. INTERNAL INSULATION AND REGISTERS. SHALL BE R-6 MINIMUM LINER WITH A COATED AIR SIDE SURFACE TO PREVENT EROSION. APPLY ADHESIVES AND FASTENERS PER SMACNA AND THE MANUFACTURER. ALL TRANSVERSE EDGES TO BE COATED WITH ADHESIVE. ALL CONCEALED DUCTWORK SHALL HAVE EXTERNAL INSULATION, UNCONCEALED DUCTWORK SHALL BE INTERNALLY LINED. DUCTWORK INSTALLED IN UNCONDITIONED SPACES SHALL BE R-12 MINIMUM SCHULLER TYPE SMALLLITE, FSK SPIN-GLAS OR APPROVED EQUAL WITH AN EMBOSSED ALUMINUM FOIL FACING

ALL AIR SUPPLY DIFFUSERS BACKS AND NECKS, SHALL BE INSULATED WITH R-6 MINIMUM MANVILLE R-SERIES SMALLITE, OR APPROVED EQUAL FIBERGLASS BLANKET INSULATION.

ADHESIVES, MASTIC, SEALANTS ADHESIVE SHALL BE FOSTER'S 85-20. STUDWELD PINS SHALL BE SEALED WITH FOSTER'S 30-36 ADHESIVE. ALL JOINTS, SEAMS AND BREAKS IN THE VAPOR BARRIER SHALL BE SEALED WITH FOSTER'S 35-00, REINFORCED WITH 4 INCH WIDE GLASS FABRIC.

TERMINAL HEAT TRANSFER UNITS

INSTALL AIR CONDITIONING UNITS OF THE CAPACITIES INDICATED, COMPLETE WITH GAS-FIRED HEATING SYSTEM, WHERE INDICATED ON THE DRAWINGS. UNIT SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPLICABLE ASME AND ANSI CODES AND SHALL BE LISTED BY UNDERWRITER'S LABORATORIES. UNIT SHALL BE RATED IN ACCORDANCE WITH THE LATEST ARI STANDARD 21. WHERE SPECIFIED OPERATING CONDITIONS ARE OTHER THAN ARI STANDARD CONDITIONS, CAPACITIES SHALL BE INTERPOLATED FROM ARI CONDITIONS.

UNITS SHALL BE TRANE, LENNOX, AAON OR APPROVED EQUAL

EXHAUST FANS

NLINE EXHAUST FAI INSTALL DIRECT DRIVE CENTRIFUGAL INLINE EXHAUST FAN BY GREENHECK OR APPROVED EQUAL WITH GALVANIZED STEEL HOUSING. BACKWARD INCLINED ALUMINUM WHEEL. ACCESS PANELS, INTEGRAL DUCT CONNECTION FLANGES, BALL BEARING MOTORS, AND CORROSION RESISTANT FASTENERS. FAN SHALL COME INSTALLED WITH NEMA-1 TOGGLE SWITCH, MOUNTED AND WIRED. SOLID STATE SPEED CONTROLLER SHIPPED LOOSE AND PSC MOTOR.

NATER SOURCE HEAT PUMP

DESCRIPTION

INSTALL WATER SOURCE HEAT PUMP OF CAPACITIES INDICATED MANUFACTURED BY FLORIDA HEAT PUMP, MCQUAY OR AN APPROVED EQUAL. FACTORY ASSEMBLED AND RATED ACCORDING TO ARI-ISO13526-1. GALVANIZED-STEEL CASING WITH ACCESS PANELS ENVIRONMENTAL CORPORATION OR APPROVED EQUAL. FOR MAINTENANCE AND FILTER REPLACEMENT, KNOCKOUTS FOR ELECTRICAL AND PIPING CONNECTIONS, FLANGED DUCT CONNECTIONS AND CABINET INSULATION OF 1/2" THICK, MULTI DENSITY, COATED GLASS FIBER. THE UNIT SHALL BE DESIGNED TO OPERATE WITH ENTERING FLUID TEMPERATURES BETWEEN 50°F AND 100°F IN COOLING AND BETWEEN

THE UNITS SHALL BE WARRANTED BY THE MANUFACTURER AGAINST DEFECTS IN YEARS ON COMPRESSOR. REFRIGERATION CIRCUITS SHALL UTILIZE R-410A. THE UNIT SHALL CONTAIN SEALED

REFRIGERANT CIRCUITS INCLUDING HERMETIC COMPRESSORS. THERMAL EXPANSION VALVE METERING DEVICES, REFRIGERANT DRIER, FINED TUBE AIR-TO-REFRIGERANT HEAT EXCHANGERS, REFRIGERANT REVERSING VALVES AND SERVICE PORTS. COMPRESSORS SHALL BE HIGH EFFICIENCY, DESIGNED FOR HEAT PUMP DUTY, INTERNALLY SPRING ISOLATED (EXCEPT FOR SCROLL TYPE COMPRESSORS) FOR MAXIMUM SOUND ATTENUATION AND MOUNTED ON RUBBER VIBRATION ISOLATORS. COMPRESSOR MOTORS SHALL BE EQUIPPED WITH OVERLOAD PROTECTION. THE FINNED TUBE COIL SHALL BE CONSTRUCTED OF LANCED ALUMINUM FINS NOT EXCEEDING 14 FINS PER INCH. COILS SHALL HAVE A BAKED POLYESTER ENAMEL COATING FOR PROTECTION AGAINST MOST

AIRBORNE CHEMICALS. THE COAXIAL WATER-TO-REFRIGERANT HEAT EXCHANGERS SHALL BE CONSTRUCTED OF A CONVOLUTED COPPER INNER TUBE AND STEEL OUTER TUBE WITH A DESIGNED REFRIGERANT WORKING PRESSURE OF 450 PSIG AND A DESIGNED WATER SIDE WORKING PRESSURE OF NO LESS THAN 400 PSIG. UNITS 6 TONS AND LARGER: THE FANS SHALL BE BELT DRIVEN FORWARD CURVE TYPE

WITH DYNAMICALLY BALANCED WHEEL(S). THE FAN HOUSINGS SHALL BE REMOVABLE FAN MOTORS. MOTORS SHALL BE PERMANENTLY LUBRICATED AND HAVE THERMAL OVERLOAD PROTECTION.

UNITS SMALLER THAN 6 TONS: THE FAN SHALL BE DIRECT DRIVE CENTRIFUGAL FORWARD CURVED TYPE WITH A DYNAMICALLY BALANCED WHEEL. FAN HOUSE SHALL BE REMOVABLE FROM UNIT WITHOUT DISCONNECTING THE SUPPLY AIR DUCTWORK FOR PERMANENTLY LUBRICATED AND HAVE THERMAL OVERLOAD PROTECTION.

DUCTWORK, LOW PRESSURE, GALVANIZED STEEL

50°F AND 80°F IN HEATING.

CTS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH "HVAC DUCT CONSTRUCTION STANDARDS" PUBLISHED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. (SMACNA)

INSPECT THE DRAWINGS AND VERIFY EXISTING CONDITIONS IN THE FIELD. REPORT CONFLICTS BEFORE STARTING FABRICATION.

VEIGHTS AND GAGES SHALL BE IN ACCORDANCE WITH TABLE I OF "HVAC DUCT CONSTRUCTION STANDARDS" PUBLISHED BY SMACNA. DUCT MATERIAL SHALL BE GALVANIZED STEEL.

LITTERS SHALL BE 18 GAGE GALVANIZED STEEL WITH HORIZONTAL AND VERTICAL DIMENSIONS SUFFICIENT TO CLOSE OFF AIR TO BRANCH. PROVIDE VENTLOK NO. 607 END BEARINGS AND VENTLOK NO. 690 DAMPER ASSEMBLY.

/OLUME DAMPERS SHALL BE 18 GAGE STEEL; SINGLE BLADE UP TO 8" X 8", OPPOSED BLADE ON ALL DUCTS OVER 8" X 8". PROVIDE VENTLOK NO. 607 END BEARINGS AND VENTLOK NO. 641 SELF-LOCKING REGULATOR. DAMPER RODS SHALL BE 1/2" SQUARE BARS WITH BLADES SECURELY RIVETED TO BAR.

SQUARE AND RECTANGULAR ELBOWS SHALL CONTAIN TITUS NO. AG-225 TURNING VANES.

IN ACCORDANCE WITH CHAPTER IV OF SMACNA.

LEXIBLE CONNECTIONS SHALL BE PROVIDED FOR EACH AIR HANDLING DEVICE TO INCHES WIDE OF VENTGLAS AS MADE BY VENTFABRICS, INC.

INSTALLATION ENERAL: SPLIT. DIVIDE OR TURN DUCTS AS NECESSARY TO AVOID OBSTRUCTIONS AND. IN SUCH CASES, PROVIDE AIR STREAM DEFLECTORS AND INCREASE SIZE OF DUCT TO AN EQUIVALENT AREA.

SPLITTERS: RIGIDLY ATTACH SPLITTERS TO PIVOT ROD AND OPERATING LINKAGE. SET DAMPER ASSEMBLY ON RAISED INSULATED BASE ON INSULATED DUCTWORK. VOLUME

DAMPERS: SUPPLY AND MAKE-UP AIR DUCTWORK IN CONCEALED SPACES. SET REGULATOR ON RAISED BASE ON INSULATED DUCTWORK. MARK END OF DAMPER ROD TO SHOW DAMPER POSITION.

FLEXIBLE CONNECTIONS: SECURE FLEXIBLE CONNECTIONS TO DUCT AND UNIT WITH GALVANIZED STEEL STRAPS HOLDING THE MATERIAL IN FORMED GALVANIZED STEEL CHANNELS. TEST TO ENSURE PROPER INSTALLATION.

PLUGS: PROVIDE SQUARE HEAD TYPE TEST PLUGS AS REQUIRED FOR INSERTION OF TEST APPARATUS. PROVIDE A RING AND A REMOVABLE INSULATION PLUG WHERE DUCTS ARE

INSULATED.

SEALING: DUCTWORK SHALL BE SEALED IN ACCORDANCE WITH SMACNA "SEAL CLASS B".

REMOVE ALL DUCTWORK FOUND TO VIBRATE, CHATTER OR PULSATE AND REPLACE WITH NEW DUCTWORK.

UCTWORK, LOW PRESSURE, FLEXIBLE

ROVIDE WHERE INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN, FACTORY FABRICATED AND PRE INSULATED FLEXIBLE DUCTS.

QUALITY ASSURANCE LEXIBLE DUCTS, INCLUDING INSULATION AND SEALANTS, SHALL CONFORM TO THE REQUIREMENTS OF NFPA 90A AND UL STANDARD 181 FOR CLASS 1 DUCTS. PERFORMANCE DATA SHALL BE BASED ON TEST PERFORMED IN ACCORDANCE WITH AIR DIFFUSION COUNCIL FLEXIBLE AIR DUCT TEST CODE FD72.

OW PRESSURE FLEXIBLE DUCTWORK LOW PRESSURE FLEXIBLE DUCTWORK SHALL CONSIST OF CORROSION RESISTANT SPRING

OPERATING TEMPERATURE OF NOT LESS THAN 250 DEGREES F.

STEEL HELIX BONDED TO A GLASS REINFORCED NEOPRENE SLEEVE INSULATED WITH A MINIMUM OF 1 INCH THICK, 1 POUND DENSITY FIBERGLASS INSULATION WHICH IS IN TURN COVERED WITH AN OUTER VAPOR BARRIER OF FIBER REINFORCED FOIL-SCRIM-KRAFT LAMINATE. INSULATION SHALL HAVE A THERMAL CONDUCTIVITY (K) NO GREATER THAN 0.25 AT 75 DEGREES F. DUCT FOR LOW VELOCITY SYSTEM CONNECTORS SHALL HAVE A WORKING PRESSURE OF NOT LESS THAN 1-1/2 INCHES OF WATER GAGE AND A MAXIMUM

UCT CONNECTOR WHERE FLEXIBLE DUCTS CONNECT TO LOW PRESSURE DUCTS TO FORM RUNOUTS TO INDIVIDUAL OUTLETS, PLENUMS OR LOW PRESSURE TERMINALS, PROVIDE FACTORY FABRICATED FITTINGS COMPLETE WITH MANUAL BALANCING DAMPERS HAVING LOCKING QUADRANTS. WHERE LOW PRESSURE DUCTS ARE INTERNALLY INSULATED THE CONNECTOR SHALL BE FURNISHED WITH AIR EXTENSION TO PROJECT THROUGH AND PROTECT THE INSULATION. FOR CONNECTION TO EQUIPMENT, AUXILIARY SLEEVES SHALL BE PROVIDED TO ALLOW AT LEAST 2 INCHES OF SURFACE FOR CLAMPING OF FLEXIBLE

PROVIDE GALVANIZED SPRING STEEL CLAMPS OR PANDUIT STRAPS AT CONNECTIONS TO DUCT FITTINGS OR DEVICES.

DUCTWORK. SLEEVES SHALL BE SCREWED OR BOLTED TO EQUIPMENT LIP FRAME.

FLEXIBLE DUCTWORK AND COMPONENTS SHALL BE AS MANUFACTURED BY GENERAL

INSTALL DUCT CONNECTORS TO LOW PRESSURE DUCTS USING MANUFACTURER'S TEMPLATE FOR ALL HOLES AND SECURE THE CONNECTOR WITH SHEET METAL SCREWS HAVING FIRST APPLIED FOSTER'S 30-02 DUCT SEALANT TO THE ADJOINING SURFACES. DO NOT PRESSURIZE THE SYSTEM FOR 48 HOURS. STRETCH NEW DUCT WHEN REMOVING IT FROM CARTONS WHERE IT MAY HAVE BEEN SHIPPED IN A COMPRESSED STATE. USE THE MINIMUM LENGTH OF FLEXIBLE DUCT REQUIRED TO MAKE THE SPECIFIC CONNECTION UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS. THE MAXIMUM DEVELOPED LENGTH OF FLEX DUCT IS 5'-0". AVOID SHARP BENDS. USE A MINIMUM INSIDE BEND RADIUS EQUAL TO (1) TIMES THE INSIDE DIAMETER OF THE DUCT. SUPPORT HORIZONTAL DUCT RUNS AS DETAILED IN THE CONSTRUCTION DOCUMENTS. ALLOW THE FLEXIBLE DUCT TO EXTEND STRAIGHT AWAY FROM CONNECTORS FOR A FEW INCHES PRIOR TO INITIATING ANY BEND. MAKE CONNECTIONS OF FLEXIBLE DUCT TO RIGID DUCT OR TERMINALS AS

FOLLOWS: 1. APPLY FOSTER'S 30-02 SEALANT TO THE INSIDE OF THE FLEXIBLE DUCT TO DEPTH OF 3 INCHES. 2. SLIDE THE FLEXIBLE DUCT OVER THE CONNECTOR AND WRAP WITH MINIMUM OF TWO REVOLUTIONS OF REINFORCED FOIL DUCT TAPE STARTING ABOUT 2 INCHES BACK FROM END OF FLEXIBLE DUCT AND SEALING OVERLAP WITH LAST WRAP.

3. PLACE A CLAMP OR STRAP OVER THE TAPED END AND SECURE FIRMLY. 4. REPAIR ALL DAMAGE TO VAPOR BARRIER WITH FOSTER'S 35-00 REINFORCED WITH 4 INCH WIDE GLASS FABRIC AND A SECOND COAT OF FOSTER'S 35-00.

IR DISTRIBUTION DEVICES

FROM THE UNIT WITHOUT DISCONNECTING THE SUPPLY AIR DUCTWORK FOR SERVICING OF AIR DISTRIBUTION DEVICES SHALL BE PROVIDED TO DELIVER THE INDICATED VOLUME OF SUPPLY AIR WITHOUT EXCEEDING THE NC RATING AS FOLLOWS: EMPLOYEE AND CUSTOMER AREAS: NC-30.

DIFFUSERS. GRILLES AND REGIST

IANUFACTURER SHALL BE TITUS OR APPROVED EQUIVALENT. FOR MODEL NUMBERS AND TYPES SEE AIR DISTRIBUTION SCHEDULE ON DRAWING. DIFFUSERS, GRILLES, AND REGISTERS SHALL BE OF THE SURFACE, FLUSH, OR LAY-IN MOUNTING CORRESPONDING TO THE CEILING IN WHICH THEY ARE LOCATED. THE FINISH OF THE DIFFUSERS, GRILLE, OR REGISTER FACE PANEL SHALL BE BAKED ENAMEL, OFF WHITE COLOR. WHERE MOUNTING SCREWS ARE REQUIRED IN AIR DISTRIBUTION DEVICES, THEY SHALL BE FINISHED TO MATCH THE ADJACENT SURFACE OF THE DEVICES. SUPPLY AND RETURN GRILLES AND REGISTERS WHICH ARE SURFACE MOUNTED SHALL BE PROVIDED WITH SPONGE RUBBER GASKETED FRAMES TO PREVENT SMUDGING.

MANUFACTURER SHALL BE RUSKIN OR APPROVED EQUAL. FOR MODEL NUMBER AND TYPE SEE DRAWING. LOUVER FINISH SHALL BE SANDSTONE COLORED BAKED ENAMEL CONTAINING 50% KYNAR RESINS. LOUVER SHALL INCLUDE GASKETED BACKDRAFT DAMPERS WITH ADJUSTABLE WEIGHTS OR SPRINGS TO PREVENT OUTWARD AIR FLOW. ADJUST AS DIRECTED BY OWNER OR AUTHORITY HAVING JURISDICTION.

INSTALL WHERE SHOWN ON DRAWINGS. DIFFUSERS, REGISTERS AND FITTINGS SHALL BE SECURELY ATTACHED TO FINISH SURFACES, OR STRUCTURAL MEMBERS BEHIND FINISH SURFACES. LAY-IN DIFFUSERS MOUNTED IN ACOUSTICAL TILE CEILINGS SHALL BE RIGIDLY MOUNTED, ABOVE THE FACE PANEL, TO THE CEILING SUSPENSION SYSTEM. DRAINABLE LOUVERS SHALL BE INSTALLED AS RECOMMENDED BY MANUFACTURER.

CONTROLS, ELECTRI

THE WORK CONSISTS OF INSTALLING CONTROLS FOR THE HVAC SYSTEM.

ECTRICAL WORK AND MATERIALS ASSOCIATED WITH THE CONTROL SYSTEM SHALL BE INSTALLED AS WORK OF THIS SECTION BUT IN ACCORDANCE WITH DIVISION 16. POWER WIRING IS SPECIFIED UNDER DIVISION 16 AND SHOWN ON FLECTRICAL DRAWINGS ELECTRICAL CONTROL WIRING CONDUIT AND FITTINGS ASSOCIATED WITH THE SPACE EMPERATURE AND HUMIDITY CONTROL INCLUDING INTERLOCKING WITH MOTOR INTROLLERS, CONTROL ACCESSORIES AND APPURTENANCES ARE TO BE PROVID UNDER THIS SECTION, CONTROL WIRING SHALL BE IN CONDUIT IF REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.

ECTRIC ROOM THERMOSTATS THERMOSTAT SHALL BE AS SPECIFIED IN THE DRAWINGS, THERMOSTATS FOR WATER SOURCE HEAT PUMPS SHALL HAVE AUTOMATIC HEATING/COOLING CHANGEOVER AND SHALL E PROVIDED WITH A LOCKABLE COVER.

MOKE DETECTOR SHALL BE FURNISHED AND WIRED BY ELECTRICAL CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR AS SHOWN IN THE DRAWINGS. WIRING AND REMOTE ALARM INDICATOR FOR DUCT MOUNTED SMOKE DETECTOR SHALL BE BY ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE POWERED AS SPECIFIED IN DRAWINGS

TESTING, ADJUSTING AND BALANCING

TESTING, ADJUSTING AND BALANCING OF ALL WORK SHALL BE MADE BY AN INDEPENDENT CONTRACTOR. WHO IS A CURRENTLY LICENSED ASSOCIATED AIR BALANCING COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) BALANCING CONTRACTOR. NO OTHER BALANCE REPORTS WILL BE REVIEWED OR ACCEPTED. ALL BALANCING WORK MUST BE COMPLETE AND DONE IN ACCORDANCE WITH THE MOST RECENT STANDARDS OF THEIR SOCIETY AND AS A MINIMUM SHALL INCLUDE THE INFORMATION AS SHOWN IN THE AIR BALANCE REVIEW CHECKLIST BELOW. PAYMENT OF ALL COSTS FOR TESTING AND BALANCING SHALL BE INCLUDED IN THE BID.

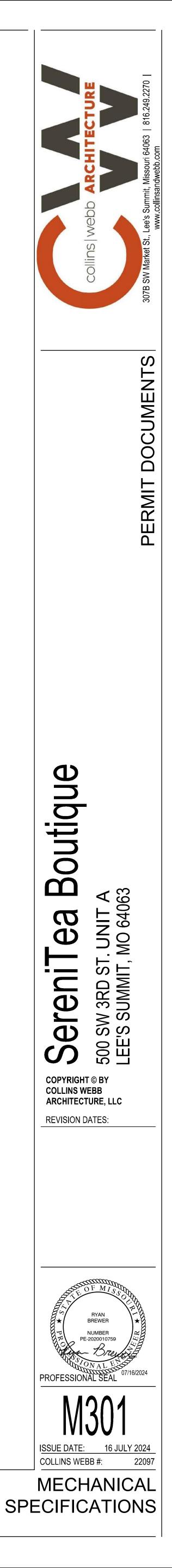
TESTING, ADJUSTING AND BALANCING REPORT MUST BE COMPLETE AND TURNED OVER TO TENANT'S PROJECT MANAGER ONE (1) WEEK PRIOR TO MERCHANDISING DATE. VERIFY THAT ALL EQUIPMENT AND SYSTEMS ARE COMPLETE AND OPERATIONAL ONE WEEK PRIOR O FINAL BALANCING. IF ALL SYSTEMS ARE NOT OPERATIONAL AT THE TIME OF THE SCHEDULED BALANCING, ADDITIONAL TESTING AND BALANCING, INCLUDING ALL LABOR, RAVEL EXPENSES, MEALS, HOTEL COSTS, ETC SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.

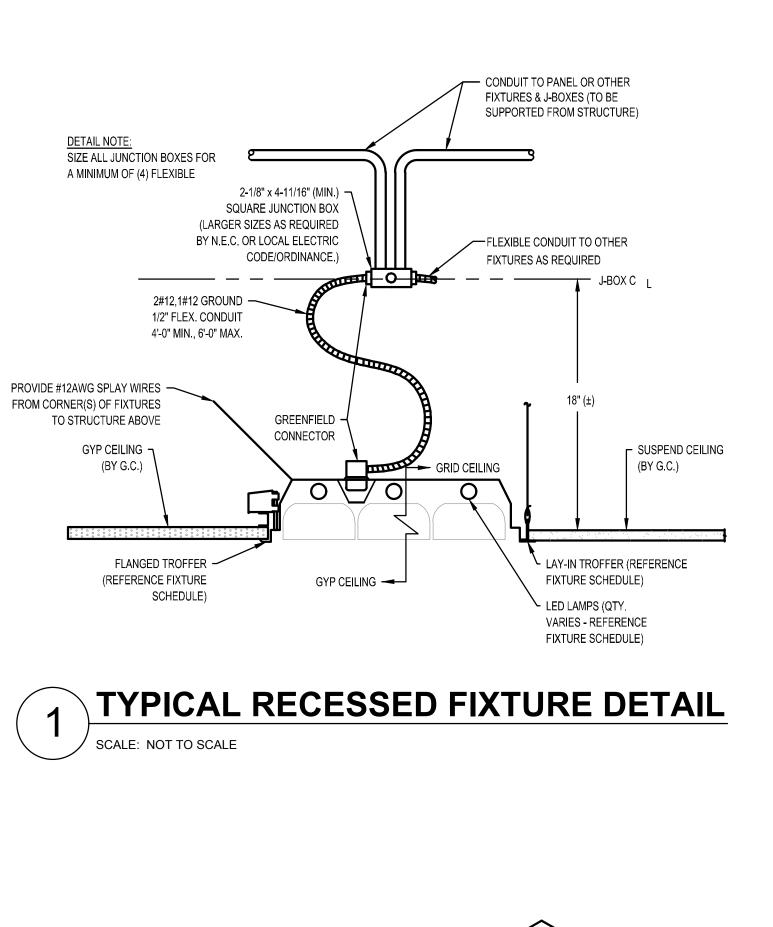
PRESENT FOR AIR BALANCE TO VERIFY ACCESSIBILITY TO ALL DEVICES, VERIFY ALL OPERATING SEQUENCES AND INSTALL NEW FILTERS IN ALL UNITS JUST PRIOR TO THE AIR BALANCE. ALLOW TWO DAYS ON SITE FOR BALANCING. THE COMPLETE AIR BALANCE SHALL TAKE PLACE WITH OUTSIDE AIR DAMPERS IN MINIMUM POSITION, EXCEPT AS NOTED OTHERWISE. INSTALL A NEW SET OF FILTERS ONE DAY PRIOR TO TURNOVER.

BALANCE AIR AND WATER QUANTITIES TO WITHIN +/- 10% OF THAT INDICATED ON THE DRAWINGS. ANY REQUIRED CHANGES IN SHEAVES, BELTS OR PULLEYS NEEDED TO ACHIEVE SPECIFIED FLOW RATES SHALL BE PERFORMED WITH NO ADDITIONAL COST TO THE OWNER. ALL CONTROL SEQUENCES SHALL BE TESTED (INTERLOCKED EQUIPMENT, SMOKE DETECTORS, SMOKE EVACUATION, ECONOMIZER, ETC.) AND OPERATING STATUS RECORDED IN THE REPORT.

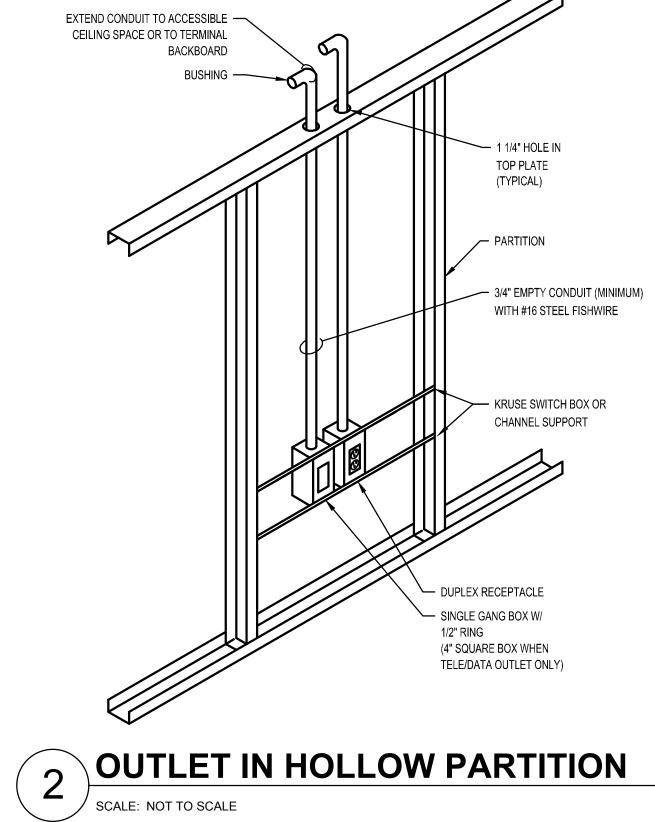
SEVEN (7) COPIES OF THE BALANCE REPORT SHALL BE SUBMITTED FOR APPROVAL. PERFORM ALL APPLICABLE TESTING AND BALANCING FUNCTIONS REQUIRED FOR THE SYSTEM DESIGNED ON THESE DRAWINGS. ALL SYSTEMS UNABLE TO BE COMPLETELY BALANCED AT THE TIME OF ORIGINAL BALANCE MUST BE BALANCED IN FUTURE AT NO ADDITIONAL EXPENSE TO THE OWNER. RECHECK ANY ITEMS THAT OWNER DEEMS NECESSARY AT NO ADDITIONAL COST TO OWNER.

THE BALANCE REPORT SHALL BE ON THE AABC NATIONAL STANDARD REPORT FORMS OR THE NEBB CERTIFIED REPORT FORMS AS PUBLISHED IN THEIR MOST CURRENT EDITIONS.









- 3/4" EMPTY CONDUIT (MINIMUM) WITH #16 STEEL FISHWIRE

→ KRUSE SWITCH BOX OR CHANNEL SUPPORT

4C	
A. OR AMPS. AFC	AMPERES ABOVE FINISH COUNTER
	ARC FAULT CIRCUIT INTERRUPTER
4FF	ABOVE FINISHED FLOOR
AIC	AMPERES INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
BTC	BRANCH TO CONNECTION POINT AND CONNECT EQUIPMENT
2	CONDUIT ("E.C." IS EMPTY CONDUIT)
CF	CEILING FAN COFFEE MAKER
CT	COOKTOP
))	DEDICATED CIRCUIT
000	DUPLEX CONVIENCE OUTLET
)P	DISPOSAL
WC YC	DISHWASHER
EMT	DRYER ELETRICAL METALLIC TUBING
EF	EXHAUST FAN
EWC	ELECTRIC WATER COOLER (WATER-COOLED DRINKING FOUNTAIN)
ΞX	EXISTING
FCU	FAN COIL UNIT
GFI/GFCI	
GFIP GRD	GROUND FAULT INTERRUPTER PROTECTED GROUND
	HORIZONTAL MOUNT (RECEPTACLE)
- HD	VENTILATION HOOD
ΗP	HORSEPOWER
ΗT	HEAT TRACE POWER (PROVIDE W/ 20A/1P GFI BREAKER)
	HEATING, VENTILATING, & AIR CONDITIONING
HZ G	HERTZ ISOLATED GROUND (DUPLEX RECEPTS NEMA 5-20RIG)
KCM	THOUSAND CIRCULAR MILLS
KVA	KILOVOLT-AMPERES (1000 VOLT-AMPERES)
KW	KILOWATTS (1000 WATTS)
VILO	MAIN LUGS ONLY
MCB	MAIN CIRCUIT BREAKER
MW NIC	MICROWAVE (COORD MTG HT W/ ARCHITECT) NOT IN CONTRACT
NEC	NATIONAL ELECTRICAL CODE
NF	NOT FUSED
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
PNL	PANEL
PH OR Ø	PHASE
PVC	POLE POLYVINYL CHLORIDE
RF	REFRIGERATOR
RG	RANGE
SPD	SURGE PROTECTIVE DEVICE
Γ	TAMPERPROOF RECEPTACLE
TTB TV	
	TELEVISION RECEPTACLE UNDERCOUNTER REFRIGERATOR (OR ICE MACHINE)
JL	UNDERWRITERS LABORATORIES
J.N.O.	UNLESS NOTED OTHERWISE
V	VOLTS
VA /D	VOLT-AMPERES
VD VFD	VENDING MACHINE (24"AFF) VARIABLE FREQUENCY DRIVE
VFD N	WARIABLE FREQUENCY DRIVE WATTS
WA	WATTS
WD	WARMING DRAWER
NO	WALL OVEN
WP	WEATHERPROOF
WP/WR W/UNIT	WEATHERPROOF/WEATHER RESISTANT DISCONNECT IS SUPPLIED WITH THE UNIT
W/UNIT	DISCONNECT IS SUPPLIED WITH THE UNIT
 COMPLETE I REQUIREME DO NOT SCA REFER TO A LIGHTING FI ALL EMPTY (ERAL ELECTRICAL NOTE NSTALLATION SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NTS OF THE AHJ AND ALL LOCAL & STATE CODES. ALE FROM THESE DRAWINGS. RCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL XTURES AND ELECTRICAL DEVICES. CONDUITS SHALL BE PROVIDED WITH PULL STRINGS AND BUSHINGS. DN BOXES SHALL HAVE A COVER.
 COORDINAT ALL BRANCH BREAKER W 	E EACH LIGHT FIXTURE INSTALLATION(S) W/ ACTUAL CEILING TO BE FURNISHED. I CIRCUITS WITHOUT A CONDUCTOR & CONDUIT INDICATED SHALL BE ROUTED TO A 20A-1P / 2#12,1#12EG,3/4"C. I CIRCUIT CONDUCTORS SHALL NOT BE SMALLER THAN #12 AWG AND ALL CONDUIT SHALL NOT

OTHERWISE. WHERE NEUTRALS ARE INDICATED TO BE SHARED, MULTIWIRE BRANCH CIRCUITS SHALL BE PROVIDED WITH 2P OR 3P BREAKERS AS REQUIRED PER NEC210.4. 0. ALL CIRCUITS (LIGHTING AND POWER) SHALL BE PROVIDED WITH AN INSULATED EQUIPMENT GROUND CONDUCTOR SIZED IN ACCORDANCE WITH THE NEC. THE RACEWAY SHALL NOT BE USED AN EQUIPMENT

GROUND. 1. ALL FIXTURES SHALL BE SUPPORTED FROM EACH CORNER (INDEPENDENT OF THE SUSPENDED CEILING) WITH 12 GAUGE WIRE CONNECTED TO STRUCTURAL SYSTEM OF BUILDING. THE INSTALLATION SHALL MEET OR EXCEED THE SEISMIC REQUIREMENTS OF LOCAL AND NATIONAL CODES. 2. ELECTRICAL DEVICE MOUNTING HEIGHTS, UNO: PANELBOARDS 78" AFF TO TOP OF PANEL

48" AFF TO TOP OF JUNCTION BOX

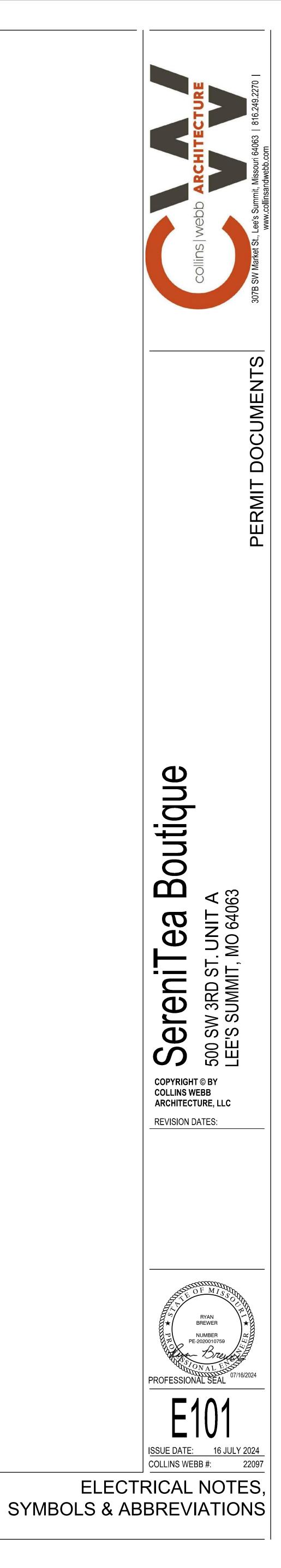
18" AFF TO CENTER OF RECEPTACLE

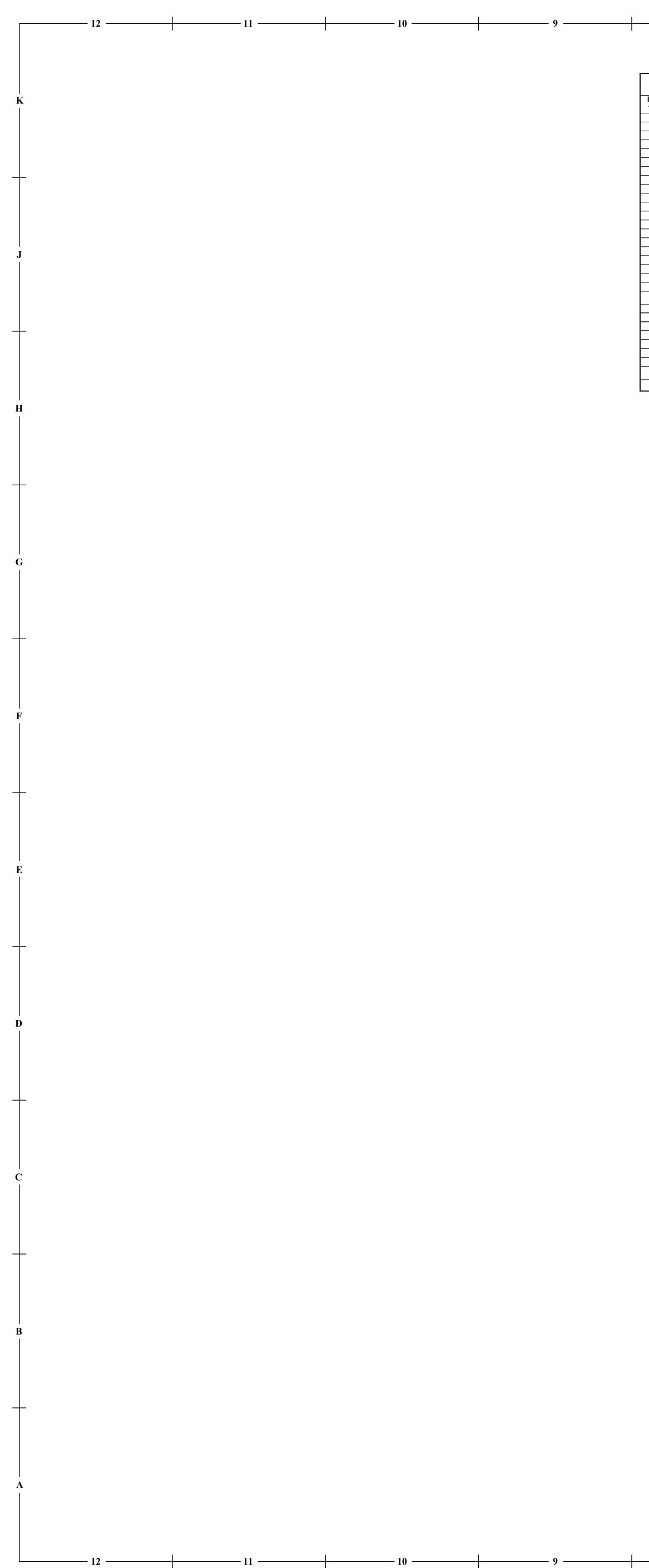
SWITCHES RECEPTACLES TELE/DATA OUTLETS

- 18" AFF TO CENTER OF RECEPTACLE APARTMENT LOADCENTERS PER ANSI A117.1 REQUIREMENTS (VERIFY WITH LOCAL INSPECTOR) 3. ELECTRICAL EQUIPMENT (PANELBOARDS, TRANSFORMERS, DISTRIBUTION EQUIPMENT, ETC.) IS SHOWN TO SCALE ON THE FLOOR PLANS.
- 4. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING EQUIPMENT THAT WILL FIT WITHIN THE SPACES SHOWN ON THE PLANS AND COMPLYING WITH ALL CODE REQUIRED CLEARANCES. 5. ELECTRICAL CONTRACTOR TO LABEL ALL DEVICES (RECEPTACLES, SWITCHES, PANELBOARDS,
- DISCONNECTS, ETC.) WITH CIRCUIT NUMBER AND PANELBOARD DESIGNATION. RECEPTACLES, SWITCHES, AND SIMILAR DEVICES TO HAVE PRE-PRINTED, SELF ADHESIVE LABEL. 6. PANELBOARDS, DISCONNECT SWITCHES, AND SIMILAR DEVICES TO HAVE ENGRAVED, SELF-ADHESIVE,
- LAMINATED ACRYLIC LABEL (BLACK W/ WHITE LETTERING). 17. PROVIDE TYPE-WRITTEN PANELBOARD SCHEDULES FOR ALL ELECTRICAL PANELBOARDS.

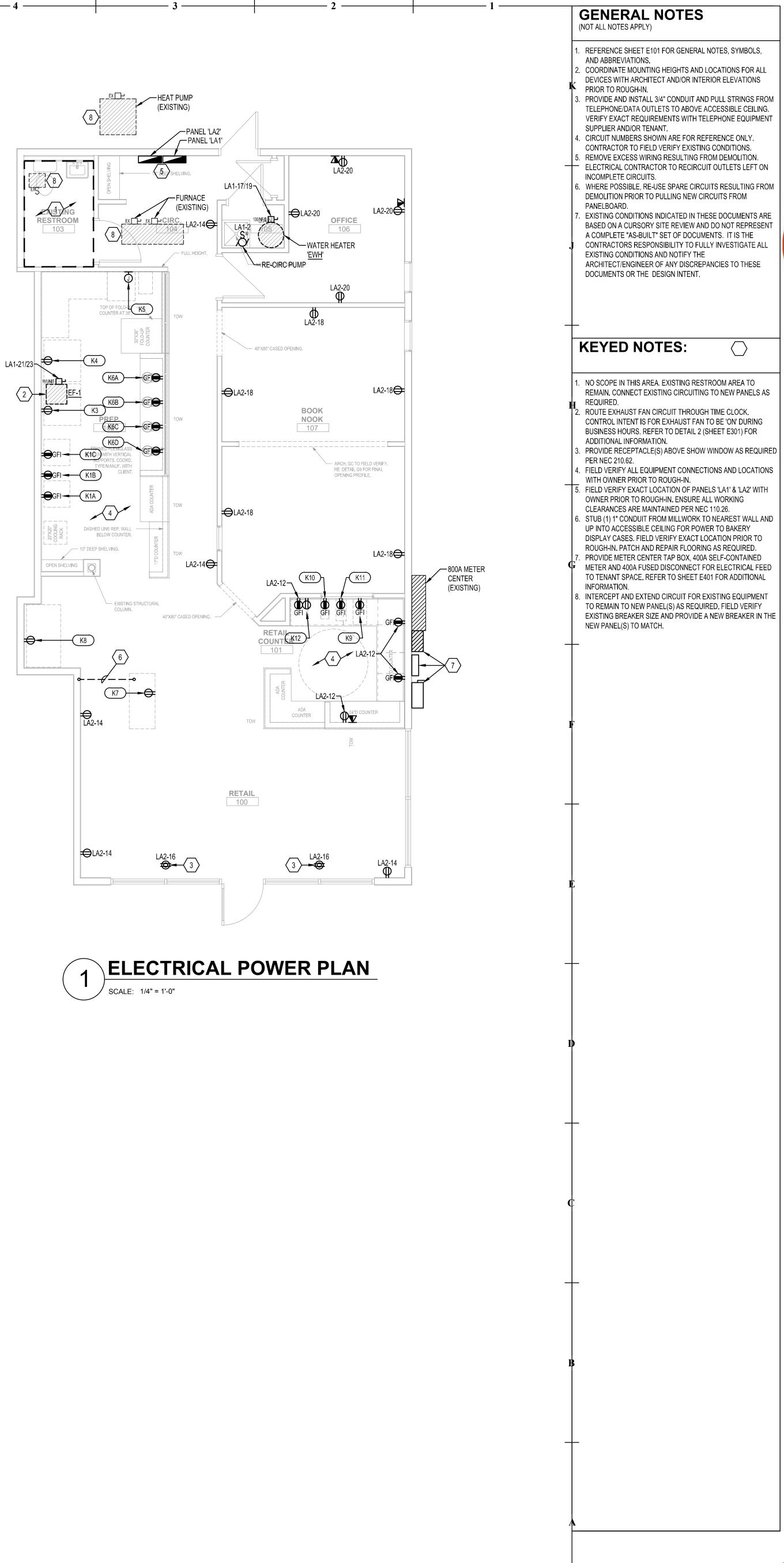
	ELEC	TRICA	LSYN	/IBOLS	
	LIGHTING FIXTURES/DEVICE	S		POWER EQUIPMENT/DEVICI	ES
SYMBOL	DESCRIPTION	MOUNTING	SYMBOL	DESCRIPTION	MOUNTING
ΟΑ	DOWNLIGHT (LETTER INDICATES FIXTURE TYPE) REFER TO LIGHT FIXTURE SCHEDULE	CEILING		SWITCHBOARD OR DISTRIBUTION PANEL REFER TO PANEL SCHEDULES	
ô A	DIRECTIONAL DOWNLIGHT (LETTER INDICATES FIXTURE TYPE) REFER TO LIGHT FIXTURE SCHEDULE	CEILING		DRY-TYPE TRANSFORMER REFER TO PLANS FOR KVA RATING	
ΜΑ	WALL MOUNTED LIGHT FIXTURE (LETTER INDICATES FIXTURE TYPE) REFER TO LIGHT FIXTURE SCHEDULE	WALL		120/208V, 3Ø, 4W PANELBOARD REFER TO PANEL SCHEDULES	
A	LINEAR LIGHT FIXTURE (LETTER INDICATES FIXTURE TYPE) REFER TO LIGHT FIXTURE SCHEDULE	CEILING OR SUSPENDED		277/480V, 3Ø, 4W PANELBOARD REFER TO PANEL SCHEDULES	
A	2X4 LIGHT FIXTURE (LETTER INDICATES FIXTURE TYPE) REFER TO LIGHT FIXTURE SCHEDULE	CEILING	Q 0	JUNCTION BOX	WALL OR CEILING
A	2X2 LIGHT FIXTURE (LETTER INDICATES FIXTURE TYPE) REFER TO LIGHT FIXTURE SCHEDULE	CEILING	30/20/3	FUSED SAFETY SWITCH (E.G. 30/20/3 INDICATES A 30A, 3-POLE SWITCH WITH 20A FUSES)	
	HATCHING ON FIXTURE INDICATES FIXTURE TO HAVE EMERGENCY BACK-UP		30/NF/3L	NON-FUSED SAFETY SWITCH (E.G. 30/NF/3 INDICATES A 30A, 3-POLE SWITCH WITHOUT FUSES)	
1	TWO HEAD EMERGENCY LIGHT FIXTURE (LETTER INDICATES FIXTURE TYPE) REFER TO LIGHT FIXTURE SCHEDULE	WALL OR CEILING	S™	MOTOR RATED SWITCH	
	EMERGENCY EXIT SIGN. PROVIDE ARROW(S) AS INDICATED. SHADING INDICATES FACE (LETTER INDICATES FIXTURE TYPE) REFER TO LIGHT FIXTURE SCHEDULE	WALL OR CEILING	N	MOTOR	
S	SINGLE POLE SWITCH 20A (120/277V)	WALL - 48" AFF	Ð	NEMA 5-20R SIMPLEX RECEPTACLE	WALL - 18" AFF
S ₃	THREE WAY SWITCH 20A (120/277V)	WALL - 48" AFF	Ð	NEMA 5-20R DUPLEX RECEPTACLE	WALL - 18" AFF
S ₄	FOUR WAY SWITCH 20A (120/277V)	WALL - 48" AFF	Ð	NEMA 5-20R DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER	
HZ	WALL BOX DIMMER SWITCH	WALL - 48" AFF	#	NEMA 5-20R QUAD-PLEX RECEPTACLE	WALL - 18" AFF
Ô _x ₹ _x	CEILING OR WALL MOUNTED OCCUPANCY SENSOR (LETTER INDICATES SENSOR TYPE) REFER TO LIGHTING CONTROLS SCHEDULE	WALL OR CEILING	÷	NEMA 5-20R SPLIT RECEPTACLE. TOP OUTLET WIRED HOT. BOTTOM OUTLET SWITCHED.	WALL - 18" AFF
HLCX	LOW-VOLTAGE CONTROL STATION (LETTER INDICATES CONTROL STATION TYPE) REFER TO LIGHTING CONTROLS SCHEDULE	WALL - 48" AFF	ନ ଜ	SPECIAL PURPOSE RECEPTACLE REFER TO PLANS FOR NEMA CONFIGURATION	WALL - 18" AFF OR CEILING
PC X	PHOTOCELL SENSOR (LETTER INDICATES SENSOR TYPE) REFER TO LIGHTING CONTROLS SCHEDULE	FIELD VERIFY	₩USB	NEMA 5-20R - DUPLEX RECEPTACLE WITH USB PORTS SIMILAR TO HUBBELL #USB20AC5W	WALL - 18" AFF
PP	POWERPACK (LETTER INDICATES POWERPACK TYPE) REFER TO LIGHTING CONTROLS SCHEDULE	ACCESSIBLE CEILING	\$	NEMA 5-20R DUPLEX RECEPTACLE MOUNTED ON CEILING	CEILING - FLUSH
COMM	IUNICATION/LOW-VOLTAGE [DEVICES	FB1	HUBBELL CFB4 SERIES FLOOR BOX (OR EQUAL) WITH (2) DUPLEX RECEPTACLES AND DATA/COMMUNICATION CONNECTION CAPABILITY	FLOOR - FLUSH
SYMBOL	DESCRIPTION	MOUNTING	FB2	HUBBELL B24 SERIES FLOOR BOX (OR EQUAL) WITH (1) DUPLEX RECEPTACLE AND DATA/COMMUNICATION CONNECTION CAPABILITY	FLOOR - FLUSH
CR	CARD READER (VERIFY EXACT REQUIREMENTS)		FB3	HUBBELL B24 SERIES FLOOR BOX (OR EQUAL) FOR POWER AND DATA CONNECTIONS TO PRE-WIRED FURNITURE VERIFY EXACT CONNECTION WITH FURNITURE VENDOR	FLOOR - FLUSH
V	DATA, TELEPHONE, OR COMBO TELE/DATA OUTLET PROVIDE PULLSTRING IN CONDUIT TO ACCESSIBLE CEILING	WALL - 18" AFF	PK1	HUBBELL S1PT SERIES 4" POKE-THRU (OR EQUAL) WITH (2) DUPLEX RECEPTACLES AND DATA/COMMUNICATION CONNECTION CAPABILITY	FLOOR - FLUSH
	DATA, TELEPHONE, OR COMBO TELE/DATA OUTLET PROVIDE PULLSTRING IN CONDUIT TO ACCESSIBLE CEILING	FLOOR OR CEILING	РК2	HUBBELL S1PTFF SERIES 4" POKE-THRU (OR EQUAL) FOR POWER AND DATA CONNECTIONS TO PRE-WIRED FURNITURE VERIFY EXACT CONNECTION WITH FURNITURE VENDOR	FLOOR - FLUSH
	TELEVISION OUTLET	WALL OR CEILING	РКЗ	HUBBELL S1R6 SERIES 6" POKE-THRU (OR EQUAL) WITH (2) DUPLEX RECEPTACLES AND DATA/COMMUNICATION AND	FLOOR - FLUSH
	SPEAKER OUTLET	FIELD VERIFY		A/V CONNECTION CAPABILITY CONDUIT IN OR UNDER FLOOR/GRADE	
'TTB'	TELEPHONE TERMINAL BOARD	WALL	╡ ── ╿ ┼╼╴	CONDUCTOR HOME RUN - () HOT, (I) NUETRAL, (I) EQUIPMENT GROUND, & () ISOLATED GROUND	
	SECURITY CAMERA OUTLET	FIELD VERIFY		EQUIPMENT CONNECTION	
▣	PUSH BUTTON			CONDUIT IN CEILING OR WALL	

1 IF MOUNTED ABOVE A COUNTER, DEVICE TO BE WALL MOUNTED 6" ABOVE FINISHED COUNTER OR 44" TO TOP OF JUNCTION BOX (WHICHEVER IS LOWER). IF NOT MOUNTED ABOVE A COUNTER, DEVICE TO BE WALL MOUNTED AT 48" AFF TO TOP OF JUNCTION BOX AS REQUIRED TO MEET ADA REQUIREMENTS. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS/ELEVATIONS.



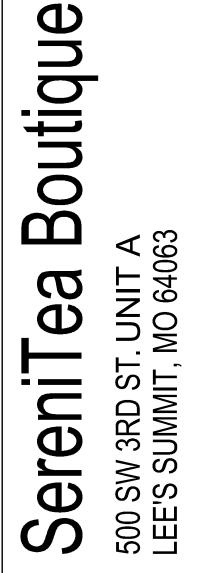


	KI	CHE	NEL	ECT	RICA	L ROL	IGH-IN SCH	EDUL	E	
ITEM	DECODIDITION		-		LOAD			MO	UNTING	
TAG	DESCRIPTION		PH.	HP	KW	AMPS	CIRCUIT	CONN.	R/I HT	REMARKS
	COUNTERTOP OVEN	120	1		1.6		LA1-25	DCO	NOTE #1	
K1B	COUNTERTOP OVEN	120	1		1.6		LA1-27	DCO	NOTE #1	
K1C	COUNTERTOP OVEN	120	1		1.6		LA1-29	DCO	NOTE #1	
K3	DOUBLE DOOR REACH-IN REFRIGERATOR	120	1		0.46		LA2-13	DCO	NOTE #1	
K4	REACH-IN FREEZER	120	1		0.42		LA2-15	DCO	NOTE #1	
K5	LOW-TEMP DISHWASHER	120	1			13.2	LA2-17	JBOX	NOTE #1	
K6A	4.5 QUART STAND MIXER	120	1		0.3		LA2-19	DCO	NOTE #1	
K6B	4.5 QUART STAND MIXER	120	1		0.3		LA2-21	DCO	NOTE #1	
K6C	4.5 QUART STAND MIXER	120	1		0.3		LA2-23	DCO	NOTE #1	
K6D	4.5 QUART STAND MIXER	120	1		0.3		LA2-25	DCO	NOTE #1	
K7	BAKERY DISPLAY CASE	120	1			3.9	LA2-27	DCO	NOTE #1	
K8	REACH-IN COOLER	120	1			5.4	LA2-2	DCO	NOTE #1	
K9	TEA/COFFEE BREWER COMBO	120	1			14	LA2-4	DCO	NOTE #1	
K10	COFFEE GRINDER	120	1			7	LA2-6	DCO	NOTE #1	
K11	HOT WATER DISPENSER	120	1			17.5	LA2-8	DCO	NOTE #1	
K12	ICE MA CHINE	120	1			6	LA2-10	DCO	NOTE #1	
						-	IPMENT NO			
	COORDINATE ALL EQUIPMENT CONNECTIONS WIT							GH-IN.		
	REFER TO ELECTRICAL PANEL SCHEDULES FOR V									
#3	PROVIDE AND INSTALL RECEPTACLES, DISCONN	,		FRICAL C	ONNECTIC	NS AS REC	QUIRED FOR POWER.	ALL ROUG	H-INS AND FIN	AL CONNECTIONS SHALL BE IN
	ACCORDANCE WITH ALL APPLICABLE CODES & I									
#4	PER NEC 210.8(B)(2), ALL SINGLE PHASE RECEPT									
	100 AMPS OR LESS SHALL BE PROVIDED WITH G					NOT DESIG	NATED WITH 'GFI', EL	ECTRICAL	CONTRACTOR	SHALL PROVIDE A 'GFI' TY PE BREAKER.
	OR FACELESS GFI DEVICE ADJACENT TO THE PA	NEL SERV	'ING TH	IE EQUIPIV	1ENT.					
			(IECT	ION LE	EGEND			
DCC	- DUPLEX RECEPTACLE, SR - SIMPLEX RECEPTAC	LE, SPR -	SPECIA	L PURPO	SE RECEF	TACLE, JB	OX - JUNCTION BOX,	BTC - BRA	NCH TO CONN	ECTION, DISC - DISCONNECT SWITCH

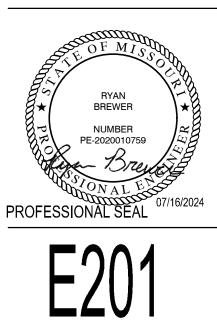








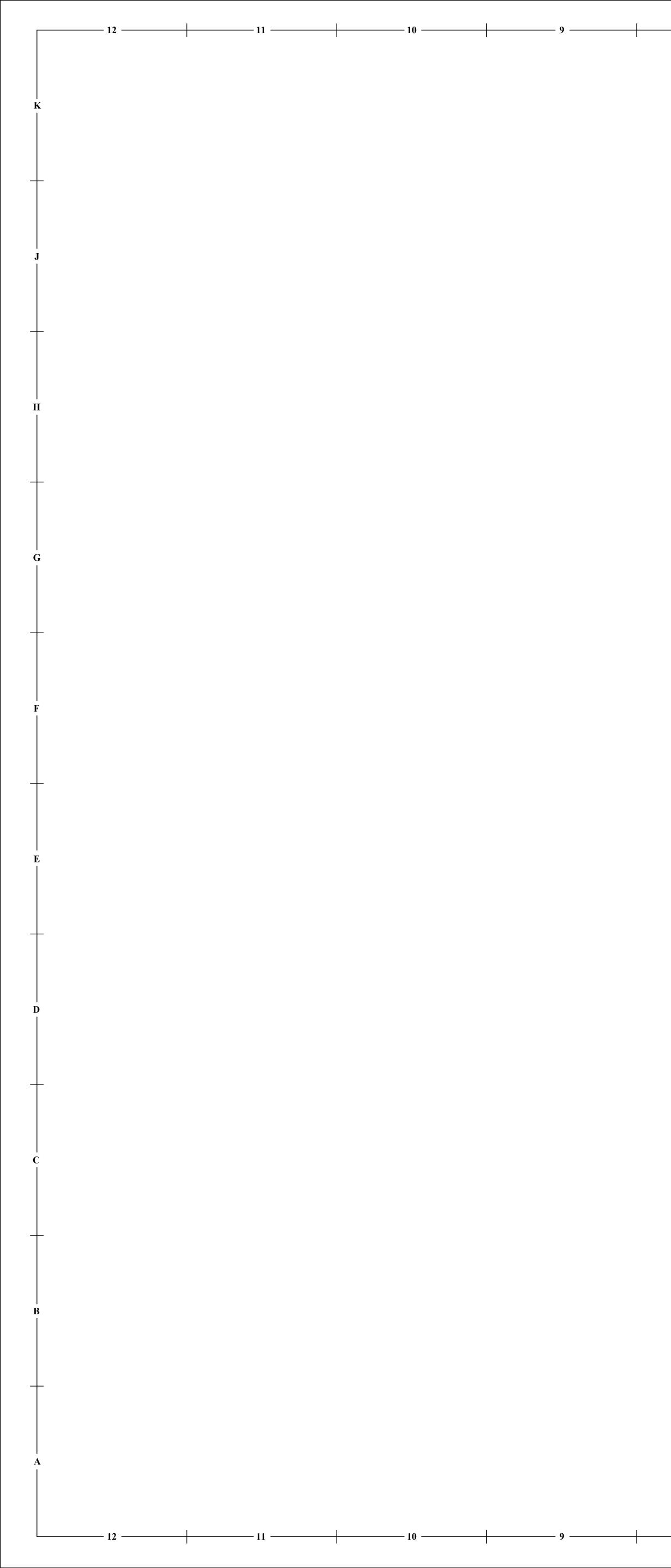
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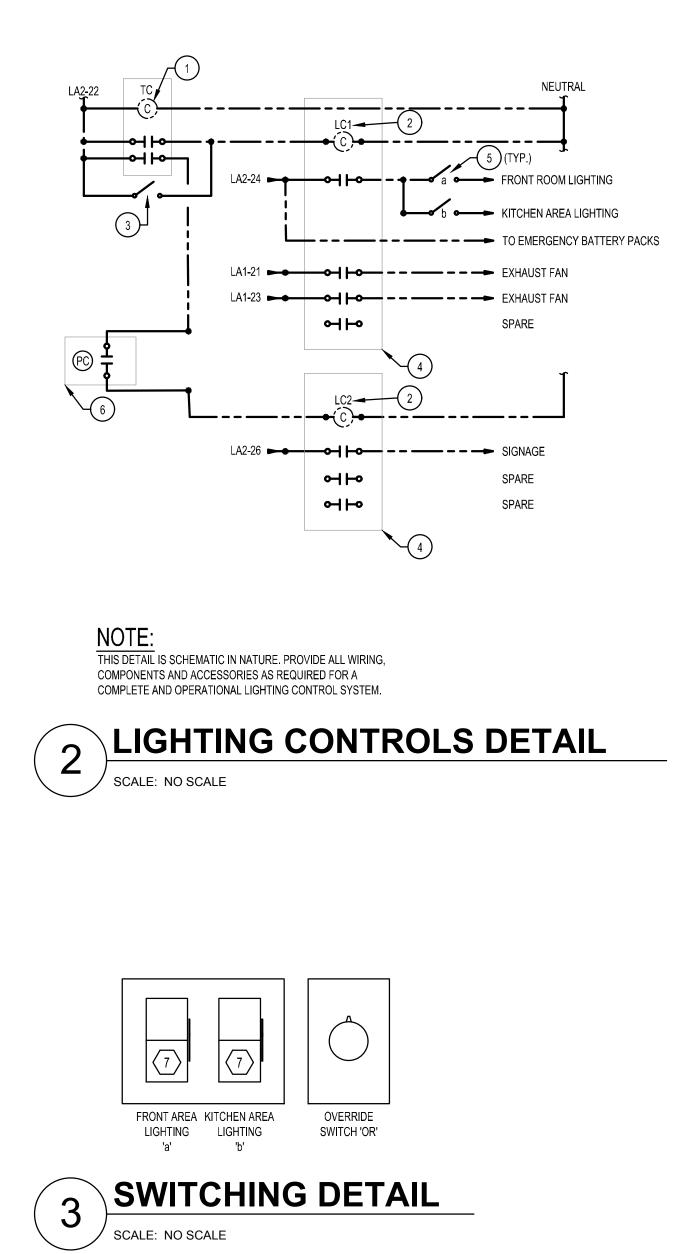


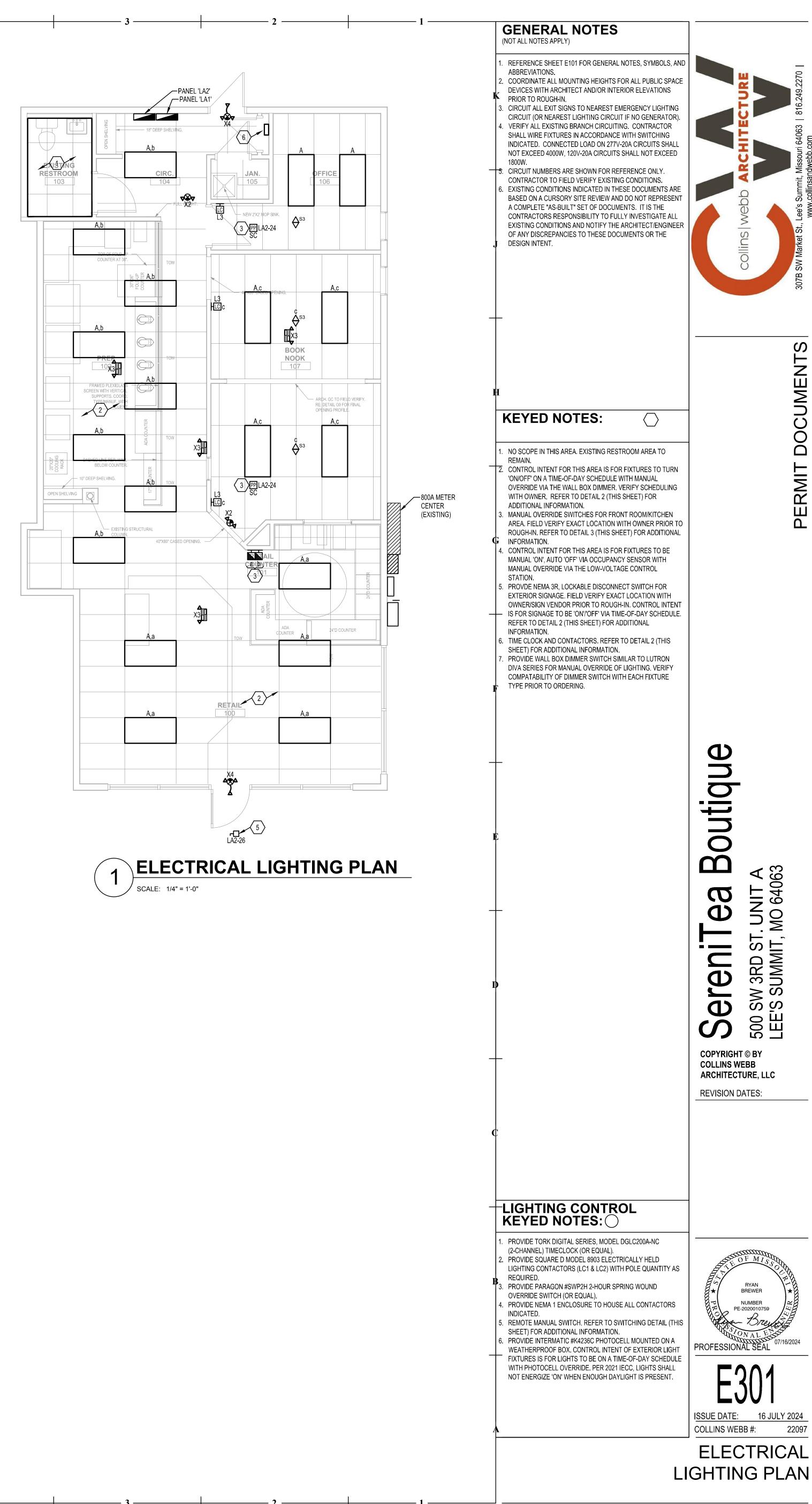
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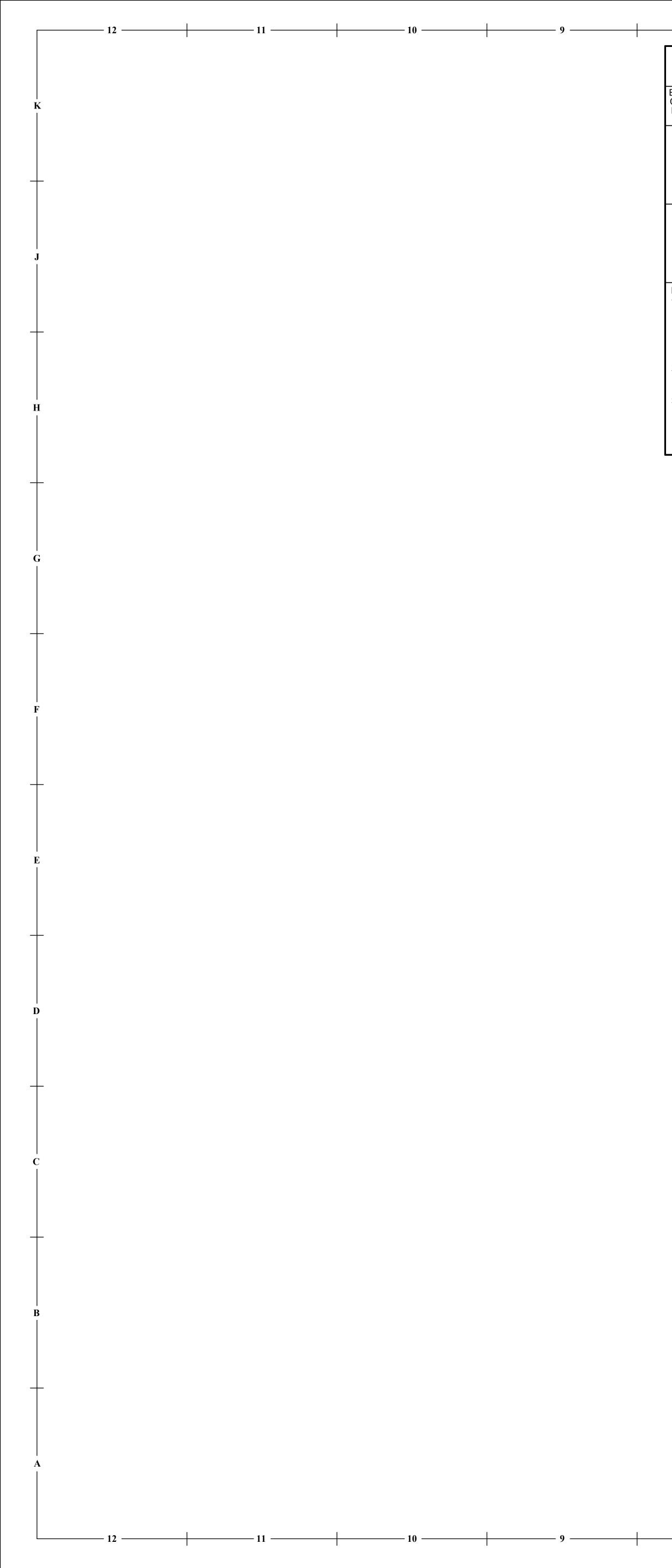
 COLLINS WEBB #:
 22097
 ELECTRICAL

POWER PLAN









	8 ——			7					(<u>.</u>		— 5 ——	
	VOLT RANCH (CIRCUIT	VOLTAG		WIRING								
BRANCH CIRCUIT RATING	WIRE SIZE	MA	XIMUM L CIR	ENGTH (CUIT (FE	OF BRAN ET) I						DO NOT ACCOUNT FOR EASE WIRE SIZES AS RE PROVIDED.		
(AMPS)	(AWG) #12	120V 50	208V 90	240V 110	277V 125	480V 200				IN THE EXIST	ILITION, VERIFY THE QUA ING PANELBOARDS. IF TI NOT ENOUGH TO COMPL	HE QUANTITY OF AVA	ILABLE
20A	#10	80	150	175	200	350					Y ENGINEER. WHERE NE		
	#8	140	230	280	320	550	ſ			FEEDER	SCHEDL	JLE	
	#6 #10	215 50	375 100	430 110	500 130	870 225				N COPPER CONI UMINUM CONDU			
30A	#8	80	160	180	210	360		CODE	SETS			RACEWAY	AMPS
0011	#6	135	250	280	325	560	(EX	OLIO	EXISTING CONDUC			
NOTES:	#4	220	400	450	525	910	(403	2	3#3/0,1#3	G. (CU)	2"	400
ABOV BRANG MAY P EQUIP APPRO 2. COND WIRES 3. LIMITS OF 3% LOADE EXACT	IDE BRANCH E FOR ALL L CH CIRCUIT PERFORM VO MENT CON OPRIATELY UCTOR SIZE S SMALLER S #6 AND LA S FOR CONE OVOLTAGE I ED UP TO 80 T BRANCH C OPRIATELY	IGHTING A S SERVE D OLTAGE DR NECTED LC SIZED TO L ES ARE BAS THAN #6 AN RGER, IN A OUCTOR LE DROP TO C DROP TO C D% OF THE NRCUIT LEM	ND RECEPT EDICATED I OP CALCUI DAD AND PR IMIT VOLTA SED ON SOI ND STRAND SINGLE ME NGTH SHON OMPLY WIT BRANCH BF	ACLE BRAN EQUIPMENT LATIONS BA OVIDE CON AGE DROP T LID COPPER ED COPPER ETAL COND WN ARE BAS TH THE NEC REAKER RA PROVIDE (NCH CIRCUI T, THE CONT SED ON AC IDUCTORS TO A MAXIM CONDUCT R CONDUCT SED ON A M FOR CIRCU TING. FIELD CONDUCTO	TS. WHERE TRACTOR TUAL UM OF 3%. ORS FOR ORS FOR IAXIMUM JITS VERIFY		2. Al 4(3. EL 7E 6. Al	ONDUCT LL RACE CHAPTE LECTRIC ERMINAT ONDUCT ERIFY M LLOWED QUIPMEI O BE AD	OUCTORS AMPACITY E ORS W/ 75°C INSULA WAY SIZES (EMT/RMC R 9), 40% FILL COLUN AL CONTRACTOR TO ION TEMPERATURE I OR AMPACITY AND C AXIMUM NO. OF SETS W/ UTILITY CO. NT GROUNDING CONI JUSTED PER T250.66 M FEEDERS NOT TO E ORS.	TION. C/PVC 40) BASED C IN. VERIFY ALL EQUIF RATINGS (IE, 60°C (ONDUIT SIZES AC(OF SERVICE ENTI OUCTORS BASED (FOR SEPARATELY	ON THE NEC TAB PMENT CONDUC OR 75°C). ADJUS CORDINGLY. RANCE CONDUC ON T250.122. GR DERIVED SYSTE	LE TOR T TORS OUND EMS.

FIXT.			LAMPS	FIXT.	TOTAL		REMARKS/MOUNTING	
TYPE	DESCRIPTION & MANUFACTURER OPTIONS	NO.	TYPE	VOLT	WATTS		REMARKS/MOUNTING	NOTES
А	2' x 4' Field Selectable LED Troffer M# LITHONIA #STAKS 2X4 AL06 SWW7	1	LED	UNV	40W	Standard	Recessed (Lay-In)	
X2	Combination LED Exit Sign and Emergency Light Fixture, Universal Mount, Emergency Battery Pack. Provide Arrows as Indicated. M# EVENLITE#TCXCOM-R-U-W DUAL LITE#EVC-U-R-W	1	LED	UNV	2W		Wall/Ceiling/Pendant	1
Х3	LED Emergency Light w/ (2) 2-Watt Adjustable LED Heads and Emergency Battery Backup M# EVENLITE#TCL-4-W DUAL LITE#EV4D-02L	2	LED	UNV	5W	White	Surface (Wall/Ceiling)	1
X4	Combination LED Exit Sign and Emergency Light Fixture w/ Exterior Rated Remote Emergency Heads, Universal Mount, Emergency Battery Pack. Provide Arrows as Indicated. M# EVENLITE#TCXCOM-R-U-W-PRWLED2MV DUAL LITE#EVC-U-R-W-D4 WITH EVO-D-X	1	LED	UNV	5W		Wall/Ceiling/Pendant	1

	LIGHTIN	G CONTROLS	SCHEDULE	
MANUFACTURER	MODEL #	SETTINGS	DESCRIPTION	NOTES
ACUITY BRANDS: nLIGHT	nPP16 SERIES	REFER TO PLANS	ON/OFF ROOM SWITCH CONTROLLER	1,2,4
		FOR CONTROL INTENT	LINE VOLTAGE - SINGLE RELAY	
ACUITY BRANDS: nLIGHT	nPODM	-	ON/OFF LOW VOLTAGE SWITCH	1,6
			WITH 1-CHANNEL CONTROL	
ACUITY BRANDS: nLIGHT	nCM-9 SERIES	-	CEILING MOUNT OCCUPANCY SENSOR - SMALL MOTION	3
	ACUITY BRANDS: nLIGHT ACUITY BRANDS: nLIGHT	MANUFACTURER MODEL # ACUITY BRANDS: nLIGHT nPP16 SERIES ACUITY BRANDS: nLIGHT nPODM	MANUFACTURER MODEL # SETTINGS ACUITY BRANDS: nLIGHT nPP16 SERIES REFER TO PLANS FOR CONTROL INTENT ACUITY BRANDS: nLIGHT nPODM -	ACUITY BRANDS: nLIGHT NPP16 SERIES REFER TO PLANS FOR CONTROL INTENT LINE VOLTAGE - SINGLE RELAY ACUITY BRANDS: nLIGHT NPODM - ON/OFF LOW VOLTAGE SWITCH ACUITY BRANDS: nLIGHT NPODM - ON/OFF LOW VOLTAGE SWITCH

WIRE

1. COORDINATE ALL MODEL NUMBERS WITH MANUFACTURER PRIOR TO ORDERING. PROVIDE DEVICES TO MEET CONTROL INTENT INDICATED ON THE DRAWINGS. PROVIDE 6'-0" OF EXCESS CONTROL WIRING, COILED AND TIED, BETWEEN CEILING MOUNTED OCCUPANCY SENSOR AND CORRESPONDING LOAD CONTROLLER. 3. MODIFY LOCATIONS OF CEILING MOUNTED OCCUPANCY SENSORS AS REQUIRED SO THAT NO OCCUPACNY SENSORS IS WITHIN 4'-0" OF AN HVAC SUPPLY DIFFUSER.

4. LOCATE DEVICE ABOVE CEILING OR AT STRUCTURE IN ACCESSIBLE LOCATION. LOCATIONS SHOWN ON DRAWINGS ARE SCHEMATIC. ADD ACCESS PANEL WITHIN CEILING IF NECESSARY. COORDINATE ACCESS PANEL LOCATION AND SPECIFICATION DIRECTLY WITH ARCHITECT.

LOW VOLTAGE

CAT5, CAT5e, OR CAT 6. STANDARD OR SOLID.

TERMINATED AS RJ45 TIA/EIA-568B

LOCATION SHOWN ON PLAN FOR REFERENCE ONLY. CONTRACTOR MAY RELOCATE BRIDGE PORTS FOR A MORE ECONOMICAL LAYOUT IF DESIRED. 6. PROVIDE DEVICES WITH DEFAULT MANUFACTURE MARKINGS ON BUTTONS.

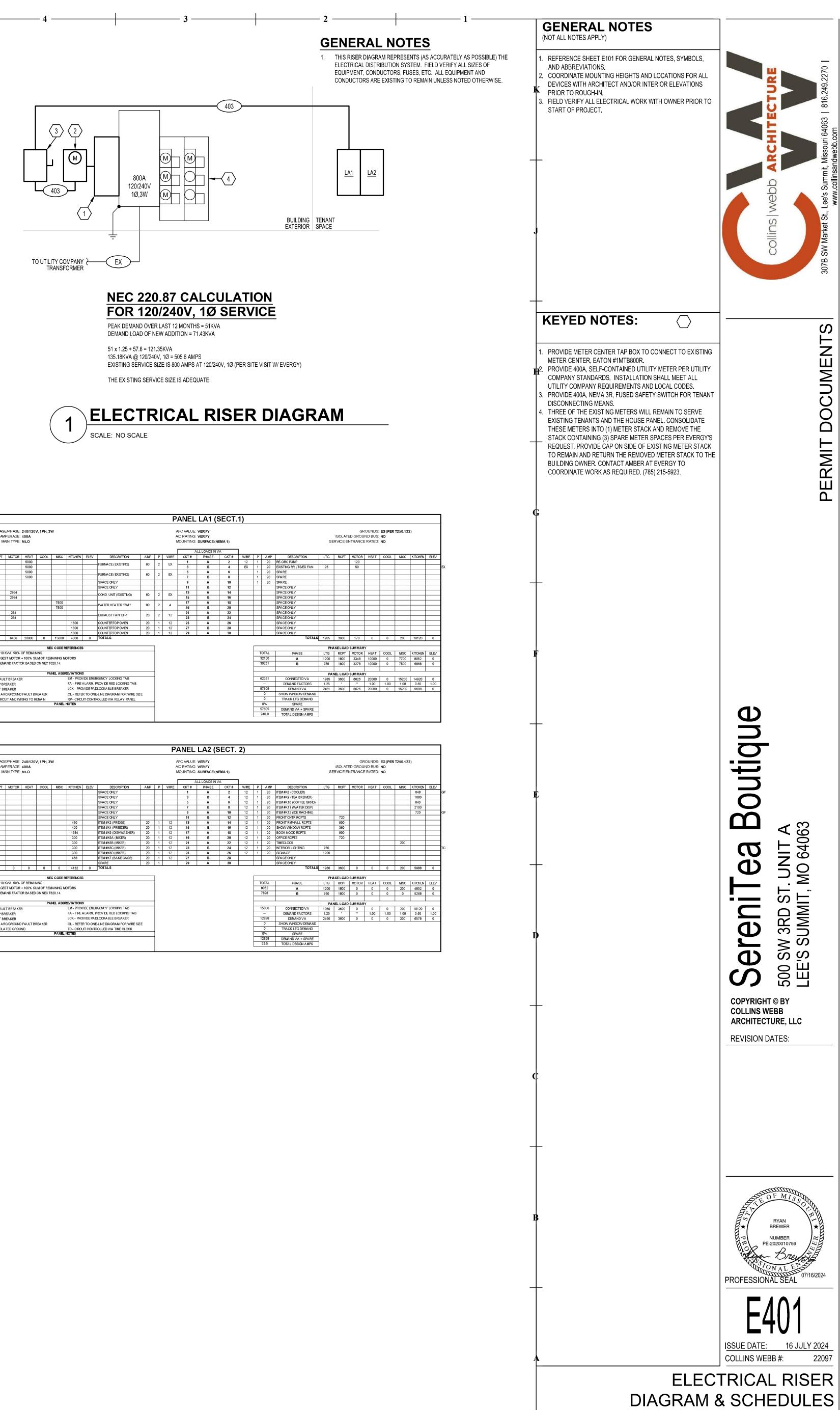
7. ROUTE RECEPTACLE CIRCUIT INDICATED ON PLAN AS "CONTROLLED RECEPTACLES" THROUGH PLUG LOAD CONTROLLER FOR AUTOMATIC ON/OFF CONTROL

MA OCCUPACNY SENSOR. ONE CONTROLLED CIRCUIT PER PLUG CONTROLLER. 8. DEVICE TO BE INSTALLED IN SINGLE GANG BOX. COORDINATE TIME-OF-DAY SCHEDULES WITH OWNER FOR ZONES TO BE ON TIME-OF-DAY CONTROL.

9. PENDANT MOUNT DEVICE TO 1/2" KNOCKOUT ON JUNCTION BOX AS REQUIRED.

VOL TAGE/PHASE: 240/12/ BUS AMPERAGE: 400A MAIN TYPE: MLO LTG RCPT MAIN TYPE: MLO EX 5000 EX 5000 EX 5000 EX 5000 EX 5000 EX 25000 EX 2984 2284 2284 2264 264 264 264 EX 264 264 264 100 6456 20000 264 27 2000 EX 264 264 264 27 264 264 264 264 264 264 264 264 264 264 264 264 264 27 0 0 6456 20000 264 27 27 100% OF 1ST 10 KVA, 50% OF REMA ** 125% OF LARGEST MOTOR + 100% S
BUS AMPERAGE: 400A MAIN TYPE: MLO LTG RCPT MOTOR HEAT EX 5000 5000 EX 5000 5000 EX 2964 - EX 2964 - EX 2964 - EX 2964 - EX 264 - EX 0 6456 20000 F - - - GF - - - T100% OF 1ST 10 KVA, 50% OF REMA * 125% OF LARGEST MOTOR + 100% / - - T100% OF 1ST 10 KVA, 50% OF REMA * 125% OF LARGEST MOTOR + 100% / - - GF - GROUND FAULT BREAKER - - - GF - GROUND FAULT BREAKER ST - SHUNT TRP BREAKER - - GF - GROUND FAULT BREAKER GF - ARC FAULT BREAKER - -
LTG RCPT MOTOR HEAT SX 5000 5000 SX 5000 5000 SX 5000 5000 SX 5000 5000 SX 2964 5000 SX 2964 5000 SX 2964 5000 SX 2964 5000 SX 264 5000 SF 5000 500000 SF 5000 500000 SF 5000000 5000000 SF 5000000000000000000000000000000000000
X S S S S S S S S S S S S S S S S S S S
SX 5000 SX 5000 SX 5000 SX 2964 2964 2964 2964 2964 264 264 SF 6456 9F 964 100% OF 1ST 10 KVA, 50% OF REMA * 105% OF LARGEST MOTOR + 100% 3 *** ELEVATOR DEMAND FACTOR BASE GF - GROUND FAULT BREAKER ST - SHUNT TRIP BREAKER GF/- GROUND FAULT BREAKER GF/- AC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT 14
X 5000 5000 X 2964 2964 2964 2964 2964 2964 2964 2964
2964 2964 2964 2964 2964 264
2964 264
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264 2
264 264 264 264 264 20000 0 0 6456 20000 0 100% OF 1ST 10 KVA, 50% OF REMA 125% OF LARGEST MOTOR + 100% *** ELEVATOR DEMAND FACTOR BASE GF - GROUND FAULT BREAKER ST - SHUNT TRP BREAKER ST - SHUNT TRP BREAKER GF/AF - ARC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT 1
264 264 264 264 264 20000 0 6456 20000 100% OF 1ST 10 KVA, 50% OF REMA 125% OF LARGEST MOTOR + 100% **** ELEVATOR DEMAND FACTOR BASE GF - GROUND FAULT BREAKER ST - SHUNT TRP BREAKER ST - SHUNT TRP BREAKER GF/AF - ARC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT 1
0 0 6456 20000 * 100% OF 1ST 10 KVA, 50% OF REMA ** 125% OF LARGEST MOTOR + 100% 3 **** **** **** GF - GROUND FAULT BREAKER ST - SHUNT TRP BREAKER *** *** *** *** GF - ARC FAULT BREAKER ST - SHUNT TRP BREAKER *** *** *** ***
0 0 6456 20000 * 100% OF 1ST 10 KVA, 50% OF REMA ** 125% OF LARGEST MOTOR + 100% S **** ELEVATOR DEMAND FACTOR BASE GF - GROUND FAULT BREAKER ST - SHUNT TRP BREAKER AF - ARC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT 1
0 0 6456 20000 ** 100% OF 1ST 10 KVA, 50% OF REMA ** 125% OF LARGEST MOTOR + 100% 5 **** ELEVATOR DEMAND FACTOR BASE GF - GROUND FAULT BREAKER ST - SHUNT TRIP BREAKER AF - ARC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT 1
0 0 6456 20000 * 100% OF 1ST 10 KVA, 50% OF REMA * 125% OF LARGEST MOTOR + 100% 3 *** ELEVATOR DEMAND FACTOR BASE GF - GROUND FAULT BREAKER ST - SHUNT TRIP BREAKER GF/A F - ARC FAULT BREAKER GF/A F - COMBO ARC/GROUND FAULT 1
** 125% OF LARGEST MOTOR + 100% 5 *** ELEVATOR DEMAND FACTOR BASE GF - GROUND FAULT BREAKER ST - SHUNT TRIP BREAKER AF - ARC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT F
** 125% OF LARGEST MOTOR + 100% 5 *** ELEVATOR DEMAND FACTOR BASE GF - GROUND FAULT BREAKER ST - SHUNT TRIP BREAKER AF - ARC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT F
** 125% OF LARGEST MOTOR + 100% 5 *** ELEVATOR DEMAND FACTOR BASE GF - GROUND FAULT BREAKER ST - SHUNT TRIP BREAKER AF - ARC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT F
ELEVATOR DEMAND FACTOR BASE GF - GROUND FAULT BREAKER ST - SHUNT TRIP BREAKER AF - ARC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT E
GF - GROUND FAULT BREAKER ST - SHUNT TRIP BREAKER AF - ARC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT 1
ST - SHUNT TRIP BREAKER AF - ARC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT B
ST - SHUNT TRIP BREAKER AF - ARC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT B
AF - ARC FAULT BREAKER GF/AF - COMBO ARC/GROUND FAULT E
GF/AF - COMBO ARC/GROUND FAULT
EX - EXISTING CIRCUIT AND WIRING TO

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16000 - ELECTRICAL

OR AS REQUIRED.

CONTRACTORS), AND TO ALL EQUIPMENT ITEMS AND AS INDICATED ON DRAWINGS

CODES, PERMITS, INSPECTION AND COMMISSIONING

QUALITY ASSURANCE

UL - UNDERWRITERS' LABORATORIES ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE ASTM - AMERICAN SOCIETY OF TESTING MATERIALS

QUANTITIES; OR FOR OMITTING COMPONENTS OR FITTINGS; OR FOR NOT COORDINATING ITEMS WITH ACTUAL BUILDING CONDITIONS AND/OR OTHER TRADES ACCUMULATE DURING THE PROGRESS OF THE JOB, THE FOLLOWING DATA IN DUPLICATE, AND PREPARE IN A NEAT BROCHURE OR PACKET FOLDER TO BE TURNED OVER TO THE OWNER AT SUBSTANTIAL COMPLETION: RECORD

DRAWINGS PER ABOVE. EQUIPMENT & MATERIAL FURNISHED.

AND POSTED AS DIRECTED ON THE PREMISES.

CURRENTLY ADOPTED ENERGY CODE REQUIREMENTS.

CABLES CONTAINED THEREIN.

ECTION OF EQUIPMENT

CONTRACTOR.

ALLOCATED SPACE.

DIVISION 16 OF THE SPECIFICATIONS COVERS ALL ELECTRICAL WORK FOR THE PROJECT. WORK SHALL INCLUDE LABOR, MATERIAL AND ACCESSORIES NECESSARY TO ACCOMPLISH THE WORK AS SPECIFIED AND SHOWN ON THE DRAWINGS, INCLUDING CONNECTION AND CHECKOUTS OF EQUIPMENT FURNISHED BY OTHERS (OTHER TRADES, THE OWNER AND OTHER

BIDDERS, AND OTHERS PERTINENT DOCUMENTS ISSUED BY THE ARCHITECT ARE A PART OF THESE SPECIFICATIONS AND ELECTRICAL DRAWINGS. THIS TRADE SHALL CONSULT THEM FOR INSTRUCTIONS WHICH APPLY. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF THE ELECTRICAL LAYOUT AND WORK INCLUDED ELECTRICIAN SHALL FOLLOW DRAWINGS IN LAYOUT THE ELECTRICAL WORK AND PROVIDE APPROVED SHOP DRAWINGS TO ALL REQUIRED DISCIPLINES AND AND SPACES IN WHICH WORK WILL BE INSTALLED.

INSTALLATION SHALL COMPLY WITH ALL LAWS APPLYING TO ELECTRICAL WORK IN EFFECT, INCLUDING THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (N.E.C.), THE NATIONAL ELECTRICAL SAFETY CODE, ALL LOCAL GOVERNING UTILITY COMPANY. PROVIDE ALL REQUIRED PERMITS AND INCLUDE THE COST OF SAME IN THE COST OF THE PROJECT. OBTAIN AND PAY FOR (WITHOUT ADDITIONAL EXPENSE TO THE OWNER) ALL REQUIRED INSPECTIONS AND TO THE OWNER) ASSOCIATED WITH LIGHTING AND LIGHTING CONTROLS COMMISSIONING. ALL COMMISSIONING DOCUMENTATION SHALL BE CERTIFIED AND GIVEN TO OWNER AND DESIGN PROFESSIONAL.

THE FOLLOWING INDUSTRY STANDARDS AS APPLICABLE TO ELECTRICAL WORK SHALL APPLY TO THE WORK OF THIS DIVISION EXCEPT THAT, WHERE THE REQUIREMENTS OF THESE SPECIFICATIONS ARE MORE THAN THE LISTED STANDARD, THESE SPECIFICATIONS SHALL TAKE PRECEDENCE:

NEMA - NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION NECA - NATIONAL ELECTRICAL CONTRACTOR'S ASSOCIATION

ALL MATERIALS SHALL BE NEW, UL LISTED AND LABELED WHERE LABELED MATERIALS ARE AVAILABLE, UNDAMAGED AND FREE OF DEFECTS AT TIME OF INSTALLATION. MATERIALS OR EQUIPMENT DAMAGED IN SHIPMENT OR OTHERWISE DAMAGED PRIOR TO OR DURING INSTALLATION SHALL NOT BE REPAIRED AT THE JOB SITE, BUT SHALL BE REPLACED WITH NEW MATERIALS. WHEN THE MANUFACTURER'S NAME APPEARS IN THESE SPECIFICATIONS AND DRAWINGS, IT SHALL BE CONSTRUED THAT THE MANUFACTURER HAS TO MEET THE FULL REQUIREMENTS OF THE SPECIFICATIONS AND DRAWINGS.

SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR EQUIPMENT TO THE ARCHITECT FOR ENGINEER'S REVIEW ELECTRONICALLY OR HARD COPIES. INCLUDE SUFFICIENT INFORMATION TO INDICATE COMPLETE COMPLIANCE WITH SPECIFICATIONS. PROVIDE SUBMITTALS AS EARLY AS REQUIRED TO SUPPORT ENGINEER'S SUBMITTAL REVIEWS WILL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS IN DIMENSIONS, DETAILS, SIZE OF MEMBERS, OR

ALL WARRANTIES, GUARANTEES, AND MANUFACTURER'S DIRECTION ON

COMPLETE PLAIN ENGLISH STEP-BY-STEP OPERATING INSTRUCTIONS FOR THE ELECTRICAL SYSTEM. ONE COPY OF THESE INSTRUCTIONS SHALL BE FRAMED

CERTIFIED LIGHTING AND LIGHTING CONTROLS COMMISSIONING AS REQUIRED BY

MANUFACTURERS' NAMES AND CATALOG NUMBERS IN SOME INSTANCES, SPECIFIC REFERENCES HAVE BEEN MADE TO ONE OR MORE MANUFACTURER'S NAME AND MODEL OR CATALOG NUMBERS. USE OF NAMES AND CATALOG NUMBERS DOES NOT INDICATE THAT THE EQUIPMENT SPECIFIED IN NECESSARILY AN "OFF THE SHELF" ITEM. VARIANCES MAY BE DUE TO REQUIREMENT OF DESIRED FINISH, MATERIAL OR OTHER MODIFICATION.

IN THE CASE OF PANELBOARDS, SAFETY SWITCHES AND OTHER EQUIPMENT REQUIRING WIRE AND CABLE TERMINATIONS, ASCERTAIN THAT LUG SIZES AND WIRING GUTTERS OR WIRING SPACE ALLOWED IS PROPER FOR THE WIRES AND

WHEN APPROVAL IS GIVEN FOR THE USE OF EQUIPMENT DIFFERING FROM THAT SHOWN ON DRAWINGS IN REGARD TO FOUNDATIONS, SPACE FOR PIPING, DUCTWORK, WIRING, INSULATION, ETC. CHANGES REQUIRED TO ACCOMPLISH SUCH DIFFERENCES SHALL BE ACCOMPLISHED AT NO COST TO THE OWNER.

ELECTRICAL EQUIPMENT SHALL BE PROTECTED FROM THE WEATHER, IN PARTICULAR, DRIPPING OR SPLASHING WATER, AT ALL TIMES DURING SHIPMENT, STORAGE AND CONSTRUCTION. MANUFACTURER'S RECOMMENDATIONS WITH REGARD TO STORAGE, PROTECTION, AND HANDLING SHALL BE FOLLOWED.

SHOULD ANY APPARATUS BE SUBJECTED TO POSSIBLE INJURY DUE TO WATER, IT SHALL BE THOROUGHLY DRIED AND PUT THROUGH A DIELECTRIC TEST, AT THE EXPENSE OF THE CONTRACTOR, TO ASCERTAIN THE SUITABILITY OF THE APPARATUS OR IT SHALL BE REPLACED WITHOUT ADDITIONAL COST TO THE

MATERIALS PRIOR TO INSTALLATION. INSTALLATION OR PLACEMENT INTO SERVICE OF DAMAGED MATERIALS WITHOUT THE PRIOR WRITTEN CONSENT OF THE OWNER IS PROHIBITED. REPLACE OR REPAIR TO NEW CONDITION, AS CERTIFIED BY THE MANUFACTURER, AND TEST DAMAGED EQUIPMENT IN COMPLIANCE WITH INDUSTRY STANDARDS AT NO ADDITIONAL COST TO THE OWNER, EQUIPMENT REQUIRED FOR THE TESTING SHALL BE PROVIDED BY THE

THE SIZE OF ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS IS BASED ON DIMENSIONS OF A PARTICULAR MANUFACTURER, (GENERALLY THE FIRST NAMED). WHILE OTHER MANUFACTURERS MAY BE ACCEPTABLE, IT IS THE RESPONSIBILITY OF THE TRADE TO DETERMINE IF THE EQUIPMENT PROPOSED WILL FIT IN THE

INSTALL ALL EQUIPMENT IN A MANNER TO PERMIT ACCESS TO ALL SURFACES.

MAINTAIN PROPER CLEARANCE TO MEET ALL SAFETY AND OPERATING CODES, PARTICULARLY N.E.C. INCLUDE ALL REQUIREMENTS DICTATED BY OPERATION. CONTROL, ADJUSTMENT, MAINTENANCE AND POSSIBLE REPLACEMENT OF EQUIPMENT IN DETERMINING CLEARANCE.

SHOULD THERE BE APPARENT VIOLATIONS OF N.E.C. CLEARANCE, NOTIFY THE ARCHITECT-ENGINEER BEFORE PROCEEDING WITH CONNECTION OR PLACEMENT OF EQUIPMENT.

INSTALLATION STUDIES ARE REQUIRED TO COORDINATE THE ELECTRICAL WORK WITH THE WORK OF OTHER TRADES. PREPARE COORDINATION DRAWINGS AT ACCURATE SCALE WHERE SEVERAL ELEMENTS OF ELECTRICAL OR COMBINED THE ARCHITECTURAL SPECIFICATIONS AND DRAWINGS INCLUDING THE GENERAL - MECHANICAL/STRUCTURAL/ELECTRICAL WORK MUST BE SEQUENCED AND CONDITIONS, INCLUDING ALL SUPPLEMENTS ISSUED THERETO, INSTRUCTIONS TO POSITIONED WITH PRECISION IN ORDER TO FIT INTO THE AVAILABLE SPACE.

> SHOW THE ACTUAL PHYSICAL DIMENSIONS REQUIRED FOR PROPER INTEGRATION OF EQUIPMENT WITH BUILDING SYSTEMS

CONSULT THE DRAWINGS AND LAYOUTS OF OTHER TRADES TO VERIFY LOCATION VERIFY FINAL ELECTRICAL CHARACTERISTICS BEFORE ROUGHING POWER FEEDS CONNECTORS SHALL BE INSULATED THROAT TYPE. TO ANY EQUIPMENT, WHEN ELECTRICAL DATA ON APPROVED SHOP DRAWINGS DIFFERS FROM CONTEMPLATED DESIGN, MAKE NECESSARY ADJUSTMENTS TO THE WIRING, DISCONNECTS, AND BRANCH-CIRCUIT PROTECTION FOR THE

DAMAGE FROM INTERFERENCE CAUSED BY INADEQUATE COORDINATION SHALL CODES AND ORDINANCES, WITH THE REGULATIONS OF THE SERVING ELECTRICAL BE RECTIFIED AT NO ADDITIONAL COST TO THE OWNER.

EQUIPMENT ACTUALLY INSTALLED AT NO ADDITIONAL COST TO THE OWNER.

ALL WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL REVIEWS. PROVIDE FOR AND PAY ALL EXPENSES (WITHOUT ADDITIONAL EXPENSE PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED.

> ANY MATERIAL ITEMS OR WORK NOT SHOWN ON THE DRAWINGS, BUT MENTIONED IN THESE SPECIFICATIONS OR VISA-VERSA, OR ANY ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE IN ALL RESPECTS AND READY FOR OPERATION SHALL BE PROVIDED WITHOUT ADDITIONAL COST TO THE OWNER.

THIS TRADE SHALL DO OR HAVE DONE BY COMPETENT TRADESMEN ALL CUTTING NO 12 AWG. IF NO CONDUCTOR SIZE IS INDICATED ON THE DRAWINGS FOR A AND PATCHING NECESSARY FOR THE INSTALLATION OF THIS WORK. NO CUTTING IN CONSTRUCTIVE PARTS OF THE BUILDING LIKELY TO IMPAIR ITS STRENGTH SHALL BE DONE WITHOUT THE ARCHITECT-ENGINEER'S WRITTEN APPROVAL.

EXCAVATION AND BACKFILL EXCAVATION, TRENCHING AND BACKFILLING ARE SPECIFIED IN SECTION

EXCAVATION TRENCHING AND BACKFILLING FOR UTILITIES. CONDUIT IS TO BE INSTALLED AS SPECIFIED FOR PIPELINES. CONDUIT INSTALLED BENEATH FLOOR SLAB SHALL BE A MINIMUM OF 6" BELOW SLAB. BACKFILL OVER CONDUIT SHALL BE COMPACTED AS FOR SLAB BEDDING MATERIAL. REFER TO STRUCTURAL DRAWINGS FOR DETAILS OF CONDUIT (PIPE) PENETRATION OF EXTERIOR FOOTINGS. COMPLETE INSTALLATION SHALL CONFORM TO N.E.C.

COORDINATE SLEEVE SELECTION AND APPLICATION WITH SELECTION AND APPLICATION OF FIRE-STOPPING SPECIFIED IN ARCHITECTURAL SPECIFICATIONS.

ROOFS: COORDINATE ALL ROOF PENETRATIONS WITH ENGINEER, OWNER, AND AS APPLICABLE, THE ROOFING CONTRACTOR PROVIDING A ROOF WARRANTY. KEEP ALL RACEWAY PENETRATIONS WITHIN MECHANICAL EQUIPMENT CURBS WHEREVER POSSIBLE. COORDINATE WITH DIVISION 15. FLASH AND COUNTERFLASH ALL OPENINGS THROUGH ROOF, AND/OR PROVIDE PRE-FABRICATED MOLDED SEALS COMPATIBLE WITH THE ROOF CONSTRUCTION THE PROJECT SCHEDULE. ALLOW ONE WEEK FOR ENGINEER REVIEW TIME. THE INSTALLED, OR AS REQUIRED BY THE ENGINEER, OWNER, OR ROOFING CONTRACTOR. ALL ROOF PENETRATIONS SHALL BE LEAKTIGHT AT THE TERMINATINO OF THE WORK AND SHALL NOT VOID ANY NEW OR EXISTING ROOF WARRANTIES.

> WALLS AND FLOORS - SLEEVES FOR RACEWAYS AND CABLES: STEEL PIPE SLEEVES: ASTM A 53/A 53M, TYPE E, GRADE B, SCHEDULE 40, GALVANIZED STEEL, PLAIN ENDS AND DRIP RINGS.

CAST IRON PIPE SLEEVES: CAST OR FABRICATED "WALL PIPE", EQUIVALIENT TO DUCTILE-IRON PRESSURE PIPE, WITH PLAIN ENDS AND INTEGRAL SATERSTOP, UNLESS OTHERWISE INDICATED.

FIRESTOPPING: FIRE RESISTANT THROUGH PENETRAION SEALANTS - TWO PART. FOAMED-IN-PLACE, SILICONE SEALANT FORMULATED FOR USE IN THROUGH-PENETRAION FIRE-STOPPING AROUND CABLES, RACEWAYS, AND CABLE CODE; ICEA METHOD 1, WITH GREEN INSULATED GROUDING CONDUCTOR. TRAY PENETRAIONS THROUGH FIRE-RATED WALLS AND FLOORS. SEALANTS AND ACCESSORIES SHALL HAVE FIRE-RESISTANCE RATINGS INDICATED, AS ESTABLISHED BY TESTING IDENTICAL ASSEMBLIES IN ACCORDANCE WITH ASTM E 814, BY UNDERWRITER'S LABORATORIES, INC., OR OTHER NRTL ACCEPTABLE TO

ACCEPTABLE MANUFACTURERS - HILTI, INC., 3M CORP, RECTORSEAL, SPECIFY TECHNOLOGY INC., UNITED STATES GYPSUM COMPANY.

ELECTRICAL SERVICE SERVICE SHALL BE AS SHOWN ON DRAWINGS.

PROVIDE SECONDARY SERVICE INTO THE BUILDING WITH CONDUIT AND WIRING AS SHOWN ON THE PLANS, INCLUDING, BUT NOT LIMITED TO, UNDERGROUND RACEWAYS AND CABLES AND SECONDARY CONNECTIONS TO UTILITY TRANSFORMERS AS REQUIRED BY SERVING ELECTRICAL UTILITY COMPANY. COORDINATE ALL REQUIREMENTS WITH UTILITY COMPANY PRIOR TO BID.

PROVIDE ALL REQUIRED GROUNDING FOR A COMPLETE SERVICE ENTRANCE GROUNDING SYSTEM. PERMANENTLY AND EFFECTIVELY GROUND AND BOND THE EXTENSION RINGS OR PLASTER RINGS OR TILE RINGS TO PROVIDE EXPOSED ELECTRICAL INSTALLATION IN A THOROUGH AND EFFICIENT MANNER, AND IN CONFORMANCE (AT A MINIMUM) WITH N.E.C. OR THESE DOCUMENTS, WHERE THEY EXCEED CODE REQUIREMENTS. USE BARE OR INSULATED CONDUCTORS AS SPECIFIED HEREIN, AND OTHER MATERIALS INDICATED ON THE DRAWINGS.

PROVIDE ALL NECESSARY ENCLOSURES REQUIRED BY THE OWNER FOR THE UTILITY COMPANY METERING. REFER TO DRAWINGS FOR MINIMUM REQUIREMENTS. COORDINATE WITH UTILITY COMPANY PRIOR TO BID FOR ALL REQUIREMENTS

ALL EQUIPMENT OF A PARTICULAR KIND, SUCH AS WIRING DEVICES AND PANELBOARDS AND ALL LIGHTING FIXTURES OF THE SAME TYPE, SHALL BE THE PRODUCT OF THE SAME MANUFACTURER.

DAMAGED OR DEFECTIVE EQUIPMENT: INSPECT ALL ELECTRICAL EQUIPMENT AND PROVIDE ACCESS PANELS FOR ALL EQUIPMENT AND DEVICES REQUIRING SUCH PANELS. SIZE AS REQUIRED FOR PROPER ACCESS AND MAINTENANCE, MINIMUM ACCEPTABLE IS 12 IN BY 12 IN CLEAR OPENING WHERE HAND ACCESS ONLY IS REQUIRED.

> PROVIDE LABELS FOR EACH MOTOR CONTROLLER, SAFETY SWITCH, RELAY, PANELBOARD, CONTACTOR, TIMER, CONTROL DEVICE, METER AND CIRCUIT BREAKER, LABELS SHALL BE LAMINATED, PHENOLIC STRIPS 1/16" THICK, AND ENGRAVED TO SHOW BLACK LETTERS ON A WHITE BACKGROUND NOT LESS THAN 1/4" HIGH. SIZE STRIPS TO PROPERLY FIT MANUFACTURER'S BRACKETS AND BE LEGIBLE, WHERE MANUFACTURER'S BRACKETS ARE NOT PROVIDED, MOUNT LABELS WITH PROPER SCREWS, OR AN APPROVED ADHESIVE.

CONDUIT, RIGID STEEL; GALVANIZED OR SHERADIZED AND MANUFACTURED IN ACCORDANCE WITH ANSI STANDARD C80.L. FITTINGS SHALL BE PIPE THREADED. MALLEABLE IRON. CONNECTORS SHALL BE INSULATED THROAT TYPE.

CONDUIT, PVC: POLYVINYLCHLORIDE SCHEDULE 40 PIPE SPECIFICALLY MANUFACTURED AND LABELED (UL STANDARD 651) FOR USE AS ELECTRICAL CONDUIT. FITTINGS SHALL BE EITHER SOCKET WELDED TYPE OR PIPE THREADED HUBBELL #52CM61). WITH INSULATED THROAT.

CONDUIT, FLEXIBLE METALLIC: GALVANIZED, INTERLOCKED SPIRALLY WOUND STEEL STRIP WITH GALVANIZED OR SHERADIZED FITTINGS. LISTED PER UL-L. FITTINGS SHALL BE OF THE SQUEEZE TYPE WITH INSULATED THROATS.

CONDUIT, LIQUIDTIGHT FLEXIBLE METALLIC: GALVANIZED, INTERLOCKED SPIRALLY WOUND STEEL STRIP WITH OVERALL JACKET OF LIQUID TIGHT PVC, UL LISTED. FITTINGS SHALL BE STEEL OR MALLEABLE IRON INSULATED THROAT, WATERTIGHT.

IN ACCORDANCE WITH ANSI STANDARD C80.3. FITTINGS 1/2 INCH THROUGH 2 INCH WIRING DEVICES. VERIFY DESIRED MATERIALS AND COLORS WITH ARCHITECT TRADE SIZE SHALL BE COMPRESSION TYPE, MANUFACTURED FROM MALLEABLE PRIOR TO INSTALLATION. IRON OR STEEL, AND RAIN AND/OR CONCRETE-TIGHT AS REQUIRED BY INSTALLATION. POT METAL OR DIE CAST TYPE FITTINGS ARE PROHIBITED.

CONDUCTORS AND CABLES GENERAL: SERVICE LATERALS AND PANELBOARD FEEDERS SHALL BE OF ANNEALED (SOFT) COPPER COMPLYING WITH ICEA S-95-658/NEMA WC70: SOLID CONDUCTOR FOR NO. 10 AWG AND SMALLER; CONCENTRIC, COMPRESSED STRANDED FOR NO. 8 AWG AND LARGER. ALL FEEDER CONDUCTORS NO 8 AWG

AND LARGER; STRANDED, TYPE THWN-2 OR XHHW-2 INSULATION.

ALL BRANCH CIRCUITS SHALL BE ANNEALED (SOFT) COPPER COMPLYING WITH ICEA S-95-658/NEMA WC70; SOLID CONDUCTOR FOR NO. 10AWG AND SMALLER: CONCENTRIC, COMPRESSED STRANDED FOR NO. 8 AWG AND LARGER. ALL BRANCH CIRCUIT CONDUCTORS NO 8 AWG AND LARGER; STRANDED, TYPE THWN-2 OR XHHW-2 INSULATION. ALL CONDUCTORS, NO 10 AWG AND SMALLER, USED FOR POWER AND LIGHTNG CIRCUITS; SOLID COPPER, TYPE THWN-2 INSULATION (WET OR DAMP LOCATIONS. OR IN CONDUIT BELOW GRADE OR SLAB). TYPE THHN INSULATION (DRY LOCATIONS ONLY ABOVE GRADE), OR DUAL RATED TYPE THHN/THWN-2. ALL BRANCH CIRCUIT WIRING SHALL NOT BE SMALLER THAN BRANCH CIRCUIT, PROVIDE CONDUCTORS AND CONDUIT SIZED PER NFPA 70 AND BASED ON THE INDICATED BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE RATING AND NUMBER OF POLES. WHERE NO CIRCUIT SIZE (CONDUCTORS AND OVERCURRENT PROTECTIVE DEVICE) IS INDICATED ON THE DRAWINGS FOR A BRANCH CIRCUIT, PROVIDE THREE NO 12 AWG CONDUCTORS IN 3/4" RACEWAY, AND A 20A SINGLE POLE CIRCUIT BREAKER.

CONDUCTOR INSULATION TYPES; 90-DEGREE C-RATED, TYPE THHN/THWN-2 OR XHHW-2 COMPLYING WITH ICEA S-95-658/NEMA WC70.

COLORS FOR 208/120V CONDUCTORS PHASE A: BLACK PHASE B: RED PHASE C: BLUE NEUTRAL: WHITE EQUIPMENT GROUND: GREEN ISOLATED GROUND: GREEN WITH YELLOW STRIPE

COLORS FOR 480/277V CONDUCTORS PHASE A: BROWN PHASE B: ORANGE PHASE C: YELLOW NEUTRAL: WHITE EQUIPMENT GROUND: GREEN

UNLESS NOTED OTHERWISE, SPECIAL PURPOSE CONDUCTORS AND CABLES, SUCH AS LOW VOLTAGE CONTROL AND SHIELDED INSTRUMENT WIRING, SHALL BE SHEET STEEL AND FINISH WITH BAKED ON GRAY ENAMEL OVER RUST INHIBITOR. THERMAL PROTECTION. AS RECOMMENDED BY THE SYSTEM EQUIPMENT MANUFACTURER.

CONTROL WIRING: STRANDED COPPER CONDUCTORS, 600V INSULATION, OF THE PROPER TYPE, SIZE AND NUMBER AS REQUIRED TO ACCOMPLISH SPECIFIED FUNCTION. MINIMUM SIZE; NO. 14 AWG UNLESS NOTED OTHERWISE.

MC TYPE CABLE CAN BE USED IF ACCEPTED BY LOCAL AUTHORITY AND GOVERNING CODES FOR WHIPS FROM JUNCTION BOX TO LIGHT FIXTURES ONLY. TYPE MC CABLE; 600V, UNJACKETED; ANSI E119 AND E814, UL STANDARDS 44 OR 83 (AS APPLICABLE), AND 1569, NFPA 70 ARTICLE 330; ALUMINUM OR GALVANIZED STEEL INTERLOCKED ARMOR: THHN- OR XHHW-INSULATED CONDUCTORS; COLOR

PROVIDE A DEDICATED EQUIPMENT-GROUNDING CONDUCTOR, OR BONDING JUMPER, AS APPLICABLE, IN ALL BRANCH CIRCUITS AND FEEDERS, SIZED IN ACCORDANCE WITH NFPA 70, UNLESS INDICATED AS LARGER ON THE DRAWINGS.

PROVIDE A DEDICATED NEUTRAL (WHERE REQUIRED) AND DEDICATED GROUNDING CONDUCTOR FOR EACH BRANCH CIRCUIT.

VOLTAGE DROP IN BRANCH CIRCUITS SHALL NOT EXCEED 2%.

GFCI CIRCUITS: DO NOT USE MULTI-CONDUCTOR CIRCUITS, WITH A SHARED NEUTRAL FOR ANY GFCI CIRCUIT BREAKER OR RECEPTACLE CIRCUIT. BRANCH CIRCUITS FED FROM GFCI CIRCUIT BREAKERS, LIMIT THE ONE-WAY CONDUCTOR LENGTH TO 100 FEET BETWEEN THE PANELBOARD AND THE MOST REMOTE RECEPTACLE OR LOAD ON THE GFCI CIRCUIT.

OUTLET BOXES: GALVANIZED PRESSED STEEL WITH GALVANIZED STEEL SURFACE FLUSH WITH WALL OR CEILING FINISH. PROVIDE ALL CEILING OUTLET BOXES WITH "NO-BOLT" OR THROUGH AND LOCKNUTTED TYPE FIXTURE STUDS.

JUNCTION AND PULL BOXES: FABRICATE IN ACCORDANCE WITH NEMA AND N.E.C. STANDARDS AND REQUIREMENTS INSOFAR AS MATERIAL, GAUGES, DIMENSIONS, AND FABRICATION METHODS. BOXES SHALL BEAR THE UL LABEL. WHERE BOXES ARE NOT SIZED ON THE DRAWINGS, THEY SHALL BE SIZED IN ACCORDANCE WITH N.E.C. REQUIREMENTS. FINISH IN STANDARD GRAY ENAMEL, WITH SIDES AND BACK SPOT-WELDED IN POSITION AND THE REMOVABLE SCREW COVER MOUNTED WITH BRASS MACHINE SCREWS.

SWITCHES: DECORA STYLE, HEAVY DUTY AC, RATED 20 AMPERES, 120/277 VOLTS, SINGLE-POLE, DOUBLE-POLE, THREE-POLE, OR FOUR-WAY AS NOTED ON DRAWINGS OR AS REQUIRED FOR THE SWITCHING ARRANGEMENTS IN EACH SPACE. HUBBELL #HBL122** OR EQUAL. COORDINATE SWITCH COLORS WITH COVERPLATES AS DESCRIBED ON POWER PLAN.

SWITCHES, SPECIAL PURPOSE: KEY OPERATED, HEAVY-DUTY AC, RATED 20 AMPERES, 120/277 VOLTS, SINGLE OR MULTI-POLE AS NOTED OR AS REQUIRED. HUBBELL #HBL122** OR EQUAL.

RECEPTACLES: DECORA STYLE, THREE WIRE GROUNDING TYPE, 120 VOLT RATED, BE UL CLASS RK-1, CURRENT-LIMITING, TIME-DELAY, DUAL-ELEMENT, 200,000 SPECIFICATION GRADE 20 AMPERES DUPLEX UNLESS NOTED OTHERWISE ON DRAWINGS. HUBBELL #5362 OR EQUAL. COORDINATE RECEPTACLE COLOR WITH COVERPLATE AS DESCRIBED ON POWER PLAN. SINGLE RECEPTACLE, 20 AMPERE, SYMMETRICAL INTERRUPTING CAPACITY ON MOTOR CIRCUITS. 120 VOLT, SPECIFICATION GRADE. HUBBELL #5361 OR EQUAL.

DUST AND MOISTURE RESISTANT, MELAMINE BODY, NYLON FACE BACKED BY FABRIC REINFORCED NEOPRENE GASKET SLIT TO PROVIDE WIPING ACTION ON CAP BLADES. PASS & SEYMOUR #6307 OR APPROVED EQUAL. GROUND FAULT CIRCUIT INTERRUPTER, NYLON FACE CLASS A, NEMA 5-20R, SPECIFICATION GRADE. HUBBELL #GF-5362* OR EQUAL.

CORROSION RESISTANT, SIMILAR AND APPROVED EQUAL TO STANDARD RECEPTACLE, EXCEPT FABRICATED FROM MELAMINE PLASTIC WITH NYLON FACE TRIP-FREE HANDLE MECHANISM. THE BREAKER SHALL BE ENCLOSED IN A AND EXPOSED METAL PARTS FINISHED TO RESIST CORROSION. (NEMA 5-15R =

ISOLATED GROUND, DUPLEX OR SIMPLEX THREE WIRE GROUNDING TYPE, SPECIFICATION GRADE, ORANGE FACE, GROUND CONTACT FULLY ISOLATED FROM STRAP AND EQUIPPED WITH SCREW TERMINAL. HUBBELL #IG-5362* OR EQUAL.

RECEPTACLES, SPECIAL PURPOSE: SPECIAL PURPOSE OUTLETS SHALL BE AS SCHEDULED ON DRAWINGS.

PLATES: PROVIDE PLATES FOR ALL OUTLET BOXES. PLATES SHALL BE OF SUITABLE CONFIGURATION FOR THE NUMBER AND TYPE OF DEVICES SERVED, SHALL BE ONE PIECE, SHALL OVERLAP OUTLET BOX EDGE AND ROOM SURFACES, ELECTRIC METALLIC TUBING: GALVANIZED OR SHERADIZED AND MANUFACTURED AND SHALL BE SMOOTH FINISH NYLON TYPE OF SAME MANUFACTURER AS THE

> STANDARD INTERIOR: REFER TO PLANS - COORDINATE ALL COLORS WITH ARCHITECT

INTERIOR DAMP LOCATIONS: STAINLESS STEEL.

EXTERIOR LOCATIONS: FOR UNATTENDED WET LOCATIONS, PROVIDE IN-USE NEMA 3R, UL LABELED PLATES MOLDED FROM A CLEAR HIGH IMPACT ULTRAVIOLET STABILIZED POLYCARBONATE MATERIAL FOR EASY VERIFICATION THAT CORDS ARE PLUGGED IN AND THAT THE GFCI IS FUNCTIONING. COVER PLATES SHALL BE BY THE SAME MANUFACTURER AS THE WIRING DEVICES; COMPLYING WITH NFPA 70 406.8 (A) OR (B) REQUIREMENTS FOR ATTENDED OR UNATTENDED USE AS APPLICABLE.

ACCEPTABLE MANUFACTURERS: HUBBELL, PASS & SEYMOUR, LEVITON AND COOPER

CABINETS AND ENCLOSURES

FURNISH AND INSTALL FLUSH CABINETS AND ENCLOSURES AS SHOWN ON THE PLANS AND AS HEREIN SPECIFIED. UNIT SHALL BE PROVIDED WITH DEAD FRONT SUB PANEL, RECESSED AS REQUIRED, TO HOUSE CONTROLS. DOOR SHALL BE PROVIDED WITH CONCEALED HINGES AND FLUSH KEY OPERATED LOCK. DOOR AND TRIM SHALL BE PRIME PAINTED FOR FIELD PAINTING TO MATCH WALL FINISHES. PROVIDE KNOCK-OUTS. LOUVERS AND IDENTIFICATION ENGRAVING AS REQUIRED TO MEET FIELD CONDITIONS. EXACT BACKBOX SIZE TO BE COORDINATED WITH EQUIPMENT SUPPLIER.

SAFETY SWITCHES: SAFETY SWITCHES SHALL CONSIST OF A BOX, FRONT COVER, REQUIRED CORRECTIONS BEFORE COMPLETION OF PROJECT. AND CIRCUIT PROTECTOR DEVICE ALL MANUFACTURED AND ASSEMBLED IN ACCORDANCE WITH NEMA STANDARDS

THE BOX SHALL BE FABRICATED FROM CODE GAUGE GALVANIZED SHEET STEEL IN CEILING EXISTS, UNLESS SHOWN OTHERWISE ON DRAWINGS. ACCORDANCE WITH U.L. LISTING AND LABEL. THE CIRCUIT PROTECTOR DEVICE SHALL BE HEAVY DUTY, QUICK-MAKE, QUICK-BREAK FUSED OR UNFUSED SWITCH RATED FOR MOTOR CIRCUITS AND/OR SERVICE ENTRANCE DUTY, IF REQUIRED. UNITS SHALL BE FURNISHED FOR SURFACE OR FLUSH MOUNTING WITH EITHER GENERAL PURPOSE OR RAINTIGHT ENCLOSURES, AS REQUIRED. FUSED UNITS SHALL BE FURNISHED COMPLETE WITH PROPER FUSES.

SHALL CONSIST OF BOX, INTERIOR, FRONT, AND CIRCUIT PROTECTIVE DEVICES THE ASSEMBLY SHALL BE U.L. LABELED AND BE LISTED FOR SERVICE. THE ASSEMBLY SHALL BE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH NEMA STANDARD PB-1. THE LATEST UL STANDARD (UL-50) AND SHALL HAVE A TURNED EDGE AROUND THE FRONT FOR RIGIDITY AND FOR CLAMPING ON FRONT. PROVIDE STANDARD KNOCKOUTS ON REMOVABLE BOX ENDS. FABRICATE FROM ALL RECESSED LIGHT FIXTURES SHALL BE PROVIDED WITH FACTORY INSTALLED EACH FRONT SHALL HAVE A DOOR MOUNTED ON SEMI-CONCEALED HINGES WITH A CYLINDER LOCK, INDEX CARD CIRCUIT DIRECTORY MOUNTED BEHIND CLEAR PLASTIC AND HELD IN A METAL FRAME, AND CONCEALED TRIM CLAMPS FOR MOUNTING TO THE BOX. ALL LOCKS SHALL BE MASTER KEYED AND ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN.

ALL INTERIORS SHALL BE COMPLETELY FACTORY ASSEMBLED. THE DESIGN OF THE INTERIOR SHALL PERMIT REPLACEMENT OF INDIVIDUAL BRANCH BREAKERS WITHOUT DISTURBING ADJACENT UNITS AND WITHOUT MACHINE DRILLING OR TAPPING. BUS BARS FOR PANELS RATED 600 AMPERES OR MORE SHALL BE TIN PLATED 98% CONDUCTIVITY COPPER OR TIN FINISH ALUMINUM (57% CONDUCTIVITY) OF RECTANGULAR CROSS-SECTION. BUS BARS FOR PANELS RATED LESS THAN 600 AMPERES SHALL BE TIN PLATED 98% CONDUCTIVITY COPPER OF RECTANGULAR CROSS-SECTION. BUS BAR CONNECTIONS TO BRANCH CIRCUIT BREAKERS SHALL BE THE PHASE SEQUENCE TYPE AND ACCEPT SYLVANIA, OR OSRAM. BOLT-ON TYPE BREAKERS ONLY. PANELBOARD BUS STRUCTURE AND MAIN BREAKER OR MAIN LUGS SHALL BE RATED AS SCHEDULED ON DRAWING. SUCH RATINGS SHALL BE ESTABLISHED BASED ON HEAT RISE TESTS IN ACCORDANCE WITH UL STANDARDS. GROUP INCOMING CABLE LUGS AT ONE END FOR SEPARATION FROM LOAD SIDE CABLES. EQUIPMENT NEUTRAL BUSSING WITH A LUG FOR EACH BRANCH BREAKER POSITION. INTERIOR SHALL MOUNT TO BOX

BREAKERS SHALL BE QUICK-MAKE, QUICK-BREAK, BOLT-ON THERMAL-MAGNETIC MOLDED CASE CIRCUIT BREAKERS ONE, TWO OR THREE POLE WITH INTEGRAL CROSSBAR FOR MULTI-POLE UNITS, EQUIPPED WITH AN OVERCENTER, TRIP-FREE, TOGGLE-TYPE OPERATING ACTION AND POSITIVE HANDLE INDICATION OF BREAKER STATUS. CIRCUIT BREAKERS SHALL BE UL LISTED IN ACCORDANCE WITH UL STANDARDS.

EACH PANELBOARD, AS A COMPLETE UNIT, SHALL HAVE A SHORT CIRCUIT RATING PANELBOARDS FURNISHED. EQUAL TO OR GREATER THAN THE INTEGRATED EQUIPMENT RATING SHOWN ON DRAWINGS. THE RATING SHALL BE ESTABLISHED BY TESTING WITH THE OVERCURRENT DEVICES MOUNTED IN THE PANELBOARD, THE SHORT CIRCUIT TESTS ON THE OVERCURRENT DEVICES ON THE STRUCTURE SHALL BE MADE SIMULTANEOUSLY BY CONNECTING THE FAULT TO EACH OVERCURRENT DEVICE WITH THE PANELBOARD CONNECTED TO ITS RATED SUPPLY VOLTAGE.

REFER TO PANELBOARD SCHEDULES FOR FULLY RATED OR SERIES-RATED REQUIREMENTS. SERIES-RATED SYSTEMS ARE NOT ALLOWED UNLESS SPECIFICALLY INDICATED ON PANELBOARD SCHEDULES. WHERE ALLOWED, SERIES-RATED SYSTEMS SHALL BE PROPERLY LABELLED BY NEC REQUIREMENTS.

METHOD OF TESTING SHALL BE PER UL STANDARDS. PANELBOARDS SHALL BE MARKED WITH THEIR MAXIMUM SHORT CIRCUIT CURRENT RATING AT THE SUPPLY VOLTAGE.

APPROVED MANUFACTURERS: SQUARE-D CO. OR EQUAL BY GE, SIEMENS AND/OR

OVERCURRENT PROTECTIVE DEVICES

EATON.

WITHOUT TOOLS.

FUSES OF THE PROPER SIZE, RATING AND ELECTRICAL CHARACTERISTICS SHALL BE PROVIDED IN EACH FUSIBLE DEVICE. FUSES OF 600 VOLTS AND BELOW SHALL AMPERE RMS SYMMETRICAL INTERRUPTING CAPACITY ON NON-MOTOR CIRCUITS AND UL CLASS RK-5. TIME-DELAY, DUAL-ELEMENT, 200.000 AMPERES RMS

APPROVED MANUFACTURERS: BUSSMANN, LITTLEFUSE OR FERRAZ-SHAWMUT (ALL FUSES SHALL BE OF SAME MANUFACTURER TO ENSURE SELECTIVE COORDINATION).

CIRCUIT BREAKERS: CIRCUIT BREAKERS OF THE PROPER SIZE, RATING, AND ELECTRICAL CHARACTERISTICS SHALL BE PROVIDED WHERE CALLED FOR ON DRAWINGS. BREAKERS SHALL BE THERMAL MAGNETIC MOLDED-CASE WITH

QUICK-MAKE, QUICK-BREAK, OVER CENTER TOGGLE TYPE MECHANISM AND SUITABLE NEMA RATED ENCLOSURE. BREAKERS SHALL BE OF SAME MANUFACTURER AS THOSE IN THE PANELBOARDS.

ELECTRONIC TIME SWITCHES: ELECTRONIC, SOLID STATE PROGRAMMABLE UNITS WITH ALPHANUMERIC DISPLAY; COMPLYING WITH UL917. SPST, 30 AMPERE INDUCTIVE OR RESISTIVE, 240VAC, CONTACT RATING. 2 PROGRAMMABLE ON-OFF SET POINTS ON A 24-HOUR SCHEDULE, ALLOWING DIFFERENT SET POINTS FOR EACH DAY OF THE WEEK. ALLOW CONNECTION OF A PHOTOELECTRIC RELAY AS SUBSTITUE FOR ON-OFF FUNCTION OF A PROGRAM, ASTRONOMIC TIME ON ALL CHANNELS. BATTERY BACKUP FOR SCHEDULES AND TIME CLOCK.

OUTDOOR PHOTOELECTRIC SWITCHES SOLID STATE, WITH SPST DRY CONTACT RATED FOR 1800-VA TUNGSTEN OR 1000-VA INDUCTIVE, TO OPERATE CONNECTED RELAY, CONTACTOR COILS OR MICROPROCESSOR INPUT, COMPLYING WITH UL 773A.

TELEPHONE AND DATA SYSTEMS FURNISH AND INSTALL A SYSTEM OF PROPERLY SIZED AND PROPERLY LOCATED OUTLETS WITH ASSOCIATED CONNECTING CONDUIT RUNS, EXTENDING TO PULL BOXES AND TELEPHONE BACKBOARD. FURNISH AND INSTALL RACEWAYS, FOR

INCOMING SERVICE WHERE INDICATED. OUTLET BOXES: UNLESS OTHERWISE INDICATED, ALL TELEPHONE OUTLETS AND JUNCTION BOXES SHALL BE PROVIDED AS REQUIRED TO ACCOMMODATE INTERNAL TERMINAL STRIPS BY TELEPHONE CO.

OUTLET COVER PLATES: TELEPHONE OUTLET COVER PLATES SHALL MATCH THOSE SPECIFIED FOR ADJACENT WIRING DEVICES, INCLUDING THOSE WITH SPECIAL FINISHES.

RACEWAYS: MATERIALS FOR TELEPHONE RACEWAY SYSTEM WORK SHALL BE IN ACCORDANCE WITH CORRESPONDING RACEWAYS SPECIFIED HEREIN AND IN OTHER SECTIONS.

VERIFY LOCATION OF WALL OUTLETS BEFORE ROUGHING IN TO ENSURE COORDINATION WITH OWNER'S FINAL INTENDED FURNITURE LAYOUT. PLAN INDICATIONS SHALL NOT BE SCALED UNLESS DIRECTED. OUTLETS SHALL BE RELOCATED WITHIN ROOMS BEFORE ROUGH-IN WHERE DIRECTED BY ARCHITECT-ENGINEER WITHOUT ADDITIONAL COST TO OWNER.

TELEPHONE SERVICE CONDUIT LAYOUT SHALL HAVE THE JOB SITE APPROVAL OF AN AUTHORIZED REPRESENTATIVE OF THE TELEPHONE CO. COORDINATE WORK SO THAT BOTH TELEPHONE CO. AND OWNER'S REPRESENTATIVES ARE PRESENT AT THE SAME TIME FOR APPROVAL OR CHANGES IN AMPLE TIME FOR ANY

FROM EACH TELEPHONE OUTLET, PROVIDE 3/4" EMT CONDUIT CONCEALED IN WALL TO 6" ABOVE ACCESSIBLE CEILING OR UP TO STRUCTURE WHERE NO

TELEPHONE TERMINAL BOARD: PRIOR TO INSTALLATION OF TELEPHONE TERMINAL BOARD, THE EXACT LOCATION SHALL BE VERIFIED WITH THE TELEPHONE CO. THE TELEPHONE TERMINAL BOARD SHALL BE PROVIDED WITH A DOUBLE DUPLEX RECEPTACLE LOCATED WHERE INDICATED ON THE DRAWINGS. THE TERMINAL BOARD SHALL BE CONSTRUCTED OF 4' X 8' X 3/4" PLYWOOD WITH TWO (2) COATS OF FLAME RETARDANT PAINT UNLESS NOTED OTHERWISE ON DRAWINGS

FIXTURES ARE SPECIFIED IN THE SCHEDULE BY MANUFACTURER'S NAME AND CATALOG NUMBER.

ALL LAMPS USED ON THIS PROJECT SHALL BE NEW, DELIVERED TO THE JOB SITE IN THE ORIGINAL PACKING CASES AND SLEEVES AND SHALL BE OF THE SAME MANUFACTURER.

PROVIDE FLUORESCENT FIXTURES WITH ELECTRONIC BALLASTS SUITABLE FOR OPERATION OF LAMPS SPECIFIED; TOTAL HARMONIC DISTORTION LESS THAN 20%; FREQUENCY OF OPERATION OF 20 KHZ OR GREATER WITH NO VISIBLE FLICKER; LINE TRANSIENT WITHSTAND RATINGS AS DEFINED IN ANSI/IEEE, CATEGORY A. APPROVED MANUFACTUERERS: ADVANCE OR EQUAL BY MAGNETEK, MOTOROLA OR OSRAM.

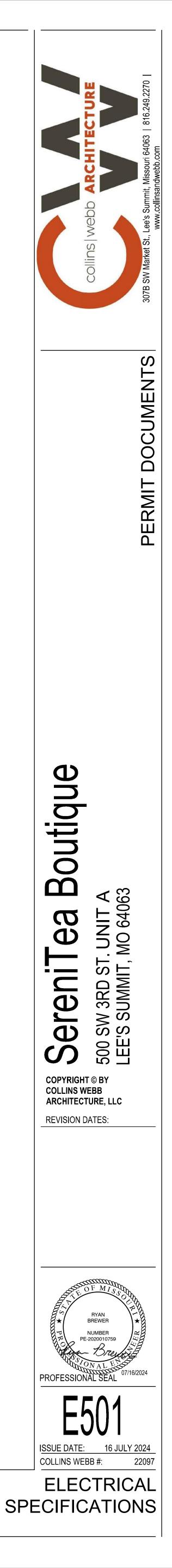
HID BALLASTS SHALL BE AUTO TRANSFORMER REACTOR, HIGH POWER FACTOR POTTED AND ENCASED TO MINIMIZE SOUND. APPROVED MANUFACTURERS: GE,

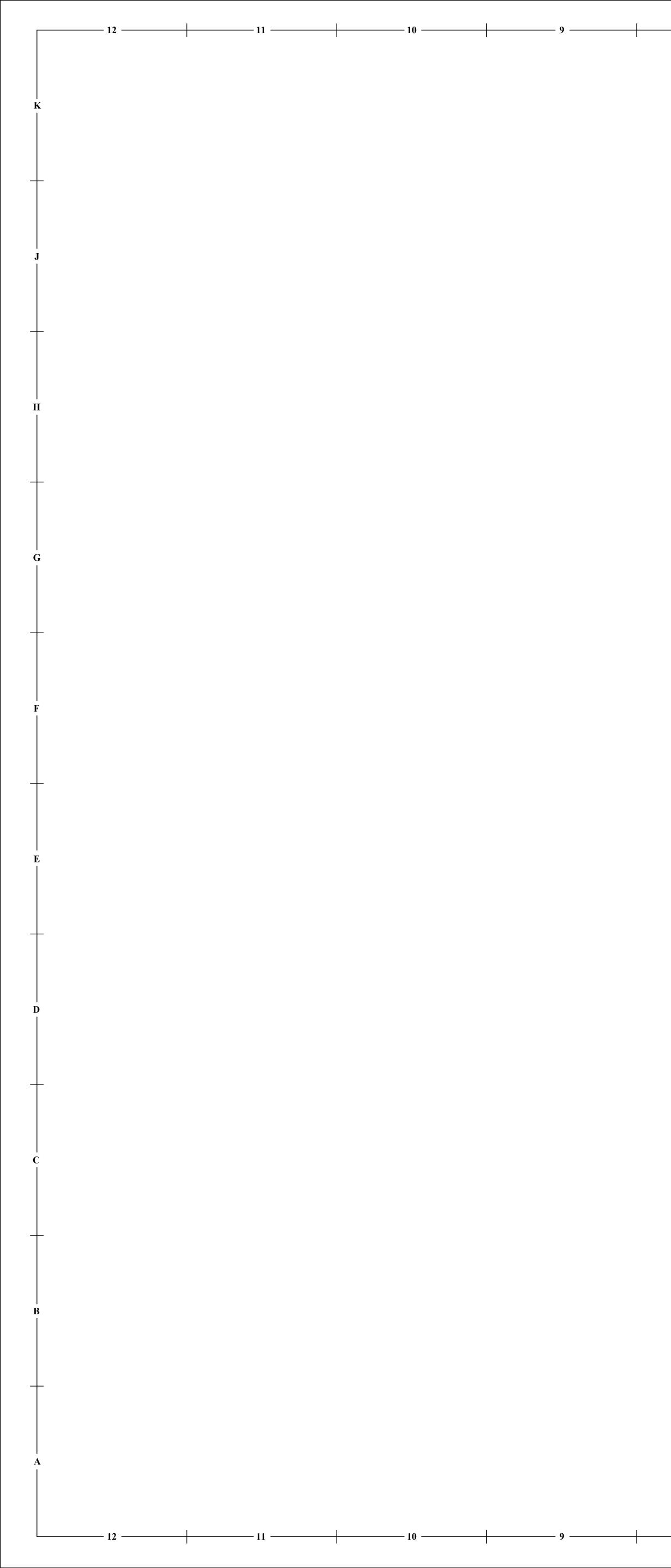
LED LIGHT FIXTURES ARE TO BE PROVIDED WITH COMPATIBLE DRIVER AND MUST BE COORDINATED WITH CONTROL TYPE INDICATED. CONTRACTOR IS RESPONSIBLE TO ENSURE CONTROLS ARE CAPABLE OF PROPERLY CONTROLLING LIGHT FIXTURES AS INDICATED WITHIN THESE DRAWINGS.

TACTORS AND RELAYS

ALL CONTACTORS AND RELAYS SHALL BE UL LISTED AND LABELED, GENERAL PURPOSE, ELECTRICALLY HELD TYPE, IN NEMA 1 ENCLOSURES. WHERE SPECIFICALLY NOTED ON DRAWINGS, UNITS SHALL BE ELECTRICALLY HELD OR MOMENTARY OPERATIONAL TYPE. UNITS SHALL BE FURNISHED WITH LINE OR LOW VOLTAGE CONTROL AS NOTED AND WITH THE CORRECT NUMBER OF POLES AND CURRENT CHARACTERISTICS. WHERE LOW VOLTAGE OPERATION IS INDICATED, PROVIDE PROPER STEPDOWN TRANSFORMERS AND RECTIFIERS. APPROVED MANUFACTURERS: ASCO, OR MANUFACTURER OF APPROVED

GENERAL PURPOSE, UL-LISTED/LABELED 150 DEGREES C TEMPERATURE RISE ABOVE 40 DEGREES C AMBIENT. INSULATING MATERIALS: EXCEED NEMA ST-020 STANDARDS, RATED FOR 220 DEGREES C, UL-COMPONENT RECOGNIZED INSULATION SYSTEM. PHASES, VOLTAGES, AND SIZES: AS INDICATED ON THE DRAWINGS. SOUND LEVEL: NOT EXCEEDING NEMA STANDARDS FOR THE SIZES INDICATED. FULL-CAPACITY PRIMARY TAPS: BELOW 25 KVA - MINIMUM OF TWO 5% (2-); 25 KVA TO 300 KVA - MINIMUM OF SIX 2.5% (2+, 4-); ABOVE 300 KVA - FOUR 2.5% (2+, 2-). TRANSFORMER CORE AND COIL ASSEMBLIES: MOUNTED ON INTEGRAL VIBRATION-ABSORBING PADS. MAKE FINAL CONDUIT CONNECTIONS TO TRANSFORMERS WITH FLEXIBLE CONDUIT, WITH AT LEAST 6" OF SLACK IN ALL DIRECTIONS. TRANSFORMER ENCLOSURES: FULLY ENCLOSED (EXCEPT FOR VENTILATION OPENINGS), NEMA 2, DRIP-PROOF, FABRICATED OF HEAVY GAUGE SHEET STEEL CONSTRUCTION. MANUFACTURERS: SQUARE D, GENERAL ELECTRIC, ACME, SIEMENS.





WIRING OF MECHANICAL EQUIPMEN PROVIDE ALL RACEWAYS AND POWER WIRING FOR ALL DIVISION 15 EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS, INCLUDING, BUT NOT LIMITED TO, PUMPS, DUCT SEALING COMPOUND. ALSO SEAL ALL CONDUITS ENTERING AND LEAVING WATER HEATERS, AND HVAC EQUIPMENT, AND ALL LINE-VOLTAGE CONTROL AND REFRIGERATED EQUIPMENT AND PROVIDE EXPANSION JOINTS PER N.E.C. INTERLOCK WIRING NOT PROVIDED UNDER DIVISION 15. CONNECT PER MANUFACTURER'S WIRING DIAGRAMS. COORDINATE WITH DIVISION 15 FOR DISCONNECTS FURNISHED WITH EQUIPMENT, AND PROVIDE ALL DISCONNECT SWITCHES AS REQUIRED. AFTER INSTALLING WIRING, VERIFY THAT EACH MOTOR PERMITTED. WHERE EQUIPMENT IS INSTALLED OUTDOORS OR EXPOSED TO LOAD HAS THE CORRECT PHASE ROTATION.

VERIEV THE ACTUAL "MAXIMUM OVERCURRENT PROTECTION" DEVICE RATINGS AND "MINIMUM CIRCUIT AMPACITY" CONDUCTOR SIZING FOR MECHANICAL EQUIPMENT FROM THE EQUIPMENT NAMEPLATE. BASE ELECTRICAL INSTALLATIONS ON ACTUAL REQUIRED AMPERAGES, WHICH MAY VARY SOMEWHAT FROM THE CONDUCTOR AND EQUIPMENT SIZES SHOWN ON THE DRAWINGS; HOWEVER, IN NO CASE, REDUCE THE SIZE OF CONDUCTORS INDICATED ON THE DRAWINGS WITHOUT AUTHORIZATION FROM THE ENGINEER. PROVIDE PROPERLY SIZED ELECTRICAL WIRING AND EQUIPMENT WITHOUT EXTRA SIZE CLAMPS, INSERTS, CHANNELS AND ALL OTHER MEMBERS TO SUPPORT A COST TO THE OWNER. NOTIFY THE ENGINEER OF ALL CHANGES REQUIRED IN THE LOAD EQUAL TO 200% OF THE COMBINED WEIGHT OF ALL SUPPORTED MATERIAL ELECTRICAL INSTALLATION DUE TO EQUIPMENT VARIANCES SO THAT THE EFFECTS ON FEEDERS, BRANCH CIRCUITS, PANELBOARDS, FUSES AND CIRCUIT BREAKERS CAN BE CHECKED PRIOR TO PURCHASING AND INSTALLATION. BE RESPONSIBLE FOR COORDINATING WITH DIVISION 15 TO VERIFY THE ACTUAL AMPACITIES AND CORRECT SIZES OF ALL CONDUCTORS AND OVERCURRENT PROTECTIVE DEVICES FOR ALL EQUIPMENT, AND CORRECT OVERLOAD HEATERS FOR ALL MOTORS, WHEN STARTERS ARE PROVIDED UNDER DIVISION 16.

PROVIDE ALL RACEWAYS, POWER WIRING, AND LINE-VOLTAGE CONTROL AND INTERLOCK WIRING NOT PROVIDED UNDER DIVISION 15, FOR ALL THERMOSTATS, TEMPERATURE CONTROL DEVICES, AND CONTROLS, INCLUDING, BUT NOT LIMITED SECURELY ATTACH HANGERS AND SUPPORTS TO CONSTRUCTION BY METHODS TO, NIGHT-STATS, WATER HEATER INTERLOCKS, TIME SWITCHES AND OVERRIDE TIMERS. SEE MECHANICAL DRAWINGS FOR LOCATIONS AND TEMPERATURE CONTROL DIAGRAMS. LOW-VOLTAGE CONDUCTORS FOR THERMOSTATS AND TEMPERATURE CONTROL SYSTEMS MAY BE RUN EXPOSED ABOVE FINISHED ACCESSIBLE CEILINGS, IF APPROVED AND LISTED FOR THIS PURPOSE, BUT SHALL BE INSTALLED IN CONDUIT WITHIN WALLS AND WHERE EXPOSED IN THE WORK ARFAS

EXECUTION

METHOD OF PROCEDUR ERECT EQUIPMENT PARTS AT SUCH TIME AND IN SUCH MANNER AS TO MINIMIZE INTERFERENCES AND DELAYS IN THE EXECUTION OF THE WORK CARE SHALL BE USED IN THE ERECTION AND INSTALLATION OF ALL EQUIPMENT AND MATERIALS TO AVOID MARRING SURFACES OF THE WORK. DAMAGES SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.

EQUIPMENT REQUIRING ELECTRICAL SERVICE SHALL NOT BE ENERGIZED OR PLACED IN SERVICE UNTIL ALL INTERESTED PARTIES HAVE BEEN DULY NOTIFIED AND ARE PRESENT OR HAVE WAIVED THEIR RIGHT TO BE PRESENT. WHERE EQUIPMENT TO BE PLACED IN SERVICE INVOLVES SERVICE OR CONNECTION FROM ANOTHER CONTRACTOR OR THE OWNER, NOTIFY THE OWNER IN WRITING WHEN THE EQUIPMENT WILL BE READY. THE OWNER SHALL BE NOTIFIED AS FAR IN ADVANCE AS POSSIBLE, OF THE DATE THE VARIOUS ITEMS OF EQUIPMENT WILL BE COMPLETE.

THE WORK OF THIS TRADE INCLUDES ROUGH-IN FOR AND FINAL CONNECTION AND 150', CONTRACTOR MUST ENSURE WIRE SIZE BEING UTILIZED DOES NOT CREATE REQUIRED TO ALL MISCELLANEOUS EQUIPMENT FURNISHED BY OTHERS, OR UNDER OTHER DIVISIONS OF THE WORK. THIS SHALL INCLUDE POWER AND CONTROL WIRING. WIRING DEVICES AND COVER-PLATES FOR BUILT-IN EQUIPMENT ARE INCLUDED IN THE WORK OF THIS DIVISION. SAFETY DISCONNECTS AND OTHER MISCELLANEOUS PROTECTIVE DEVICES REQUIRED BY SIZE INCREASED AS REQUIRED. WHERE THE INCREASED CONDUCTOR SIZE N.E.C. ARE INCLUDED IN THE WORK OF THIS DIVISION. DO ALL ROUGHING-IN AND REQUIRES, INCREASE THE RACEWAY SIZE AS WELL. FOR CONTROL WIRING, USE FINAL CONNECTIONS FROM APPROVED SHOP DRAWINGS ONLY.

COMPLIANCE WITH THE DRAWING AND ANY NOTES THEREON IS REQUIRED. PROVIDE OPENINGS THROUGH WALLS, PARTITIONS, FLOORS, AND ROOFS AS REQUIRED FOR ELECTRICAL WORK.

PROVIDE SLEEVES FOR ELECTRICAL WORK PASSING THROUGH WALLS, PARTITIONS, ROOFS, AND FLOORS. SLEEVES SHALL EXTEND THROUGH FLOORS, WALLS AND PARTITIONS AND SHALL BE CUT FLUSH WITH EACH SURFACE UNLESS OTHERWISE SPECIFIED. FIRE WALL AND/OR FLOOR INTEGRITY SHALL BE RESTORED AFTER PENETRATION. SLEEVES IN CONCRETE AND MASONRY WALLS, CONCRETE FLOORS AND ROOFS, SHALL BE FABRICATED FROM STANDARD GALVANIZED STEEL PIPE WITH ENDS FINISHED SMOOTH, BURR FREE, WITHOUT SHARP EDGES. SLEEVES IN WALLS, ROOFS, AND FLOORS OF OTHER CONSTRUCTION AND THROUGH SUSPENDED CEILINGS SHALL BE FABRICATED FROM 22 U.S. GAUGE GALVANIZED STEEL. FLOOR SLEEVES SHALL EXTEND THREE N.E.C. INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. SPACE BETWEEN FLOOR SLEEVES AND PASSING CONDUIT SHALL BE FILLED WITH DUCT SEAL PACKING AND CAULKED WITH WATERPROOF COMPOUND AS APPROVED. WHERE CONDUITS PASS THROUGH WATERPROOFED FLOORS OR WALLS, SLEEVES SHALL BE FABRICATED SUCH THAT WATERPROOFING CAN BE FLASHED ONTO AND AROUND THE SLEEVE.

RACEWAYS ALL POWER AND LIGHTING CIRCUITS SHALL BE RUN IN METALLIC RACEWAYS EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE. THESE RACEWAYS SHALL BE EACH BOX SHALL BE OF PROPER SIZE TO ACCOMMODATE THE DEVICE AND RUN CONCEALED IN ALL FINISHED AREAS, AND WHERE RUN EXPOSED SHALL BE SQUARE TO THE BUILDING AND HELD TIGHT TO THE BUILDING CONSTRUCTION. LOW VOLTAGE, TELEPHONE, INTERCOM, MUSIC, ALARM AND SECURITY WIRING RUN ABOVE ACCESSIBLE CEILINGS SHALL BE RUN USING INSULATED, PLENUM RATED CABLE. PROVIDE LOW VOLTAGE CABLE IN CONDUIT IF REQUIRED BY LOCAL MOUNTING OF LIGHTING FIXTURES SHALL BE FOUR INCH OCTAGON, EQUIPPED AHJ. VERIFY ALL REQUIREMENTS PRIOR TO INSTALLATION. METALLIC CONDUIT WITH 3/8 IN. "NO-BOLT" FIXTURE STUD. BOXES FOR FLOOR OUTLETS SHALL BE FOR THESE SYSTEMS SHALL BE PROVIDED ONLY WHERE RUN INSIDE WALLS. THE CONCRETE PROOF STEEL BOXES WITH ADJUSTABLE TOPS AND DEVICES AS DRAWINGS INDICATE THE REQUIRED SIZE OF ALL RACEWAYS (EXCEPT AS HEREINAFTER SPECIFIED), THE POINTS OF TERMINATION AND THE SUGGESTED ROUTING. HOWEVER, THE INSTALLER IS RESPONSIBLE FOR PROPER COORDINATION WITH BUILDING STRUCTURE AND THE WORK OF OTHER TRADES. FINISH FLOOR): WALL SWITCHES 48" AND CONVENIENCE OUTLETS 18" UNLESS FURNISH ALL REQUIRED BENDS, ELBOWS, FITTINGS, JUNCTION AND PULL BOXES, NOTED OTHERWISE ON DRAWINGS. WHETHER OR NOT SPECIFICALLY SHOWN ON DRAWINGS, THAT MAY BE REQUIRED TO SATISFY CODES AND THE STANDARDS OF GOOD PRACTICE. WHERE CONDUITS TELEPHONE, ALARM, AND SIGNAL SYSTEM OUTLET BOXES SHALL BE STANDARD FOR BOTH BRANCH AND FEEDER CIRCUITS ARE RUN CONCEALED, THEY MAY BE OUTLET BOX TYPE WHERE ONLY ONE CONDUIT ENTERS SAME. UNLESS RUN OUT OF SQUARE TO THE BUILDING PROVIDING THE SHORTEST POSSIBLE RUN OTHERWISE SPECIFIED OR INDICATED ON DRAWINGS, WHERE TWO OR MORE IS UTILIZED. RACEWAY SIZES ARE BASED ON THE USE OF COPPER CONDUCTORS CONDUITS ENTER, BOX SHALL BE 4-11/16 IN. SQUARE MINIMUM WITH SUITABLE AND N.E.C. FILL.

CONDUIT SHALL BE CONSTRUED AS ELECTRICAL RACEWAYS AND SHALL CONFORM TO THE FOLLOWING: CONCEALED IN SUSPENDED CEILINGS AND INTERIOR PARTITIONS - EMT WITH SET SCREW TYPE FITTINGS. UNDERGROUND OR BELOW INTERIOR SLABS - GRS, (NOTE: PVC CONDUIT IS PERMITTED OUTSIDE FOR PARKING AREA LIGHTING, SIGNS, ETC. ELBOWS SHALL BE GRS). EXPOSED ON BUILDING EXTERIOR - GRS.

CONDUIT BENDS SHALL BE MADE TO THE LARGEST POSSIBLE RADIUS FOR EASE IN ACCORDANCE WITH N.E.C. ARTICLE 250. PULLING CONDUCTORS AND TO PROVIDE A NEATLY INSTALLED APPEARANCE EQUIPMENT AND CONDITIONS PERMITTING, POWER CONDUIT BENDS SHALL CONFORM TO THE FOLLOWING: 1-1/2 IN. - 18 IN. RADIUS; 2 IN. - 24 IN. RADIUS; 2-1/2 GREEN GROUNDING CONDUCTOR SIZE IN ACCORDANCE WITH N.E.C. AND IN. - 24 IN. RADIUS; 3 IN. - 36 IN. RADIUS.

GRS CONDUIT SHALL BE CUT WITH POWER OR HACKSAW AND CLEANLY REAMED INTO A HOLE IN THE BACK OF THE BOX AND USED FOR NO OTHER PURPOSE. TO REMOVE ALL "BURRS" AND ALL FIELD CUT THREADS SHALL BE PAINTED WITH WHITE LEAD BEFORE COUPLINGS ARE APPLIED.

EMPTY CONDUIT SYSTEMS INSTALLED FOR COMMUNICATION SYSTEMS. PUBLIC CONTINUOUS BETWEEN A GROUNDING SCREW IN THE EQUIPMENT JUNCTION BOX TELEPHONES, OWNER ITEMS AND OTHER SYSTEMS AS INDICATED ON DRAWINGS AND A GROUND ATTACHMENT IN THE NEAREST OUTLET BOX IN THE RIGID SHALL BE INSTALLED COMPLETE WITH NYLON PULL WIRES PROPERLY TAGGED AT METALLIC CONDUIT SYSTEM. THIS REQUIREMENT INCLUDES ALL FLEXIBLE BOTH ENDS FOR IDENTIFICATION.

WHERE BUILDING VENTILATION CONDITIONS ARE SUCH THAT AIR MAY FLOW

CONTINUOUSLY IN CONDUITS. CAUSING CONDENSATION AND THE COLLECTION OF 6 AWG CONDUCTOR TO EACH PROTECTOR CABINET. OTHER CABINET. OR DEVICE MOISTURE, THE CONDUITS SHALL BE SEALED AT EACH END WITH A PLIABLE X

ALL CONNECTIONS TO MOTORS, SOLENOID VALVES, PRESSURE SWITCHES, LIMIT SWITCHES, AND SIMILAR APPARATUS SHALL BE FLEXIBLE CONDUIT WHERE MOISTURE, USE LIQUIDTIGHT FLEXIBLE CONDUIT WITH WATERTIGHT FITTINGS.

EQUIPMENT LEVELING, HANGERS AND SUPPORTS SET EACH PIECE INSTALLED UNDER THIS DIVISION TRUE AND LEVEL.

ADEQUATELY SUPPORT ALL RACEWAYS FROM THE STRUCTURE USING SCREW CLAMPS TO SECURE TO SAME. ARRANGE SUPPORTS TO PREVENT MOISTURE COLLECTION AND ALLOW ENTRANCE TO BOXES WITHOUT BENDS. INSTALL MULTIPLE CONDUITS USING CHANNEL TRAPEZE SUPPORTS TIGHT TO STRUCTURE ABOVE. USE APPROVED SPACERS TO INSULATE FROM CONTACT WITH BUILDING. PLUS THE WEIGHT OF A MAN.

WHERE SEVERAL RACEWAYS ARE SUPPORTED ON A COMMON TRAPEZE HANGER, SUPPORTS SHALL BE SPACED TO ACCOMMODATE THE SMALLEST SIZE RACEWAY INVOLVED. SPACE HANGERS AS FOLLOWS: RIGID CONDUIT: 1/2 AND 3/4 IN. SIZE; 6'-0" ON CENTERS; 1 AND 1-1/4 IN. SIZE; 9'-0" ON CENTERS

ELECTRIC METALLIC TUBING: 1/2 AND 3/4 IN. SIZE; 5'-0" ON CENTERS; 1 AND 1-1/4 IN SIZE; 6'-0" ON CENTERS.

RECOMMENDED IN THE "NECA STANDARDS OF INSTALLATION" MANUAL COORDINATION WITH MECHANICAL TRADES: THE INTENT OF THE ABOVE CEILING SUPPORTS IS TO COMBINE AS MANY PIPES, CONDUITS, ETC., AS IS POSSIBLE WITHIN SAFE STRUCTURAL LIMITS. ON EACH HORIZONTAL SECTION OF A TRAPEZE HANGER. PRIOR TO SELECTING THE HORIZONTAL MEMBER, ALL TRADES, MECHANICAL AND ELECTRICAL, SHALL COORDINATE ACTUAL NUMBER OF PIPES, CONDUITS, ETC., SUCH THAT FINAL SELECTION RESULTS IN A NEATLY GROUPED, DISCIPLINED AND ACCESSIBLE INSTALLATION.

NG INSTALLATION

EXCEPT FOR SUCH ITEMS AS ARE NORMALLY WIRED AT THEIR POINT OF MANUFACTURE AND SO DELIVERED - AND UNLESS SPECIFICALLY NOTED TO THE CONTRARY HEREIN - THE ELECTRICAL TRADE SHALL DO ALL ELECTRICAL WIRING OF EVERY CHARACTER. IT IS THE INTENT OF THESE SPECIFICATIONS AND DRAWINGS THAT ALL SYSTEMS AND EQUIPMENT SHALL BE PROVIDED WITH ALL NECESSARY UTILITY CONNECTIONS, COMPLETED TO ALLOW SAFE AND PROPER OPERATION OF SAID SYSTEMS. WHEN IT IS NECESSARY FOR TRADES PERFORMING WORK COVERED BY THIS DIVISION TO MAKE FINAL CONNECTIONS TO ITEMS OF EQUIPMENT BEING FURNISHED BY OTHERS, OR BY OTHER TRADES UNDER OTHER DIVISIONS, ALL SUCH WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS DIVISION AND ALL MATERIALS USED SHALL BE AS SPECIFIED HEREIN.

MINIMUM WIRE SIZE FOR BRANCH CIRCUITS SHALL BE #12 AWG, EXCEPT THAT HOMERUNS LONGER THAN 100 FT. LENGTH FROM THE PANEL TO THE CIRCUIT'S ELECTRICAL LOAD CENTER SHALL BE #10 AWG MINIMUM. WHERE RUNS EXCEED A VOLTAGE DROP GREATER THAN 3%. REQUEST PROPER WIRE SIZE PRIOR TO INSTALLATION IF A 3% VOLTAGE DROP MAY OCCUR FOR ANY BRANCH CIRCUIT. WHERE MORE THAN THREE CURRENT CARRYING CONDUCTORS ARE ENCLOSED IN ELECTRICAL WORK. AT COMPLETION OF THE WORK, REMOVE ALL RUBBISH, THE SAME RACEWAY, CONDUCTORS ARE TO BE DERATED PER N.E.C. AND WIRE #14 AWG MINIMUM. FOR FIXTURE WIRING, AS PERMITTED BY N.E.C., USE #18 AWG TESTING AND LOAD BALANCING MINIMUM. FOR SIGNAL AND COMMUNICATIONS SYSTEMS USE WIRE SIZE AS SPECIFICALLY REQUIRED BY THE SYSTEM SUPPLIER.

MAKE CONNECTIONS TO TERMINALS USING PRESSURE TYPE CONNECTORS. SOLDERED JOINTS ARE PROHIBITED. ALL JOINTS IN CONDUCTORS SHALL BE MADE AT AN ACCESSIBLE LOCATION WITHIN A BOX BY TWISTING THE BARE CONDUCTOR ENDS TOGETHER AND APPLYING A WIRE CONNECTOR IN ALL SIZES UP TO THE MAXIMUM CAPACITY OF THE CONNECTOR. JOINTS SHALL BE TAPED WITH AN APPROVED ELECTRICAL TAPE. SPLICES FOR CONDUCTORS LARGER THAN #10 AWG SHALL BE MADE WITH AN APPROVED COMPRESSION (SQUEEZE) CONNECTOR INSULATED WITH NOT LESS THAN TWO LAYERS OF ELECTRICAL FILL TAPE TO 1.5 TIMES THE THICKNESS OF INSULATION, FOLLOWED BY TWO (MINIMUM) LAYERS OF HALF-LAPPED ELECTRICAL TAPE FOR MECHANICAL PROTECTION. LOCATE ALL SPLICES IN BOXES OR FITTINGS OF PROPER SIZE PER

IDENTIFY ALL WIRES AND CABLES WITH BRADY ADHESIVE WIRE MARKERS AT EACH BOX, PANEL, AND OUTLET. IDENTIFICATION SHALL, AS A MINIMUM, INDICATE 100% DEMAND, THE UNBALANCE SHALL NOT EXCEED 10%. DURING FINAL SERVED AND ITS LOCATION SHALL BE INDICATED. PROVIDE A MINIMUM OF 8 IN. SLACK WIRE AT EACH OUTLET FOR MAKING CONNECTION TO THE DEVICE OR TO PROVIDE FOR A FUTURE DEVICE IN THE BOX.

FUNCTION FOR WHICH IT IS SHOWN. BOXES FOR WALL DEVICES SHALL BE FURNISHED COMPLETE WITH PLASTER RING OR TILE RING ACCORDING TO WALL CONSTRUCTION WHERE REQUIRED. BOXES FOR INSTALLATION IN MASONRY WALLS SHALL BE SPECIAL SQUARE CORNER MASONRY TYPE. BOXES FOR HEREINAFTER NOTED OR SHOWN. ALL BOXES SHALL BE FURNISHED COMPLETE WITH PROPER COVER AND/OR DEVICE PLATE AND DEVICE. UNLESS OTHERWISE NOTED, PLACE OUTLET BOXES AT THE FOLLOWING HEIGHTS (BOX CENTER TO

ADAPTER RING.

LOCATE ALL OUTLETS AS INDICATED ON DRAWINGS, HOWEVER, AT INSTALLATION INSPECT ARCHITECTURAL DRAWINGS AND LOCATE LOCAL SWITCHES ON THE STRIKE SIDE OF THE DOOR.

<u>SYSTEM GROUNDING</u> EQUIPMENT, RACEWAY SYSTEMS, WIRING SYSTEM NEUTRALS, RECEPTACLES AND POWER OUTLETS, MOTORS AND MOTORIZED EQUIPMENT, SHALL BE GROUNDED IN

GROUND RECEPTACLES AND POWER OUTLETS TO THE CONDUIT SYSTEM WITH A CONNECTED BETWEEN THE DEVICE GROUNDING SCREW AND THE OUTLET BOX. CONNECTION TO THE BOX MAY BE A "G" CLIP OR BY A 10/24 SCREW THREADED EQUIPMENT CONNECTED TO THE ELECTRICAL SYSTEM SHALL BE GROUNDED WITHIN INSULATED GREEN GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH N.E.C. AND INSTALLED WITHIN THE RACEWAY. CONDUCTOR SHALL BE CONDUIT.

GENERALLY FOR TELEPHONE AND SUPPLEMENTAL COMMUNICATION SYSTEMS NO

INSTALLATION SHALL BE CONSIDERED SUFFICIENT, FROM THE SERVICE GROUND (UNLESS INDICATED OTHERWISE).

GROUND-RODS - 1/2" DIA., 10' LONG, COPPERWELD

GROUND CONDUCTOR - SIZE AS PER N.E.C. REQUIREMENTS, SOFT DRAWN OR SOFT ANNEALED, COPPER WIRE. JOINTS AND CONNECTIONS - MOLDED FUSION WELDING PROCESS USING PROPER MOLD AND THE NUMBER, SIZE AND TYPE CARTRIDGE FOR THE JOINT OR CONNECTION. WATERPIPE CONNECTION, SILICON BRONZE APPROVED MECHANICAL CONNECTOR DESIGNED FOR THE PIPE AND CABLE TO BE BONDED.

PANELBOARD INSTALLATION: MOUNT PANELBOARDS WITH CENTERLINE AT 5 FT.-6IN. ABOVE FINISH FLOOR, EXCEPT THAT THE HIGHEST BREAKER HANDLE SHALL BE BELOW 6 FT.-5 IN. ABOVE FINISH FLOOR. ARRANGE BREAKERS SO THAT THE BREAKER RATING IS VISIBLE WITH THE PANEL FRONT IN PLACE.

PANEL DIRECTORIES, AS A MINIMUM, SHALL BE TYPEWRITTEN AND INDICATE BREAKER POSITION NUMBER AND EQUIPMENT SERVED. THE PANEL IDENTIFICATION SHALL BE LOCATED ON THE PANEL TRIM AND SHALL CONSIST OF A BLACK LAMINATED PHENOLIC LABEL, SCREW MOUNTED, WITH THE PANEL IDENTIFICATION MATCHING PANEL IDENTIFICATION ON DRAWINGS. LABEL ALL CONDUCTORS WITH ADHESIVE WRAP LABELS WITHIN 2 IN. OF THE CONDUCTOR TERMINATION PRIOR TO INSTALLATION OF TRIM.

LIGHTING FIXTURE INSTALLATION

PROVIDE A LIGHTING FIXTURE FOR EACH AND EVERY OUTLET IN ACCORDANCE WITH TYPE DESIGNATION AND FIXTURE SCHEDULE ON THE DRAWINGS, VERIFY THE ARCHITECTURAL FINISHES AND CEILING CONSTRUCTION AND - REGARDLESS OF THE CATALOG NUMBER PREFIXES AND SUFFIXES SHOWN - PROVIDE FIXTURES WITH THE PROPER TRIM, FRAMES, SUPPORTS, AND HANGER AND OTHER MISCELLANEOUS APPURTENANCES TO PROPERLY COORDINATE WITH SAID FINISHES. REINFORCE CEILING CONSTRUCTION AS REQUIRED TO PROPERLY SUPPORT THE WEIGHT OF FIXTURES INSTALLED THEREON.

IMMEDIATELY PRIOR TO FINAL INSPECTION: THOROUGHLY CLEAN ALL FIXTURES INSIDE AND OUT, INCLUDING PLASTICS AND GLASSWARE. ADJUST TRIM TO FIT ADJACENT SURFACES. REPLACE BROKEN OR DAMAGED PARTS. INSTALL NEW LAMPS. ELECTRICALLY AND MECHANICALLY TEST THE SYSTEM FOR PROPER OPERATION.

THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING APPROVAL FROM LOCAL CODE AUTHORITIES AND MAKING ANY REVISIONS DIRECTED BY THEM ON EMERGENCY AND EXIT LIGHTING.

THOROUGHLY CLEAN ALL FIXTURES, SWITCHES, OTHER DEVICES, PANELBOARDS, AND EQUIPMENT PROVIDED OR CONNECTED IN THIS CONTRACT. ALL SURFACES SHALL BE PROPERLY POLISHED AND SHALL BE FREE OF PAINT AND ALL OTHER DIRT OR DEBRIS. TOUCHUP OR COMPLETELY REFINISH ALL EQUIPMENT FURNISHED WITH FACTORY FINISHES THAT IS DAMAGED DURING DELIVERY OR CONSTRUCTION. PROPERLY PROTECT THE FRONTS OF ALL PANELBOARDS, SWITCHBOARDS AND SIMILAR EQUIPMENT TO PREVENT MARRING AND OTHER DEFACING.

AT ALL TIMES, KEEP THE PREMISES FREE FROM ACCUMULATIONS OF WASTE MATERIALS OR RUBBISH CAUSED BY THE WORK OF THE TRADESMEN DOING TOOLS, EQUIPMENT, AND SURPLUS MATERIALS. BROOM CLEAN ALL ASSIGNED SPACES PRIOR TO LEAVING THE PREMISES.

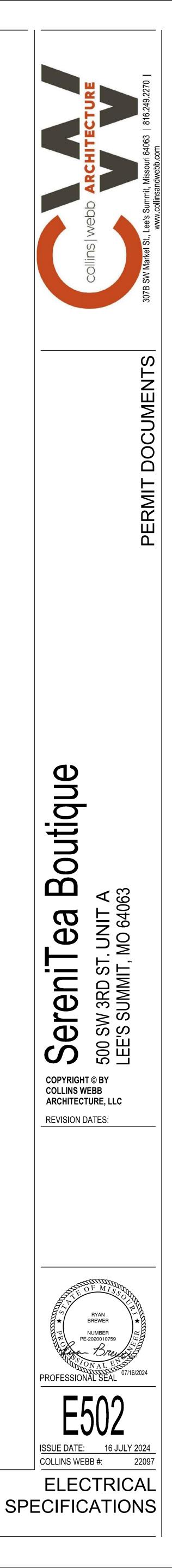
TEST ALL CIRCUITS TO ASSURE THEM TO BE FREE OF GROUNDS AND SHORTS. LIGHT AND TEST EACH LAMP. PROVE AND TEST THE AVAILABLE VOLTAGE ON THE LOAD SIDE OF EACH DISCONNECT, VERIFY PROPER OPERATION OF THE DISCONNECT. VERIFY THE PHASE SEQUENCE, VOLTAGE, AND ROTATION AT EACH MOTOR IN THE PRESENCE OF THE INSTALLER. RUN EACH MOTOR WITH ITS CONTROL AS NEARLY AS POSSIBLE UNDER OPERATING CONDITIONS FOR A

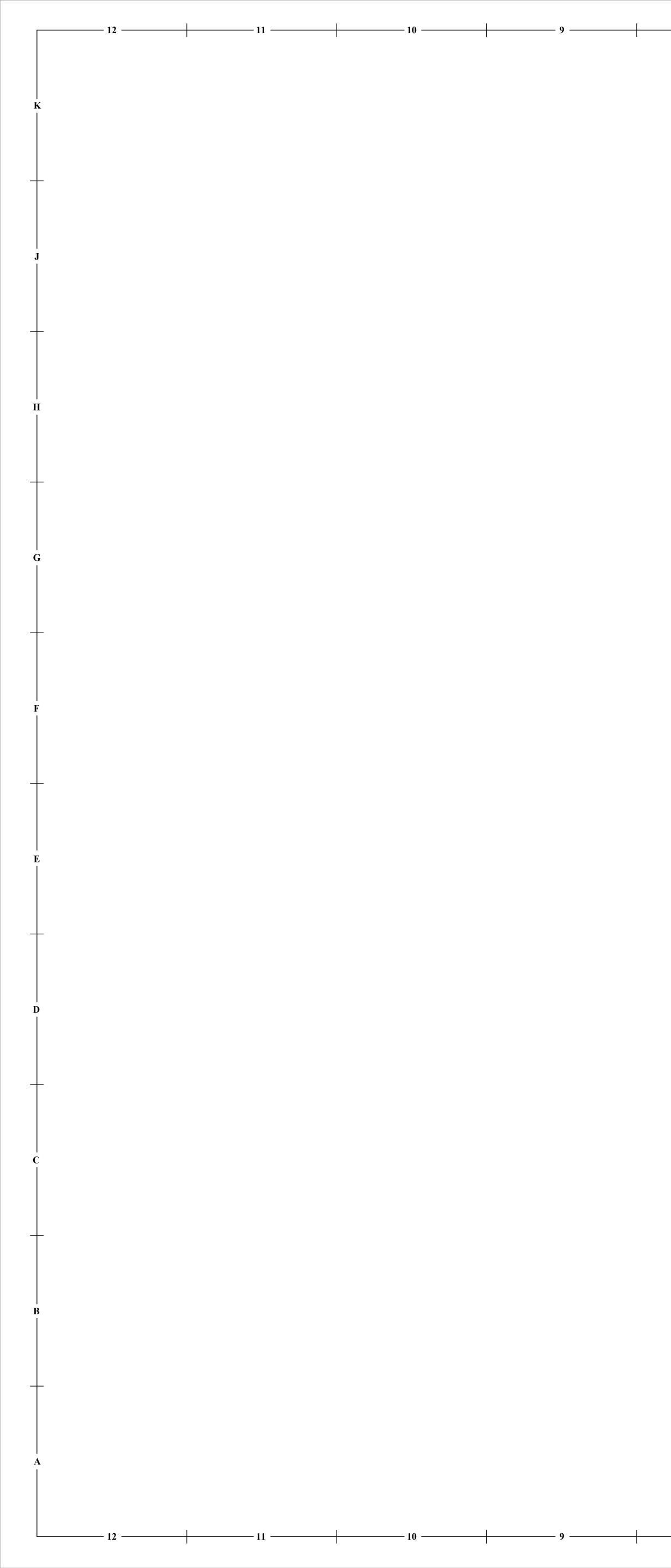
SUFFICIENT LENGTH OVER TIME TO DEMONSTRATE CORRECT ALIGNMENT, WIRING CAPACITY, SPEED, AND OVERALL SATISFACTORY OPERATION, CHECK THAT THE PROPER OVERLOAD HEATERS HAVE BEEN INSTALLED BY READING THE MOTOR NAMEPLATE. ADJUST THE SIZE OF THE OVERLOAD HEATER AS REQUIRED TO MATCH THE MOTOR NAMEPLATE. OPERATE ALL MAIN AND FEEDER SWITCHES AND BREAKERS.

THE VARIOUS BRANCH CIRCUITS SERVED FROM THE LIGHTING PANELBOARDS VARY IN LOADING. CAREFULLY BALANCE THE ACTUAL OPERATING LOAD ON EACH PANELBOARD WHEN ALL LOAD IS TURNED ON AND THE SYSTEM IS OPERATING AT THE PANEL AND CIRCUIT SUPPLYING THE OUTLET. AT THE PANEL END, THE LOAD INSPECTION, FURNISH THE TEST INSTRUMENTS AND QUALIFIED PERSONNEL TO PERFORM COMPLETE TESTING. COSTS OF ALL TESTING, INCLUDING THE INCIDENT COSTS FOR RETESTING OCCASIONED BY DEFECTS AND FAILURES OF THE EQUIPMENT TO MEET THE SPECIFICATIONS, SHALL BE BORNE BY THE CONTRACTOR.

> FURNISH AT THE COMPLETION OF THE PROJECT A FINAL INSPECTION CERTIFICATE FROM THE LOCAL INSPECTING AUTHORITY.

END OF SECTION 16000





	GENERAL PLUMBING NOTES		
١.	ALL WORK SHALL BE IN CONFORMANCE WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AND	А	٨D
•	AUTHORITIES HAVING JURISDICTION.	A	١FC
		A	١FG
2.	PROVIDE TO OWNER A COPY OF ALL REPORTS AND APPROVAL CERTIFICATES FROM LOCAL AND STATE	A	١HU
	INSPECTIONS AND ALL PLUMBING SYSTEMS EQUIPMENT MANUALS INCLUDING WARRANTIES.	В	SFP
3.	COORDINATE THE COMPLETE INSTALLATION OF SYSTEMS TO AVOID CONFLICT WITH OTHER TRADES.	В	BOP
		В	SOS
1.	COORDINATE ALL ABOVE SLAB AND UNDER SLAB SANITARY, AND WATER PIPING SYSTEMS TO AVOID CONFLICT	С	D
	WITH ALL OTHER TRADES SYSTEMS, AND COLUMN FOOTINGS. ALL SOIL AND WASTE PIPING SHALL BE GRADED	C	0
	TO A UNIFORM SLOPE OF NOT LESS THAN 1/8" PER FOOT FOR PIPING 4" OR LARGER, AND NOT LESS THAN 1/4"	С	W
	PER FOOT FOR PIPING 3" OR SMALLER. ALL GREASE WASTE PIPING SHALL BE ROUTED AT 1/4" PER FOOT SLOPE	D)D
	MINIMUM.	D)N
5.	COORDINATE ALL FLOOR DRAINS, CLEANOUTS, AND FLOOR MOUNTED FIXTURES WITH FINISHED FLOOR SLAB	E	TR
	ELEVATION TO ENSURE THEY ARE INSTALLED PLUM AND FLUSH WITHOUT CRACKS, RISE IN THE SLAB, OR VOIDS	E	WC
	AROUND GRATES OR TOPS. ALL CLEANOUTS SHALL BE INSTALLED ALONG MAINS AT 50'-0" DISTANCE MAXIMUM.	F	CO
	ALL FLOOR AND WALL CLEANOUTS SHALL BE ACCESSIBLE FOR MAINTENANCE AND NOT INSTALLED BENEATH	F	FA
	EQUIPMENT. ANY DRAIN GRATES THAT ARE DAMAGED AS A RESULT OF OTHER CONSTRUCTION PRIOR TO	F	P
	RELEASE OF THE BUILDING TO THE OWNER SHALL BE REPLACED WITH LIKE GRATE AT NO EXPENSE OF THE OWNER.	F	S
	OWNER.	G	}
6.	ALL EXPOSED PIPES PENETRATING FINISHED WALLS SHALL BE EQUIPPED WITH WALL ESCUTCHEONS.	G	SCO
		G	P M
7.	PROVIDE TRAP AND SEAL PRIMERS ON ALL FLOOR DRAINS IF REQUIRED BY CODE OR OWNER.	Н	IВ
3.	PLUMBING VENTS THROUGH THE ROOF ARE LOCATED AT A MINIMUM OF 5'-0" FROM BUILDING PARAPETS AND		W
J.	10'-0" FROM FRESH AIR INTAKES AND AS REQUIRED TO MEET LOCAL CODES.		IWR
			WS
).	ALL SHUT-OFF OR BALANCING VALVES TO PLUMBING ROUTED IN PIPE CHASES SHALL BE ACCESSIBLE FROM		
	CEILING AREA OR ACCESS DOORS PROVIDED IN WALL.	_	
0.	PROVIDE FINAL CONNECTIONS FOR ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. PROVIDE ALL REQUIRED SHUT-OFFS, BACKFLOW PREVENTERS, PRESSURE REGULATORS, AND CONDENSATE		
	DRAINS AS REQUIRED BY LOCAL CODES FOR COMPLETE EQUIPMENT INSTALLATION. CONSULT EQUIPMENT		
	SUPPLIER OR OWNER FOR ADDITIONAL FINAL CONNECTION REQUIREMENTS NOT SHOWN ON THESE DRAWINGS.		
1.			
	REPAIR. IF ANY EXISTING PIPING IS FOUND TO BE DAMAGED REPLACE WITH LIKE.		

	PLUMBING A	BBREVI	ATIONS
AD	AREA DRAIN, ACCESS DOOR	IE	INVERT ELEVATION
AFC	ABOVE FINISH CEILING	LP	LIQUIFIED PETROLEUM
AFG	ABOVE FINISH GRADE	MBH	1000 BTU PER HOUR
AHU	AIR HANDLING UNIT	N/A	NOT APPLICABLE
BFP	BACKFLOW PREVENTER	ORD	OVERFLOW ROOF DRAIN
BOP	BOTTOM OF PIPE	OST	STORM OVERFLOW
BOS	BOTTOM OF STRUCTURE	PD	PUMP DISCHARGE
CD	CONDENSATE	PIV	POST INDICATOR VALVE
CO	CLEANOUT	PRV	PRESSURE REDUCING VALVE
CW	DOMESTIC COLD WATER	REV	REVISION
DD	DECK DRAIN	RPM	REVOLUTIONS PER MINUTE
ON	DOWN	RTU	ROOF TOP UNIT
ETR	EXISTING TO REMAIN	SAN	SANITARY
EWC	ELECTRIC WATER COOLER	SCW	SOFT DOMESTIC COLD WATER
-CO	FLOOR CLEANOUT	SHW	SOFT DOMESTIC HOT WATER
FFA	FROM FLOOR ABOVE	SDHWR	SOFT RECIRC. HOT WATER
P	FIRE PROTECTION	ST	STORM
-S	FLOOR SINK	TFA	TO FLOOR ABOVE
G	GAS (NATURAL)	TFB	TO FLOOR BELOW
GCO	GRADE CLEANOUT	TW	TEMPERED WATER
GPM	GALLONS PER MINUTE	UH	UNIT HEATER
НB	HOSE BIBB	V	VENT PIPE
HW	DOMESTIC HOT WATER	VTR	VENT THROUGH ROOF
HWR	HOT WATER RETURN	WCO	WALL CLEANOUT
HWS	HOT WATER SUPPLY	WH	WALL HYDRANT

PLUMBING SYMBOLS							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION				
	GATE VALVE		FLOOR DRAIN / AREA DRAIN				
- * \-	CHECK VALVE		FLOOR SINK				
–₽–	PRESSURE	(<u>(</u>) RD	ROOF DRAIN				
	SOLENOID VALVE		OVERFLOW ROOF DRAIN				
- k -	GLOBE VALVE (STRAIGHT PATTERN)		HOT WATER RECIRCULATION PUMP				
-6-	BUTTERFLY VALVE		PLUMBING VEVT THRU ROOF				
- 6 -	BALL VALVE	VTR					
6	GAS COCK		POINT OF CONNECTION (CONNECT NEW TO EXISTING)				
—¢}—	PLUG VALVE						
D FCO	FLOOR CLEAN OUT		PLUMBING EQUIPMENT DESIGNATION				
wco	WALL CLEAN OUT	$\left(\begin{array}{c} X \\ X \end{array}\right)$	PLUMBING RISER OR DETAIL DESIGNATION				
co	CLEAN OUT	S	SANITARY SEWER PIPING				
-+	HOSE BIBB	ST	STORM SEWER PIPING				
	FREEZE PROOF WALL HYDRANT	V	VENT PIPING				
\triangleleft	SHOWER HEAD		VENT PIPING (BELOW SLAB)				
-+)	ELBOW DOWN	CW					
-+0	ELBOW UP		HOT WATER PIPING				
-+0+	TEE UP	scw	SOFTENED COLD WATER PIPING				
-+ +-	TEE DOWN	HWR	HOT WATER RECIRCULATING PIPING				
+	STRAINER	FW	FILTERED WATER PIPING				
++	UNION	FWBF	FILTERED WATER PIPING BELOW GRADE				
	REDUCER	GAS	GAS PIPING				
	CAP		CONDENSATE PIPING				
M	FLEX PIPE						

PLUMBING FIXTURE MINIMUM CONNECTION SCHEDULE C.W. H.W. DRAIN VENT DESIGNATION FIXTURE

WC	WATER CLOSET	1"	-	4"	2"
UR	URINAL	3/4"	-	2"	2"
LAV.	LAVATORY	1/2"	1/2"	2"	2"
EWC/DF	ELECTRIC WATER COOLER/DRINKING FOUNTAIN	1/2"	-	2"	2"
MB/SS	MOP BASIN/SERVICE SINK	1/2"	1/2"	3"	2"
SH/BT	SHOWER/BATHTUB	1/2"	1/2"	2"	2"
SK	SINK	1/2"	1/2"	2"	2"

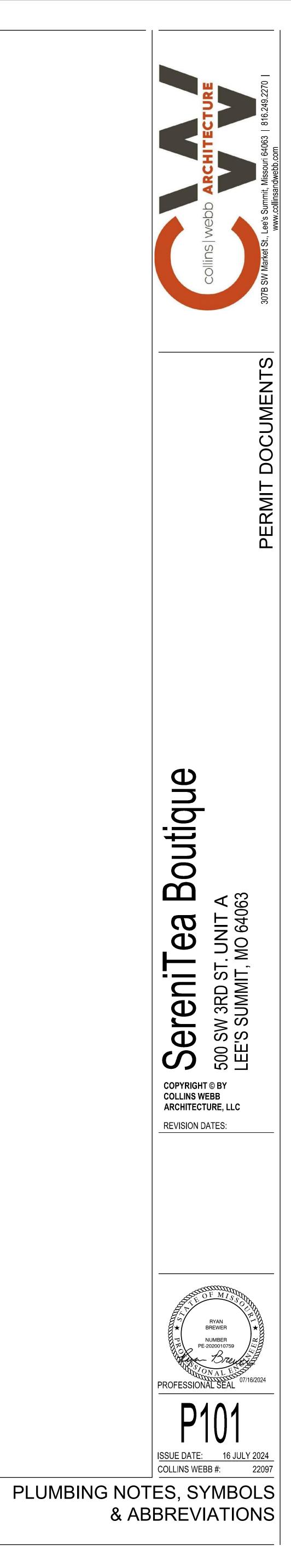
GENERAL NOTES:

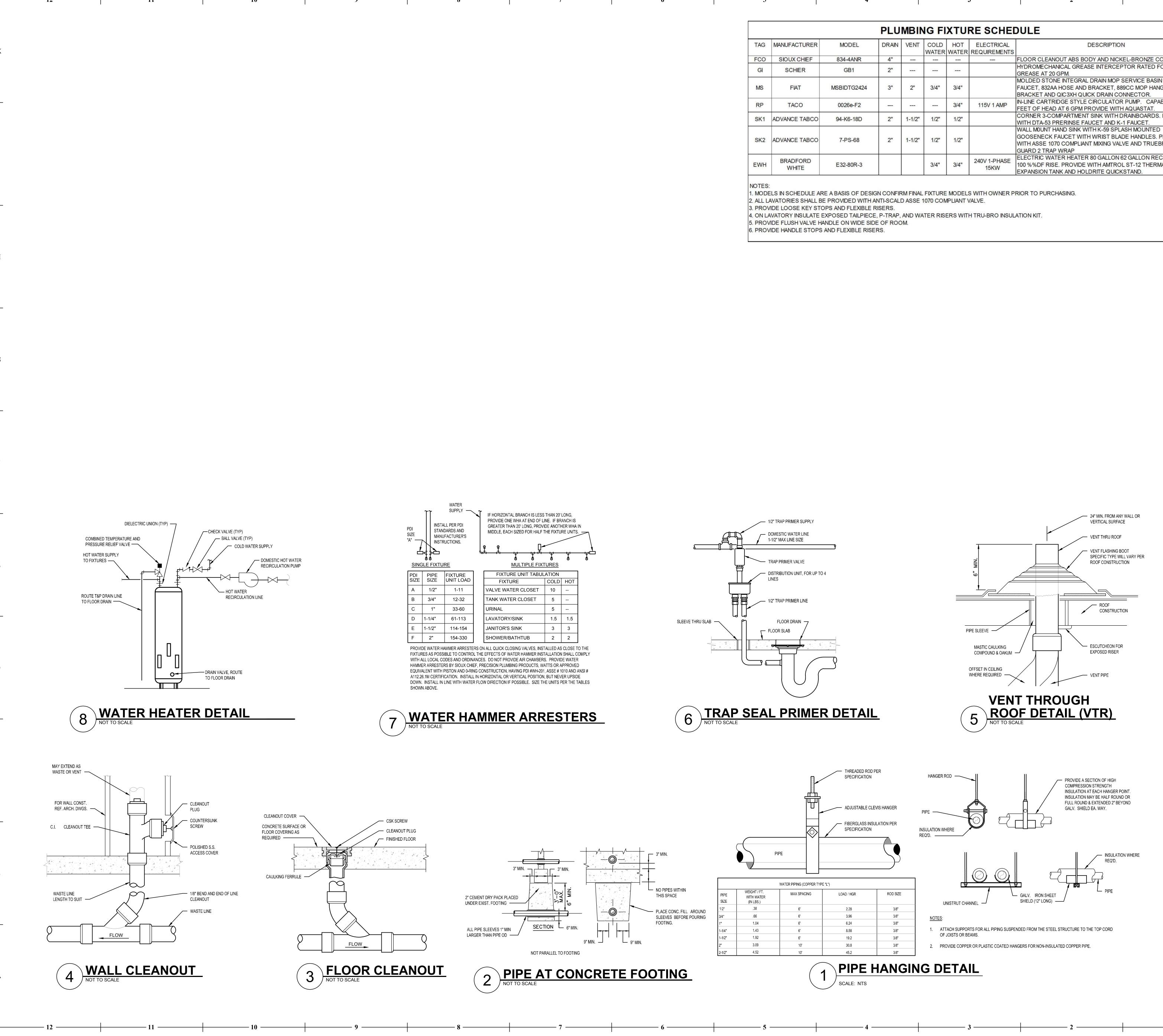
PITCH ALL DRAINAGE PIPING 3" AND LARGER AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. PITCH ALL DRAINAGE PIPING 2-1/2" AND SMALLER AT 1/4" PER FOOT.

ALL UNDERGROUND DRAINAGE PIPING SHALL BE A MINIMUM OF 2" IN SIZE.

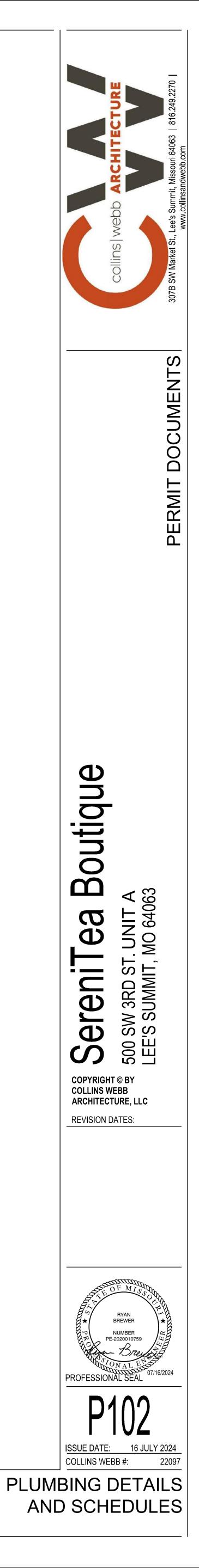
PROVIDE TRAP PRIMER UNITS FOR ALL FLOOR DRAINS.

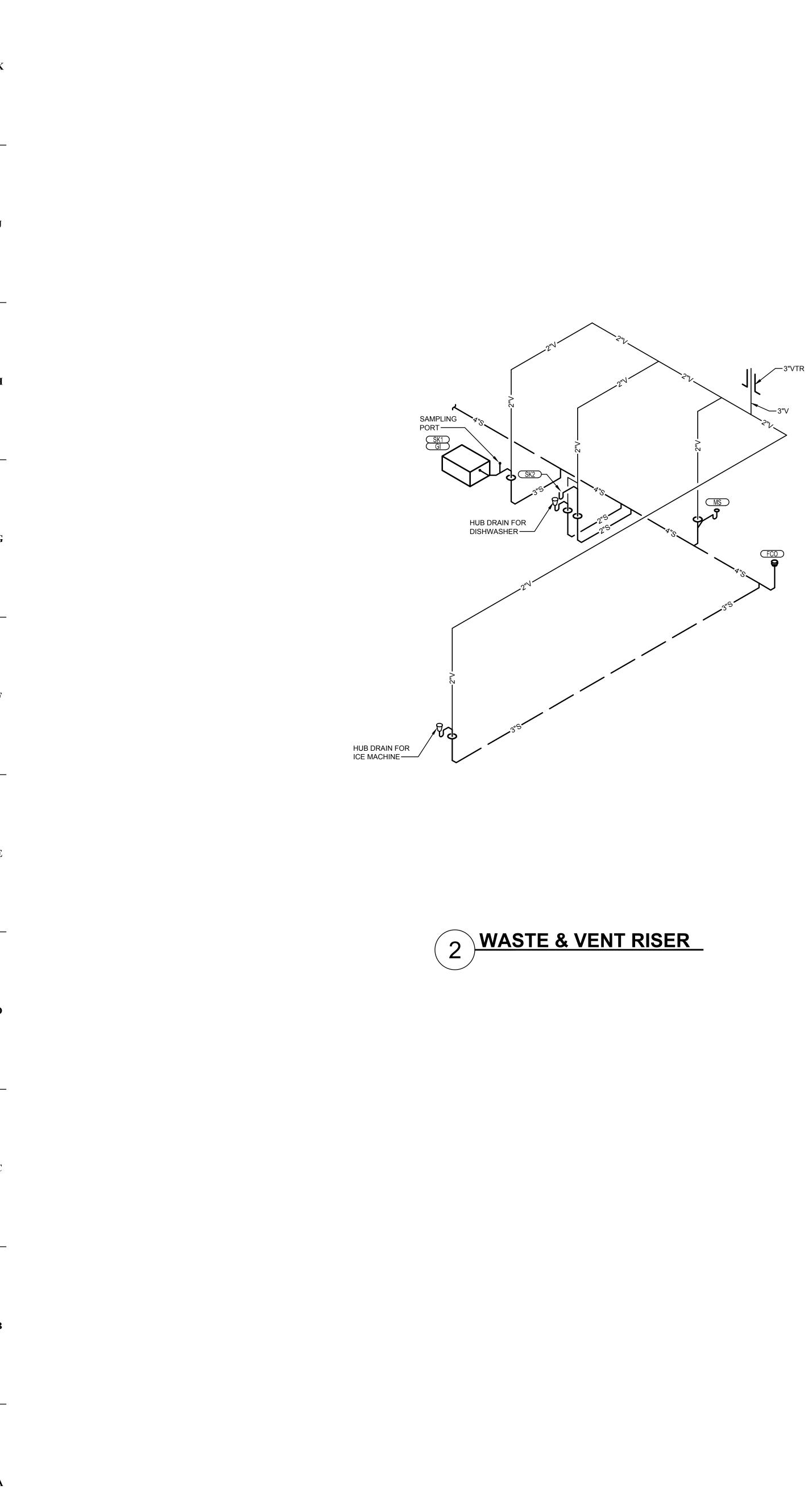
VERIFY/COORDINATE LOCATIONS OF ALL FIXTURES, DRAIN, ETC. WITH ARCHITECT PRIOR TO ROUGH-IN.

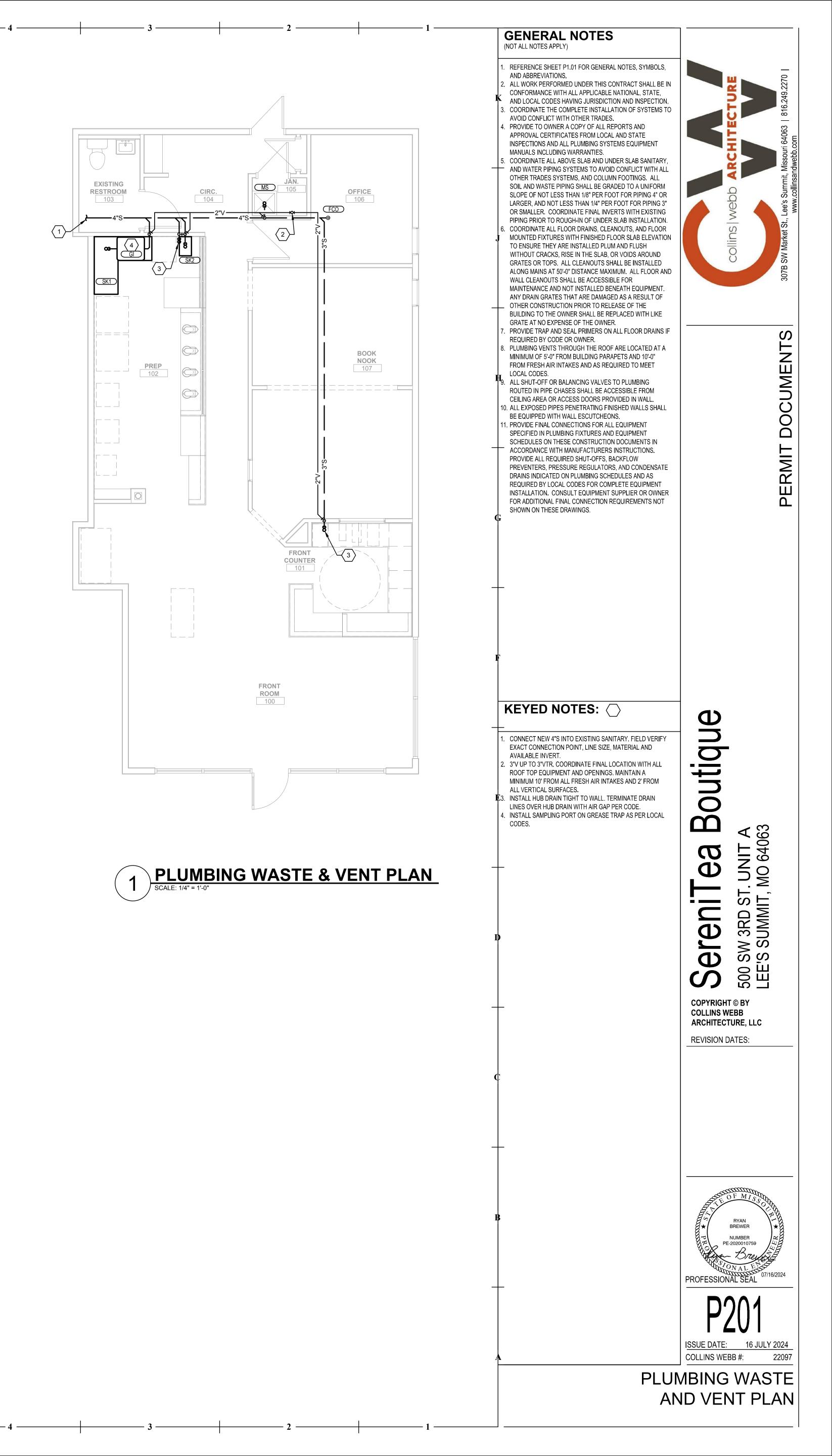


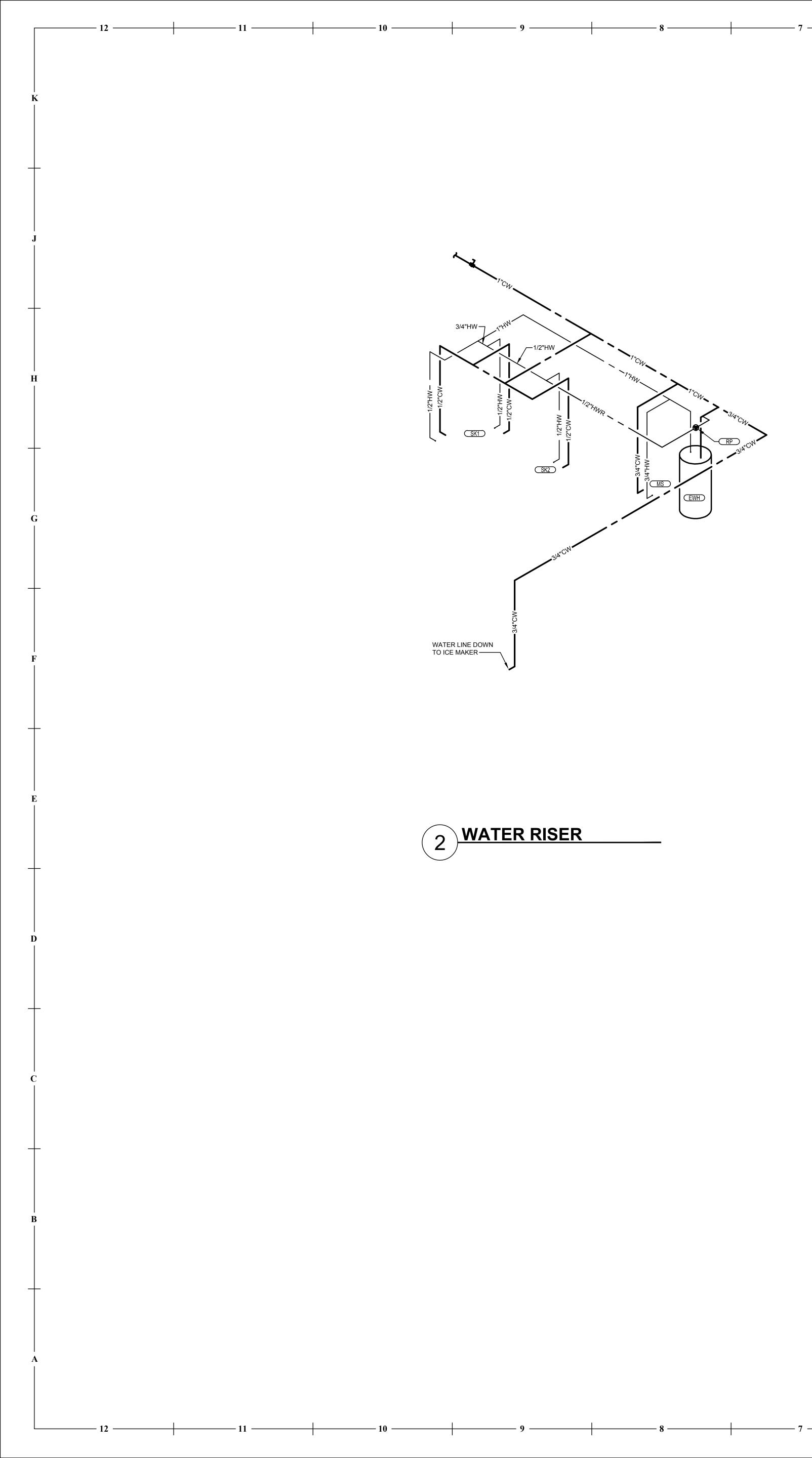


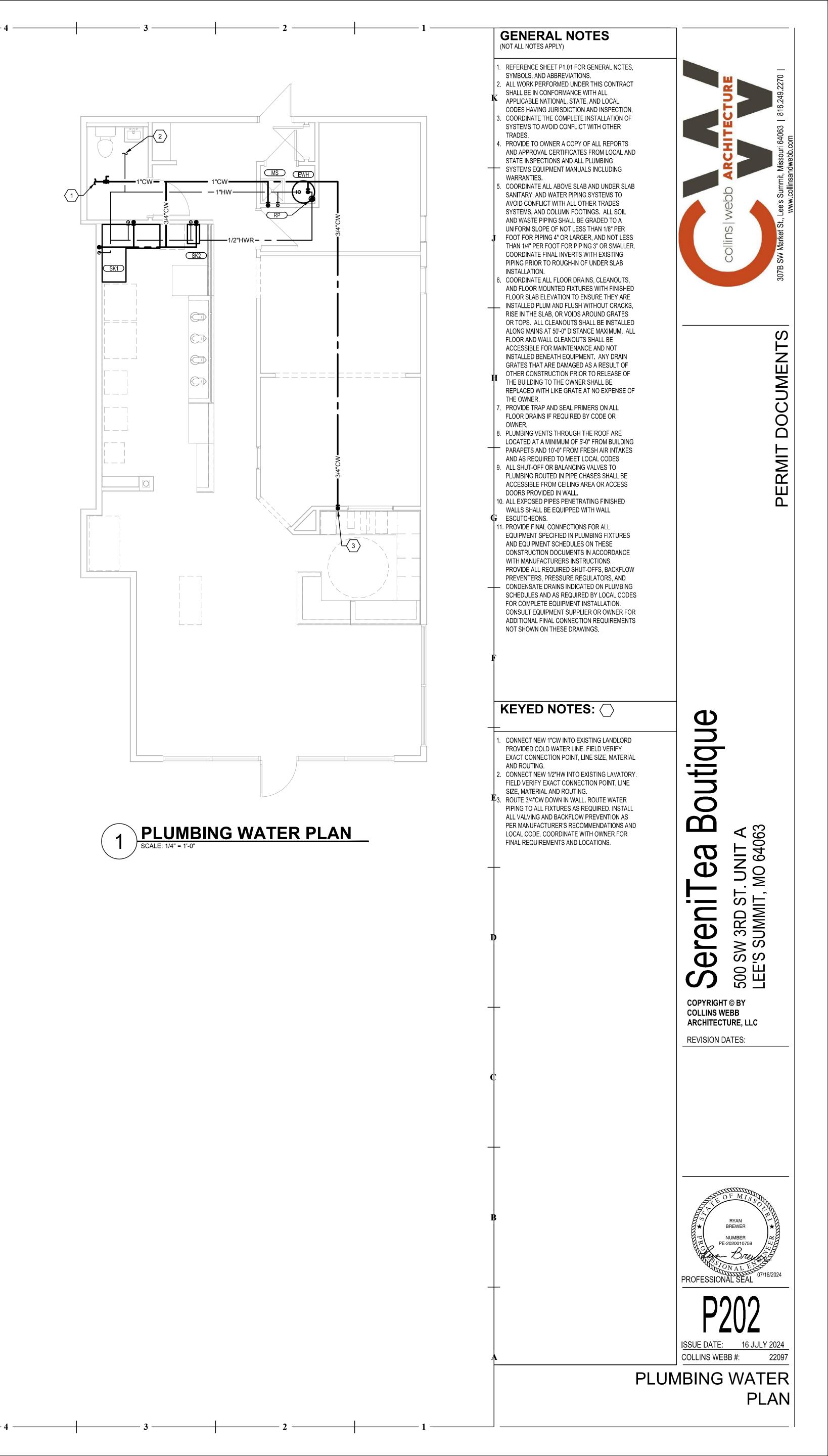
	PLUMBING FIXTURE SCHEDULE							
TAG	MANUFACTURER	MODEL	DRAIN	VENT	COLD WATER	HOT WATER	ELECTRICAL REQUIREMENTS	DESCRIPTION
FCO	SIOUX CHIEF	834-4ANR	4"	. 3			()	FLOOR CLEANOUT ABS BODY AND NICKEL-BRONZE COVER
GI	SCHIER	GB1	2"					HYDROMECHANICAL GREASE INTERCEPTOR RATED FOR 70 LBS GREASE AT 20 GPM.
MS	FIAT	MSBIDTG2424	3"	2"	3/4"	3/4"		MOLDED STONE INTEGRAL DRAIN MOP SERVICE BASIN WITH 830AA FAUCET, 832AA HOSE AND BRACKET, 889CC MOP HANGER BRACKET AND QIC3XH QUICK DRAIN CONNECTOR.
RP	TACO	0026e-F2				3/4"	115V 1 AMP	IN-LINE CARTRIDGE STYLE CIRCULATOR PUMP. CAPABLE OF 12 FEET OF HEAD AT 6 GPM PROVIDE WITH AQUASTAT.
SK1	ADVANCE TABCO	94-K6-18D	2"	1-1/2"	1/2"	1/2"		CORNER 3-COMPARTMENT SINK WITH DRAINBOARDS. PROVIDE WITH DTA-53 PRERINSE FAUCET AND K-1 FAUCET.
SK2	ADVANCE TABCO	7-PS-68	2"	1-1/2"	1/2"	1/2"		WALL MOUNT HAND SINK WITH K-59 SPLASH MOUNTED GOOSENECK FAUCET WITH WRIST BLADE HANDLES. PROVIDE WITH ASSE 1070 COMPLIANT MIXING VALVE AND TRUEBRO LAV GUARD 2 TRAP WRAP
EWH	BRADFORD WHITE	E32-80R-3			3/4"	3/4"	240V 1-PHASE 15KW	ELECTRIC WATER HEATER 80 GALLON 62 GALLON RECOVERY AT 100 % % DF RISE. PROVIDE WITH AMTROL ST-12 THERMAL EXPANSION TANK AND HOLDRITE QUICKSTAND.











DESCRIPTION ALL PLUMBING AND ASSOCIATED WORK IN DIVISION 15 IS GOVERNED BY THIS SECTION. PROVIDE LABOR AND MATERIALS NECESSARY TO PROVIDE THE WORK AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN. REFER TO OTHER DIVISIONS FOR CONTINUATION OF EXTERIOR AND ALLIED WORK.

QUALITY ASSURANCE

OBTAIN AND PAY FOR ALL PERMITS, INSPECTIONS AND CONNECTION FEES REQUIRED BY GOVERNING BODIES IN CONNECTION WITH THE WORK. DELIVER CERTIFICATES OF INSPECTION TO THE OWNER'S REPRESENTATIVE. ALL WORK SHALL COMPLY WITH GOVERNING CODES, ORDINANCES, AND REGULATIONS OF CITY, COUNTY AND STATE.

SUBMITTALS

SHOP DRAWINGS: SUBMIT MATERIALS, PRODUCTS, EQUIPMENT AND SYSTEMS AS INDEX OF CONTENTS SPECIFIED UNDER EACH PLUMBING SECTION IN THIS DIVISION IN ACCORDANCE WITH THE GENERAL CONDITIONS. SHOW PIPE SIZES, LOCATION, SLOPES OF HORIZONTAL RUNS, FITTINGS, VALVES, METERS, GAGES AND CONNECTIONS.

PRODUCT DATA: SUBMIT ON MATERIALS, FIXTURES, AND EQUIPMENT UNLESS OTHERWISE SPECIFIED OR ACKNOWLEDGED IN WRITING.

SAMPLES: SUBMIT WHEN SPECIFIED OR REQUESTED.

RECORD DOCUMENTS REFER TO GENERAL CONDITIONS FOR REQUIREMENTS CONCERNING RECORD

DOCUMENTS. ADDITIONAL REQUIREMENTS MAY BE SPECIFIED IN DIVISION 1 UNLESS SEPIAS OF THE DRAWINGS ARE TO BE FURNISHED BY THE

ARCHITECT-ENGINEER FOR PREPARATION OF RECORD DRAWINGS. FURNISH OWNER'S REPRESENTATIVE WITH TWO SETS OF ACCURATELY MARKED COPIES OF SUBMITTING APPLICATION FOR FINAL PAYMENT. THE DRAWINGS, INSTEAD OF ONE SET AS REQUIRED BY THE GENERAL CONDITIONS, INDICATING ALL CHANGES FROM ORIGINAL DRAWINGS AS INSTALLED.

PRODUCT HANDLING PIPE, FIXTURES AND ACCESSORIES SHALL BE PROTECTED FROM DAMAGE IN

SHIPMENT, HANDLING, STORAGE AND INSTALLATION: FROM MOISTURE, DIRT AND DEBRIS. PIPE, CLEANOUT AND FLOOR DRAIN OPENINGS SHALL BE TEMPORARILY PLUGGED WITH TEST PLUGS UNTIL FINAL CONNECTIONS ARE MADE.

GUARANTEE AND SERVICE

REFER TO GENERAL CONDITIONS FOR GUARANTEE. WHERE EXTENDED GUARANTEES ARE CALLED FOR, FURNISH THREE COPIES TO BE INSERTED INTO OPERATION AND MAINTENANCE MANUALS.

GENERAL

PLUMBING SYSTEMS SHALL BE PROVIDED COMPLETE. SHOULD A SYSTEM, OR ANY PART THEREOF FAIL TO MEET PERFORMANCE REQUIREMENTS, NECESSARY REPLACEMENTS, ALTERATIONS OR REPAIRS, AS REQUIRED BY THE OWNER'S REPRESENTATIVE, SHALL BE MADE TO BRING PERFORMANCE UP TO SPECIFIED REQUIREMENTS AND ALL BUILDING CONSTRUCTION AND FINISHES DAMAGED OR MARRED BY SUCH REPLACEMENTS, ALTERATIONS OR REPAIRS SHALL BE RESTORED TO PRIOR CONDITION, AT NO ADDITIONAL COST TO THE OWNER.

WHERE MULTIPLE ITEMS OF EQUIPMENT OR MATERIALS ARE REQUIRED THEY SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER.

INSERTS, PIPE SLEEVES, HANGERS, SUPPORTS, FIXTURES, TRIM DRAINS AND ANCHORAGE OF PLUMBING SHALL BE PROVIDED AS SPECIFIED HEREIN. WHERE SUCH ITEMS ARE TO BE SET OR EMBEDDED IN CONCRETE. MASONRY OR SIMILAR 16. WHERE ACCEPTABLE BY LOCAL AUTHORITY HAVING JURISDICTION PEX WORK, THE ITEMS SHALL BE FURNISHED AND LAYOUT MADE AT THE PROPER TIME FOR THE SETTING OR EMBEDMENT THEREOF SO AS TO CAUSE NO DELAY IN THE WORK

MANUFACTURER'S NAMES AND CATALOG NUMBERS

NAMES AND MODEL OR CATALOG NUMBERS. THIS DOES NOT NECESSARILY ITEM. REQUIREMENTS FOR SPECIFIC FINISHES, MATERIAL OR OTHER MODIFICATIONS MAY INTRODUCE VARIANCES FROM MANUFACTURERS' STANDARDS. MODIFICATIONS SHALL BE FULLY CONSIDERED.

CHARTS AND TAGS

IN AREAS HAVING VALVES, PROVIDE SINGLE LINE DIAGRAMS FRAMED UNDER GLASS AND MOUNTED ON EQUIPMENT ROOM WALL. THE DIAGRAMS SHALL GIVE NAME, NUMBER DESIGNATION AND LOCATION OF VALVE.

VALVES SHALL BE IDENTIFIED WITH 1/16 INCH THICK WHITE LAMINATED PLASTIC NAMEPLATES WITH 3/16 INCH HIGH BLACK LAMINATED LETTERS. THE NAMEPLATE 7. FLANGED JOINTS: FURNISH WITH COMPANION FLANGE AND CLOTH IDENTIFICATION SHALL COINCIDE WITH ITEMS APPEARING ON DIAGRAMS. ATTACH NAMEPLATES TO VALVES WITH NON-CORROSIVE CHAIN OR WIRE.

ACCESS DOORS PROVIDE ACCESS DOORS AS INDICATED AND SPECIFIED IN DRAWINGS

INSTALLATION AND WORKMANSHIP

THE WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ANY MATERIAL, APPARATUS OR EQUIPMENT WHICH, IN THE OPINION OF THE OWNER'S REPRESENTATIVE, IS IMPROPERLY INSTALLED SHALL BE REMOVED AND REINSTALLED IN AN APPROVED MANNER AT NO ADDITIONAL COST TO THE OWNER.

CLEARS OPENINGS AND STRUCTURAL MEMBERS; THAT PIPING INDICATED AS FITTINGS TO INSTALL THE SYSTEM IN THE AVAILABLE SPACE. CONCEAL OR INSTALL TIGHT TO STRUCTURE (IF EXPOSED) UNLESS OTHERWISE NOTED.

PIPING SHALL BE EXPOSED IN FINISHED AREAS ONLY WHERE INDICATED OR WITH THE APPROVAL OF THE OWNER'S REPRESENTATIVE.

WHERE DRAIN OR WATER CONNECTIONS NECESSARY TO THE OPERATION OF FIXTURES OR EQUIPMENT ARE NOT SPECIFICALLY SHOWN ON DIAGRAMS, EXTEND APPLY LUBRICANT TO SCREW JOINT MALE THREADS. NECESSARY BRANCHES TO THE CLOSEST INDICATED BRANCH OR MAIN, AT NO ADDITIONAL COST TO THE OWNER.

EACH FIXTURE, EQUIPMENT DRAIN OR FLOOR DRAIN SHALL BE SEPARATELY TRAPPED UNLESS OTHERWISE INDICATED OR SPECIFIED.

PLUMBING PIPING AND EQUIPMENT SHALL NOT BE FIELD PAINTED, OR PRIMED BEYOND THE DEGREE OF APPLICATION FROM THE FACTORY SOURCE, OR EXCEPT AS REQUIRED BY APPLICABLE CODES AND AUTHORITIES HAVING JURISDICATION.

WATERPROOFING DO NOT CUT OR PENETRATE WATERPROOFED SURFACES OR WATERPROOFING MEMBRANES WITHOUT FIRST MAKING ARRANGEMENTS FOR REPAIR BY A METHOD APPROVED BY THE OWNER'S REPRESENTATIVE.

ACCESS DOORS INSTALL AS REQUIRED FOR MAINTENANCE, ADJUSTMENT, REMOVAL AND REPAIR OF VALVES, EQUIPMENT AND LIKE ITEMS. DOORS SHALL BE CONVENIENTLY LOCATED AND OF SUFFICIENT SIZE.

PIPING PROVISIONS FOR FIXTURES AND EQUIPMENT SPECIFIED IN OTHER SECTIONS OR FURNISHED BY THE OWNER ROUGH IN LOCATIONS SHALL BE DETERMINED FOR SERVICES, PROVIDE ALL AND MAKE ALL FINAL CONNECTIONS.

DESCRIPTION

MANUAL CONTENTS

TYPEWRITTEN OPERATING INSTRUCTIONS FOR THE OWNER'S PERSONNEL DESCRIBING HOW TO OPERATE EACH PIECE OF EQUIPMENT, AND CAUTION AND DISTRIBUTION UNIT OR APPROVED EQUAL. WARNING NOTICES.

COPIES OF CERTIFICATES OF INSPECTION, WHERE INSPECTION IS REQUIRED.

DFLIVERY

PLUMBING PIPING

DESCRIPTION SPECIFIED.

PIPING MATERIALS OPTIONS

۱.	CAST IRON HUBLESS
2.	CAST IRON SOIL PIPE
3.	CAST IRON SOIL PIPE
1.	STEEL PIPE: ASTM A
5.	MALLEABLE IRON FIT
3.	PIPE THREADS: ANSI
7.	NIPPLES, PIPE (THRE
3.	COPPER WATER TUB
9.	WROUGHT COPPER /

B16.29. WROUGHT COPPER AND WROUGHT COPPER ALLOY SOLDER-JOINT DRAINAGE FITTINGS: ANSI BL6,29, 11. CAULKING LEAD: FED. SPEC. QQ-C-40 (2). 12 SHEET LEAD: FED_SPEC_QQ-L-201

3. SHEET COPPER: ASTM B 152. 14. NO-HUB STAINLESS STEEL COUPLING AND GASKETS: CISPI STD. S-301. 15. WHERE ACCEPTABLE BY LOCAL AUTHORITY HAVING JURISDICTION SOLID WALL ABS PIPING MAY BE USED FOR WASTE PIPING.

15.A. PVC/ABS PIPING CANNOT BE USED IN RETURN AIR PLENUM APPLICATION.

WATER PIPING.

JOINTS AND CONNECTIONS OPTIONS SPECIFIED REFERENCES HAVE BEEN MADE TO ONE OR MORE MANUFACTURER'S 1. CAST IRON, HUB AND SPIGOT: PACKED WITH OAKUM AND FINISHED WITH LEAD NOT LESS THAN 1 INCH DEEP; WELL CAULKED. INDICATE THAT THE MATERIAL AND EQUIPMENT SPECIFIED IS AN "OFF THE SHELF" 2. CAST IRON, NO-HUB: NEOPRENE GASKET AND CORRUGATED 304 STAINLESS 1. FOR SCREWED AND SOLDER JOINT INSTALLATION. SAME AS SECTION A OR STEEL SHIELD IN CONJUNCTION WITH 4 STAINLESS STEEL CLAMPS FOR 4"

- 6. BETWEEN COPPER AND FERROUS MATERIALS: INSULATING DIELECTRIC UNION
- INSERTED RUBBER GASKET.
- WASHERS. 9. ASSEMBLY FOR HUBLESS PIPING: AS RECOMMENDED BY THE
- MANUFACTURER.

INSTALLATION

BEFORE INSTALLING PIPE IN ANY PART OF THE SYSTEM, THE PIPE SHALL BE CLEANED INSIDE AND MADE FREE OF OIL, DIRT, AND FOREIGN MATTER. PROPERLY ALIGN AND INSTALL IN NEAT ARRANGEMENT, TRUE TO THE LINES OF THE LOCATION OF PLUMBING PIPING SHALL BE COORDINATED TO ENSURE THAT IT THE BUILDING. PITCH LINE AT A CONSTANT SLOPE FOR PROPER DRAINAGE.

CONCEALED CAN BE PROPERLY CONCEALED IN WALLS OR PARTITIONS AND THAT EXCEPT AS NOTED OTHERWISE ON DRAWINGS, PIPING SHALL BE HELD AS HIGH AS ELEVATION. IT DOES NOT INTERFERE WITH LIGHTS, DUCTWORK OR EQUIPMENT HAVING FIXED POSSIBLE, BETWEEN STRUCTURES AND THROUGH JOIST WEBBING, WITH DUE LOCATIONS, MAKE NECESSARY HORIZONTAL OR VERTICAL OFFSETS WITH PIPE REGARD TO CONFLICTS WITH OTHER SYSTEMS AND THEIR REQUIREMENTS FOR SPACE.

> PIPING, INCLUDING NO-HUB PIPING, SHALL BE INSTALLED STRAIGHT AND TRUE TO VERTICAL AND HORIZONTAL LINES. DEFLECTION SHALL NOT EXCEED ONE DEGREE. WHEN NECESSARY TO ACHIEVE THIS ALIGNMENT PROVIDE ADDITIONAL HANGERS OR BRACING.

SOLDER USED.

BE PERMITTED.

PLUMBING SPECIALITES PIPE SLEEVES

PIPES THROUGH WALLS AND FLOORS. ESCUTCHEONS

PLATED, TWO PIECE, HINGED WITH SET SCREW.

CONNECTION TO EQUIPMENT.

NECESSARY PLUMBING SERVICES, ACCESSIBLE VALVES ON PLUMBING BRANCHES TO EQUIPMENT.

PLUMBING OPERATION AND MAINTENANCE MANUALS

FURNISH TWO COPIES OF COMPLETE OPERATION AND MAINTENANCE MANUALS TO THE OWNER'S REPRESENTATIVE, FOR APPROVAL AND FOR THE OWNER, ON PLUMBING EQUIPMENT AND SPECIALTIES. THE MANUAL SHALL BE BOUND IN HARD-BACK, THREE-RING LOOSE-LEAF BINDERS.

TITLE SHEET WITH JOB NAME, AND THE NAMES, ADDRESSES AND PHONE NUMBERS OF THE CONTRACTOR, SUBCONTRACTOR, CONTROL SUBCONTRACTOR, RELATED CONTRACTOR AND MATERIAL AND EQUIPMENT SUPPLIERS.

APPROVED SHOP DRAWINGS, PRODUCT DATA AND PARTS AND MAINTENANCE BOOKLET FOR EACH ITEM OF PLUMBING, EQUIPMENT SPECIFIED IN DIVISION 15.

GUARANTEES, INCLUDING EXTENDED GUARANTEES.

SUBMIT MEDICAL GAS CERTIFICATION REPORT TO OWNER AND LOCAL AHJ.

DELIVER THE MANUALS TO THE OWNER'S REPRESENTATIVE PRIOR TO

FURNISH AND INSTALL PLUMBING PIPING WHERE SHOWN ON DRAWINGS AND AS

SANITARY PIPE AND FITTINGS: CISPI STD. 301. E AND FITTINGS, SERVICE WEIGHT: ASTM A 74. E AND FITTINGS, EXTRA HEAVY WEIGHT: ASTM A 74.

FTINGS, 150 LB.: ASTM A 197.

EADED): FED SPEC. WW-N-351.

BE: ASTM B 88. AND BRONZE SOLDER-JOINT PRESSURE FITTINGS: ANSI 3 INCH AND SMALLER:

PIPING CONFORMING TO ASTM F876 MAY BE USED FOR HOT AND COLD

AND SMALLER, 6 CLAMPS FOR 5" AND LARGER BETWEEN LEAD AND BRASS: FERRULES OR SOLDERING NIPPLES WITH WIPED JOINTS 3/8" THICK AND 3/4" EACH SIDE OF JOINTS. 4. SCREWED JOINTS: AMERICAN NATIONAL STANDARD WITH PIPE FREE FROM CUTTING AND BURRS, THREE THREADS EXPOSED MAXIMUM. 5. SOLDERED JOINTS: 95-5 TIN-ANTIMONY SOLDER. SLIP JOINTS: USE FOR PLUMBING TRAP SEALS ON INLET SIDE ONLY.

8. FLANGED BOLTS: ASTM A 354, MINIMUM GRADE BD, ALLOY STEEL WITH HEX NUTS IN COMPLIANCE WITH ANSI B18.22 AND STANDARD ROLLED STEEL

10. CHANGES IN PIPE SIZE SHALL BE MADE WITH REDUCERS. INCREASERS OR REDUCING FITTINGS. BUSHINGS WILL NOT BE PERMITTED.

METAL TO BE SOLDERED SHALL BE CLEANED AND FLUXED AS SUITABLE FOR THE

NOTCHING OF COPPER TUBING OR PLASTIC PIPING FOR CONNECTIONS WILL NOT

SCHEDULE 40 BLACK STEEL, GALVANIZED 26 GAGE STEEL, PROVIDE FOR ALL

PROVIDE FOR ALL PIPING THROUGH WALLS, FLOORS AND CEILING WERE PIPING IS EXPOSED TO VIEW IN FINISHED AREA. ESCUTCHEONS SHALL BE CHROMIUM

PROVIDE GROUND JOINT BRASS UNIONS OR FLANGES ON EACH PIPING

PROVIDE DIELECTRIC UNIONS BETWEEN COPPER AND STEEL PIPING CONNECTION

FLASHING

CLEANOUTS

VACUUM BREAKERS

SHALL CONFORM TO THE REQUIREMENTS OF THE REFERENCED PLUMBING CODE AND SHALL BE PROVIDED FOR HOSE BIBBS, FLUSHOMETERS AND ANY FIXTURE OR EQUIPMENT WATER SUPPLY HAVING A THREADED OUTLET.

VENT FLASHING SHALL COMPLY WITH ROOFING MANUFACTURER'S WRITTEN SPECIFICATIONS

CLEANOUTS ON NO-HUB PIPE SHALL BE STANDARD NO-HUB FITTINGS. CLEANOUTS ON CAST IRON HUB AND SPIGOT PIPING, SHALL BE CADMIUM PLATED. APPROVED MANUFACTURERS: ZURN, JOSAM OR JONESPEC.

TRAP PRIMERS PROVIDE WHERE INDICATED ON DRAWINGS. PRECISION PRODUCTS WITH

PIPE SLEEVES EXTEND SLEEVE 1/4 INCH BEYOND FINISHED SURFACE.

- 2. SET SLEEVE BEFORE POURING CONCRETE. 3. PROVIDE CLEARANCE BETWEEN SLEEVE AND PIPE OR BETWEEN SLEEVE AND INSULATION TO ALLOW FOR PIPE MOVEMENT DUE TO EXPANSION AND CONTRACTION.
- INSULATION SHALL PASS CONTINUOUS THROUGH THE SLEEVE. CAULK BETWEEN SLEEVE AND PIPE OR SLEEVE AND INSULATION. PREFABRICATED, PRE-INSULATED, "PIPE SHIELDS" WILL BE ACCEPTABLE FOR PIPES PASSING THROUGH FLOORS, EXTERIOR WALLS, FIRE WALLS AND ARCHITECT-ENGINEER.
- FIRE RESISTIVE WALLS AND PARTITONS. 6. ESCUTCHEONS: FIT AROUND INSULATION WHERE PRESENT. PROVIDE DEEP ESCUTCHEON PLATES WHERE PIPE SLEEVES EXTEND ABOVE FLOORS. WATER HAMMER ARRESTERS: INSTALL WHERE SHOWN ON DRAWINGS 8. CLEANOUTS: INSTALL WHERE SHOWN ON DRAWINGS AND AT BASE OF ALL
- RISERS. PROVIDE ADDITIONAL CLEANOUTS WHERE REQUIRED BY LOCAL CODES AND FOR CONVENIENCE OF TESTING AND ERECTION AT CONTRACTOR'S OPTION. 9. FRAMES AND COVERS SHALL BE FLUSH WITH ADJOINING ARCHITECTURAL
- FINISH.

PLUMBING VALVES

DESCRIPTION

INSTALL IN ACCESSIBLE LOCATION. VALVES SHALL NOT BE INSTALLED WITH THE STEMS BELOW THE HORIZONTAL POSITION.

VALVES, GATE, 125# UNION BONNET. RISING STEM

 SCREWED: ITT GRINNELL #3080 OR APPROVED EQUAL. 2. SOLDER JOINT: ITT GRINNELL #3080 SJ OR APPROVED EQUAL.

VALVES, BALL (MAY BE USED IN LIEU OF GATE VALVES UP TO 2"): 2" AND SMALLER NIBCO #T580; TWO PIECE BRONZE BODY, WITH SCREEWED ENDS, CHROME PLATED BRONZE BALL WITH CONVENTIONAL PORT, 400 PSI, BLOW OUT PROOF STEM.

VALVES, GLOBE 150# TEFLON DISC. UNION BONNET

3 INCH OR SMALLER: 1. SCREWED: ITT GRINELL #3240 OR APPROVED EQUAL. SOLDER JOINT: ITT GRINELL #3240 SJ OR APPROVED EQUAL.

VALVES, CHECK 125# REMOVABLE REGRINDABLE DISC A. 3 INCH AND SMALLER, HORIZONTAL:

SCREWED: ITT GRINELL #3300 OR APPROVED EQUAL. SOLDER JOINT: ITT GRINELL #3300 SJ OR APPROVED EQUAL.

3 INCH AND SMALLER, VERTICAL:

APPROVED EQUAL, PROVIDE ADAPTERS FOR SOLDER JOINT CONNECTION, 2.05 HOSE BIBBS A. SEE FIXTURE SCHEDULE ON DRAWINGS. B. PLUG COCKS, 125# BRONZE COCKS. TWO (2) INCH AND SMALLER SHALL BE CRANE NO. 250 OR APPROVED EQUAL.

INSTALLATION INSTALL VALVES WHERE SHOWN ON DRAWINGS.

PLUMBING HANGERS AND SUPPORTS

DESCRIPTION PROVIDE HANGERS FOR ALL PIPING NOT INDICATED BELOW GRADE. USE HANGERS CAPABLE OF ADJUSTMENT.

HANGERS AND SUPPORTS HANGERS FOR BLACK OR GALVANIZED STEEL PIPE SHALL BE GRINNELL, MODEL NO. 65 OR APPROVED EQUAL

HANGERS FOR CAST IRON PIPE SHALL BE GRINNELL, MODEL NO. 260 OR APPROVED EQUAL.

HANGERS FOR COPPER TUBING SHALL BE GRINNELL, MODEL NO. 97 C OR APPROVED EQUAL.

TRAPEZE HANGERS OF A TYPE APPROVED BY THE OWNER'S REPRESENTATIVE MAY BE USED WHERE PIPES ARE DESIGNED TO RUN PARALLEL AT THE SAME

PROVIDE ISOLATION HANGER WITH PROTECTIVE SHIELD, GRINNELL, MODEL NO. 300 103 OR APPROVED EQUAL, FOR ALL INSULATED PIPING. AT HANGER POINTS, PROVIDE 6 INCH LONG SECTION OF 1/2 INCH THICK CALCIUM SILICATE SECTIONAL PIPE INSULATION WITH FACTORY LONGITUDINAL LAP. SEAL BUTT JOINTS WITH INSULATING CEMENT.

STRAP HANGERS: NOT PERMITTED.

APPROVED EQUAL.

RISER CLAMPS: PROVIDE RISER CLAMPS FOR VERTICAL PIPING AT EACH LEVEL. GRINNELL MODEL NO. 261

INSERTS: IN CONCRETE, GRINNELL MODEL NO. 285 OR APPROVED EQUAL, HAVING BETWEEN THE VALVE AND THE STUD TO ACHIEVE CONNECTION WILL NOT BE ADJUSTMENT FROM 3/4 INCH THROUGH 1-1/4 INCH. IN METAL DECKS READHEAD SD1 OR APPROVED EQUAL, POWDER PROPELLED PERMITTED IN NEW CONSTRUCTION WHERE TYPE AND LOCATION ARE APPROVED PRIOR TO INSTALLATION. IN EXISTING CONSTRUCTION, START SLUGIN NO. 6800 SERIES OR

SIDE BEAM CLAMPS: PROVIDE WHEN SUPPORTING FROM STRUCTURAL STEEL MEMBERS, GRINNELL, MODEL 225 OR APPROVED EQUAL.

OTHER SUPPORTS: OBTAIN OWNER'S REPRENTATIVE APPROVAL FOR OTHER METHODS OF SUPPORT.

SPACING OF HANGERS PROVIDE HANGER AT EACH CHANGE OF DIRECTION.

SPACE HANGERS AND SUPPORTS TO PREVENT SAGGING AND REDUCE STRAIN ON VALVES AND SPECIALTIES WITH SPACING NO GREATER AND ROD NO SMALLER THAN SHOWN ON THE FOLLOWING TABLE. HANGERS SHALL ALLOW FOR EXPANSION AND CONTRACTION.

FERROUS PIPING AND COPPER TUBING: DIAMETER OF PIPE MAXIMUM SPACING ROD SIZE

10" THROUGH 15" EACH JOINT 3/4"

1/2" THROUGH 1-1/2"	6 FT.	3/8"	
2" THROUGH 3"	10 FT.	1/2"	
4" THROUGH 5"	12 FT.	5/8"	
6" AND LARGER	16 FT.	3/4" D.	
CAST IRON PIPING:			
DIAMETER OF PIPE	MAXIMUM	SPACING	ROD SIZE
2" AND 3" EAC	H JOINT	3/8"	
4" AND 5" EAC	H JOINT	1/2"	
6" AND 8" EAC	H JOINT	3/4"	

RISER CLAMPS

INSTALL AT EACH LEVEL BELOW THE FLOOR. SUSPEND FROM TWO HANGER RODS AND INSERTS WHERE THE INSTALLATION OF ESCUTCHEON PLATES IS REQUIRED. TESTING OF PLUMBING PIPING

(TWO HANGERS)

DESCRIPTION

CONDUCT ALL TESTS AFTER PIPING IS INSTALLED AND BEFORE PIPING IS CONCEALED OR COVERED.

PROVIDE ALL NECESSARY TEMPORARY PIPING CLOSURES.

PROVIDE ALL TESTING EQUIPMENT, MATERIALS AND SUPPLIES. SYSTEMS SHALL REMAIN UNDER TEST FOR SUFFICIENT LENGTH OF TIME TO PROVE TIGHTNESS THEREOF AND FOR ADEQUATE OBSERVATION BY THE

MATERIALS OTHER THAN THOSE SPECIFIED FOR JOINING WILL NOT BE PERMITTED 3. JOINTS TO BE AWS A5.8, BCUP SILVER BRAZE (15% SILVER SOLDER) IN THE PIPING SYSTEMS FOR THE PURPOSE OF STOPPING LEAKS.

ALL LEAKS DISCLOSED BY THE TESTING PROCEDURES SHALL BE REPAIRED AND TESTING REPEATED UNTIL THE SYSTEM IS PROVEN TIGHT.

TESTING REQUIREMENTS ARE MINIMUM AND ARE NOT INTENDED TO BE LIMITING WHERE ADDITIONAL TESTING METHODS ARE REQUIRED BY THE AUTHORITY HAVING JURISDICTION.

SUBMITTALS STERILIZATION: PROVIDE A DATED LETTER TO THE ARCHITECT-ENGINEER'S REPRESENTATIVE STATING THAT PIPING SYSTEM HAS BEEN STERILIZED AND

FLUSHED AS SPECIFIED. PIPING TEST

DOMESTIC HOT AND COLD WATER PIPING SHALL BE FILLED. THEN TESTED TO A HYDROSTATIC PRESSURE OF 150 PSIG. MAINTAIN TEST PRESSURE FOR A MINIMUM STANDARD GRADE HYDROSTATIC PRESSURE RATINGS FROM PLASTIC PIPE OF ONE HOUR.

SANITARY PIPING, PREVIOUS TO CONNECTION OF FIXTURES, SHALL BE FILLED WITH WATER TO THE TOP OF THE SYSTEM AND PROVEN TIGHT. WHEN TESTING THE SYSTEM BY SECTIONS THE MINIMUM HEIGHT OF THE WATER COLUMN SHALL BE 10 FEET. EXAMINE ALL JOINTS FOR LEAKS.

NEW FIRE STANDPIPE SYSTEM SHALL BE TESTED TO A HYDROSTATIC PRESSURE OF 200 PSIG. MAINTAIN TEST PRESSURE FOR A MINIMUM OF TWO HOURS.

GAS PIPING SHALL BE TESTED WITH NITROGEN TO 50 PSIG. PRESSURE SHALL BE MEASURED WITH A MANOMETER, MAINTAIN TEST PRESSURE FOR A MINIMUM OF 30 MINUTES.

STERILIZATION

AFTER TESTS ARE COMPLETED ALL WATER SUPPLY SYSTEMS SHALL BE FILLED WITH A SOLUTION CONTAINING 100 PPM OF AVAILABLE CHLORINE AND ALLOWED TO STAND FOR A PERIOD TO TWO HOURS BEFORE BEING FLUSHED WITH CLEAN WATER.

PLUMBING, FIXTURES, TRIM AND DRAINS

MANUFACTURER

MANUFACTURER SHALL BE AS SCHEDULED OR BY APPROVED EQUAL.

PIPING PIPING TO SERVE FIXTURES AND EQUIPMENT AND EXPOSED TO VIEW IN FINISHED AREAS SHALL BE BRASS, CHROMIUM PLATED.

SUPPORTS FOR ANCHORING THE FIXTURES RIGIDLY IN PLACE. RISERS TO SHOWER HEADS SHALL BE ANCHORED TO THE WALL CONSTRUCTION TO PREVENT MOVEMENT.

FIXTURES PROVIDE PLUMBING FIXTURES AS SCHEDULED ON DRAWINGS, AMERICAN STANDARD, KOHLER, ELJER OR APPROVED EQUAL.

PLUMBING DRAINS FURNISH WITH SEEPAGE FLANGE WHERE INSTALLED WITH PANS OR FLASHING FURNISH CLAMPING RING.

ALL DRAINS SHALL BE OF THE SAME MANUFACTURER.

FURNISH FLOOR DRAINS WITH PRIMER CONNECTIONS WHERE INDICATED ON THE INSULATION FOR EXPOSED HOT AND COLD WATER PIPING SHALL BE SECTIONAL DRAWINGS. IN LIEU OF CAST-IN PRIMER CONNECTIONS ON THE DRAIN BODY, A TEE BETWEEN THE DRAIN BODY AND THE TRAP, TO RECEIVE THE PRIMER DISCHARGE WILL BE ACCEPTABLE.

PROVIDE FLOOR DRAINS WITH 4 INCH DEEP SEAL TRAPS.

INSTALLATION

PERMITTED.

FROM DAMAGE.

<u>GAS PIPING</u>

PIPING

COMPANY

INSTALLATION

GAS COMPANY

BOLT WATER CLOSET CARRIER TO FLOOR.

PROVIDE ALL DRAINS AS SCHEDULED ON DRAWINGS OR APPROVED EQUAL.

CHROME PLATED PIPING REQUIRING THE USE OF WRENCH SHALL BE PROTECTED

SHALL COMPLY WITH THE REQUIREMENTS OF NFPA NO. 54 AND THE LOCAL GAS

PIPE SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH MALLEABLE FITTINGS

INSTALL GAS SHUT-OFF AND GAS MANIFOLDS AS INDICATED OR REQUIRED.

PIPING SHALL COMPLY WITH THE REQUIREMENTS OF NFPA NO. 54 AND THE LOCAL

DRAIN SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS; ACCESSIBLE AND LOCATED TO SUIT EQUIPMENT APPROVED FOR INSTALLATION. WHERE FLUSH VALVES ARE SPECIFIED WITH FIXTURES, THE SUPPLY TO THE VALVE IN EACH SHALL BE SET IN PLACE SO THAT THE CENTER LINE OF THE VALVE DISCHARGE IS DIRECTLY ABOVE THE CENTER LINE OF FIXTURE STUD. BENDING OF NIPPLE

MEDICAL VACUUM

- 1. TYPE L HARD DRAWN COPPER TUBING, ASTM B-819.
- WROUGHT BRONZE SOLDERED FITTINGS. JOINTS TO BE AWS A5.8, BCUP SILVER BRAZE (15% SILVER SOLDER).
- 4. PIPING SHALL BE CLEANED AND INSTALLED PER INSTALLATION OF MEDICAL GAS PIPING SECTION OF THIS SPECIFICATION. PVC PLASTIC PIPE SHALL BE SCHEDULE 40 OR SCHEDULE 80, COMPLYING
- WITH ASTM D 1785 STANDARD SPECIFICATION FOR POLYVINYL CHLORIDE (PVC) PLASTIC PIPE SCHEDULES 40, 80 AND 120. 6. PVC PLASTIC FITTINGS SHALL BE SCHEDULE 40 OR 80 TO MATCH THE PIPING AND COMPLY WITH ASTM D 2466 STANDARD SPECIFICATION FOR POLYVINYL CHLORIDE (PVC) PLASTIC PIPE FITTINGS, SCHEDULE 40 OR ASTM D 2467
- STANDARD SPECIFICATION FOR POLYVINYL CHLORIDE (PVC) PLASTIC PIPE FITTINGS, SCHEDULE 80. PVC PLASTIC PIPING JOINTS SHALL BE SOLVENT-CEMENTED IN ACCORDANCE WITH ASTM D 2672 STANDARD SPECIFICATION FOR JOINTS FOR IPS PVC PIPE USING SOLVENT CEMENT.

- 1. TYPE L HARD DRAWN COPPER TUBING PER ASTM B-819.
- WROUGHT BRONZE SOLDERED FITTINGS. JOINTS TO BE AWS A5.8, BCUP SILVER BRAZE (15% SILVER SOLDER).
- 4. PIPING SHALL BE CLEANED AND INSTALLED IN ACCORDANCE WITH INSTALLATION OF MEDICAL GAS PIPING SECTION OF THIS SPECIFICATION.

NITROUS OXIDE

- 1 TYPE L HARD DRAWN COPPER TUBING PER ASTM B-819 WROUGHT BRONZE SOLDERED FITTINGS.
- 4. PIPING SHALL BE CLEANED AND INSTALLED IN ACCORDANCE WITH
- INSTALLATION OF MEDICAL GAS PIPING SECTION OF THIS SPECIFICATION.

DOMESTIC HOT AND COLD WATER

DESCRIPTION THE WORK INCLUDES FURNISHING AND INSTALLING HOT AND COLD WATER PIPING AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

HOT AND COLD WATER PIPING SHALL BE COPPER WATER TUBE HARD TEMPER, TYPE "L" WITH WROUGHT SOLDER FITTINGS ABOVE FLOOR AND SOFT TEMPER

TYPE "K" WITH WROUGHT SOLDER FITTINGS BELOW GRADE. PEX, HIGH-DENSITY CROSS-LINKED POLYETHYLENE TUBING SHALL BE MANUFACTURED TO THE REQUIREMENTS OF ASTM F876 AND MEET THE

INSTITUTE IN ACCORDANCE WITH TR-4/03.

GATE VALVES SPECIFIED IN SECTION, PLUMBING VALVES

INSTALLATION

NOTCHING OF PIPE FOR CONNECTION NOT PERMITTED.

WHERE POSSIBILITY OF BACKFLOW FROM THE DRAIN TO THE SUPPLY FITTING EXISTS, INSTALL VACUUM BREAKERS.

NOT MORE THAN ONE LAVATORY, SINK, OR SIMILAR FIXTURE SHALL BE SUPPLIED BY A 1/2 INCH BRANCH. LINEAR DIMENSIONS NOT TO EXCEED 5 FEET.

MAKE CONNECTION TO EQUIPMENT AND FIXTURES INDICATED ON THE DRAWINGS OR SPECIFIED HEREIN.

HOT WATER BRANCH CONNECTIONS TO DISTRIBUTION MAINS SHALL BE TOP TAKE-OFF. SWING JOINT TYPE.

ALL PIPING INSTALLED BELOW GROUND SHALL RECEIVE TWO COATS OF KOPPERS SHALL PERFORM A CROSS CONNECTION TEST ON THE SYSTEM. THE TESTING NO. 50 OR APPROVED EQUAL.

PLUMBING INSULATION

DESCRIPTION

INSULATION SHALL NOT BE INSTALLED UNTIL TESTING PROCEDURES HAVE BEEN COMPLIED WITH AND ALL SURFACES HAVE BEEN CLEANED AND FREE OF DIRT, GREASE AND COMPLETELY DRIED.

PROVIDE ALL BRACKETS, PLATES, ANCHORS AND FASTENING DEVICES REQUIRED MATERIALS SHALL COMPLY WITH UL 723, FLAME SPREAD RATING, HOT SURFACE TEST PERFORMANCE, AND SMOKE DEVELOPED RATING.

> SUBMITTALS SAMPLES AND MANUFACTURER'S PRODUCT DATA: SUBMIT SAMPLES OF INSULATION AND ADHESIVE AND PRODUCT DATA LISTING RECOMMENDATIONS FOR USE AND COMPLIANCE WITH NFPA 90.

INSULATION INSULATION FOR HOT AND COLD WATER PIPING, SHALL BE SECTIONAL GLASS FIBER AS MANUFACTURED BY OWENS CORNING FIBERGLASS TYPE ASJ/SSLII OR APPROVED EQUAL, WITH FACTORY APPLIED, ALL PURPOSE, FIRE RETARDANT JACKET.

GLASS FIBER AS MANUFACTURED BY OWENS CORNING FIBERGLASS TYPE ASJ/SSLII OR APPROVED EQUAL, WITH FACTORY APPLIED, .016 EMBOSSED ALUMINUM JACKET.

ADHESIVE SHALL BE BENJAMIN FOSTER 30-36, OR APPROVED EQUAL, WHITE INSULATION LAGGING ADHESIVE.

VAPOR BARRIER MASTIC SHALL BE BENJAMIN FOSTER NO. 82-07, WHITE, OR APPROVED EQUAL.

INSTALLATION

HOT AND COLD WATER PIPING: SHALL BE INSULATED WITH 1/2 INCH THICK GLASS ROOM SHALL BE AT THE SAME HEIGHT FOR THE TYPE OF FIXTURE AND THE VALVE FIBER INSULATION HAVING A FACTORY APPLIED, ALL PURPOSE, FIRE RETARDANT JACKET WITH A MINIMUM R-4.0 PER INCH. CONCEALED AND EXPOSED PIPING SHALL HAVE THE INSULATION APPLIED WITH SIDE AND END JOINTS BUTTED TIGHTLY. SEAL JACKET LEGS AND BUTT JOINT STRIPS WITH ADHESIVE.

> INSULATE FITTINGS FOR PIPING UP TO 3 INCHES IPS WITH MOLDED GLASS FIBER. INSULATE FITTINGS FOR PIPING LARGER THAN 3 INCHES WITH MOLDED FITTINGS OR SEGMENTED SECTIONS, WIRED IN PLACE TO THE SAME THICKNESS AS ADJACENT INSULATION. EXPOSED INSULATED PIPING AND FITTINGS SHALL BE JACKETED WITH 6 OUNCE CANVAS PIPING INCLUDING THE FITTING CHANGE FROM HORIZONTAL TO VERTICAL. CONCEALED AND EXPOSED PIPING SHALL HAVE THE INSULATION APPLIED WITH SIDE AND END JOINTS BUTTED TIGHTLY. SEAL OFF ENDS OF INSULATION WITH VAPOR BARRIER MASTIC AT EACH FITTING AND AT 21 FOOT INTERVALS ON CONTINUOUS RUNS.

> INSTALL THE FACTORY APPLIED FIRE RETARDANT JACKET VAPOR BARRIER SO THAT IT WILL LAP SMOOTHLY AND SECURELY AT THE LONGITUDINAL LAP AND ADHERE IT WITH VAPOR BARRIER MASTIC. ADHERE 3 INCH WIDE BUTT STRIPS X SMOOTHLY OVER ALL END JOINTS WITH THE VAPOR BARRIER MASTIC TO ASSURE A CONTINUOUS VAPOR BARRIER - NO STAPLES ALLOWED. INSULATE DRAIN BODIES AND FITTINGS WITH METERED SEGMENTS OF PIPE INSULATION, OVERSIZED PIPE INSULATION OR MOLDED FITTINGS. COAT WITH TWO, 1/8 INCH COATS OF VAPOR BARRIER MASTIC REINFORCED WITH GLASS FABRIC EXTENDING 2 INCHES ONTO ADJACENT PIPES. EXPOSED INSULATED PIPING AND FITTINGS SHALL BE JACKETED WITH 8 OUNCE CANVAS. TERMINATE INSULATION NEATLY AT

CLEANOUTS ON STORM AND COLD DRAIN PIPING. DO NOT COVER CLEANOUTS.

DOMESTIC WATER HEATING

DESCRIPTION

PROVIDE DOMESTIC WATER HEATING EQUIPMENT WHERE SHOWN ON DRAWINGS AND SPECIFIED.

DISCHARGE PIPE RELIEF VALVE DISCHARGE SHALL BE COPPER WATER TUBE, TYPE M.

INSTALLATION WATER HEATER SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS.

DISCHARGE PIPE SHALL HAVE TERMINATING END CUT AT 45 DEGREE ANGLE. TERMINATE RELIEF VALVE DRAIN AS SHOWN ON THE DRAWINGS.

MEDICAL GAS PIPING INSTALLATION

INSTALL NON-FLAMMABLE MEDICAL GAS SYSTEM, INHALATION ANAESTHETIC SYSTEM AND VACUUM PIPING SYSTEM IN ACCORDANCE WITH NFPA 99 AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

PRE-INSTALLATION CLEANING: PRIOR TO INSTALL, DISASSEMBLE POSITIVE PRESSURE GAS SYSTEM PIPING, FITTINGS, VALVES, AND COMPONENTS (UNLESS SUPPLIED CLEAN AND PREPARED FOR INTENDED SERVICE) AND THOROUGHLY WASH IN HOT SOLUTION OF SODIUM CARBONATE OR TRISODIUM PHOSPHATE MIXED ONE POUND TO THREE GALLONS OF WATER, RINSE WITH WATER, THOROUGHLY DRY AND CAP UNTIL INSTALLATION.

BRAZE JOINTS IN PIPE AND TUBING. DO NOT LEAVE EXCESS FLUX ON INSIDE OF PIPE AND FITTINGS. PURGE INTERIOR OF PIPE WITH NITROGEN CONTINUOUSLY DURING BRAZING OF PIPE CONNECTIONS.

BENDS SHALL BE FREE OF FLATTENING, BUCKLING OR THINNING OF TUBE WALL. MAKE CHANGES IN DIRECTION FOR REQUIRED TURNS OR OFFSETS WITH FITTINGS

OR TUBING SHAPED BY UTILIZING A BENDING TOOL.

PIPING TO BE GRADED DOWN IN DIRECTION OF FLOW. PROVIDE PIPE SLEEVES WHERE PIPES AND TUBING PASS THROUGH WALLS,

FLOORS, ROOFS, AND PARTITIONS. FINISH FLUSH AT BOTH ENDS. EXTEND TWO INCHES (50MM) ABOVE FINISHED FLOORS PACK SPACE BETWEEN PIPE AND/OR TUBING/SLEEVE AND CAULK.

PIPING SHALL BE LISTED AND IDENTIFIED IN ACCORDANCE WITH MIL-STD 101 USING TAPE AND DECALS TO FSPPP-T-66. PROVIDE LABELING ON PIPE IN EACH ROOM, AT EACH LEVEL TRAVERSED BY PIPING AND AT INTERVALS NOT EXCEEDING TWENTY FEET.

SUPPORT GAS PIPING WITH HANGERS OR PIPE HOOKS ACCEPTABLE FOR SIZE OF PIPING. SUPPORT SPACING SHALL BE AS FOLLOWS: 1/2" PIPE OR TUBING: 72 INCHES, 3/4" OR 1" PIPE OR TUBING: 96 INCHES, HORIZONTAL PIPING 1-1/4" OR LARGER: 120 INCHES, VERTICAL PIPING 1-1/4" OF LARGER: AT EVERY FLOOR.

PIPING SYSTEMS CLEANING AND PRESSURE TESTING

PRIOR TO INSTALLATIONO OF SERVICE OUTLET VALVES AND AFTER INSTALLATION OF PIPE AND TUBING, BLOW SYSTEM CLEAR OF MOISTURE AND FOREIGN DEBRIS WITH NITROGEN GAS.

AFTER INSTALLATION OF SERVICE OUTLET VALVES, TEST SYSTEM TO PRESSURE OF 150 PSIG WITH NITROGEN OR DRY COMPRESSED AIR. CHECK ALL LINES AND FITTINGS WITH SOAPY WATER AND PROVIDE 24-HOUR STANDING PRESSURE TEST.

CROSS-CONNECTION TESTS

THE MEDICAL GAS EQUIPMENT SUPPLIER OR AN INDEPENDENT TESTING AGENCY AGENCY SHALL BE CERTIFED TO PERFORM MEDICAL GAS TESTING PROCEDURES AND SHALL CERTIFY THAT THE SYSTEM IS COMPLETE WITH ALL ZONE VALVES INSTALLED, ALARM SYSTEMS FUNCTIONAL, AND ENSURE THAT ALL TESTING REQUIRED BY THE 2018 NFPA 99 WERE PERFORMED. DOCUMENT TESTS AND SUBMIT CERTIFICATE TO OWNER AND LOCAL AHJ.

REDUCE PRESSURE TO ATMOSPHERIC PRESSURE IN ALL PIPING SYSTEMS OTHER THAN THE SYSTEM BEING TESTED.

SYSTEM SHALL BE TESTED WITH DRY COMPRESSED AIR OR DRY NITROGEN AT 50 PSIG (345 KPA).

CHECK EVERY STATION OUTLET OF EACH SYSTEM TO CONFIRM TEST GAS IS ONLY DISPENSED FROM OUTLET OF SYSTEM BEING TESTED. MEASURE PRESSURE WITH GAGE ATTACHED TO SPECIFIC ADAPTOR. UNIVERSAL ADAPTORS ARE NOT ALLOWED.

AFTER TESTING, DISCONNECT TEST GAS AND CONNECT PROPER GAS TO EACH SYSTEM. PURGE ENTIRE SYSTEM TO REMOVE TEST GAS AND CHECK WITH ANALYZER SUITABLE FOR GAS INSTALLED.

