

WOODFOREST NATIONAL BANK BRANCH AND COFFEE SHOP

1330 LAKE ROBBINS DR., SUITE 100
THE WOODLANDS, TX 77380



ARCHITECTURE PLANNING INTERIOR DESIGN

550 WESTLAKE PARK BLVD., SUITE 300
HOUSTON, TEXAS 77079
713-465-4650
www.sligroup.com

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ISSUED FOR BID AND PERMIT

BUILDING CODE AND PROJECT INFORMATION

SCOPE OF WORK

INTERIOR RENOVATION OF EXISTING BANK BRANCH.

BUILDING CODE

2024 INTERNATIONAL BUILDING CODE (IBC)
2023 NATIONAL ELECTRICAL CODE (NEC)
2024 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
2024 INTERNATIONAL FIRE CODE (IFC)
2024 INTERNATIONAL MECHANICAL CODE (IMC)
2024 INTERNATIONAL PLUMBING CODE (IPC)
2015 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2012 TEXAS ACCESSIBILITY STANDARDS

OCCUPANCY CLASSIFICATION, EGRESS & OCCUPANT LOADS

OCCUPANCY TYPE: B-BUSINESS
CONSTRUCTION TYPE: II B - EXISTING

OCCUPANCY B - 1 PER 150 GROSS
SUITE SQ. FT. 3,562
TOTAL OCCUPANT LOAD 24

EXITS REQUIRED: 1
EXITS PROVIDED: 2

WIDTH OF EXITS REQUIRED: 12.2"
WIDTH OF EXITS PROVIDED: 262"

MAXIMUM ALLOWABLE TRAVEL DISTANCE: 300 FT.
MAXIMUM ACTUAL TRAVEL DISTANCE: 53 FT. 11 IN.

FIRE RESISTANCE

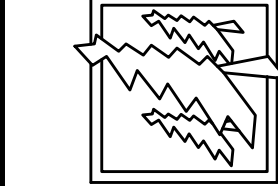
	(HRS.)
EXTERIOR BEARING WALLS	0
INTERIOR BEARING WALLS	0
STRUCTURAL FRAME	0
CORRIDORS	0
SHAFT ENCLOSURE	0
ROOFS/CEILINGS:	0
EXTERIOR DOORS AND WINDOWS	0
SMOKE BARRIER SEPERATIONS	0

FIRE EXTINGUISHERS	CLASS	MAX. SEP.
	2A	75 FT.

WOODFOREST
NATIONAL BANK

1330 Lake Robbins Dr, Suite 100
Branch and Coffee Shop
The Woodlands, TX 77380

PROJECT NUMBER: 8995



ISSUED FOR CLIENT APPROVAL



DATE

ISSUED FOR BIDDING

10.05.26

ISSUED FOR PERMIT

10.01.26

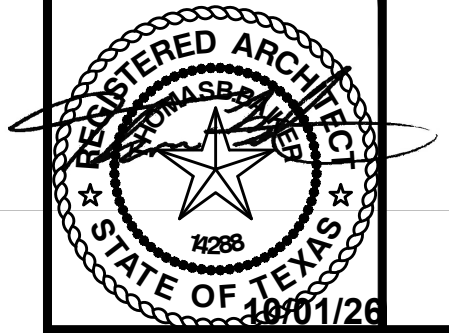
ISSUED FOR CONSTRUCTION

REVISIONS

MARK	DESCRIPTION	DATE
A	ADDENDUM A	10.05.26

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DRAWING TITLE
Title Sheet/Code Information

DRAWN BY CM SHEET NO.

CHECKED BY TB

APPROVED BY TB

T-1.00

GENERAL

T-1.00 TITLE SHEET

ARCHITECTURAL

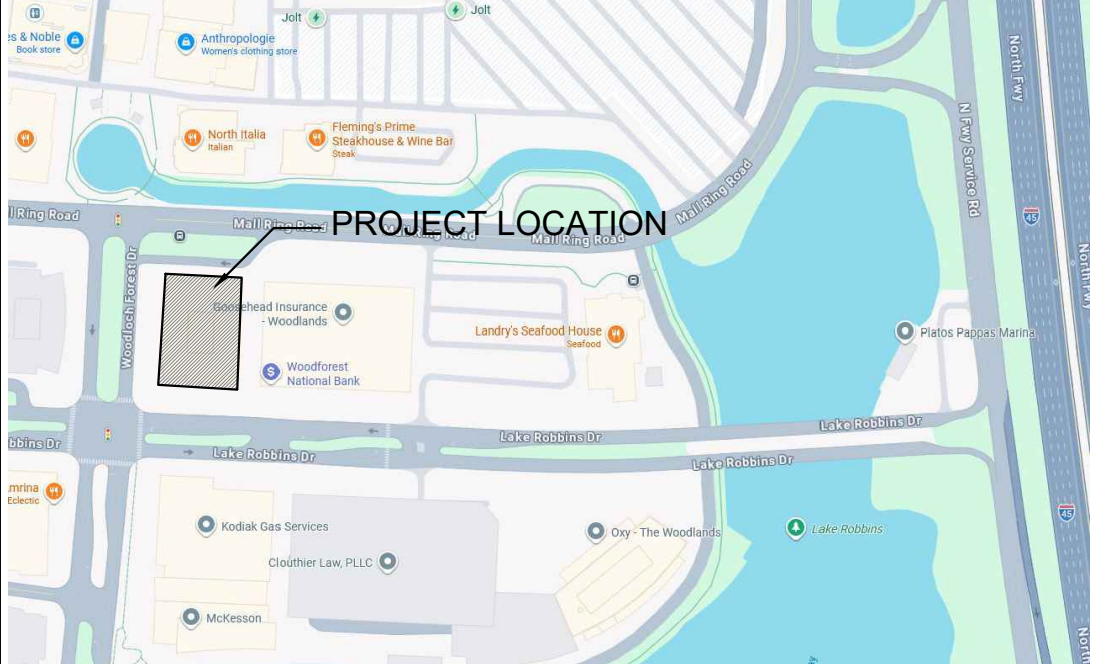
A-0.00 ACCESSIBILITY ROUTE COMPLIANCE
A-0.10 ACCESSIBILITY ELEMENT COMPLIANCE
D-1.00 FLOOR PLAN - DEMOLITION FIRST FLOOR
A-1.00 FLOOR PLAN - FIRST FLOOR
D-4.00 DEMOLITION REFLECTED CEILING PLAN
A-4.00 REFLECTED CEILING PLAN - FIRST FLOOR
A-10.00 INTERIOR ELEVATIONS
A-12.00 INTERIOR FINISH PLAN
A-14.00 INTERIOR SIGNAGE

MEP

MEP-1.01 MEP SPECIFICATIONS
MEP-2.01 MEP SPECIFICATIONS
MEP-3.01 MEP SPECIFICATIONS
M-0.01 MECHANICAL INFORMATION
M-1.01 MECHANICAL PLAN
E-0.01 ELECTRICAL INFORMATION
E-1.01 ELECTRICAL LIGHTING PLAN
E-2.01 ELECTRICAL POWER PLAN
E-3.01 ELECTRICAL SCHEDULES
E-4.01 ELECTRICAL SCHEDULES
P-0.01 PLUMBING INFORMATION
P-1.01 PLUMBING PLAN
P-2.01 PLUMBING RISERS
P-3.01 PLUMBING DETAILS

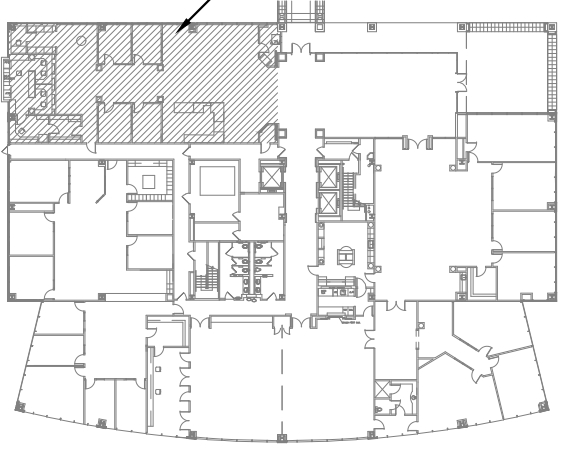


VICINITY MAP



AREA OF WORK

PROJECT LOCATION



TYPICAL MOUNTING HEIGHTS:

ELECTRICAL
CONVENIENCE OUTLETS 15" (FL. TO BOTTOM OF BOX U.N.O. ON PLAN)
LIGHT SWITCHES 45" (FLOOR TO BOTTOM OF BOX)
FIRE ALARM PULL STATIONS 48" (FLOOR TO HORIZONTAL PULL)
TELEPHONE OUTLETS 15" (FLOOR TO BOTTOM OF BOX)
WALL TELEPHONE OUTLETS 45" (FLOOR TO BOTTOM OF BOX)
DATA CABLE OUTLETS 15" (FLOOR TO BOTTOM OF BOX)
SMOKE AND/OR HEAT DETECTORS CEILING MOUNT

PLUMBING
LAVATORIES 27" min. - 29" (FLOOR TO UNDERSIDE OF APRON)
HANDICAPPED-ACCESSIBLE (KNEE SPACE) 34" (FLOOR TO TOP OF APRON)
WATER CLOSET HANDICAPPED-ACCESSIBLE 18" (FLOOR TO TOP OF RIM)
FLUSH CONTROLS 44" (FLOOR TO CENTER LEVER)

ARCHITECTURAL
GRAB BARS 36" (1 1/2" DIAMETER) (FLOOR TO TOP OF BAR)
PAPER TOWEL DISPENSER 40" (FLOOR TO TOWEL SLOT)
TOILET TISSUE HOLDER 19" (FLOOR TO CENTER ROLL)
SOAP DISPENSER 36" (MAXIMUM FOR REAR WALL)
MIRRORS 48" (FLOOR TO CENTER OF PUSH BOTTOM)
40" (FLOOR TO BOTTOM OF MIRROR)

(FOR MORE INFORMATION ON MOUNTING HEIGHTS FOR ACCESSIBLE ELEMENTS AND AREAS,SEE SHEETS A-0.0 AND A-0.1.)

ABBREVIATIONS

ABBR	DEFINITION	ABBR	DEFINITION
AC	AIR CONDITIONER	INCL	INCLUDING
ACT	ACOUSTICAL CEILING TILE	INS	INSULATION
ADD	ADDITIONAL	INT	INTERIOR
ADJ	ADJACENT	JAN	JANITOR
AFF	ABOVE FINISH FLOOR	JC	JANITOR'S CLOSET
AFC	AT FINISH CEILING	JT	JOINT
ALUM	ALUMINUM	LP	LOW POINT
ARCH	ARCHITECTURAL	LAM	LAMINATED
BD	BOARD	LAV	LAVATORY
BFF	BELOW FINISH FLOOR	LIT	LIGHTING
BLDG.	BUILDING	MAX	MAXIMUM
BLKG	BLOCKING	MBM	METAL BUILDING MANUFACTURER
BM	BEAM	MECH	MECHANICAL
BO	BOTTOM OF	MEMB	MEMBRANE
BRG	BEARING	MFR	MANUFACTURER
CSB	CHALKBOARD	MIN	MINIMUM
CI	CAST IRON	MISC	MISCELLANEOUS
CIP	CAST-IN-PLACE	MO	MASONRY OPENING
CJ	CONTROL JOINT	MTL	METAL
CL	CENTERLINE	NIC	NOT IN CONTRACT
CLG	CEILING	NO	NUMBER
CLO	CLEAR	NTS	NOT TO SCALE
CLO	CLOSET	OC	ON CENTER
CNU	CONCRETE MASONRY UNIT	OH	OVERHEAD DOOR
CONT	COLUMN	OPNG	OPENING
CONC	CONCRETE	OPP	OPPOSITE
CONT	CONTINUOUS	OPP.HD	OPPOSITE HAND
CPT	CARPET	PART	PARTITION
CT	CERAMIC TILE	PC	PRECAST
DET	DETAIL	PEMB	PRE-ENGINEERED METAL BUILDING
DF	DRINKING FOUNTAIN	PLAM	PLASTIC LAMINATE
DIA	DIAMETER	PT	PRESSURE TREATED
DN	DOWN	PTD	PAINTED
DOOR	DOOR	PVCH	POLYVINYL CHLORIDE
DWG	DRAWING	QT	QUARRY TILE
EA	EACH	QTY	QUANTITY
EJ	EXPANSION JOINT	R	RADIUS or RISER
ELEC	ELECTRICAL	RA	RETURN AIR
ELEV	ELEVATION or ELEVATOR	RD	ROOF DRAIN
EXT	EXTERIOR	REF	REFERENCE
EQ	EQUAL	REINF	REINFORCING or REINFORCED
EQUIP	EQUIPMENT	REQ	REQUIRED
EXIST	EXISTING	REV	REVISION
FD	FLOOR DRAIN	RM	ROOM
FDN	FOUNDATION	RO	ROUGH OPENING
FE	FIRE EXTINGUISHER	RTU	ROOF TOP UNIT
FEC	FIRE EXTINGUISHER CABINET	SECT	SECTION
FF	FINISH FLOOR	SIM	SIMILAR
FFE	FINISH FLOOR ELEVATION	SPEC	SPECIFICATION
FF	FINISH FLOOR TRANSITION	SQ	SQUARE
FIN	FINISH	SSL	STAINLESS STEEL
FIXT	FIXTURE	STD	STANDARD
FR	FIRE-RATED	STL	STEEL
FRP	FIBERGLASS REINFORCED PLASTIC	STRUC	STRUCTURAL
FR	FIRE RETARDANT TREATED	SUSP	SUSPENDED
FT	FOOT	T	TREAD
FV	FIELD VERIFY	TBD	TO BE DETERMINED or TACKBOARD
GA	GAUGE	TD	TRENCH DRAIN
GALV	GALVANIZED	TO	TOP OF
GC	GENERAL CONTRACTOR	TOC	TOP OF CONCRETE
GL	GLASS	TOS	TOP OF STEEL
GYP BD	GYP SUM BOARD	TOW	TOP OF WALL
HC	HANDICAP ACCESSIBLE	THK	THICK
HDW	HARDWARE	TYP	TYPICAL
HGT	HEIGHT	UNO	UNLESS NOTED OTHERWISE
HM	HOLLOW METAL	VCT	VINYL COMPOSITION TILE
HORIZ	HORIZONTAL	VERT	VERTICAL
HP	HIGH POINT	WD	WOOD
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING	WOW	WINDOW
IN	INCH	WF	WIDE FLANGE
		WPR	WATERPROOFING

DRAWING SYMBOLS LEGEND

SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
	NORTH ARROW		PARTITION TYPE		COLUMN GRID
	DRAWING NAME, NUMBER, AND SCALE		WINDOW TYPE		CENTERLINE
	ENLARGED DETAIL REFERENCE		DOOR IDENTIFICATION		BREAK LINE
	EXTERIOR ELEVATION		ROOM NAME ROOM NUMBER		SPOT ELEVATION
	INTERIOR ELEVATION		DIMENSION LINES		
	BUILDING SECTION		MATCH LINE		
	WALL SECTION		REVISION NUMBER & AFFECTED AREA		
	SECTION DETAIL		FIRE EXTINGUISHER		
	VERTICAL ELEVATION				

GENERAL NOTES:

1. NOTIFY ARCHITECT OF ANY DISCREPANCIES AND/OR OMISSIONS.
2. ALL WORK SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL ORDINANCES.
3. ALL DIMENSIONS ARE TO FINISHED FACE OF PARTITIONS.
4. ALL DOORS ON AN ACCESSIBLE ROUTE SHALL HAVE A MIN. 18" CLEAR ON THE PULL SIDE, A MIN. 12" CLEAR ON THE PUSH SIDE WHEN DOOR IS EQUIPPED WITH BOTH A LATCH AND CLOSER.
5. ALL DOORS TO RECEIVE NEW AMERICAN DISABILITIES ACT COMPLIANT HARDWARE.
6. COMPLY WITH ALL 2012 TAS GUIDELINES

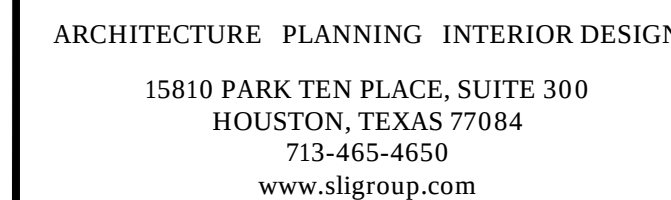
PROJECT TEAM

ARCHITECT/CONTRACTOR

SLI GROUP
15810 PARK TEN PLACE, SUITE 300
HOUSTON, TEXAS 77084
713-465-4650

MEP ENGINEER

EJBIE CONSULTING ENGINEERS
12603 SOUTHWEST FRWY, SUITE 170
STAFFORD, TEXAS 77477
713-840-0177



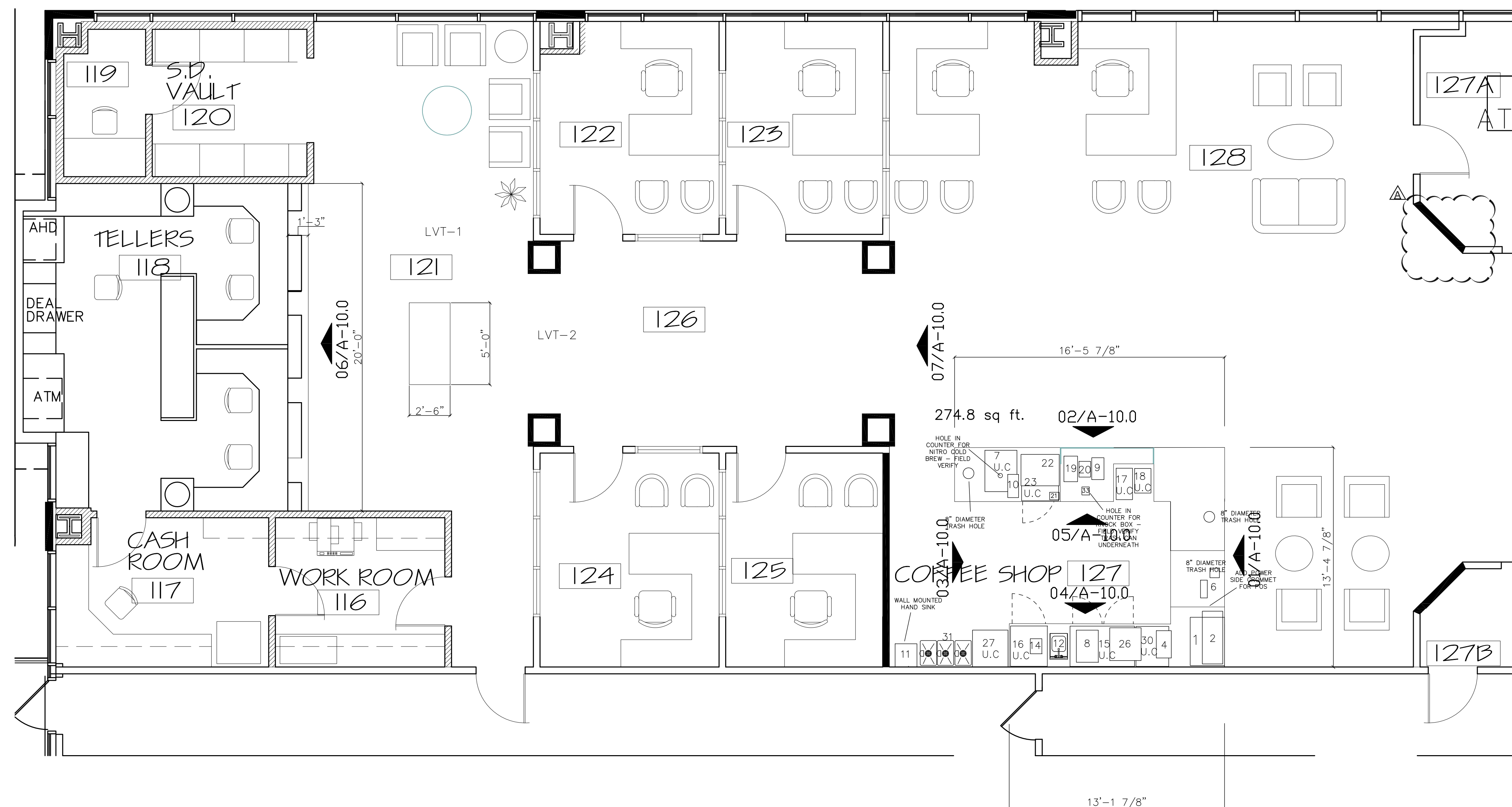
**1330 Lake Robbins Dr, Suite 100
Branch and Coffee Shop
The Woodlands, TX 77380**

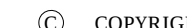
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DRAWING TITLE		FLOOR PLAN	
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01 FLOOR PLAN
SCALE: 1/4"=1'-0"

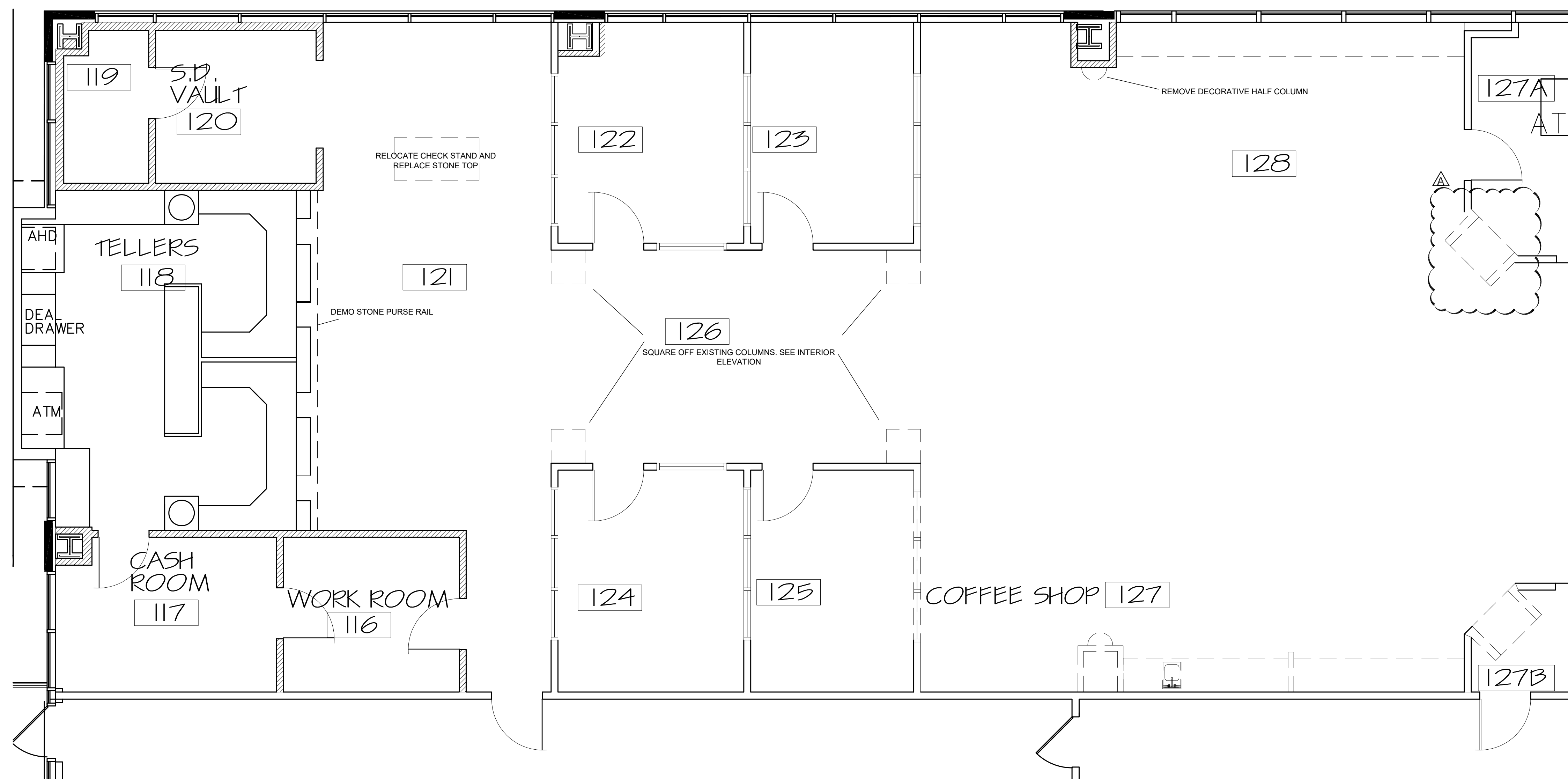


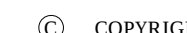


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D-1.01

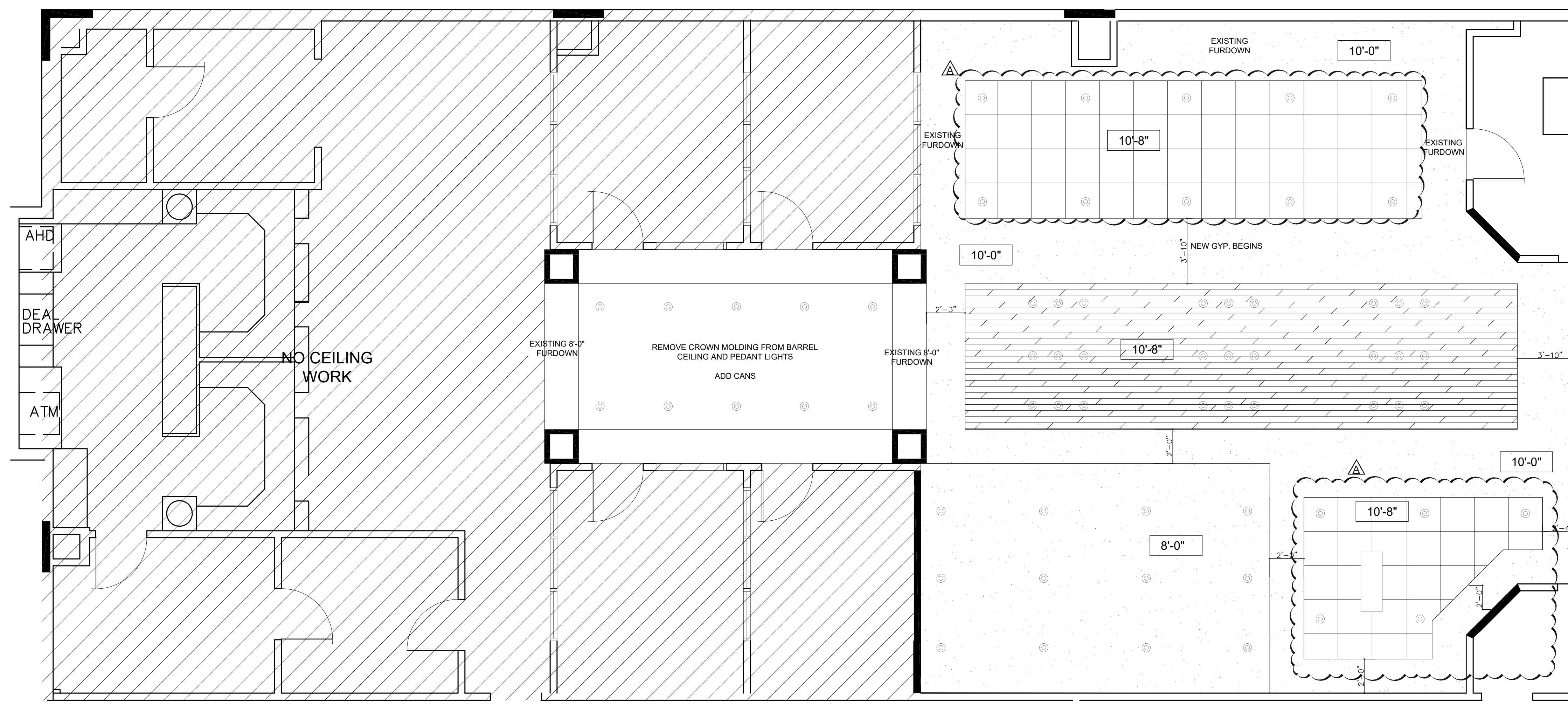
01 DEMO FLOOR PLAN
SCALE: 1/4"=1'-0"

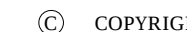




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01 RCP
SCALE: 1/4"=1'-0"



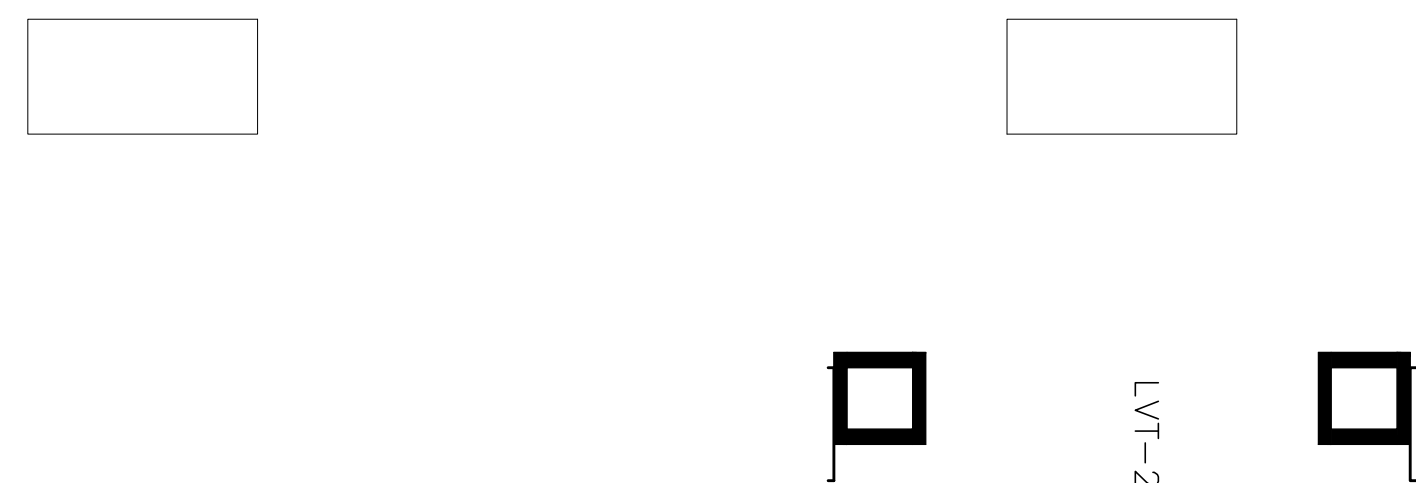


DESIGNED BY	BH	D-4.01
APPROVED BY		

01 DEMO RCP
SCALE: 1/4"=1'-0"

BH	D-4.01
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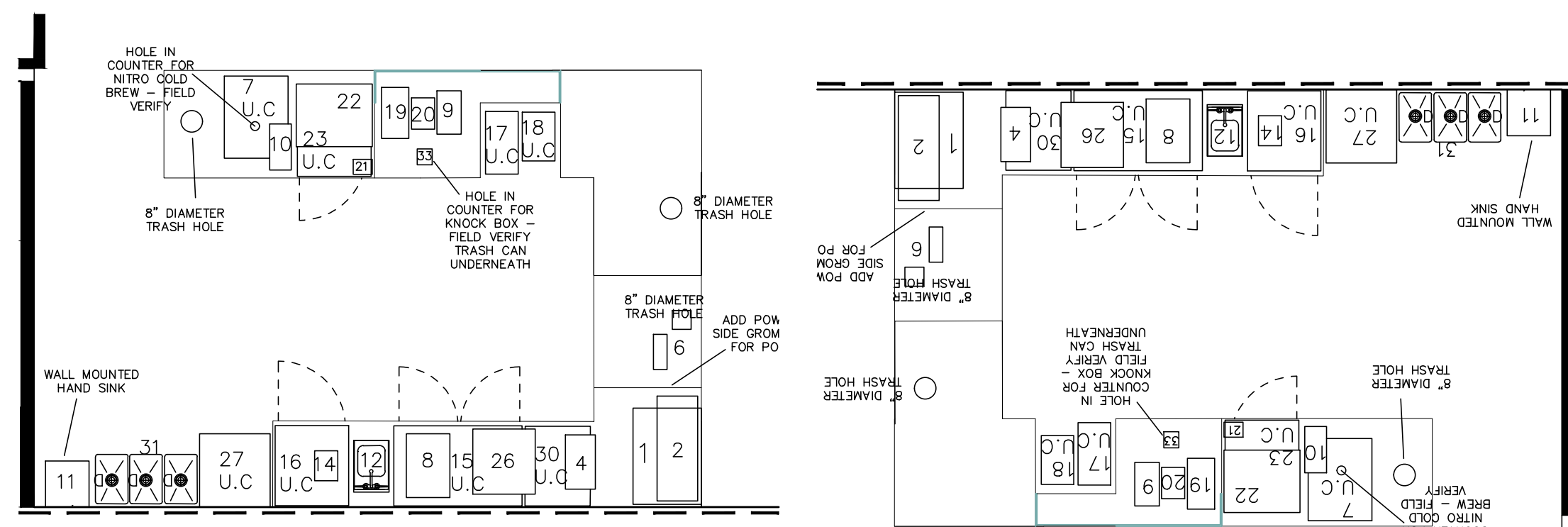
*BULLNOSE EDGE ON ALL STONE TOP EDGES FOR COFFEE BAR



08 CHECKSTAND
SCALE: 1/4"=1'-0"

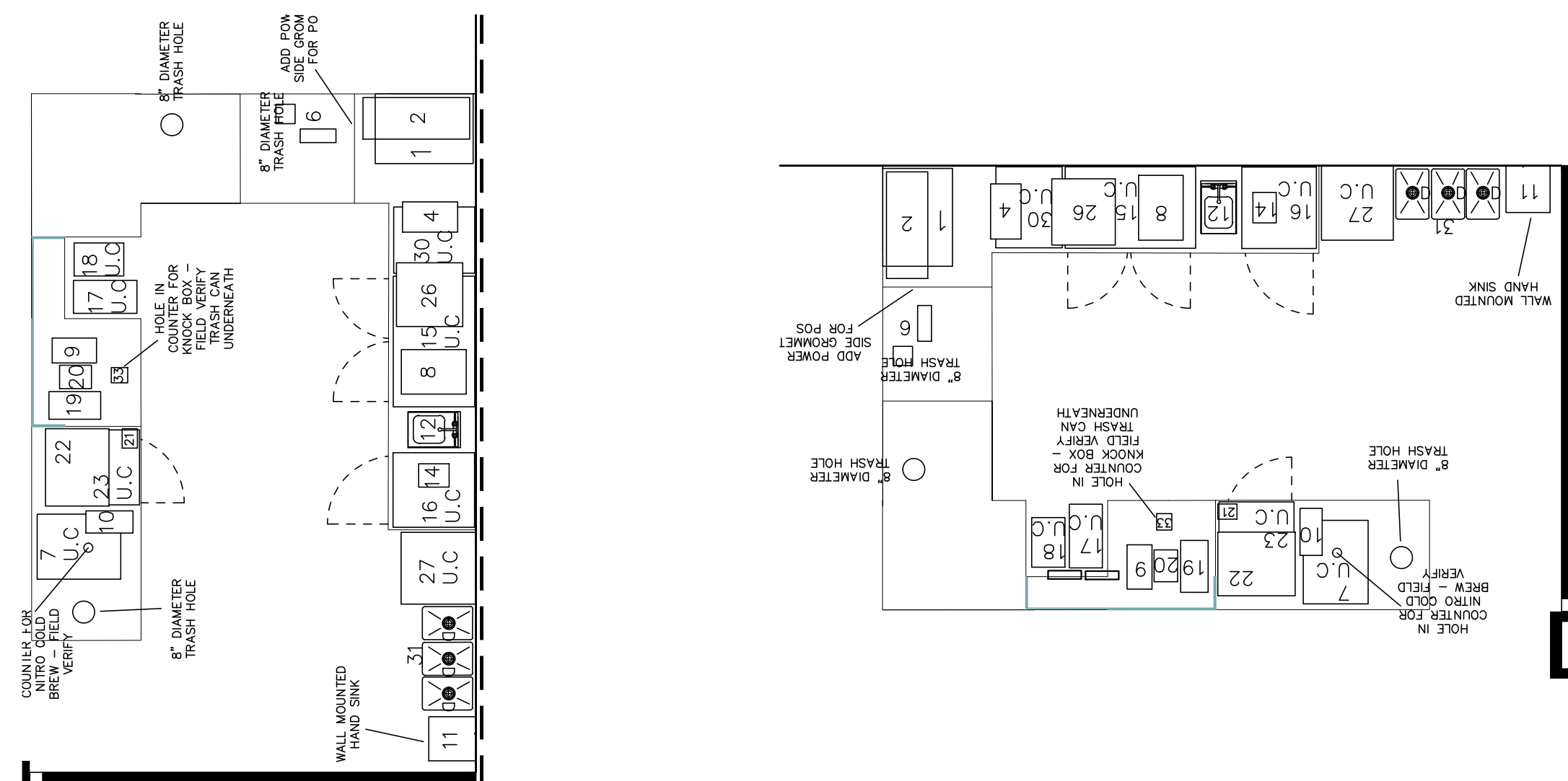
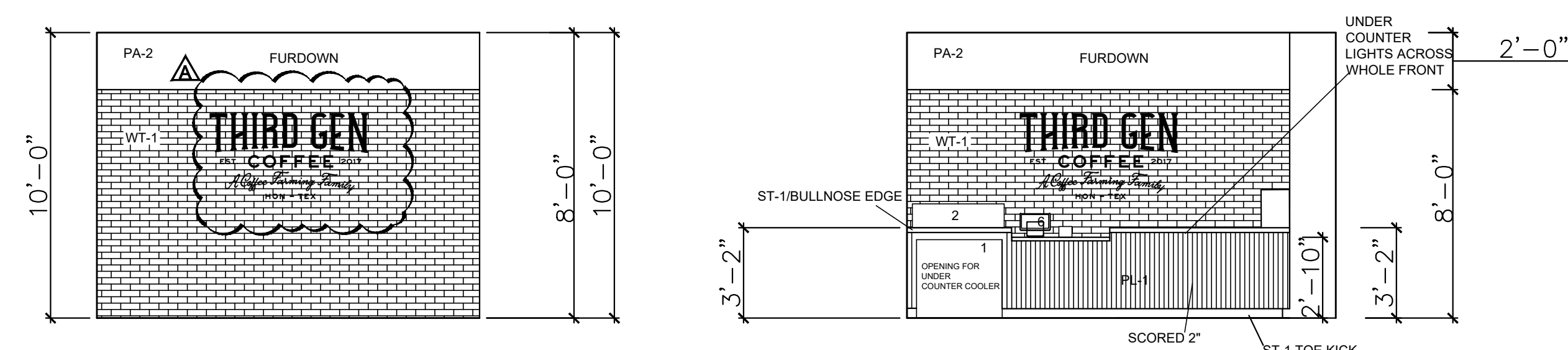
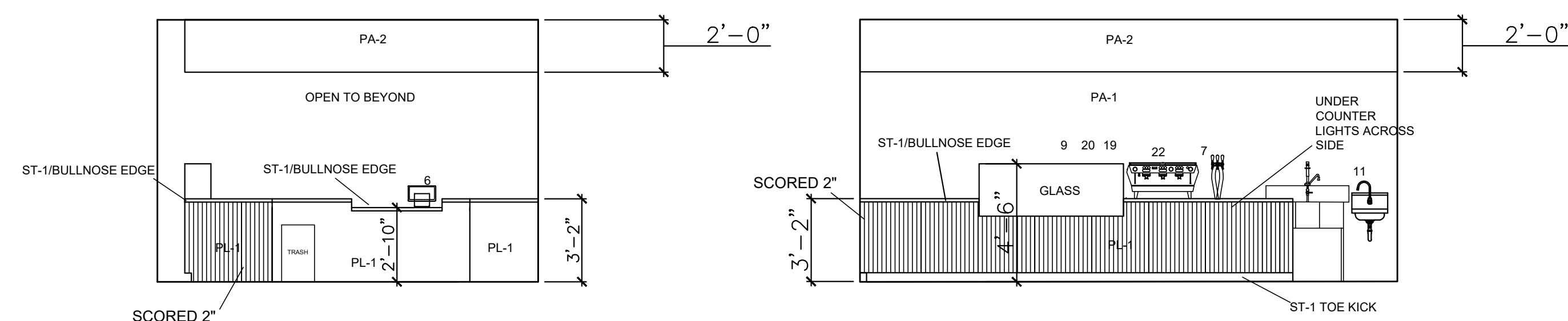
07 CORRIDOR 126- WEST
SCALE: 1/4"=1'-0"

06 TELLER LINE 118 - WEST
SCALE: 1/4"=1'-0"



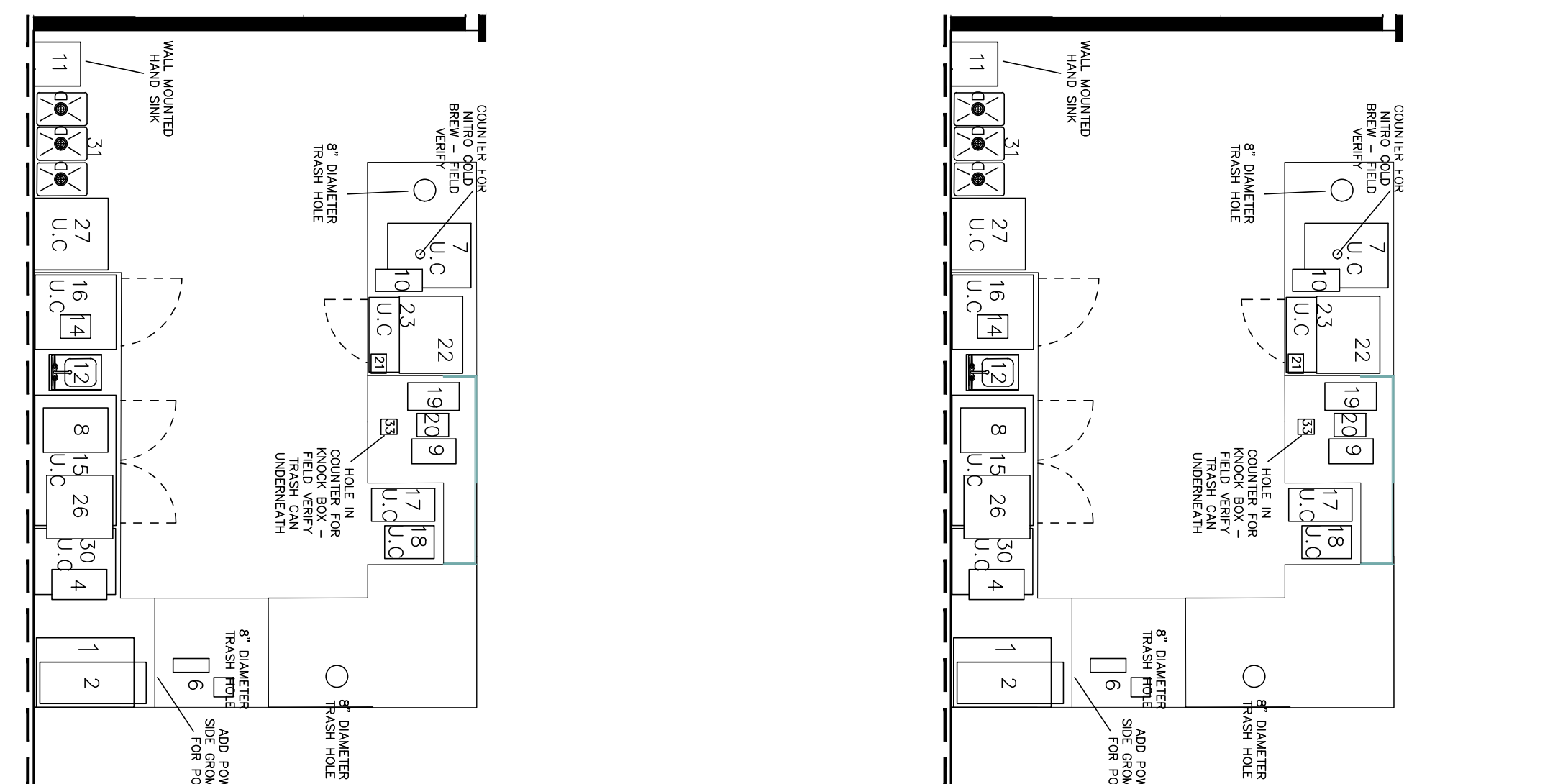
05 COFFEE BAR - NORTH
SCALE: 1/4"=1'-0"

04 COFFEE BAR - SOUTH
SCALE: 1/4"=1'-0"



03 COFFEE BAR - EAST
SCALE: 1/4"=1'-0"

02 COFFEE BAR - SOUTH
SCALE: 1/4"=1'-0"



01 COFFEE BAR - WEST
SCALE: 1/4"=1'-0"

01 COFFEE BAR - WEST
SCALE: 1/4"=1'-0"



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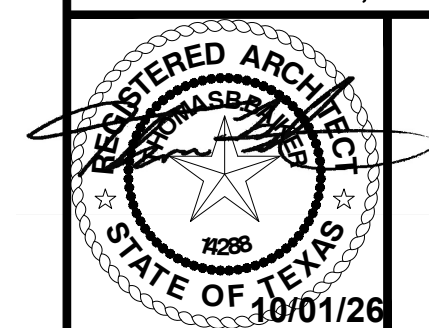
PROJECT NUMBER : 8995

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INTERIOR ELEVATIONS

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PLUMBING SPECIFICATIONS

DOMESTIC WATER PIPING - COPPER TUBE AND FITTINGS

- A. HARD COPPER TUBE: ASTM B 88, TYPE L (ASTM B 88M, TYPE B) WATER TUBE, DRAWN TEMPER.
- CAST-COPPER SOLDER-JOINT FITTINGS: ASME B16.12, PRESSURE FITTINGS.
 - WROUGHT-COPPER SOLDER-JOINT FITTINGS: ASME B16.22, WROUGHT-COPPER PRESSURE FITTINGS.
 - BRONZE FLANGES: ASME B16.24, CLASS 150, WITH SOLDER-JOINT ENDS.
 - COPPER UNIONS: MSS SP-123, CAST-COPPER-ALLOY, HEXAGONAL-STOCK BODY, WITH BALL-AND-SOCKET, METAL-TO-METAL SEATING SURFACES, AND SOLDER-JOINT OR THREADED ENDS.
- B. SOFT COPPER TUBE: ASTM B 88, TYPE K (ASTM B 88M, TYPE A) AND ASTM B 88, TYPE L (ASTM B 88M, TYPE B) WATER TUBE, ANNEALED TEMPER.
- COPPER SOLDER-JOINT FITTINGS: ASME B16.22, WROUGHT-COPPER PRESSURE FITTINGS, COPPER PRESSURE-SEAL-JOINT FITTINGS.
 - MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
 - WECO INC.
 - WECO PLUMBING AND HEATING SYSTEMS.
 - NPS 2 (DN 50) AND SMALLER: WROUGHT-COPPER FITTING WITH EPDM-RUBBER O-RING SEAL IN EACH END.
 - NPS 3 AND NPS 4 (DN 80 AND DN 100): CAST-BRONZE OR WROUGHT-COPPER FITTING WITH EPDM-RUBBER O-RING SEAL IN EACH END.
- C. DIELECTRIC FITTINGS
- GENERAL REQUIREMENTS: ASSEMBLY OF COPPER ALLOY AND FERROUS MATERIALS WITH SEPARATING NONCONDUCTIVE INSULATING MATERIAL. INCLUDE END CONNECTIONS COMPATIBLE WITH PIPES TO BE JOINED.
- D. DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF DOMESTIC WATER PIPING. INDICATED LOCATIONS AND ARRANGEMENTS ARE USED TO SIZE PIPE AND CALCULATE FRICTION LOSS, EXPANSION, AND OTHER DESIGN CONSIDERATIONS. INSTALL PIPING AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON COORDINATION DRAWINGS.
- E. INSTALL COPPER TUBING UNDER BUILDING SLAB ACCORDING TO ODA'S "COPPER TUBE HANDBOOK."
- F. INSTALL SHUTOFF VALVE IMMEDIATELY UPSTREAM OF EACH DIELECTRIC FITTING.
- G. INSTALL DOMESTIC WATER PIPING LEVEL WITH 0.125 PERCENT SLOPE DOWNWARD TOWARD DRAIN AND FLUME.
- H. INSTALL PIPING CONCEALED FROM VIEW AND PROTECTED FROM PHYSICAL CONTACT BY BUILDING OCCUPANTS UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS.
- I. INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE.
- J. INSTALL PIPING ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL AND COORDINATE WITH OTHER SERVICES OCCUPYING THAT SPACE.
- K. INSTALL PIPING ADJACENT TO EQUIPMENT AND SPECIALTIES TO ALLOW SERVICE AND MAINTENANCE.
- L. INSTALL PIPING TO PERMIT VALVE SERVICING.
- M. INSTALL NIPPLES, UNIONS, SPECIAL FITTINGS, AND VALVES WITH PRESSURE RATINGS THE SAME AS OR HIGHER THAN SYSTEM PRESSURE RATING USED IN APPLICATIONS BELOW UNLESS OTHERWISE INDICATED.
- N. INSTALL PIPING FREE OF SACS AND BENDS.
- O. INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS.
- P. INSTALL UNIONS IN COPPER TUBING AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT, MACHINE, AND SPECIALTY.
- Q. INSTALL SLEEVES FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
- R. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
- S. INSTALL SHUTOFF VALVE CLOSE TO WATER MAIN ON EACH BRANCH AND RISER SERVING PLUMBING FIXTURES OR EQUIPMENT, ON EACH WATER SUPPLY TO EQUIPMENT, AND ON EACH WATER SUPPLY TO PLUMBING FIXTURES THAT DO NOT HAVE SUPPLY STOPS. USE BALL VALVES FOR PIPING NPS 2 (DN 50) AND SMALLER. USE GATE VALVES FOR PIPING NPS 2-1/2 (DN 65) AND LARGER.
- T. HANGER AND SUPPORT INSTALLATION: SUPPORT VERTICAL PIPING AND TUBING AT BASE AND AT EACH FLOOR.
- U. ROOF DIAMETER MAY BE REDUCED ONE SIZE FOR DOUBLE-ROOF HANGERS, TO A MINIMUM OF 1/8 INCH (3 MM).
- V. INSTALL HANGERS FOR COPPER TUBING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROOF DIAMETERS:
- NPS 3/4 (DN 20) AND SMALLER: 60 INCHES (1500 MM) WITH 3/8-INCH (10-MM) ROD.
 - NPS 1 AND NPS 1-1/4 (DN 25 AND DN 32): 72 INCHES (1800 MM) WITH 3/8-INCH (10-MM) ROD.
 - NPS 1-1/2 AND NPS 2 (DN 40 AND DN 50): 96 INCHES (2400 MM) WITH 3/8-INCH (10-MM) ROD.
 - NPS 2-1/2 (DN 65): 108 INCHES (2700 MM) WITH 1/2-INCH (13-MM) ROD.
 - NPS 3 TO NPS 5 (DN 80 TO DN 125): 10 FEET (3 M) WITH 1/2-INCH (13-MM) ROD.
 - NPS 6 (DN 150): 10 FEET (3 M) WITH 5/8-INCH (16-MM) ROD.
 - NPS 8 (DN 200): 10 FEET (3 M) WITH 3/4-INCH (19-MM) ROD.
- W. INSTALL SUPPORTS FOR VERTICAL COPPER TUBING EVERY 10 FEET (3 M).
- X. FIELD QUALITY CONTROL PERFORM TESTS AND INSPECTIONS.
- DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT HAS BEEN INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.
 - DURING INSTALLATION, NOTIFY AUTHORITIES HAVING JURISDICTION AT LEAST ONE DAY BEFORE INSPECTION MUST BE MADE. PERFORM TESTS SPECIFIED BELOW IN PRESENCE OF AUTHORITIES HAVING JURISDICTION.
 - ROUGH-IN INSPECTION: ARRANGE FOR INSPECTION OF PIPING BEFORE CONCEALING OR CLOSING-IN AFTER ROUGH-IN AND BEFORE SETTING FIXTURES.
 - FINAL INSPECTION: ARRANGE FOR FINAL INSPECTION FOR AUTHORITIES HAVING JURISDICTION TO OBSERVE TESTS SPECIFIED BELOW AND TO ENSURE COMPLIANCE WITH REQUIREMENTS.
 - REINSPECTION: IF AUTHORITIES HAVING JURISDICTION FIND THAT PIPING WILL NOT PASS TESTS OR INSPECTIONS, MAKE REQUIRED CORRECTIONS AND ARRANGE FOR REINSPECTION.
 - REPORTS: PREPARE INSPECTION REPORTS AND HAVE THEM SIGNED BY AUTHORITIES HAVING JURISDICTION.
- Y. PIPING TESTS
- FILL DOMESTIC WATER PIPING. CHECK COMPONENTS TO DETERMINE THAT THEY ARE NOT AIR BOUND AND THAT PIPING IS FULL OF WATER.
 - TEST FOR LEAKS AND DEFECTS IN NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED. IF TESTING IS PERFORMED IN SEGMENTS, SUBMIT A SEPARATE REPORT FOR EACH TEST, COMPLETE WITH DIAGRAM OF PORTION OF PIPING TESTED.
 - LEAVE NEW, ALTERED, EXTENDED, OR REPLACED DOMESTIC WATER PIPING UNCOVERED AND UNCONCEALED UNTIL IT HAS BEEN TESTED AND APPROVED. EXPOSE WORK THAT WAS COVERED OR CONCEALED BEFORE IT WAS TESTED.
 - CAP AND SUBJECT PIPING TO STATIC WATER PRESSURE OF 50 PSIG (345 KPA) ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED.
 - REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED.
 - PREPARE REPORTS FOR TESTS AND FOR CORRECTIVE ACTION REQUIRED.
- Z. DOMESTIC WATER PIPING WILL BE CONSIDERED DEFECTIVE IF IT DOES NOT PASS TESTS AND INSPECTIONS.
- AA. PREPARE TEST AND INSPECTION REPORTS.
- AB. CLEAN AND DISINFECT POTABLE AND NON-POTABLE DOMESTIC WATER PIPING AS FOLLOWS:
- PURGE NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED BEFORE USING.
 - USE PURGING AND DISINFECTING PROCEDURES PRESCRIBED BY AUTHORITIES HAVING JURISDICTION. IF METHODS ARE NOT PRESCRIBED, USE PROCEDURES DESCRIBED IN EITHER AWWA C651 OR AWWA C652 OF FELLOW PROCEDURES DESCRIBED BELOW.
 - FLUSH PIPING SYSTEM WITH CLEAN, POTABLE WATER UNTIL DIRTY WATER DOES NOT APPEAR AT OUTLETS.
 - FLUSH SYSTEM WITH CLEAN, POTABLE WATER UNTIL NO CHLORINE IS IN WATER COMING FROM SYSTEM AFTER THE STANDING TIME.
 - SUBMIT WATER SAMPLES IN STERILE BOTTLES TO AUTHORITIES HAVING JURISDICTION. REPEAT PROCEDURES IF BIOLOGICAL EXAMINATION SHOWS CONTAMINATION.
- AC. UNDER-BUILDING-SLAB, DOMESTIC WATER PIPING NPS 2 (DN 50) AND SMALLER, SHALL BE THE FOLLOWING:
- SOFT COPPER TUBE, ASTM B 88, TYPE L (ASTM B 88M, TYPE B); WROUGHT-COPPER SOLDER-JOINT FITTINGS, AND SOLDERED JOINTS.
 - COPPER PRESS FITTINGS, AT THE CONTRACTOR'S OPTION ON THE DOMESTIC HOT AND COLD WATER PIPING, COULDN'G COOL CONDENSATE DRAINING IN COPPER LINES 1/2" DIAMETER UP THROUGH 2-1/2" DIAMETER MECHANICAL PRESS (PRO-PRESS) JOINTS AND FITTINGS INCLUDING THE SMART CONNECTION FEATURE OPTION TO ENSURE THAT UNPRESSURED FITTING WILL EASILY AND RELIABLY DETECTED DURING PRESSURE TESTING AS MANUFACTURED BY WECO, WECO AND AVALLO PRESS WILL BE ACCEPTABLE. PROVIDED THE FITTING MANUFACTURER'S RECOMMENDED CRIMPING TOOL, WITH PROPERLY SIZED REPLACEABLE JAWS ARE UTILIZED RIGID TOOL COMPANY.
 - INSTALLATION WILL BE IN ACCORDANCE WITH MANUFACTURER'S APPROVED PUBLISHED GUIDELINES.
- AD. ABOVEGROUND DOMESTIC WATER PIPING NPS 2-1/2 TO NPS 4 (DN 65 TO DN 100), SHALL BE ONE OF THE FOLLOWING:
- HARD COPPER TUBE, ASTM B 88, TYPE L (ASTM B 88M, TYPE B); CAST-COPPER SOLDER-JOINT FITTINGS, AND SOLDERED JOINTS.
 - GALVANIZED-STEEL PIPE, GROOVED-JOINT, GALVANIZED-STEEL-PIPE APPURTENANCES, AND GROOVED JOINTS.
- AE. DRAWINGS INDICATE VALVE TYPES TO BE USED. WHERE SPECIFIC VALVE TYPES ARE NOT INDICATED, THE FOLLOWING REQUIREMENTS APPLY:
- SHUTOFF DUTY: USE BALL VALVES FOR PIPING NPS 2 (DN 50) AND SMALLER. USE GATE VALVES WITH FLANGED ENDS FOR PIPING NPS 2-1/2 (DN 65) AND LARGER.
 - THROTTLING DUTY: USE BALL VALVES FOR PIPING NPS 2 (DN 50) AND SMALLER. USE BALL VALVES WITH FLANGED ENDS FOR PIPING NPS 2-1/2 (DN 65) AND LARGER.
 - HOT-WATER CIRCULATION PIPING, BALANCING VALVE, CALIBRATED BALANCING VALVES.
 - DRAIN DUTY: HOSE-END DRAIN VALVES.
- AF. USE CHECK VALVES TO MAINTAIN CORRECT DIRECTION OF DOMESTIC WATER FLOW TO AND FROM EQUIPMENT.
- AG. IRON GROOVED-END VALVES MAY BE USED WITH GROOVED-END PIPING.

- AK. WATER HAMMER ARRESTERS
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
 - AMTROL, INC.
 - JOSAM COMPANY.
 - MIFAB, INC.
 - SILOX CHIEF MANUFACTURING COMPANY, INC.
 - SMITH, JAY R. WFG. CO.; DIVISION OF SMITH INDUSTRIES, INC.
 - TYLER PIPE, WADE DIV.
 - HATS DRAMMAGE PRODUCTS INC.
 - STANDARD: ASSE 101 OR PDH-W201.
 - TYPE: COPPER SUBE WITH PISTON.
 - SIZE: ASSE 100, SIZES AA AND A THROUGH F OR PDH-W 201, SIZES A THROUGH F.

- INSTALL WATER HAMMER ARRESTERS IN WATER PIPING ACCORDING TO PDH-W 201.
- INSTALL AIR VENTS AT HIGH POINTS OF WATER PIPING. INSTALL DRAIN PIPING AND DISCHARGE OUT FLOOR DRAIN.

SANITARY WASTE AND STORM PIPING

- A. HUB-AND-SPOOT, CAST-IRON SOIL PIPE AND FITTINGS
- PIPE AND FITTINGS: ASTM A 74, SERVICE CLASS(ES).
- GASKETS: ASTM C 564, RUBBER.
- B. HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS
- PIPE AND FITTINGS: ASTM A 888 OR CISPI 301.
- STANDARD: ASME A112.36.2M FOR THREADED, ADJUSTABLE HOUSING OPERATION.
- SIZE: SAME AS CONNECTED DRAINAGE PIPING.
- CLOSURE: COUNTERSUNK PLUG.
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
- AMCO-HUSKY, SD-4000.
 - MIFAB, INC.
 - MISSOUR RUBBER COMPANY; A DIVISION OF MCP INDUSTRIES, INC.
 - AMP-ALL CORP.
 - STANDARDS: ASTM C 1277 AND CISPI 310.
 - DESCRIPTION: CAST-IRON STEEL CORRUGATED SHIELD WITH STAINLESS-STEEL BANDS AND TIGHTENING DEVICES; AND ASTM C 564, RUBBER SLEEVE WITH INTEGRAL, CENTER PIPE STOP.
- C. DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF PIPING SYSTEMS. INDICATED LOCATIONS AND ARRANGEMENTS WERE USED TO SIZE PIPE AND CALCULATE FRICTION LOSS, EXPANSION, PUMP SIZING, AND OTHER DESIGN CONSIDERATIONS. INSTALL PIPING AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON COORDINATION DRAWINGS.
- D. INSTALL PIPING IN CONCEALED LOCATIONS UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS.
- E. INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE.
- F. INSTALL PIPING ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL AND COORDINATE WITH OTHER SERVICES OCCUPYING THAT SPACE.
- G. INSTALL PIPING TO PERMIT VALVE SERVICING.
- H. INSTALL PIPING FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS.
- I. INSTALL PIPING TO ALLOW APPLICATION OF INSULATION.
- J. MAKE CHANGES IN DIRECTION FOR SOIL AND WASTE DRAINAGE AND VENT PIPING USING APPROPRIATE BRANCHES, BENDS, AND LONG-SWEEP BENDS. SANITARY TESTS AND SHORT-SWEEP 1/4 BENDS MAY BE USED ON VERTICAL STACKS IF CHANGE IN DIRECTION OF FLOW IS FROM HORIZONTAL TO VERTICAL. USE LONG-TURN, DOUBLE Y-BRANCH AND 1/8-BEND FITTINGS IF TWO FITTINGS ARE INSTALLED BACK TO BACK OR SIDE BY SIDE WITH COMMON DRAIN PIPE. STRAIGHT TEES, ELBOWS, AND CROSSES MAY BE USED ON VENT LINES. DO NOT CHANGE DIRECTION OF FLOW MORE THAN 90 DEGREES. USE PROPER SIZE OF STANDARD INCREASERS AND REDUCERS IF PIPES OF DIFFERENT SIZES ARE CONNECTED.
- L. SIZE OF DRAINAGE PIPING IN DIRECTION OF FLOW IS PROHIBITED.
- LAY BURIED BUILDING DRAINAGE PIPING BEGINNING AT LOW POINT OF EACH SYSTEM. INSTALL TIE TO GRADES AND ALIGNMENT INDICATED, WITH UNBROKEN CONTINUITY OF INVERT. PLACE END OF PIPING UPSTREAM. INSTALL REQUIRED GASKETS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS FOR USE OF LUBRICANTS, CEMENTS, AND OTHER INSTALLATION REQUIREMENTS. MAINTAIN SWAB IN PIPING AND PULL PAST EACH JOINT AS COMPLETED.
- N. INSTALL SOIL AND WASTE DRAINAGE AND VENT PIPING AT THE FOLLOWING MINIMUM SLOPES UNLESS OTHERWISE INDICATED:
- BUILDING SANITARY DRAIN: 2 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 3 (DN 80) AND SMALLER; 1 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 4 (DN 100) AND LARGER.
 - HORIZONTAL SANITARY DRAINAGE PIPING: 1 PERCENT DOWNWARD IN DIRECTION OF FLOW.
 - VENT PIPING: 1 PERCENT DOWN TOWARD VERTICAL FIXTURE VENT OR TOWARD VENT STACK.
- O. INSTALL CAST-IRON PIPING ACCORDING TO CISPI'S "CAST IRON SOIL PIPE AND FITTINGS HANDBOOK," CHAPTER IV, "INSTALLATION OF CAST IRON SOIL PIPE AND FITTINGS."
- P. DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT IS INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.
- Q. INSTALL SLEEVES FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
- R. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
- S. HANGER AND SUPPORT INSTALLATION
- COMPLY WITH REQUIREMENTS FOR HANGER AND SUPPORT DEVICES AND INSTALLATION. COMPLY WITH REQUIREMENTS FOR PIPING HANGERS FOR HORIZONTAL PIPING IN CORROSSIVE ENVIRONMENTS.
- INSTALL STAINLESS-STEEL PIPE HANGERS FOR HORIZONTAL PIPING IN CORROSSIVE ENVIRONMENTS.
 - INSTALL CARBON-STEEL PIPE SUPPORT CLAMPS FOR VERTICAL PIPING IN NONCORROSSIVE ENVIRONMENTS.
 - INSTALL STAINLESS-STEEL PIPE SUPPORT CLAMPS FOR VERTICAL PIPING IN CORROSSIVE ENVIRONMENTS.
 - VERTICAL PIPING: MSS TYPE 8 OR TYPE 42, CLAMPS.
 - INSTALL INDIVIDUAL, STRAIGHT, HORIZONTAL PIPING RUNS:
 - 100 FEET (30 M) AND LESS: MSS TYPE 1, ADJUSTABLE, STEEL CLEVIS HANGERS.
 - LONGER THAN 100 FEET (30 M): MSS TYPE 4S, ADJUSTABLE ROLLER HANGERS.
 - LONGER THAN 100 FEET (30 M) IF INDICATED: MSS TYPE 4S, SPRING CUSHION ROLLS.
 - MULTIPLE, STRAIGHT, HORIZONTAL PIPING RUNS 100 FEET (30 M) OR LONGER: MSS TYPE 4A, PIPE ROLLS.
 - BASE OF VERTICAL PIPING: MSS TYPE 52, SPRING HANGERS.
- T. SUPPORT HORIZONTAL PIPING AND TUBING WITHIN 12 INCHES (300 MM) OF EACH FITTING, VALVE, AND COUPLING.
- U. SUPPORT VERTICAL PIPING AND TUBING AT BASE AND AT EACH FLOOR.
- V. ROOF DIAMETER MAY BE REDUCED ONE SIZE FOR DOUBLE-ROOF HANGERS, WITH 3/8-INCH (10-MM) MINIMUM ROOF DIAMETERS.
- W. INSTALL HANGERS FOR CAST-IRON SOIL PIPING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROOF DIAMETERS:
- NPS 1-1/2 AND NPS 2 (DN 40 AND DN 50): 60 INCHES (1500 MM) WITH 3/8-INCH (10-MM) ROD.
 - NPS 3 (DN 80): 60 INCHES (1500 MM) WITH 1/2-INCH (13-MM) ROD.
 - NPS 4 AND NPS 5 (DN 100 AND DN 125): 60 INCHES (1500 MM) WITH 5/8-INCH (16-MM) ROD.
 - NPS 6 AND NPS 8 (DN 150 AND DN 200): 60 INCHES (1500 MM) WITH 3/4-INCH (19-MM) ROD.
- X. INSTALL SUPPORTS FOR VERTICAL CAST-IRON SOIL PIPING EVERY 15 FEET (4.5 M).
- Y. DURING INSTALLATION, NOTIFY AUTHORITIES HAVING JURISDICTION AT LEAST 24 HOURS BEFORE INSPECTION MUST BE MADE. PERFORM TESTS SPECIFIED BELOW IN PRESENCE OF AUTHORITIES HAVING JURISDICTION.
- Z. ROUGH-IN INSPECTION: ARRANGE FOR INSPECTION OF PIPING BEFORE CONCEALING OR CLOSING-IN AFTER ROUGH-IN AND BEFORE SETTING FIXTURES.
- FINAL INSPECTION: ARRANGE FOR FINAL INSPECTION FOR AUTHORITIES HAVING JURISDICTION TO OBSERVE TESTS SPECIFIED BELOW AND TO ENSURE COMPLIANCE WITH REQUIREMENTS.
- REINSPECTION: IF AUTHORITIES HAVING JURISDICTION FIND THAT PIPING WILL NOT PASS TESTS OR INSPECTIONS, MAKE REQUIRED CORRECTIONS AND ARRANGE FOR REINSPECTION.
- REPORTS: PREPARE INSPECTION REPORTS AND HAVE THEM SIGNED BY AUTHORITIES HAVING JURISDICTION.
- AA. TEST SANITARY DRAINAGE AND VENT PIPING ACCORDING TO PROCEDURES OF AUTHORITIES HAVING JURISDICTION OR, IN ABSENCE OF PUBLISHED PROCEDURES, AS FOLLOWS:
- TEST FOR LEAKS AND DEFECTS IN NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED. IF TESTING IS PERFORMED IN SEGMENTS, SUBMIT A SEPARATE REPORT FOR EACH TEST, COMPLETE WITH DIAGRAM OF PORTION OF PIPING TESTED.
 - LEAVE UNCOVERED AND UNCONCEALED NEW, ALTERED, EXTENDED, OR REPLACED SANITARY DRAINAGE AND VENT PIPING UNTIL IT HAS BEEN TESTED AND APPROVED. EXPOSE WORK THAT WAS COVERED OR CONCEALED BEFORE IT WAS TESTED.
 - ROUGH-IN INSPECTION: TEST PROCEDURES: TEST DRAINAGE AND VENT PIPING EXCEPT THROTTLING VALVES. IN ADDITION TO OLD DUSTERS OR REMOVING THEM, PROTECTION SHOULD BE RESTORED EACH NIGHT SO THAT AS POSSIBLE, THE FIRE DEPARTMENT SHALL BE NOTIFIED AS TO CONDITIONS.
 - FINAL INSPECTION: TEST PROCEDURES: AFTER PLUMBING FIXTURES HAVE BEEN SET AND TRAPS FILLED WITH WATER, TEST CONNECTIONS AND PROVE THEY ARE GASTIGHT AND WATERIGHT. PLUG VENT-STACK OPENINGS ON ROOF AND BUILDING DRAINS WHERE THEY LEAVE BUILDING. INTRODUCE AIR INTO PIPING SYSTEM EQUAL TO PRESSURE OF 1-INCH W.G. (250 PA). USE U-TUBE OR MANOMETER INSERTED IN TRAP OF WATER CLOSET TO MEASURE THIS PRESSURE. AIR PRESSURE MUST REMAIN CONSTANT WITHOUT INTRODUCING ADDITIONAL AIR THROUGHOUT PERIOD OF INSPECTION. INSPECT PLUMBING FIXTURE CONNECTIONS FOR GAS AND WATER LEAKS.
 - REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING, OR PORTION THEREOF, UNTIL SATISFACTORY RESULTS ARE OBTAINED.
- AB. CAP AND SUBJECT PIPING TO STATIC-WATER PRESSURE OF 50 PSIG (345 KPA) ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED.
- AC. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING, OR PORTION THEREOF, UNTIL SATISFACTORY RESULTS ARE OBTAINED.
- AD. PREPARE REPORTS FOR TESTS AND REQUIRED CORRECTIVE ACTION.

- AF. ABOVEGROUND, SOIL AND WASTE PIPING 6" AND SMALLER SHALL BE ANY OF THE FOLLOWING:
- SERVICE CLASS, CAST-IRON SOIL PIPE AND FITTINGS; GASKETS, AND GASKETED JOINTS.
 - HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS HEAVY-DUTY HUBLESS-PIPING COUPLINGS, AND COUPLED JOINTS.

- AG. ABOVEGROUND, SOIL AND WASTE PIPING 6" AND LARGER SHALL BE ANY OF THE FOLLOWING:
- SERVICE WEIGHT(S) HUB AND SPOOT CAST IRON SOIL PIPE FITTINGS
 - CLEANOUTS
- AH. ABOVEGROUND, VENT PIPING 6" AND SMALLER SHALL BE ANY OF THE FOLLOWING:
- HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS; CISPI HUBLESS-PIPING COUPLINGS; AND COUPLED JOINTS.

- AI. ABOVEGROUND, VENT PIPING 6" AND LARGER SHALL BE ANY OF THE FOLLOWING:
- SERVICE CLASS, CAST-IRON SOIL PIPE AND FITTINGS; GASKETS, AND GASKETED JOINTS.
 - SIZE: ASSE 100, SIZES AA AND A THROUGH F OR PDH-W 201, SIZES A THROUGH F.
- AJ. UNDERGROUND, SOIL, WASTE, AND VENT PIPING 15" AND SMALLER SHALL BE ANY OF THE FOLLOWING:
- SERVICE CLASS, CAST-IRON SOIL PIPE AND FITTINGS; GASKETS, AND GASKETED JOINTS.
 - SOLID WALL PVC PIPE, PVC SOCKET FITTINGS, AND SOLVENT-CEMENTED JOINTS.

CLEANOUTS

- A. EXPOSED METAL CLEANOUTS
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
- JOSAM COMPANY; JOSAM DIV.
 - MIFAB, INC.
 - SMITH, JAY R. WFG. CO.; DIVISION OF SMITH INDUSTRIES, INC.
 - TYLER PIPE, WADE DIV.
 - ZURN PLUMBING PRODUCTS GROUP: SPECIFICATION DRAINAGE OPERATION. STANDARD: ASME A112.36.2M FOR THREADED, ADJUSTABLE HOUSING OPERATION. SIZE: SAME AS CONNECTED DRAINAGE PIPING. BODY MATERIAL: HUB-AND-SPOOT, CAST-IRON SOIL PIPE 1-BRANCH AS REQUIRED TO MATCH CONNECTED PIPING. CLOSURE: COUNTERSUNK PLUG WITH SEAL.
- B. METAL FLOOR CLEANOUTS
- MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
- JOSAM COMPANY; JOSAM DIV.
 - SMITH, JAY R. WFG. CO.; DIVISION OF SMITH INDUSTRIES, INC.
 - TYLER PIPE, WADE DIV.
 - A. MIFAB, INC.
- STANDARD: ASME A112.36.2M FOR THREADED, ADJUSTABLE HOUSING CLEANOUT. SIZE: SAME AS CONNECTED BRANCH.
- CONSIDERABLE HOUSING BRANCH PIPING AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON COORDINATION DRAWINGS.
- D. INSTALL PIPING IN CONCEALED LOCATIONS UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS.
- E. INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE.
- F. INSTALL PIPING ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL AND COORDINATE WITH OTHER SERVICES OCCUPYING THAT SPACE.
- G. INSTALL PIPING TO PERMIT VALVE SERVICING.
- H. INSTALL PIPING FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS.
- I. INSTALL PIPING TO ALLOW APPLICATION OF INSULATION.
- J. MAKE CHANGES IN DIRECTION FOR SOIL AND WASTE DRAINAGE AND VENT PIPING USING APPROPRIATE BRANCHES, BENDS, AND LONG-SWEEP BENDS. SANITARY TESTS AND SHORT-SWEEP 1/4 BENDS MAY BE USED ON VERTICAL STACKS IF CHANGE IN DIRECTION OF FLOW IS FROM HORIZONTAL TO VERTICAL. USE LONG-TURN, DOUBLE Y-BRANCH AND 1/8-BEND FITTINGS IF TWO FITTINGS ARE INSTALLED BACK TO BACK OR SIDE BY SIDE WITH COMMON DRAIN PIPE. STRAIGHT TEES, ELBOWS, AND CROSSSES MAY BE USED ON VENT LINES. DO NOT CHANGE DIRECTION OF FLOW MORE THAN 90 DEGREES. USE PROPER SIZE OF STANDARD INCREASERS AND REDUCERS IF PIPES OF DIFFERENT SIZES ARE CONNECTED.
- L. SIZE OF DRAINAGE PIPING IN DIRECTION OF FLOW IS PROHIBITED.
- LAY BURIED BUILDING DRAINAGE PIPING BEGINNING AT LOW POINT OF EACH SYSTEM. INSTALL TIE TO GRADES AND ALIGNMENT INDICATED, WITH UNBROKEN CONTINUITY OF INVERT. PLACE END OF PIPING UPSTREAM. INSTALL REQUIRED GASKETS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS FOR USE OF LUBRICANTS, CEMENTS, AND OTHER INSTALLATION REQUIREMENTS. MAINTAIN SWAB IN PIPING AND PULL PAST EACH JOINT AS COMPLETED.
- N. INSTALL SOIL AND WASTE DRAINAGE AND VENT PIPING AT THE FOLLOWING MINIMUM SLOPES UNLESS OTHERWISE INDICATED:
- BUILDING SANITARY DRAIN: 2 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 3 (DN 80) AND SMALLER; 1 PERCENT DOWNWARD IN DIRECTION OF FLOW FOR PIPING NPS 4 (DN 100) AND LARGER.
 - HORIZONTAL SANITARY DRAINAGE PIPING: 1 PERCENT DOWNWARD IN DIRECTION OF FLOW.
 - VENT PIPING: 1 PERCENT DOWN TOWARD VERTICAL FIXTURE VENT OR TOWARD VENT STACK.
- O. INSTALL CAST-IRON PIPING ACCORDING TO CISPI'S "CAST IRON SOIL PIPE AND FITTINGS HANDBOOK," CHAPTER IV, "INSTALLATION OF CAST IRON SOIL PIPE AND FITTINGS."
- P. DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT IS INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.
- Q. INSTALL SLEEVES FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
- R. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
- S. HANGER AND SUPPORT INSTALLATION
- COMPLY WITH REQUIREMENTS FOR HANGER AND SUPPORT DEVICES AND INSTALLATION. COMPLY WITH REQUIREMENTS FOR PIPING HANGERS FOR HORIZONTAL PIPING IN NONCORROSSIVE ENVIRONMENTS.
- INSTALL STAINLESS-STEEL PIPE HANGERS FOR HORIZONTAL PIPING IN CORROSSIVE ENVIRONMENTS.
 - INSTALL CARBON-STEEL PIPE SUPPORT CLAMPS FOR VERTICAL PIPING IN NONCORROSSIVE ENVIRONMENTS.
 - INSTALL STAINLESS-STEEL PIPE SUPPORT CLAMPS FOR VERTICAL PIPING IN CORROSSIVE ENVIRONMENTS.
 - VERTICAL PIPING: MSS TYPE 8 OR TYPE 42, CLAMPS.
 - INSTALL INDIVIDUAL, STRAIGHT, HORIZONTAL PIPING RUNS:
 - 100 FEET (30 M) AND LESS: MSS TYPE 1, ADJUSTABLE, STEEL CLEVIS HANGERS.
 - LONGER THAN 100 FEET (30 M): MSS TYPE 4S, ADJUSTABLE ROLLER HANGERS.
 - LONGER THAN 100 FEET (30 M) IF INDICATED: MSS TYPE 4S, SPRING CUSHION ROLLS.
 - MULTIPLE, STRAIGHT, HORIZONTAL PIPING RUNS 100 FEET (30 M) OR LONGER: MSS TYPE 4A, PIPE ROLLS.
 - BASE OF VERTICAL PIPING: MSS TYPE 52, SPRING HANGERS.
- T. SUPPORT HORIZONTAL PIPING AND TUBING WITHIN 12 INCHES (300 MM) OF EACH FITTING, VALVE, AND COUPLING.
- U. SUPPORT VERTICAL PIPING AND TUBING AT BASE AND AT EACH FLOOR.
- V. ROOF DIAMETER MAY BE REDUCED ONE SIZE FOR DOUBLE-ROOF HANGERS, WITH 3/8-INCH (10-MM) MINIMUM ROOF DIAMETERS.
- W. INSTALL HANGERS FOR CAST-IRON SOIL PIPING WITH THE FOLLOWING MAXIMUM HORIZONTAL SPACING AND MINIMUM ROOF DIAMETERS:
- NPS 1-1/2 AND NPS 2 (DN 40 AND DN 50): 60 INCHES (1500 MM) WITH 3/8-INCH (10-MM) ROD.
 - NPS 3 (DN 80): 60 INCHES (1500 MM) WITH 1/2-INCH (13-MM) ROD.
 - NPS 4 AND NPS 5 (DN 100 AND DN 125): 60 INCHES (1500 MM) WITH 5/8-INCH (16-MM) ROD.
 - NPS 6 AND NPS 8 (DN 150 AND DN 200): 60 INCHES (1500 MM) WITH 3/4-INCH (19-MM) ROD.
- X. INSTALL SUPPORTS FOR VERTICAL CAST-IRON SOIL PIPING EVERY 15 FEET (4.5 M).
- Y. DURING INSTALLATION, NOTIFY AUTHORITIES HAVING JURISDICTION AT LEAST 24 HOURS BEFORE INSPECTION MUST BE MADE. PERFORM TESTS SPECIFIED BELOW IN PRESENCE OF AUTHORITIES HAVING JURISDICTION.
- Z. ROUGH-IN INSPECTION: ARRANGE FOR INSPECTION OF PIPING BEFORE CONCEALING OR CLOSING-IN AFTER ROUGH-IN AND BEFORE SETTING FIXTURES.
- FINAL INSPECTION: ARRANGE FOR FINAL INSPECTION FOR AUTHORITIES HAVING JURISDICTION TO OBSERVE TESTS SPECIFIED BELOW AND TO ENSURE COMPLIANCE WITH REQUIREMENTS.
- REINSPECTION: IF AUTHORITIES HAVING JURISDICTION FIND THAT PIPING WILL NOT PASS TESTS OR INSPECTIONS, MAKE REQUIRED CORRECTIONS AND ARRANGE FOR REINSPECTION.
- REPORTS: PREPARE INSPECTION REPORTS AND HAVE THEM SIGNED BY AUTHORITIES HAVING JURISDICTION.
- AA. TEST SANITARY DRAINAGE AND VENT PIPING ACCORDING TO PROCEDURES OF AUTHORITIES HAVING JURISDICTION OR, IN ABSENCE OF PUBLISHED PROCEDURES, AS FOLLOWS:
- TEST FOR LEAKS AND DEFECTS IN NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED. IF TESTING IS PERFORMED IN SEGMENTS, SUBMIT A SEPARATE REPORT FOR EACH TEST, COMPLETE WITH DIAGRAM OF PORTION OF PIPING TESTED.
 - LEAVE UNCOVERED AND UNCONCEALED NEW, ALTERED, EXTENDED, OR REPLACED SANITARY DRAINAGE AND VENT PIPING UNTIL IT HAS BEEN TESTED AND APPROVED. EXPOSE WORK THAT WAS COVERED OR CONCEALED BEFORE IT WAS TESTED.
 - ROUGH-IN INSPECTION: TEST PROCEDURES: TEST DRAINAGE AND VENT PIPING EXCEPT THROTTLING VALVES. IN ADDITION TO OLD DUSTERS OR REMOVING THEM, PROTECTION SHOULD BE RESTORED EACH NIGHT SO THAT AS POSSIBLE, THE FIRE DEPARTMENT SHALL BE NOTIFIED AS TO CONDITIONS.
 - FINAL INSPECTION: TEST PROCEDURES: AFTER PLUMBING FIXTURES HAVE BEEN SET AND TRAPS FILLED WITH WATER, TEST CONNECTIONS AND PROVE THEY ARE GASTIGHT AND WATERIGHT. PLUG VENT-STACK OPENINGS ON ROOF AND BUILDING DRAINS WHERE THEY LEAVE BUILDING. INTRODUCE AIR INTO PIPING SYSTEM EQUAL TO PRESSURE OF 1-INCH W.G. (250 PA). USE U-TUBE OR MANOMETER INSERTED IN TRAP OF WATER CLOSET TO MEASURE THIS PRESSURE. AIR PRESSURE MUST REMAIN CONSTANT WITHOUT INTRODUCING ADDITIONAL AIR THROUGHOUT PERIOD OF INSPECTION. INSPECT PLUMBING FIXTURE CONNECTIONS FOR GAS AND WATER LEAKS.
 - REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING, OR PORTION THEREOF, UNTIL SATISFACTORY RESULTS ARE OBTAINED.
- AB. CAP AND SUBJECT PIPING TO STATIC-WATER PRESSURE OF 50 PSIG (345 KPA) ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED.
- AC. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING, OR PORTION THEREOF, UNTIL SATISFACTORY RESULTS ARE OBTAINED.
- AD. PREPARE REPORTS FOR TESTS AND REQUIRED CORRECTIVE ACTION.

PLUMBING PIPING INSULATION

- A. INSULATION MATERIALS
- PRODUCTS SHALL NOT CONTAIN ASBESTOS, LEAD, MERCURY, OR MERCURY COMPOUNDS. PRODUCTS THAT COME IN CONTACT WITH STAINLESS STEEL SHALL HAVE A LEACHABLE CHLORIDE CONTENT OF LESS THAN 50 PPM WHEN TESTED ACCORDING TO ASTM C 871.
- B. MINERAL INSULATION MATERIALS SHALL NOT USE CFC OR HCFC BLOWING AGENTS IN THE MANUFACTURING PROCESS.
- C. FIBER-GLASS, FIBERGLASS PIPE INSULATION
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE FOLLOWING [PROVIDE ONE OF THE FOLLOWING]:
- CESTAN TIED, CO.
 - JOHNS MANVILLE MICRO-K.
 - KNAS INSULATION 100-DEGREE KPIE INSULATION.
 - MANSON INSULATION INC. ALLEY-K.
 - OWENS CORNING, FIBERGLASS PIPE INSULATION.
 - THEMOSITING RESIN, COMPLY WITH ASTM C 547, TYPE I, GRADE A, WITH FACTORY-APPLIED ASJ-SSL, FACTORY-APPLIED JACKET REQUIREMENTS ARE SPECIFIED IN "FACTORY-APPLIED JACKETS" ARTICLE.
- D. MINERAL-FIBER INSULATING CEMENT: COMPLY WITH ASTM C 195.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE FOLLOWING:
- RAMCO INSULATION, INC.; SUPER-STK.
- E. MINERAL-FIBER, HYDRAULIC-SETTING INSULATING AND FINISHING CEMENT: COMPLY WITH ASTM C 449.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE FOLLOWING:
- RAMCO INSULATION, INC.; RAMCOITE 1200 AND QUIK-COTE.
- F. ADHESIVES
- MATERIALS SHALL BE COMPATIBLE WITH INSULATION MATERIALS, JACKETS, AND SUBSTRATES AND FOR BONDING INSULATION TO ITSELF AND TO SURFACES TO BE INSULATED, UNLESS OTHERWISE INDICATED.
- MINERAL-FIBER ADHESIVE: COMPLY WITH MIL-A-3316C, CLASS 2, GRADE A.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
- CHILDERS BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; CP-127.
 - EAGLE BRIDGES - MARATHON INDUSTRIES; 225.
 - FOSTER BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; 85-60/85-70.
 - MON-ECO INDUSTRIES, INC.; 22-25.
- FOR INDOOR APPLICATIONS, USE ADHESIVE THAT HAS A VOC CONTENT OF 80 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).
- G. ASJ ADHESIVE, AND FSJ JACKET ADHESIVE: COMPLY WITH MIL-A-3316C, CLASS 2, GRADE A FOR BONDING INSULATION JACKET LAP SEAMS AND JOINTS.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
- CHILDERS BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; CP-82.
 - EAGLE BRIDGES - MARATHON INDUSTRIES; 225.
 - FOSTER BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; 85-20.
 - MON-ECO INDUSTRIES, INC.; 22-25.
- FOR INDOOR APPLICATIONS, USE ADHESIVE THAT HAS A VOC CONTENT OF 50 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).
- H. MASTICS: MATERIALS SHALL BE COMPATIBLE WITH INSULATION MATERIALS, JACKETS, AND SUBSTRATES; COMPLY WITH MIL-PRF-19565G, TYPE II, FOR INDOOR APPLICATIONS, USE MASTICS THAT HAVE A VOC CONTENT OF 50 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).
- I. VAPOR-BARRIER MASTIC: SOLVENT BASED; SUITABLE FOR INDOOR USE ON BELOW-AMBIENT SURFACES.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
- CHILDERS BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; CP-30.
 - EAGLE BRIDGES - MARATHON INDUSTRIES; 501.
 - FOSTER BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; 30-35.
 - MON-ECO INDUSTRIES, INC.; 55-10.
- WATER-VAPOR PERMEANCE: ASTM F 1249, 0.05 PERM (0.03 METRIC PERM) AT 35-MIL (0.9-MM) DRY FILM THICKNESS.
- SERVICE TEMPERATURE RANGE: 0 TO 180 DEG F (MINUS 18 TO PLUS 82 DEG C).
- SOLIDS CONTENT: ASTM D 1644, 44 PERCENT BY VOLUME AND 62 PERCENT BY WEIGHT. COLOR: WHITE.
- J. JOINT SEALANTS
- ASJ FLASHING SEALANTS, AND VINYL, PVC, AND PVC JACKET FLASHING SEALANTS.
- PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
- CHILDERS BRAND, SPECIALTY CONSTRUCTION BRANDS, INC., A BUSINESS OF H. B. FULLER COMPANY; CP-76.
- MATERIALS SHALL BE COMPATIBLE WITH INSULATION MATERIALS, JACKETS, AND SUBSTRATES. FIRE- AND WATER-RESISTANT, FLEXIBLE, ELASTOMERIC SEALANT.
- SERVICE TEMPERATURE RANGE: MINUS 40 TO PLUS 250 DEG F (MINUS 40 TO PLUS 121 DEG C).
- COLOR: WHITE.
- FOR INDOOR APPLICATIONS, USE SEALANTS THAT HAVE A VOC CONTENT OF 4

ELECTRICAL SPECIFICATIONS	
ELECTRICAL CONDUCTORS A. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: ALCAN PRODUCTS CORPORATION; ALCAN CABLE DIVISION. AMERICAN INSULATED WIRE CORP.; A LEVITON COMPANY. GENERAL CABLE CORPORATION. SENAIOR WIRE & CABLE COMPANY. SOUTHWIRE COMPANY. COPPER CONDUCTORS: COMPLY WITH NEMA MC 70. MULTICONDUCTOR INSULATION: COMPLY WITH NEMA MC 70 FOR TYPES THW, THHN-THWN, XHHW, UF, USE, AND SO. MULTICONDUCTOR CABLE: COMPLY WITH NEMA MC 70 FOR ARMORED CABLE, TYPE AC, METAL-CLAD CABLE, TYPE MC, TYPE MC-B, AND TYPE USE WITH GROUND WIRE. B. CONDUCTOR MATERIAL APPLICATIONS: COPPER: SOLID FOR NO. 10 AWG AND SMALLER; STRANDED FOR NO. 8 AWG AND LARGER. C. CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS 1. SERVICE ENTRANCES: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY, TYPE SE OR USE. 2. EXPOSED FEEDERS: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY. 3. FEEDERS CONCEALED IN CEILINGS, WALLS, PARTITIONS, AND CRAWLSPACES: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY. 4. FEEDERS CONCEALED IN CONCRETE, BELOW SLABS-ON-GRADE, AND UNDERGROUND: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY. 5. FEEDERS INSTALLED BELOW RAISED FLOORING: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY. 6. EXPOSED BRANCH CIRCUITS, INCLUDING IN CRAWLSPACES: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY, METAL-CLAD CABLE, TYPE MC. 7. BRANCH CIRCUITS CONCEALED IN CEILINGS, WALLS, AND PARTITIONS: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY, ARMORED CABLE, TYPE AC, METAL-CLAD CABLE, TYPE MC. 8. BRANCH CIRCUITS CONCEALED IN CONCRETE, BELOW SLABS-ON-GRADE, AND UNDERGROUND: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY. 9. BRANCH CIRCUITS INSTALLED BELOW RAISED FLOORING: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY OR ARMORED CABLE, TYPE AC, METAL-CLAD CABLE, TYPE MC. 10. BRANCH CIRCUITS INSTALLED IN PATIENT CARE AREAS: TYPE HCP-HCF AND AC-HOF WITH ASSEMBLY CERTIFIED AS AN EQUIPMENT GROUNDING CONDUCTOR AND A GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR CONNECTED TO ALL RECEPTABLES, METALLIC BOXES CONTAINING RECEPTABLES, AND ALL METALLIC EQUIPMENT CASINGS. GROUNDING A. INSULATED CONDUCTORS: COPPER WIRE OR CABLE INSULATED FOR 600 V UNLESS OTHERWISE REQUIRED BY APPLICABLE CODE OR AUTHORITIES HAVING JURISDICTION. B. BARE COPPER CONDUCTORS: 1. SOLID CONDUCTORS: ASTM B 3. 2. STRANDED CONDUCTORS: ASTM B 3. 3. BONDING CABLE: 28 KCMIL, 14 STRANDS OF NO. 17 AWG CONDUCTOR, 1/4 INCH (6 MM) IN DIAMETER. 4. BONDING CONDUCTOR: NO. 4 OR NO. 6 AWG, STRANDED CONDUCTOR. 5. BONDING JUMPER: COPPER TAPE, BRAIDED CONDUCTORS TERMINATED WITH COPPER FERRULES: 1-5/8 INCHES (41 MM) WIDE AND 1/16 INCH (1.6 MM) THICK. C. GROUNDING BUS: PREDRILLED RECTANGULAR BARS OF ANNEALED COPPER, 1/4 BY 1 INCHES (6.3 BY 100 MM) IN CROSS SECTION, WITH 1/32-INCH (7.14-MM) HOLES SPACED 1-1/8 INCHES (28 MM) APART. STAND-OFF RADIUS FOR MOUNTING SHALL COMPLY WITH UL 891 FOR USE IN SWITCHGEAR, 600 V. LEVEX, IMPULSE TESTED AT 5000 V. D. CONDUCTORS LISTED AND LABELED BY AN NRTL, ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION FOR APPLICATIONS IN WHICH USED AND FOR SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS CONNECTED. E. BOLTED CONNECTORS FOR CONDUCTORS AND PIPES: COPPER OR COPPER ALLOY, PRESSURE TYPE WITH AT LEAST TWO BOLTS. F. WELDED CONNECTORS: EXOTHERMIC WELDING KITS OF TYPES RECOMMENDED BY KIT MANUFACTURER FOR MATERIALS BEING JOINED AND INSTALLATION CONDITIONS. G. BUS-BAR CONNECTORS: MECHANICAL TYPE, CAST SILICON BRONZE, SOLDERLESS COMPRESSION-TYPE WIRE TERMINALS, AND LONG-BARREL, TWO-BOLT CONNECTION TO GROUND BUS BAR. H. CONDUCTORS: INSTALL SOLID CONDUCTOR FOR NO. 8 AWG AND SMALLER, AND STRANDED CONDUCTORS FOR NO. 6 AWG AND LARGER UNLESS OTHERWISE INDICATED. I. ISOLATED GROUNDING CONDUCTORS: GREEN-COLORED INSULATION WITH CONTINUOUS YELLOW STRIPE. ON FEEDERS WITH ISOLATED GROUND, DENY GROUNDING CONDUCTOR WHEN VISIBLE TO NORMAL INSPECTION, WITH ALTERNATING BANDS OF GREEN AND YELLOW TAPE, WITH AT LEAST THREE BANDS OF GREEN AND TWO BANDS OF YELLOW. J. CONDUCTOR TERMINATIONS AND CONNECTIONS: PIPE AND EQUIPMENT GROUNDING CONDUCTOR TERMINATIONS: BOLTED CONNECTORS. UNDERGROUND CONNECTIONS: WELDED CONNECTORS EXCEPT AT TEST WELLS AND AS OTHERWISE INDICATED. CONNECTIONS TO GROUND RODS AT TEST WELLS: BOLTED CONNECTORS. CONNECTIONS TO STRUCTURAL STEEL: WELDED CONNECTORS. K. EQUIPMENT GROUNDING: INSTALL INSULATED EQUIPMENT GROUNDING CONDUCTORS TO COMPLY WITH THE NEC AND AS INDICATED ON THE DRAWINGS. ELECTRICAL HANGERS AND SUPPORTS A. COMPLY WITH NECA 1 AND NECA 101 FOR APPLICATION OF HANGERS AND SUPPORTS FOR ELECTRICAL EQUIPMENT AND SYSTEMS EXCEPT IF REQUIREMENTS IN THIS SECTION ARE STRICTER. MAXIMUM SUPPORT SPACING AND MINIMUM HANGER ROD SIZE FOR RACEWAY, SPACE SUPPORTS FOR EMT, IMC, AND RMC AS SCHEDULED IN NECA 1, WHERE ITS TABLE 1 LISTS MAXIMUM SPACINGS LESS THAN STATED IN NFPA 70. MINIMUM ROD SIZE SHALL BE 1/4 INCH (6 MM) IN DIAMETER. MULTIPLE RACEWAYS OR CABLES: INSTALL TRAPEZE-TYPE SUPPORTS FABRICATED WITH STEEL SLOTTED OR OTHER SUPPORT SYSTEM, SIZED SO CAPACITY CAN BE INCREASED BY AT LEAST 25 PERCENT IN FUTURE WITHOUT EXCEEDING SPECIFIED DESIGN LOAD LIMITS. SECURE RACEWAYS AND CABLES TO THESE SUPPORTS WITH TWO-BOLT CONDUIT CLAMPS. SPRING-STEEL CLAMPS DESIGNED FOR SUPPORTING SINGLE CONDUITS WITHOUT BOLTS MAY BE USED FOR 1-1/2-INCH (38-MM) AND SMALLER RACEWAYS SERVING BRANCH CIRCUITS AND COMMUNICATION SYSTEMS ABOVE SUSPENDED CEILINGS AND FOR FASTENING RACEWAYS TO TRAPEZE SUPPORTS. B. SUPPORT INSTALLATION: COMPLY WITH NECA 1 AND NECA 101 FOR INSTALLATION REQUIREMENTS EXCEPT AS SPECIFIED IN THIS ARTICLE. C. RACEWAY SUPPORT METHODS: IN ADDITION TO METHODS DESCRIBED IN NECA 1, EMT, IMC, AND RMC MAY BE SUPPORTED BY OPENINGS THROUGH STRUCTURE MEMBERS, AS PERMITTED IN NFPA 70. D. STRENGTH OF SUPPORT ASSEMBLIES: WHERE NOT INDICATED, SELECT SIZES OF COMPONENTS SO STRENGTH WILL BE ADEQUATE TO CARRY PRESENT AND FUTURE STATIC LOADS WITH SPECIFIED LOADING LIMITS. MINIMUM STATIC DESIGN LOAD USED FOR STRENGTH DETERMINATION SHALL BE WEIGHT OF SUPPORTED COMPONENTS PLUS 200 LB (90 KG). E. MOUNTING AND ANCHORAGE OF SURFACE-MOUNTED EQUIPMENT AND COMPONENTS: ANCHOR AND FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTS TO BUILDING STRUCTURAL ELEMENTS BY THE FOLLOWING METHODS UNLESS OTHERWISE INDICATED BY CODE: 1. TO WOOD: FASTEN WITH LAG SCREWS OR THROUGH BOLTS. 2. TO NEW CONCRETE: FASTEN TO IT TO CONCRETE INSERTS. 3. TO MASONRY: APPROVED TOGGLE-TYPE BOLTS ON HOLLOW MASONRY UNITS AND EXPANSION ANCHOR FASTENERS ON SOLID MASONRY UNITS. 4. TO EXISTING CONCRETE: EXPANSION ANCHOR FASTENERS. 5. INSTEAD OF EXPANSION ANCHORS, POWDER-ACTUATED DRIVEN THREADED STUDS PROVIDED WITH LOCK WASHERS AND NUTS MAY BE USED IN EXISTING STANDARD-HIGHT CONCRETE 4 INCHES (100 MM) THICK OR GREATER. DO NOT USE FOR ANCHORAGE TO LIGHTWEIGHT-AGGREGATE CONCRETE OR FOR SLABS LESS THAN 4 INCHES (100 MM) THICK. 6. TO STEEL: WELDED TO STEEL STUDS COMPLYING WITH AWS D1.1/D1.1M, WITH LOCK WASHERS AND NUTS OR BEAM CLAMPS (MSS TYPE 19, 21, 23, 25, OR 27) COMPLYING WITH MSS SP-69. 7. TO LIGHT STEEL: SHAPED LAG SCREWS. 8. DRILL HOLES FOR EXPANSION ANCHORS IN CONCRETE AT LOCATIONS AND TO DEPTHS THAT AVOID REINFORCING BARS.	ELECTRICAL CONDUIT A. METAL CONDUIT AND TUBING MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: 1. AFC CABLE SYSTEMS, INC. 2. ALEXIS INC. 3. ALLED TUBE & CONDUIT: A TYCO INTERNATIONAL LTD. CO. 4. ALUMET ELECTRICAL, INC.; ANACONDA METAL HOSE. 5. ELECTRIC-TEC CO. 6. MAYORICK TUBE CORPORATION. 7. O-2 GEENEY: A UNIT OF GENERAL SIGNAL. 8. WHEATLAND TUBE COMPANY. B. RIGID STEEL CONDUIT: ANSI C80.1. C. ALUMINUM RIGID CONDUIT: ANSI C80.5. D. IMC: ANSI C80.6. E. PVC-COATED STEEL CONDUIT: PVC-COATED RIGID STEEL CONDUIT. F. COMPLY WITH NEMA RM 1. G. COATING THICKNESS: 0.040 INCH (1 MM), MINIMUM. H. EMT: ANSI C80.3. I. FMC: ZINC-COATED STEEL. J. LFMC: FLEXIBLE STEEL CONDUIT WITH PVC JACKET. K. FITTINGS FOR CONDUIT (INCLUDING ALL TYPES AND FLEXIBLE AND LIQUIDTIGHT), EMT, AND CABLE: NEMA FB 1, LISTED FOR TYPE AND SIZE RACEWAY WITH JOSEPH USED, AND FOR APPLICATION AND ENVIRONMENT IN WHICH INSTALLED. L. FITTINGS FOR EMT: STEEL SET-SCREW OR COMPRESSION TYPE, DIE-CAST IS NOT ACCEPTABLE. M. COATING FOR FITTINGS FOR PVC-COATED CONDUIT: MINIMUM THICKNESS, 0.040 INCH (1 MM), WITH OVERLAPPING SLEEVES PROTECTING THREADED JOINTS. N. JOINT COMPOUND FOR RIGID STEEL CONDUIT OR IMC: LISTED FOR USE ON CABLE CONNECTOR ASSEMBLIES, AND COMPOUNDED FOR USE TO LUBRICATE AND PROTECT THREADED RACEWAY JOINTS FROM CORROSION AND ENHANCE THEIR COHERENCY. O. WAXES FOR METAL RACEWAYS: GALVANIZED STEEL WITH SNAP-ON COVERS. MANUFACTURER'S STANDARD ENAMEL FINISH IN COLOR SELECTED BY ARCHITECT. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: 1. THOMAS & BETTS CORPORATION. 2. WALKER SYSTEMS, INC.; WIREMOLD COMPANY (THE). 3. WIREMOLD COMPANY (THE). ELECTRICAL SALES DIVISION. N. BOXES, ENCLOSURES, AND CABINETS: MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: 1. COPPER CROUSE-HINDS, DIV. OF COPPER INDUSTRIES, INC. 2. EGS/APPLETON ELECTRIC. 3. HOFFMAN. 4. HUBBELL INCORPORATED; KILLARK ELECTRIC MANUFACTURING CO. DIVISION. 5. 2-GEENEY: A UNIT OF GENERAL SIGNAL. 6. RACO; A HUBBELL COMPANY. 7. ROBBROY INDUSTRIES, INC.; ENCLOSURE DIVISION. 8. THOMAS & BETTS CORPORATION. 9. WALKER SYSTEMS, INC.; WIREMOLD COMPANY (THE). O. SHEET METAL OUTLET AND DEVICE BOXES: NEMA OS 1. P. CAST-ALUM OUTLET AND DEVICE BOXES: NEMA FB 1, FERROUS ALLOY, TYPE FD, WITH GASKETED COVER. Q. METAL FLOOR BOXES: CAST METAL, FULLY ADJUSTABLE, RECTANGULAR. R. WAXES FOR METAL RACEWAYS: GALVANIZED STEEL WITH SNAP-ON COVERS. MANUFACTURER'S STANDARD ENAMEL FINISH IN COLOR SELECTED BY ARCHITECT. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: 1. THOMAS & BETTS CORPORATION. 2. WALKER SYSTEMS, INC.; WIREMOLD COMPANY (THE). 3. WIREMOLD COMPANY (THE). ELECTRICAL SALES DIVISION. N. BOXES, ENCLOSURES, AND CABINETS: MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: 1. COPPER CROUSE-HINDS, DIV. OF COPPER INDUSTRIES, INC. 2. EGS/APPLETON ELECTRIC. 3. HOFFMAN. 4. HUBBELL INCORPORATED; KILLARK ELECTRIC MANUFACTURING CO. DIVISION. 5. 2-GEENEY: A UNIT OF GENERAL SIGNAL. 6. 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MECHANICAL GENERAL NOTES:

1.

ALL WORK SHALL BE PERFORMED IN A CLEAN AND WORKMANLIKE MANNER. CARE SHALL BE EXERCISED TO MINIMIZE ANY INCONVENIENCE OR DISTURBANCE TO OTHER AREAS OF THE BUILDING WHICH ARE TO REMAIN IN OPERATION. ISOLATE WORK AREAS BY MEANS OF TEMPORARY PARTITIONS AND/OR TARPS TO KEEP DUST AND DIRT WITHIN THE CONSTRUCTION AREA.
2.

NO PIPING, EQUIPMENT, ETC. SHALL BE REMOVED, DISCONNECTED OR SHUT DOWN WITHOUT PRIOR REVIEW WITH THE LANDLORD AND/OR ENGINEER TO CONFIRM THAT AREAS TO REMAIN IN OPERATION WILL NOT BE AFFECTED. IF ANY AREAS NOT WITHIN THE SCOPE OF WORK ARE AFFECTED BY ANY SHUTDOWN, REMOVAL OR DISCONNECTION, SUFFICIENT ADVANCE NOTICE MUST BE GIVEN TO THE LANDLORD INDICATING WHICH AREAS WILL BE AFFECTED, WHEN THE PROPOSED SHUTDOWN WILL OCCUR, AND FOR HOW LONG A PERIOD OF TIME.
3.

ALL ITEMS REMOVED SHALL BECOME PROPERTY OF THE LANDLORD AND SHALL BE DISPOSED OF AS PER THE LANDLORD'S INSTRUCTIONS, UNLESS INDICATED OTHERWISE. ALL ITEMS WHICH ARE NOT TO BE STORED ON SITE BY OWNERS SHALL BE REMOVED FROM THE BUILDING IMMEDIATELY.
4.

THIS CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO PROCEEDING WITH ANY WORK. WHERE DISCREPANCIES OCCUR BETWEEN THESE DOCUMENTS AND EXISTING CONDITIONS, THE DISCREPANCY SHALL BE REPORTED TO THE LANDLORD AND/OR ENGINEER FOR EXPEDITING AND THE RESOLUTION.
5.

CLEAN THE JOB SITE DAILY AND REMOVE FROM THE PREMISES ANY DIRT AND DEBRIS CAUSED BY THE PERFORMANCE OF THE WORK INCLUDED IN THIS CONTRACT.
6.

USE OF THE LANDLORD'S ELEVATORS AND BUILDING CORRIDORS FOR HANDLING OF THE LANDLORD'S AND REMOVED EQUIPMENT AND MATERIALS SHALL BE AT THE DIRECTION OF THE LANDLORD AND SHALL BE COORDINATED WITH HIS OPERATIONS.
7.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFEKEEPING OF HIS OWN PROPERTY ON THE JOB SITE. OWNER ASSUMES NO RESPONSIBILITY FOR PROTECTION OF PROPERTIES AGAINST FIRE, THEFT AND ENVIRONMENTAL CONDITIONS.
8.

EXISTING MATERIALS THAT ARE REMOVED SHALL NOT BE REUSED IN NEW SYSTEMS, EXCEPT WHERE INDICATED AS BEING RELOCATED.
9.

PROVIDE ALL NECESSARY TEMPORARY OR PERMANENT CAPS OR PLUGS FOR PIPING. DO NOT LEAVE PIPING OPEN ENDED.
10.

WHERE USED, THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
11.

THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH THE LANDLORD AND ALL OTHER TRADES PRIOR TO FABRICATION, PURCHASE AND/OR INSTALLATION OF ALL WORK.
12.

SUBMISSION OF PROPOSAL DIRECTLY OR INDIRECTLY IN CONNECTION WITH THIS WORK SHALL IMPLY THAT THE BIDDER HAS EXAMINED THE JOB SITE UNDER WHICH HE WILL BE OBLIGATED TO OPERATE SHOULD HE BE AWARDED THE WORK UNDER THIS CONTRACT. NO EXTRA CHARGE WILL BE ALLOWED FOR FAILURE OF ANY BIDDER TO EXAMINE THE SITE PRIOR TO BID.
13.

ALL WORK SHALL CONFORM TO ALL STATE AND LOCAL CODES, RULES AND REGULATIONS AND ORDINANCES.
14.

CONTRACTOR SHALL SECURE AND PAY ALL FEES AND PERMITS PERTAINING TO THE CONTRACT.
15.

ALL EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THE CONTRACTOR SHALL PROVIDE ALL HANGERS AND SUPPORTS REQUIRED FOR A COMPLETE INSTALLATION.
16.

CONTRACTOR SHALL BE RESPONSIBLE FOR WORKMEN'S IDENTIFICATION AND BADGING, SAFETY AND FIRE PROTECTION, CONTRACTOR'S LIABILITY INSURANCE, BARRICADES, WARNING SIGNS, TRASH REMOVAL, CUTTING AND PATCHING.
17.

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RIGGING, HANDLING AND PROTECTION OF MATERIALS.
18.

CONTRACTOR SHALL PROVIDE LABOR TO RECEIVE, UNLOAD, STORE, PROTECT AND TRANSFER TO POINT OF INSTALLATION, OWNER FURNISHED ITEMS.
19.

WHERE CONDUIT, CABLES, DUCTWORK OR PIPING PASSES THROUGH FIRE RATED FLOORS OR WALLS, THE SLEEVES SHALL BE COMPLETELY SEALED WITH A FIRE STOP MATERIAL THAT IS UL LISTED AND ACCEPTED BY THE BUILDING DEPARTMENT AND FIRE DEPARTMENT AS BEING SUITABLE FOR THIS SERVICE.
20.

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CORING AS IT RELATES TO HIS WORK.
21.

CONTRACTOR SHALL REFER TO BUILDING MANAGEMENT'S RULES AND REGULATIONS' TO COMPLY WITH BUILDING STANDARDS.
22.

FLEXIBLE DUCTWORK LENGTHS SHALL NOT EXCEED 5'-0". USE INSULATED RIGID ROUND DUCTWORK WHERE REQUIRED. ALL NEW FLEXIBLE DUCTWORK CONNECTIONS TO AIR DEVICES SHOWN ON THE DRAWING SHALL BE SIZED ACCORDING TO THE NECK SIZE SCHEDULE.
23.

THE ENTIRE AIR SUPPLY SYSTEM SHALL BE RE-BALANCED TO THE AIR QUANTITIES INDICATED ON THIS DRAWING BY AN INDEPENDENT AIR BALANCE CONTRACTOR. THE AIR BALANCE CONTRACTOR SHALL SUBMIT NEBB CERTIFIED AIR BALANCE REPORTS FOR ENGINEERING REVIEW AND TO BUILDING MANAGEMENT. PROVIDE AHU DRIVE ADJUSTMENTS AS REQUIRED.
24.

REFER TO DRAWING MEP FOR SPECIFICATIONS THAT APPLY TO THIS SHEET.
25.

CONTRACTOR SHALL VERIFY THAT SUFFICIENT RETURN AIR OPENINGS ARE PROVIDED IN EXISTING WALLS ABOVE CEILING. AIR IS RETURNED TO THE CEILING PLENUM AND THEN TO THE AIR HANDLING UNITS THROUGH RETURN AIR GRILLES, ARCHITECTURAL CEILING OPENING AND LIGHT FIXTURES.
26.

EXISTING TAPS TO SUPPLY DUCTWORK SHALL BE USED WHERE POSSIBLE. ANY UNUSED TAPS TO EXISTING SUPPLY DUCTWORK SHALL BE CAPPED, SEALED AIRTIGHT, AND INSULATED.
27.

EXISTING MAIN TRUNK SUPPLY DUCTWORK SHALL REMAIN. CONTRACTOR SHALL VERIFY EXISTING LOCATION AND LIGHTING FIXTURE CLEARANCES AND INCLUDE IN THEIR COST THE RELOCATION OR REMOVAL OF EXISTING EQUIPMENT REQUIRED TO COMPLY WITH THIS DRAWING.
28.

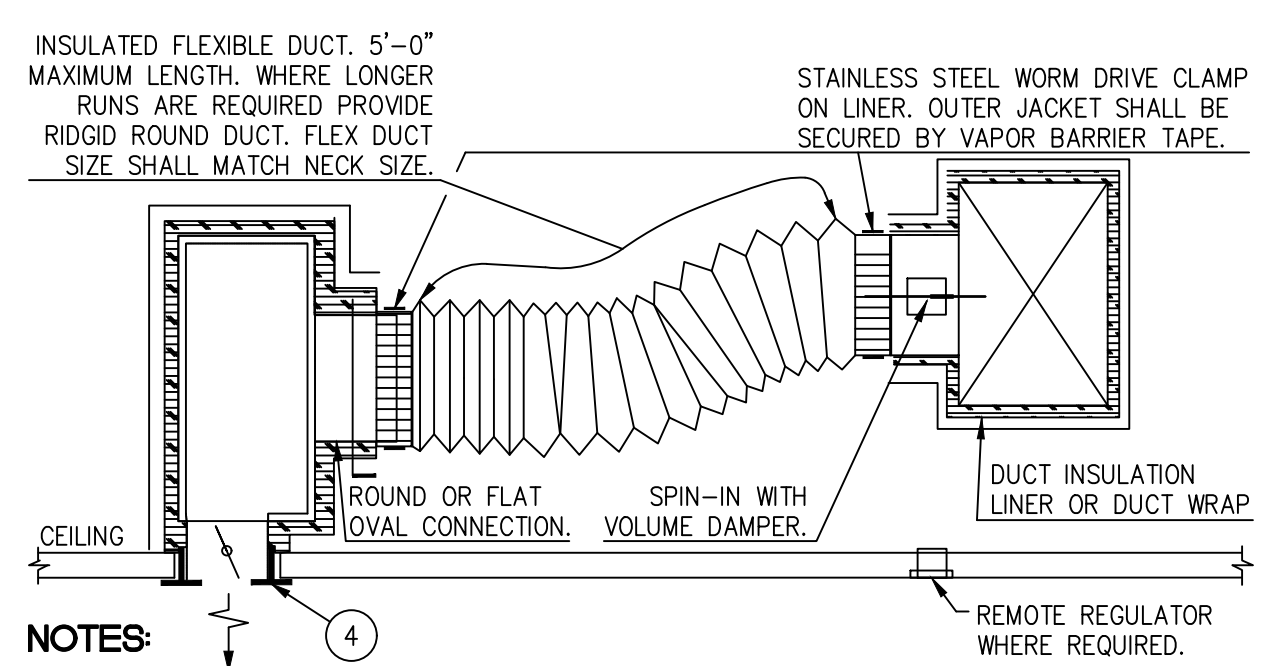
CONTRACTOR SHALL PROVIDE TO BUILDING OWNER THE AS-BUILT RECORD DRAWINGS AND THE OPERATING AND MAINTENANCE MANUALS WITHIN 90 DAYS OF SYSTEMS ACCEPTANCE. RECORD DRAWINGS SHALL INCLUDE PERFORMANCE DATA FOR EQUIPMENT, DUCT AND PIPE DISTRIBUTION SYSTEMS, AND AIR AND WATER FLOW RATES. O&M MANUALS SHALL INCLUDE EQUIPMENT AND ASSOCIATED OPTIONS REQUIRING SERVICE, REQUIRED MAINTENANCE ACTIVITIES, CONTACT INFO OF SERVICE AGENCIES, HVAC CONTROLS CALIBRATION INFORMATION AND SET-POINTS, AND DESCRIPTION OF EQUIPMENTS' INTENDED OPERATIONS.
29.

FOR RETURN AIR PLENUMS, ALL MATERIALS LOCATED WITHIN A RETURN AIR PLENUM SHALL BE RATED AND APPROVED FOR INSTALLATION IN A RETURN AIR PLENUM.

AIR DEVICE SCHEDULE			
MARK	MANUF. + MODEL	TYPE	REMARKS
	TITUS PCS OR EQUAL	CEILING SUPPLY	24x24 PERFORATED FACE. FACE SHALL BE ALUMINUM WITH A STEEL BACK PAN. PROVIDE AIR PATTERN CONTROLS. FACE AND FRAME SHALL HAVE AN OFF-WHITE ENAMEL FINISH. COORDINATE CEILING MOUNTING TYPE WITH ARCHITECTURAL CEILING TYPE. PROVIDE REMOTE DAMPER OPERATORS IN AREAS WITH INACCESSIBLE CEILINGS.
	TITUS PAR OR EQUAL	CEILING RETURN	24x24 PERFORATED FACE. FACE SHALL BE ALUMINUM WITH A STEEL BACK PAN. FACE AND FRAME SHALL HAVE AN OFF-WHITE ENAMEL FINISH. COORDINATE CEILING MOUNTING TYPE WITH ARCHITECTURAL CEILING TYPE.
	TITUS FTI-20	CEILING SUPPLY	48" LONG SUPPLY DIFFUSER WITH AN EXTRUDED ALUMINUM, ADJUSTABLE AIR OUTLET DESIGNED TO DIRECT SUPPLY AIR HORIZONTALLY ACROSS THE CEILING OR DOWN THE WALL. COORDINATE MOUNTING WITH CEILING TYPE.

DIFFUSER NECK SIZE SCHEDULE		
CFM RANGE	SQUARE NECK SIZE	ROUND NECK SIZE
0 - 120	6 X 6	6"ø
125 - 220	8 X 8	8"ø
225 - 330	10 X 10	10"ø
335 - 450	12 X 12	12"ø
455 - 530	15 X 15	14"ø
540 - 700	16 X 16	16"ø

OUTSIDE AIR ANALYSIS	
OUTSIDE AIR SHALL BE PROVIDED IN ACCORDANCE WITH THE MECHANICAL CODES:	
(Rp x Pz) + (Ra x Az) = Vbz	
OFFICE SPACE: (5 CFM/PER x 7 PPL) + (0.06 CFM/SQFT x 1540 SQFT) = 128 CFM	
TOTAL = 128 CFM	
OVERALL: Vbz / Ez = Voz 128 CFM / 1 = 128 CFM	
TOTAL OUTSIDE AIR REQUIRED = 130 CFM	
TOTAL OUTSIDE AIR PROVIDED = 130 CFM	



1.

ALL EXPOSED SURFACES ARE TO BE PAINTED FLAT BLACK.
2.

SUPPORT FLEXIBLE DUCT FROM STRUCTURE AS SPECIFIED. DUCT SHALL NOT KINK, SAG OR REST ON LIGHT FIXTURES, CEILING SUPPORT TEES OR TILE.
3.

FOR UNCONDITIONED CEILING PLENUMS, INSULATE BACK OF SLOT DIFFUSER WITH 1" DUCT WRAP AND SEAL WITH VAPOR BARRIER TAPE.
4.

CEILING "TEE" OR DRYWALL TRIM PIECE BY OTHERS. PROVIDE BLACK BLANK-OFF FOR INACTIVE SECTION. PROVIDE BLACK LIGHT SHIELD ON ACTIVE RETURN SECTIONS.
5.

SLOT DIFFUSER DEVICE SHOWN MAY NOT BE ACTUAL DEVICE SCHEDULED. REFER TO AIR DEVICE SCHEDULE FOR EXACT DEVICE.
6.

METALLIC FLEXIBLE DUCT SHALL BE USED WHERE FLEXIBLE DUCT CONNECTIONS ARE SHOWN ON THE DRAWING TO ALL DISTRIBUTION DEVICES INSTALLED IN INACCESSIBLE LOCATIONS, SUCH AS ABOVE GYPSUM BOARD OR PLASTER CEILING. (RE. TO ARCH. DWGS. FOR CEILING TYPE.)

SLOT DIFFUSER	01
SCALE NONE	

LEGEND OF MECHANICAL SYMBOLS	
SYMBOL	DESCRIPTION
	SUPPLY DUCT VIEW INTO DUCT
	SUPPLY DUCT VIEW HEEL OF ELBOW
	RETURN OR EXHAUST DUCT VIEW INTO DUCT
	RETURN OR EXHAUST DUCT VIEW HEEL OF ELBOW
	SQUARE TO ROUND TRANSITION
	SQUARE ELBOW WITH TURNING VANES.
	RADIUS ELBOW WITHOUT TURNING VANES.
	SUPPLY SIDEWALL REGISTER
	RETURN OR EXHAUST SIDEWALL REGISTER
	ROUND S.A. DIFFUSER
	EXISTING FLEX DUCT
	NEW FLEX DUCT
	EXISTING DUCTWORK
	NEW DUCTWORK
	DUCTWORK TO BE REMOVED
	SQUARE CEILING DIFFUSER
	RETURN AIR GRILLE
	RETURN OR EXHAUST AIR REGISTER W/ SQUARE NECK
	PLENUM SLOT DIFFUSER
	MANUAL DAMPER
	FIRE DAMPER WITH ACCESS DOOR
	DRAIN LINE
	PIPE RISING
	PIPE TURNING DOWN
	EXHAUST FAN SPEED CONTROL
	THERMOSTAT
	EXISTING TO REMAIN
	RELOCATED
	RETURN AIR
	SUPPLY AIR
	CUBIC FEET PER MINUTE
	AIR HANDLER UNIT
NOTES:	
1. ALL SYMBOLS MAY NOT BE USED ON THIS DRAWINGS.	



ARCHITECTURE PLANNING INTERIOR DESIGN

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www.sligroup.com

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WOODLANDS, TEXAS

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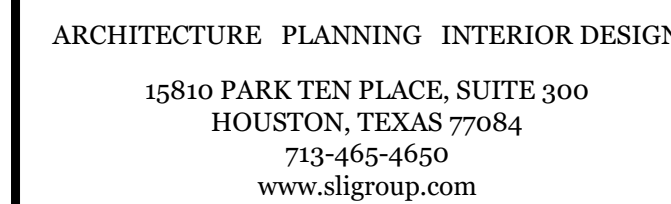
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MECHANICAL
INFORMATION

SHEET NO.

M0.01



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WOODLANDS, TEXAS

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09/30/2022

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MECHANICAL PLAN

SHEET NO.

0. **M1.01**



NORT

01 MECHANICAL PLAN
SCALE: 1/8"=1'-0"

MECHANICAL KEYED NOTES:

- ① EXISTING MECHANICAL IN THIS AREA TO REMAIN.
- ② RELOCATE EXISTING 24" X 24" RETURN AIR GRILLE TO LOCATION INDICATED. CLEAN TO APPEAR IN LIKE NEW CONDITION. REPAIR OR REPLACE IF DAMAGED. TYPICAL.
- ③ DEMOLISH EXISTING 24" X 24" SUPPLY AIR DEVICE. TYPICAL.
- ④ EXISTING EXTERIOR SUPPLY OR RETURN PLENUM SLOT DIFFUSER TO REMAIN.
- ⑤ PROVIDE 8" TO EXISTING LOCATION OF DEMOLISHED SQUARE DIFFUSER.
- ⑥ PROVIDE NEW LINEAR SUPPLY PLENUM SLOT DIFFUSER AT LOCATION INDICATED. COORDINATE WITH ARCHITECT FOR FINAL LOCATION AND DETAIL. BALANCE TO EXISTING CFM. SEE SCHEDULE AND DETAIL. TYPICAL.

3. MEP SPECIFICATIONS SHALL APPLY TO ALL WORK ON THIS DRAWING UNLESS OTHERWISE NOTED.
2. REFER TO ARCHITECT FOR EXACT HEIGHT AND LOCATION OF ALL FLOOR AND WALL OUTLETS.
3. ALL DATA/TELEPHONE OUTLETS SHALL BE PROVIDED WITH PULL STRINGS.
4. CONTRACTOR SHALL LOCATE ALL ELECTRICAL & TELEPHONE OUTLETS WITHIN THE LIMITS OF THE TENANT FURNITURE PLAN PROVIDED BY THE ARCHITECT. CONTRACTOR SHALL MARK INTENDED LOCATION OF ALL OUTLETS PRIOR TO INSTALLATION, THEN SHALL NOTIFY TENANT FOR APPROVAL BEFORE PROCEEDING.
5. CONTRACTOR SHALL PROVIDE NEW CIRCUIT DIRECTORY CARD AT PANELS. CIRCUITS SHALL BE LABELED TO CORRESPOND TO THE CIRCUITS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL CONNECT CIRCUITS AS REQUIRED TO COMPLY WITH THIS DRAWING.
6. CONDUCTORS SHALL BE #12 AWG SOLID COPPER (THWN) IN 1/2" CONDUIT UNLESS OTHERWISE INDICATED.
7. ALL OUTLETS TO BE MOUNTED VERTICALLY UNLESS OTHERWISE INDICATED.
8. CONTRACTOR SHALL PROVIDE ONE PULL STRING FOR EACH VOICE OR DATA OUTLET SHOWN. WHEN VOICE AND DATA OUTLETS ARE SHOWN ADJACENT, CONTRACTOR SHALL PROVIDE ONE PULL STRING (WITH ONE WALL PENETRATION) FOR THE PAIR, UNLESS NOTED OTHERWISE. VOICE AND DATA LINES SHALL BE PULLED BY OTHERS.
9. CONTRACTOR SHALL REFER TO BUILDING MANAGEMENT'S "RULES AND REGULATIONS" TO COMPLY WITH BUILDING STANDARDS.
10. GANG TOGETHER, ALL NEW ELECTRICAL, TELEPHONE AND COMPUTER OUTLETS SHOWN ADJACENT TO EACH OTHER.
11. VERIFY FINAL LOCATIONS FOR ROUGH-INS WITH FIELD MEASUREMENTS AND WITH THE REQUIREMENT OF THE ACTUAL EQUIPMENT TO BE CONNECTED.
12. COORDINATE THE INSTALLATION OF ELECTRICAL MATERIALS AND EQUIPMENT ABOVE CEILINGS WITH SKEWERS, SPRINKLER SYSTEM, MECHANICAL EQUIPMENT AND SYSTEMS, AND STRUCTURAL COMPONENTS. COORDINATE ELECTRICAL EQUIPMENT AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS.
13. VERIFY MECHANICAL EQUIPMENT SWITCH AND CONNECTION REQUIREMENTS, ITEM BY ITEM, WITH THE MECHANICAL CONTRACTOR, BEFORE WIRING EQUIPMENT. RESOLVE ALL DISCREPANCIES WITHOUT FURTHER COST TO OWNER.
14. FOR RETURN AIR PLENUMS, ALL MATERIALS LOCATED WITHIN A RETURN AIR PLENUM SHALL BE RATED AND APPROVED FOR INSTALLATION IN A RETURN AIR PLENUM.

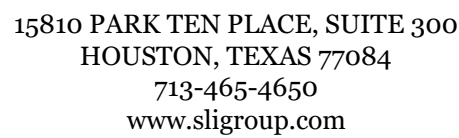
1. MEP SPECIFICATIONS SHALL APPLY TO ALL WORK SHOWN ON THIS DRAWING UNLESS OTHERWISE NOTED.
2. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN FOR THE EXACT LOCATION OF ALL LIGHTING FIXTURES.
3. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL JUNCTION BOXES IN THE JUNCTION BOX GRID AND AVAILABILITY OF ALL CIRCUITS INDICATED TO BE USED.
4. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL EXISTING EQUIPMENT PRIOR TO CONSTRUCTION. FARE CIRCUIT TRACING AS REQUIRED TO DETERMINE CIRCUIT AVAILABILITY. PROVIDE A WRITTEN REPORT TO ENGINEER AND BUILDING MANAGEMENT SHOWING LIGHTING LOCATIONS AND CIRCUIT NUMBER USED.
5. ALL UNUSED WIRING IS TO BE REMOVED BACK TO SOURCE UNLESS NOTED OTHERWISE.
6. CONNECT NEW FIRE ALARM DEVICES TO THE BASE BUILDING FIRE ALARM SYSTEM AS REQUIRED. EXISTING DEVICES, ARE INDICATED BY THE LETTER "E" ADJACENT TO THE DEVICE SYMBOL. THE BASE BUILDING FIRE ALARM SYSTEM SEQUENCES OF OPERATION SHALL COMPLY WITH THE CITY OF HOUSTON BUILDING CODE. ALARM INITIATION BY SMOKE DETECTOR, HEAT DETECTOR, PULL STATIONS, OR BY OTHER ALARM INITIATING DEVICES SHALL CAUSE AUDIBLE AND VISIBLE ALARM SIGNALS TO OCCUR ON THE FLOOR OF INCIDENCE, THE FLOOR ABOVE AND THE FLOOR BELOW. ELEVATORS SHALL RETURN TO THEIR DESIGNATED FLOORS AND ELECTRICALLY LOCKED EGRESS DOORS SHALL RELEASE, AND ALL OTHER EVENTS REQUIRED TO COMPLY WITH THE CITY OF HOUSTON BUILDING CODE SHALL OCCUR. PROVIDE ADDITIONAL ZONING AS NEEDED TO COMPLETE THE FIRE ALARM INSTALLATION AND TO MEET REQUIRED SEQUENCES OF OPERATION.
7. EGRESS AND EXIT LIGHT FIXTURES SHALL BE CONNECTED TO UNSWITCHED HOT CONDUCTOR WITH 2#10/1/2" C.
8. ALL LIGHTS SHALL BE CLEANED AND RESTORED TO GOOD WORKING CONDITION. PROVIDE NEW FIXTURES TO MATCH EXISTING AS REQUIRED. RELAMP ALL FIXTURES WITH NEW LAMPS AS REQUIRED.
9. INSTALL NEW ACRYLIC LENSES AS NEEDED IN LIGHT FIXTURES TO REPLACE DAMAGED LENSES.
10. ALL LIGHTING FIXTURES, LAMPS AND EXIT SIGNS SHALL MATCH BASE BUILDING STANDARD UNLESS OTHERWISE NOTED.
11. ALL FIRE ALARM DEVICES SHALL MATCH EXISTING.
12. CONTRACTOR SHALL REFER TO BUILDING MANAGEMENT'S "RULES AND REGULATIONS" TO COMPLY WITH BUILDING STANDARDS.
13. LIGHTING FIXTURES SHALL BE PROTECTED TO COMPLY WITH THE EXISTING BUILDING FLOOR/CEILING FIRE RATED ASSEMBLY.
14. FOR RETURN AIR PLENUMS, ALL MATERIALS LOCATED WITHIN A RETURN AIR PLENUM SHALL BE RATED AND APPROVED FOR INSTALLATION IN A RETURN AIR PLENUM.

LIGHTING FIXTURE SCHEDULE					
TYPE	MANUFACTURER + SERIES NUMBER	MOUNTING	LAMPS	VOLTS	REMARKS
			NO./TYPE		
○	WILLIAMS 4DR-TL-L20/835-DIM-UNV-OW-OF-CS-N-F1	RECESSED	20W LED	277	4" RECESSED LED DOWNLIGHT.
○ K	WILLIAMS 4DR-TL-L20/835-DIM-UNV-OW-OF-CS-WET/CC-N-F1	RECESSED	20W LED	277	4" RECESSED LED DOWNLIGHT. WET LOCATION RATED
□	WILLIAMS LT-24-L52/835-AF-DIM-UNV	SURFACE	37W	277	LED 2X4 FIXTURE
○ G	FEISS PRODUCT No. SF3400RB	SURFACE	75W LED	277	LED PENDANT LIGHT #LENNON-5-LIGHT OIL RUBBED BRONZE SEMI-FLUSH MOUNT
⊞ E	EXIT SIGN	SURFACE	4.5W LED	277	LED EXIT SIGN. EXISTING.
⊞ E	EXIT SIGN MATCH BUILDING STANDARD	SURFACE	4.5W LED	277	LED EXIT SIGN. NEW TO MATCH EXISTING.

THIS fixture schedule is intended to provide general lighting fixture quality and performance requirements only. Contractor shall be responsible to obtain the exact model/catalog number of the lighting fixtures listed above. Any differences between this lighting fixture schedule and architectural drawings or manufacturers product listings shall be immediately brought to the attention of the engineer. Fluorescent lights that are shown with dimmer control shall be provided with an electronic dimming ballast. Fluorescent lights not shown dimmed shall have a non-dimming electronic ballast. All lamps shall match building standard.

SYMBOL		DESCRIPTION
		CONDUIT RUN CONCEALED IN WALLS OR ABOVE CEILING. ARROW INDICATES HOMERUN TO PANEL. CONDUCTOR DESIGNATIONS ARE AS FOLLOWS: LONG HATCH INDICATES NEUTRAL, SHORT HATCH INDICATES PHASE, "1" INDICATES INSULATED OR ISOLATED GROUND, "2" INDICATES SWITCHLEG, AND NO HATCHES INDICATES TWO CONDUCTORS.
		PARTIAL HOME RUN. SAME AS ABOVE.
		CONDUIT RUN CONCEALED IN FLOOR SLAB, BELOW FLOOR SLAB OR BELOW GRADE. WIRING SAME AS ABOVE.
		HATCHED LINES INDICATES FIXTURE CONNECTED TO BUILDING EMERGENCY SYSTEM.
A		2'x4' FLUORESCENT FIXTURE. LETTER INDICATES FIXTURE TYPE. REFER TO LIGHTING FIXTURE SCHEDULE FOR SPECIFICATIONS.
A		2'x2' FLUORESCENT FIXTURE. LETTER INDICATES FIXTURE TYPE. REFER TO LIGHTING FIXTURE SCHEDULE FOR SPECIFICATIONS.
A		UNDERCABINET FIXTURE. LETTER INDICATES FIXTURE TYPE. REFER TO LIGHTING FIXTURE SCHEDULE FOR SPECIFICATIONS.
A		DOWNLIGHT FIXTURE. LETTER INDICATES FIXTURE TYPE. REFER TO LIGHTING FIXTURE SCHEDULE FOR SPECIFICATIONS.
A		WALL WASHER FIXTURE. LETTER INDICATES FIXTURE TYPE. REFER TO LIGHTING FIXTURE SCHEDULE FOR SPECIFICATIONS.
		EXIT LIGHT. PROVIDE ARROWS AS INDICATED ON DRAWINGS.
		DUPLEX RECEPTACLE OUTLET; 20 AMP, 125V., 3 WIRE, GROUNDED TYPE.
		QUADRUPLX RECEPTACLE OUTLET GANGED WITH A COMMON WALL PLATE; (2)-20 AMP, 125V, 3 WIRE, GROUNDED TYPE.
		DUPLEX RECEPTACLE OUTLET WITH GROUND FAULT INTERRUPTER; 20 AMP, 125V., 3 WIRE GROUNDED TYPE.
		FLUSH MOUNTED FLOOR OUTLET W/ RECEPTACLE (S) AND/OR DATA AND, OR TELEPHONE.
		COMBINATION TELEPHONE / DATA OUTLET.
		TELEPHONE OUTLET.
		DATA OUTLET
		TELEPHONE TERMINAL BOARD, 4'x8'x3/4" PLYWOOD.
		SINGLE POLE, SINGLE-THROW SWITCH; 20 AMP, 120/277V.
		3-WAY SWITCH: 20 AMP, 120/277V.
		OCCUPANCY SENSOR SWITCH. LUTRON MS-B102, U.N.O. WITH DIMMING WHERE NOTED ON PLANS.
		VACANCY SENSOR SWITCH. LUTRON MS-B102, U.N.O. WITH DIMMING WHERE NOTED ON PLANS.
		DIMMER SWITCH. LUTRON MAESTRO SERIES.
		JUNCTION BOX MOUNTED ABOVE ACCESSIBLE CEILING.
		JUNCTION BOX
		DISCONNECT IN A NEMA 1 ENCLOSURE, UNLESS OTHERWISE SPECIFIED. REFER TO DRAWINGS FOR AMPERAGE, PHASES, & FUSE SIZE. (IF REQUIRED)
		MOTOR STARTER / DISCONNECT IN A NEMA 1 ENCLOSURE, UNLESS OTHERWISE SPECIFIED. REFER TO DRAWINGS FOR AMPERAGE, PHASES, FUSE SIZE (IF REQUIRED), AND SIZE.
		TRANSFORMER - REFER TO DRAWINGS FOR VOLTAGE AND AMPERAGE.
		SURFACE PANELBOARD W/ NEC CLEARANCES; 120/208 VOLT.
		SURFACE PANELBOARD W/ NEC CLEARANCES; 277/480 VOLT.

NOTES: 1. ALL SYMBOLS MAY NOT BE USED ON THIS DRAWINGS.
2. REFER TO SPECIFICATIONS FOR MOUNTING HEIGHTS



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WOODLANDS, TEXAS

E/P/E PROJECT NUMBER : 06191 00

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ELECTRICAL
INFORMATION

SHEET NO.

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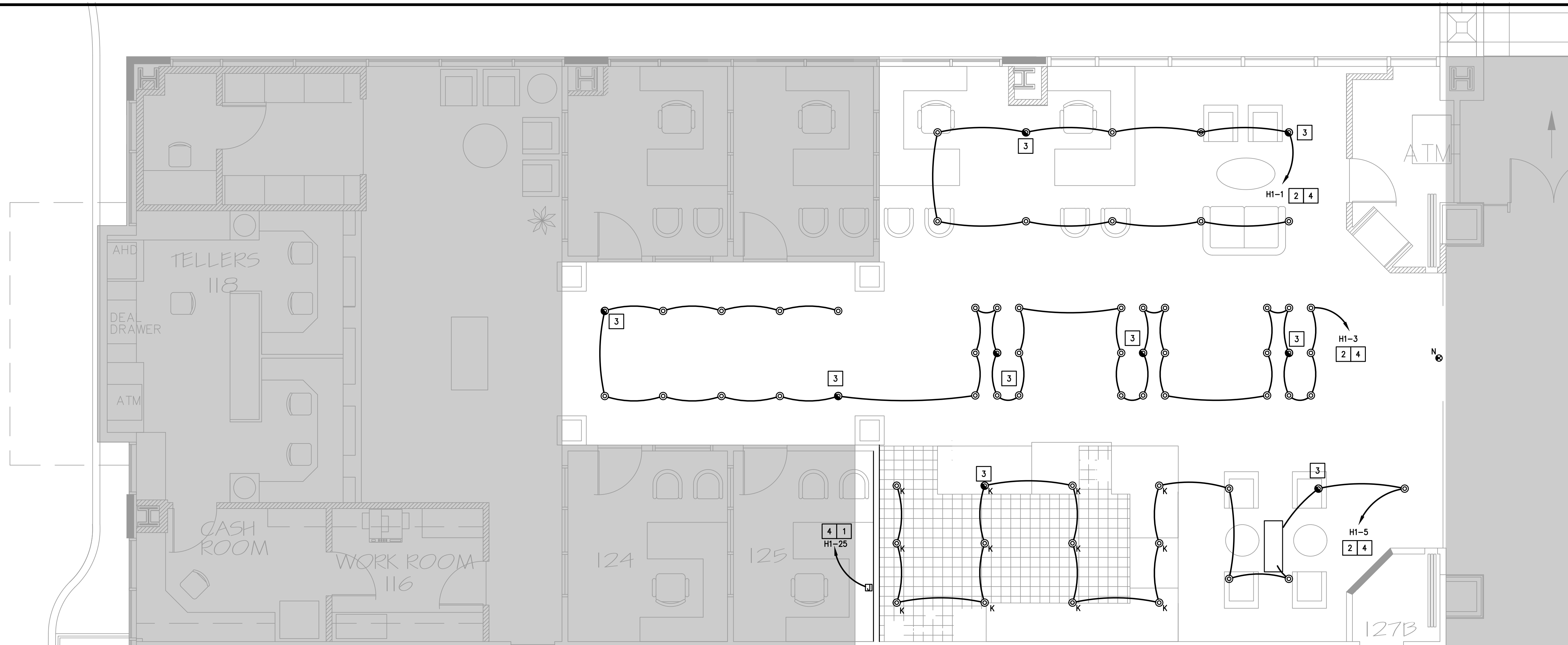
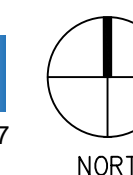
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ELECTRICAL
LIGHTING PLAN

SHEET NO.

E1.01

EBE Mechanical
CONSULTING ENGINEERS Electrical Plumbing
12603 Southwest Fwy, Ste 170, Stafford, Tx 77479
Tel: (713) 840-0177 / Firm Reg. No: 5638



01 ELECTRICAL LIGHTING PLAN

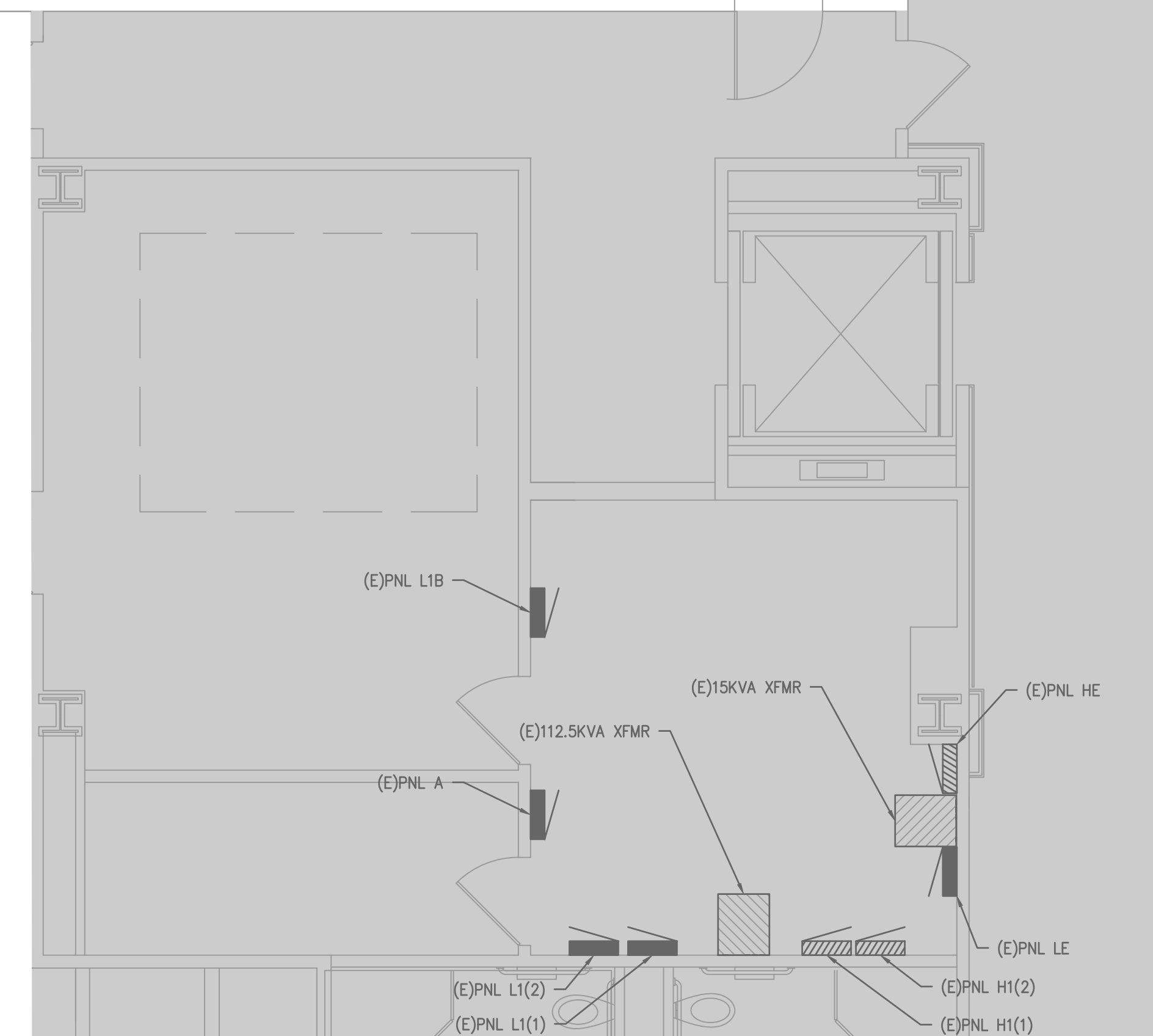
SCALE: $1/4"=1'-0"$

ELECTRICAL LIGHTING KEYED NOTES:

- 1 CIRCUIT TO BE CONNECTED TO WOODFOREST SIGN AT FUR DOWN. CONTRACTOR TO CONFIRM LOCATION WITH ARCHITECT BEFORE INSTALLATION.
- 2 CIRCUIT INDICATED IS REFERENCE ONLY. EXISTING LIGHTING CIRCUIT SERVING THIS SPACE TO BE UTILIZED FOR RE-USE. CONTRACTOR TO CONNECT NEW LIGHT FIXTURES IN THIS AREA TO LIGHTING CIRCUIT MADE AVAILABLE THROUGH DEMOLITION.
- 3 GROSS HATCHING INDICATES EMERGENCY LIGHTING. CONNECT TO FLOOR EMERGENCY LIGHTING CIRCUIT HE-7. VERIFY LOAD DOES NOT EXCEED 3600VA. PER 20A, 277V. CIRCUIT. PROVIDE RELAY SO THAT FIXTURE IS SWITCHED UNDER NORMAL OPERATIONS. TYP.
- 4 LIGHTS IN THESE AREAS TO BE CONTROLLED BY EXISTING TIMECLOCK IN ELECTRICAL ROOM. SHOULD THE EXISTING TIMECLOCK NOT HAVE SPACE FOR CIRCUITS REQUIRED, PROVIDE NEW TIMECLOCK TO MATCH EXISTING. TYP.

LIGHTING CONTROL NOTE:

OCCUPANT SENSOR CONTROL SHALL BE PROVIDED IN ALL REQUIRED AREAS. THE CONTROL SHALL AUTOMATICALLY TURN OFF GENERAL LIGHTING IN ALL CONTROL ZONES WITHIN 20 MINUTES AFTER ALL OCCUPANTS HAVE LEFT THE SPACE. REFER TO LIGHTING CONTROL SCHEDULE FOR MORE DETAILS.

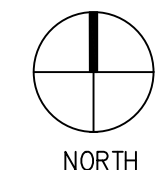




- 1 CONTRACTOR TO INSTALL GFCI BREAKERS IN ACCORDANCE WITH NEC 210.8.
- 2 PROVIDE 20A./277V./1-POLE/NEMA-1 HD TOGGLE SWITCH IN ACCESSIBLE LOCATION. COORDINATE FINAL LOCATION PRIOR TO INSTALLATION.
- 3 PROVIDE 50W POWER TO LEAK DETECTION SYSTEM USING CIRCUIT L1B-6. VERIFY LOAD DOES NOT EXCEED 1900V.A. PER 20A., 120V. CIRCUIT.

EQUIPMENT	#	VOLTAGE	AMPS	PHASE	CIRCUIT	PLUG	REMARKS
NSF 35 Ins Open Air Display Case Refrigerator Cf-100A	2	110v	12	1	A-9	5-15P	
Curtis G41P563A3100 ThermoPro Single 1 Gallon Coffee Brewer	4	120V or 220V	15 12.7	1	A-23	5-15P Cord only	
Cash Register	6	110V	0.5	1	A-5	5-15P	50W
Nitro Kegsator	7	110V	1.9	1	A-11	5-15P	
Turbo Chef	8	208/240V	20	1	L1B-40-42	6-20P	
Coffee Grinder #4 Bulk Coffee	9	110V	12	1	L1B-33	5-15P	
Marco Hot water tower	10	110V	12.73	1	L1B-35	5-15P	
Blender #1	14	120V	15	1	L1B-37	5-15P	
Under counter Refrigerator Back Bar #2 UNDER TURBO CHEF MILK	15	115V	2.4	1	L1B-28	5-15P	1/3 hp
Under counter FREEZER 1 Door Smoothies	17	110V	3.6	1	L1B-29	5-15P	
Coffee Grinder Espresso #1	19	110V	5.42	1	A-11	5-15P	650W
Coffee Grinder Espresso #2 Decaf	20	110V	5	1	A-11	5-15P	575W
Puq press temper	21	110V	0.63	1	A-11	5-15P	75W
Espresso Machine 1 (2 GROUP)	22	208/240V	30	1	L1B-30-41	6-20P	4800W 30A service required
Under counter refrigerator BACK BAR #1 MILK BARISTA	23	115V	2	1	L1B-31	5-15P	
Lyso Oven for cookies	26	120V	12	1	L1-4	5-15P	1450W
Air Cooled Undercounter Half Cube Ice Machine - 299 lb.	27	115V	8.6	1	L1-4	5-15P	989W
2 Door Cooler Milk,Meat, and cheese	28	115V	6.2	1	L1B-10	5-15P	116 hp 713W
3" Solid Door Reach-In Freezer	29	115V	4.2	1	L1B-26	5-15P	273 hp 396W, 1188 W STARTING
Dish washer	30	120V	17.5	1	L1B-8	5-15P	

RECEPTACLE CONTROL SHALL BE PROVIDED IN ALL REQUIRED AREA. THE OCCUPANT SENSOR CONTROL SHALL AUTOMATICALLY TURN OFF RECEPTACLES WITHIN 20 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE. REFER TO RECEPTACLE CONTROL SCHEDULE FOR MORE DETAILS.



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WOODFOREST TOWN CENTER
WOODLANDS, TEXAS

E/B/E PROJECT NUMBER: 26181.00

[illegible]

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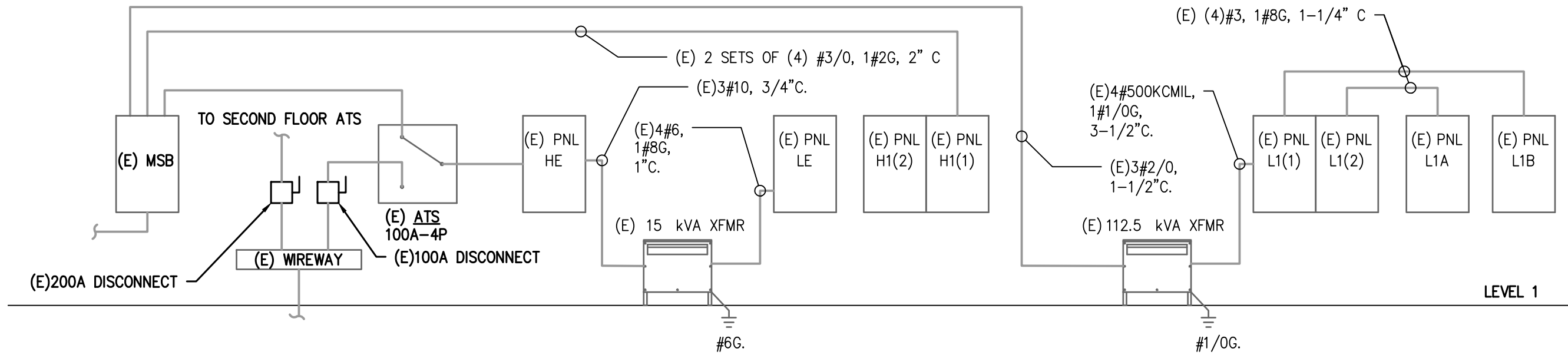
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CONSTRUCTION**

DRAWING TITLE

ELECTRICAL
POWER PLAN

SHEET NO.

E2.01



01 PARTIAL ELECTRICAL DISTRIBUTION DIAGRAM

SCALE: NO SCALE

VOLTAGE DROP CALCULATION:

VOLTAGE DROP CALCULATIONS HAVE BEEN PERFORMED. NO CIRCUIT HAS A VOLTAGE DROP HIGHER THAN 3%.

ELECTRICAL LOAD ANALYSIS					
PROJECT NAME:	WOODFOREST TOWN CENTER				
PROJECT NUMBER:	26181.00				
SERVICE VOLTAGE:	277/480V, 3 PHASE, 4 WIRE, WYE				
SERVICE RATING:	400 AMPS				
GROSS AREA:	3,703 SQUARE FEET				
LOAD DESCRIPTION	CODE	CONNECTED LOAD (kVA)	DEMAND FACTORS (%)	DESIGN LOAD (kVA)	REMARKS
LIGHTS (1.3 VA/FT ²):	4.8	1.6	125%	6.0	NEC 220.42, 43, 44, 45
SIGN LIGHTS:	0.5	125%	0.6	NEC 220.14.F	
SITE LIGHTS:	0.0	125%	0.0	NEC 220.42, 43, 44, 45	
RECEPTACLES:	3.7	0.0	10kVA+50%	3.7	NEC 220.14.H, I, J, K, 220.47
EQUIPMENT:		24.1	100%	24.1	NEC 220.14.A
WATER HEATERS:	0.0	100%	0.0	NEC 220.14.A	
HVAC:	0.0	100%	0.0	NEC 220.14.C, 220.50	
ELECTRIC HEAT:	0.0	100%	0.0	NEC 220.51	
LARGEST MOTOR:	0.0	125%	0.0	NEC 430.22	
TOTAL DESIGN LOAD:		34	kVA		
@ 480V, 3 PHASE:		41	AMPS		

NOTE: ALL LOADS AND DEMAND FACTORS ARE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NEC ARTICLE 220

PROJECT NAME: WOODFOREST TOWN CENTER													
PROJECT NUMBER: 26181.00													
PANEL: L1B													
VOLTAGE: 120/208V, 3PH, 4W BUS: 100 AMP MAINS: M.L.O. ACCESSORIES: NEMA: 1													
CODES: 0=LIGHTS 1=RECEP 2=EQUIP 3=A/C 4=HTG 5=125% LGST MTR 6=KITCHEN 7=PREVIOUSLY CALCULATED													
CODE	LOAD	CIRCUIT DESCRIPTION	BKR	CKT	PH	CKT	BKR	CIRCUIT DESCRIPTION	LOAD	CODE			
6	989	UC ICE MACHINE	*	20/1	1	A	2	20/1	RECEP.	*	900	1	
2	900	PC	*	20/1	3	B	4	20/1	RECEP.	*	540	1	
2	900	PC	*	20/1	5	C	6	20/1	RECEP.	*	950	1	
2	900	PC	*	20/1	7	A	8	20/1	DISHWASHER	*	2100	6	
2	900	PC	*	20/1	9	B	10	20/1	COOLER	*	713	6	
2	900	PC	*	20/1	11	C	12	20/1	EXISTING	*	540	1	
2	900	PC	*	20/1	13	A	14	20/1	COFFEE MACHINE	*	800	6	
1	900	RECEP.	*	20/1	15	B	16	20/1	COPY MACHINE	*	800	2	
1	540	RECEP.	*	20/1	17	C	18	20/1	EXISTING	*	540	1	
1	900	RECEP.	*	20/1	19	A	20	20/1	ATM	*	1000	2	
2	540	NEW DIRECTORY	*	20/1	21	B	22	20/1	EXISTING	*	540	1	
2	1000	ATM	*	40/1	23	C	24	20/1	POWER BANK	*	800	2	
2	2000	ATM	*	25/1	25	A	26	20/1	FREEZER	*	1188	6	
1	540	CORRIDOR REC	*	20/1	27	B	28	20/1	COFFEE MACHINE	*	800	6	
6	800	FREEZER	*	20/1	29	C	30	20/1	COFFEE MACHINE	*	800	6	
6	240	UNDER COUNTER FRIDGE	****	20/1	31	A	32	20/2	EXISTING	*	800	2	
6	1440	COFFEE GRINDER	****	20/1	33	B	34	---	---	*	800	2	
6	1528	HOT WATER TOWER	****	20/1	35	C	36	20/2	IDF ROOM RACK	*	800	2	
6	1800	BLENDER	****	20/1	37	A	38	---	---	*	800	2	
6	2300	ESPRESSO MACHINE	****	30/2	39	B	40	20/2	TURBO CHEF	****	2000	6	
6	2300	---	****	---	41	C	42	---	---	****	2000	6	
LIGHTS		RECEP.	EQUIP.	MOTORS	EL. HEAT	PHASE		PHASE		CONN.KVA	LOAD FACTORS	DES. KVA	DES. AMP.
0		1800	11026	0	0	A		A		12.8	LIGHTS @ 125%	12.8	107
0		2520	8654	0	0	B		B		11.2	EQUIP. @ 100%	11.2	83
0		2570	9228	0	0	C		C		11.8	LG. MOTOR @ 100%	11.8	98
0		6890	28908	0	0	TOTAL		TOTAL		35.8	RECEPS @ 100W+50%	35.8	99

PROJECT NAME: WOODFOREST TOWN CENTER																	
PROJECT NUMBER: 26181.00																	
PANEL: L1(1)																	
VOLTAGE: 120/208V, 3PH, 4W BUS: 400 AMP MAINS: M.L.O. ACCESSORIES: NEMA: 1																	
CODES: 0=LIGHTS 1=RECEP 2=EQUIP 3=A/C 4=HTG 5=125% LGST MTR 6=KITCHEN 7=PREVIOUSLY CALCULATED																	
CODE	LOAD	CIRCUIT DESCRIPTION	BKR	CKT	PH	CKT	BKR	CIRCUIT DESCRIPTION	LOAD	CODE							
2	800	ODC PNL	*	20/1	1	A	2	20/1	EXISTING	*	540	1					
2	800	TTB	*	20/1	3	B	4	20/1	OVEN	*	1440	2					
1	900	EXTERIOR REC	*	20/1	5	C	6	20/1	TIMECLOCK	*	1000	2					
1	540	EXTERIOR REC	*	20/1	7	A	8	20/1	CORE REC	*	900	1					
2	800	BUILDING DIRECTORY	*	20/1	9	B	10	20/1	EDF-1	*	50	2					
1	900	CORE REC	*	20/1	11	C	12	20/1	CORE REC	*	900	1					
1	540	EXISTING	*	20/1	13	A	14	20/1	EXHAUST	*	50	2					
1	900	EXISTING	*	20/1	15	B	16	20/1	LTS	*	1000	0					
1	540	EXISTING	*	20/1	17	C	18	20/1	LTS	*	1000	0					
1	900	EXISTING	*	20/1	19	A	20	20/1	LTS	*	1000	0					
1	540	EXISTING	*	20/1	21	B	22	20/1	LTS	*	1000	0					
1	900	RECEP.	*	20/1	23	C	24	20/1	LTS	*	1000	0					
1	540	RECEP.	*	20/1	25	A	26	20/1	LTS	*	1000	0					
1	900	RECEP.	*	20/1	27	B	28	20/1	LTS	*	1000	0					
1	540	RECEP.	*	20/1	29	C	30	20/1	LTS	*	1000	0					
1	900	EXISTING	*	20/1	31	A	32	20/1	LTS	*	1000	0					
7	1174	L1-B	*	100/3	33	B	34	20/1	LTS	*	1000	0					
7	11798	---	*	---	35	C	36	20/1	LTS	*	1000	0					
7	12826	---	*	---	37	A	38	20/1	LTS	*	1000	0					
1	900	RECEP.	*	20/1	39	B	40	20/1	LTS	*	1000	0					
1	540	RECEP.	*	20/1	41	C	42	20/1	LTS	*	1000	0					
LIGHTS		RECEP.	EQUIP.	MOTORS	EL	HEAT	PHASE		PHASE	CONV.N.KVA	LOAD FACTORS	DES. KVA	DES. AMP				
4000		4860	850	0	0	0	A		A	22.5	LIGHTS @ 125%	9.9	83				
5000		3240	3090	0	0	0	B		B	22.5	EQUIP. @ 100%	12.6	105				
5000		5220	1000	0	0	0	C		C	23.0	L.G. MOTOR @125%	11.5	96				
14000		13320	4940	0	0	0	TOTAL		TOTAL	68.1	RECEP.S @ 10KW+50%	34.1	95				
SUB-FEED PANELS:																	
PANEL NAME:				PANEL L1(2)				S.F. KVA				LOAD FACTORS		DES. KVA		DES. AMP	
				PANEL L1B				50.8				SUB FEED @ 100%		50.8		141	
								35.8						35.8		99	



WOODFOREST TOWN CENTER
WOODLANDS, TEXAS

PROJECT NUMBER : 06191 00

[illegible]

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ELECTRICAL SCHEDULES

SHEET NO.

E4.01

PROJECT NAME:		WOODFOREST TOWN CENTER													
PROJECT NUMBER:		26181.00													
PANEL:		MSB													
VOLTAGE:		277/480V, 3PH, 4W		BUS: 4000 AMP		MAINS: M.L.O.		ACCESSORIES:		EXISTING PANEL					
CODES:		0=LIGHTS 1=RECEP 2=EQUIP 3=A/C 4=HTG 5=125% LGST MTR 6=KITCHEN 7=PREVIOUSLY CALCULATED													
CODE	LOAD	CIRCUIT DESCRIPTION			BKR	CKT	PH	CKT	BKR	CIRCUIT DESCRIPTION			LOAD	CODE	
		SPACE		***		1	A	2	SPACE		***				
		SPACE		***		3	B	4	SPACE		***				
		SPACE		***		5	C	6	SPACE		***				
2	8967	ATS		*	100/3	7	A	8	SPACE		***				
2	7732	---		*		9	B	10	SPACE		***				
2	6978	---		*		11	C	12	SPACE		***				
7	40522 XFMR 1			*	175/3	13	A	14	SPACE		***				
7	40694	---		*		15	B	16	SPACE		***				
7	39471	---		*		17	C	18	SPACE		***				
7	50875 PNL H1			*	400/3	19	A	20	SPACE		***				
7	48625	---		*		21	B	22	SPACE		***				
7	61125	---		*		23	C	24	SPACE		***				
		LIGHTS	RECEP.	EQUIP.	MOTORS	EL. HEAT	PHASE			PHASE	CONN./KVA	LOAD FACTORS	DES. KVA	DES. AMP	
	0	0	8967	0	0	A	A			100.4	LIGHTS @ 125%		9.0	32	
	0	0	7732	0	0	B	B				97.1	EQUIP. @ 100%		7.7	28
	0	0	6978	0	0	C	C				107.6	LG. MOTOR @125%		7.0	25
	0	0	23676	0	0	TOTAL	TOTAL			305.0	RECEPS @ 10kW=50%		23.7	28	
SUB-FEED PANELS:															
PANEL NAME						S.F. KVA				LOAD FACTORS		DES. KVA		DES. AMP	
PANEL H1						160.6				SUB FEED @ 100%		160.6		193	
PANEL L1						120.7						120.7		145	

- * EXISTING CIRCUIT BREAKER - ESTIMATED LOAD
** EXISTING SPARE CIRCUIT BREAKER
*** EXISTING BREAKER SPACE
**** REPLACE EXISTING BREAKER AS SHOWN

PROJECT NAME:		WOODFOREST TOWN CENTER												
PROJECT NUMBER:		26181.00												
PANEL:		HE												
VOLTAGE:		277/480V, 3PH, 4W			BUS: 100 AMP			MAINS: M.L.O.			ACCESSORIES:		EXISTING PANEL	
CODES:		0=LIGHTS 1=RECEP 2=EQUIP 3=A/C 4=HTC 5=125% LOST MTR 6=KITCHEN 7=PREVIOUSLY CALCULATED												
		NEMA: 1												
CODE	LOAD	CIRCUIT DESCRIPTION				BKR	CKT	PH	CKT	BKR	CIRCUIT DESCRIPTION	LOAD	CODE	
0	1500	STAIRWELL B				*	20/1	1	A	2	20/1	EXIT SIGNAGE	*	1500
0	1500	STAIRWELL A				*	20/1	3	B	4	20/1	SPARE	**	
0	1500	LEVEL 1 CORRIDOR LIGHTING				*	20/1	5	C	6	20/1	SPARE	**	
0	1500	LEVEL 1 EGRESS LIGHTING				*	20/1	7	A	8	30/3	XFMR XLE	*	4420
0	1000	LEVEL 2 CORRIDOR LIGHTING				*	20/1	9	B	10	---	---	*	5000
0	1000	LEVEL 2 EGRESS LIGHTING				*	20/1	11	C	12	---	---	*	3860
0	1000	LEVEL 3 CORRIDOR LIGHTING				*	20/1	13	A	14	---	SPACE	***	
0	1000	LEVEL 3 EGRESS LIGHTING				*	20/1	15	B	16	---	SPACE	***	
0	1000	LEVEL 4 CORRIDOR LIGHTING				*	20/1	17	C	18	---	SPACE	***	
0	1000	LEVEL 4 CORRIDOR LIGHTING				*	20/1	19	A	20	---	SPACE	***	
0	1000	LEVEL 5 CORRIDOR LIGHTING				*	20/1	21	B	22	---	SPACE	***	
0	1000	LEVEL 5 CORRIDOR LIGHTING				*	20/1	23	C	24	---	SPACE	***	
0	1000	LEVEL 6 CORRIDOR LIGHTING				*	20/1	25	A	26	---	SPACE	***	
0	1000	LEVEL 6 CORRIDOR LIGHTING				*	20/1	27	B	28	---	SPACE	***	
0	1000	EXISTING				*	20/1	29	C	30	---	SPACE	***	
		LIGHTS	RECEP.	EQUIP.	MOTORS	EL. HEAT	PHASE			PHASE	CONN.KVA	LOAD FACTORS	DES. KVA	DES. AMP
		7500	0	0	0	0	A			A	11.9	LIGHTS @ 125%	9.4	34
		5500	0	0	0	0	B			B	10.5	EQUIP. @ 100%	6.9	25
		5500	0	0	0	0	C			C	9.4	L.G. MOTOR @125%	6.9	25
		18500	0	0	0	0	TOTAL			TOTAL	31.8	RECEPS @ 10kW+50%	23.1	28
SUB-FEED PANELS:														
3324		PANEL NAME					S.F. KVA		LOAD FACTORS		DES. KVA		DES. AMP	
		PANEL LE					13.3		SUB FEED @ 100%		13.3		16	
GRAND TOTAL											36.4		44	

- ```
* EXISTING CIRCUIT BREAKER - ESTIMATED LOAD
** EXISTING SPARE CIRCUIT BREAKER
*** EXISTING BREAKER SPACE
**** REPLACE EXISTING BREAKER AS SHOWN
```

|                 |        |                                                                                              |        |             |      |               |       |              |      |                     |                    |          |          |      |   |
|-----------------|--------|----------------------------------------------------------------------------------------------|--------|-------------|------|---------------|-------|--------------|------|---------------------|--------------------|----------|----------|------|---|
| PROJECT NAME:   |        | WOODFOREST TOWN CENTER                                                                       |        |             |      |               |       |              |      |                     |                    |          |          |      |   |
| PROJECT NUMBER: |        | 26181.00                                                                                     |        |             |      |               |       |              |      |                     |                    |          |          |      |   |
| PANEL:          |        | LE                                                                                           |        |             |      |               |       |              |      |                     |                    |          |          |      |   |
| VOLTAGE:        |        | 120/208V, 3PH, 4W                                                                            |        | BUS: 60 AMP |      | MAINS: M.L.O. |       | ACCESSORIES: |      | EXISTING PANEL      |                    |          |          |      |   |
| CODES:          |        | 0=LIGHTS 1=RECEP 2=EQUIP 3=A/C 4=HTG 5=125% LGST MTR 6=KITCHEN 7=PRECIOUS CALCULATED NEMA: 1 |        |             |      |               |       |              |      |                     |                    |          |          |      |   |
| CODE            | LOAD   | ORCUIT DESCRIPTION                                                                           |        |             |      |               | BKR   | LST          | MTR  | BKR                 | ORCUIT DESCRIPTION |          | LOAD     | CODE |   |
| 1               | 900    | EXISTING                                                                                     |        |             |      |               | *     | 20/1         | 1    | A                   | 20/1               | *        | 2        | 560  | 1 |
| 1               | 560    | EXISTING                                                                                     |        |             |      |               | *     | 20/1         | 3    | B                   | 4                  | 20/1     | *        | 900  | 1 |
| 1               | 900    | EXISTING                                                                                     |        |             |      |               | *     | 20/1         | 5    | C                   | 6                  | 20/1     | *        | 560  | 1 |
| 1               | 560    | EXISTING                                                                                     |        |             |      |               | *     | 20/1         | 7    | A                   | 8                  | 20/1     | *        | 900  | 1 |
| 2               | 1500   | EXISTING                                                                                     |        |             |      |               | *     | 30/2         | 9    | B                   | 10                 | 20/1     | *        | 560  | 1 |
| 2               | 1500   | EXISTING                                                                                     |        |             |      |               | *     | 30/2         | 11   | C                   | 12                 | 20/1     | *        | 900  | 1 |
|                 | SPACE  | ***                                                                                          |        |             |      |               |       |              | 13   | A                   | 14                 | 30/2     | *        | 1500 | 2 |
|                 | SPACE  | ***                                                                                          |        |             |      |               |       |              | 15   | B                   | 16                 | ---      | *        | 1500 | 2 |
|                 | SPACE  | ***                                                                                          |        |             |      |               |       |              | 17   | C                   | 18                 | SPACE    | ***      |      |   |
|                 | SPACE  | ***                                                                                          |        |             |      |               |       |              | 19   | A                   | 20                 | SPACE    | ***      |      |   |
|                 | SPACE  | ***                                                                                          |        |             |      |               |       |              | 21   | B                   | 22                 | SPACE    | ***      |      |   |
|                 | SPACE  | ***                                                                                          |        |             |      |               |       |              | 23   | C                   | 24                 | SPACE    | ***      |      |   |
|                 | SPACE  | ***                                                                                          |        |             |      |               |       |              | 25   | A                   | 26                 | SPACE    | ***      |      |   |
|                 | SPACE  | ***                                                                                          |        |             |      |               |       |              | 27   | B                   | 28                 | SPACE    | ***      |      |   |
|                 | SPACE  | ***                                                                                          |        |             |      |               |       |              | 29   | C                   | 30                 | SPACE    | ***      |      |   |
| 1               | LIGHTS | RECEP.                                                                                       | EQUIP. | MOTORS      | ELT. | HEAT          | PHASE | PHASE        |      | CONN.KVA            | LOAD FACTORS       | DES. KVA | DES. AMP |      |   |
|                 | 0      | 2920                                                                                         | 1500   | 0           | 0    | A             |       | A            | 4.4  | LIGHTS @ 125%       |                    | 4.4      | 37       |      |   |
|                 | 0      | 2020                                                                                         | 3000   | 0           | 0    | B             |       | B            | 5.0  | EQUIP. @ 100%       |                    | 5.0      | 42       |      |   |
|                 | 0      | 2360                                                                                         | 1500   | 0           | 0    | C             |       | C            | 3.9  | I.C. MOTOR @75%     |                    | 3.9      | 32       |      |   |
|                 | 0      | 2300                                                                                         | 6000   | 0           | 0    | TOTAL         |       | TOTAL        | 13.3 | RECEPS @ 100% & 50% |                    | 13.3     | 37       |      |   |

- |      |                                           |
|------|-------------------------------------------|
| *    | EXISTING CIRCUIT BREAKER - ESTIMATED LOAD |
| **   | EXISTING SPARE CIRCUIT BREAKER            |
| ***  | EXISTING BREAKER SPACE                    |
| **** | REPLACE EXISTING BREAKER AS SHOWN         |

**E B E** Mechanical  
CONSULTING ENGINEERS Electrical  
Plumbing  
12603 Southwest Frwy, Ste 170, Stafford, Tx 77477  
Tel: (713) 840-0177 / Firm Reg. No: 5638

1. CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS IN THE DEMOLITION AREA PRIOR TO SUBMITTING A BID. THE CONTRACTOR SHALL INCLUDE IN HIS BID THE COST OF REPLACEMENT, REPAIR, RELOCATION OR REMOVAL OF EXISTING ELEMENTS AS REQUIRED TO COMPLETE INSTALLATION OF ALL SYSTEMS AS SPECIFIED AND AS SHOWN ON THESE DRAWINGS.
2. THE CONTRACTOR BY SUBMITTING HIS BID PROPOSAL AGREES TO ACCEPT ALL EXISTING SITE CONDITIONS NOT SPECIFICALLY EXPECTED. DISPOSE OF ITEMS REMOVED FROM THE DEMOLITION AREA. REUSE OF ANY EXISTING ITEM ON THIS PROJECT INCLUDING THOSE INDICATED ON THE DRAWINGS TO BE RELOCATED SHALL BE APPROVED BY THE ENGINEER AND SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS. WHERE THESE DRAWINGS CONFLICT WITH EXISTING FIELD CONDITIONS. A RECORD OF THE FIELD CONDITIONS SHALL BE MADE AVAILABLE TO THE OWNER, ENGINEER, AND ARCHITECT.
3. RELOCATE AND RECONNECT ACTIVE PORTIONS OF THE PLUMBING SYSTEM AS INDICATED ON THE DRAWINGS AND AS REQUIRED TO MAINTAIN A COMPLETE AND OPERATING SYSTEM THAT IS FUNCTIONALLY EQUIVALENT TO THE PRE-EXISTING SYSTEM PRIOR TO DEMOLITION.
4. GENERAL CONTRACTOR IS RESPONSIBLE FOR KEEPING AND CAPPING OFF ANY PIPING WITHIN WALLS NOT BEING DEMOLISHED.
5. PLUMBING CONTRACTOR SHALL REMOVE ALL EXISTING SANITARY SEWER LINES UNUSED IN CEILING SPACE. CONTRACTOR TO CAP TO POINT OF USE.
6. ALL UNUSED WATER, WASTE, AND VENT LINES SHALL BE COMPLETELY REMOVED BACK TO POINT OF USE. CAP AND PLUG WASTE, VENT AND WATER LINES BACK TO POINT OF USE ABOVE CEILING.
7. THE PLUMBING DEMOLITION WORK SHALL INCLUDE THE DISCONNECT, REMOVAL AND DISPOSAL OF THE FOLLOWING PIPING AND ASSOCIATED VALVES, FITTINGS, ACCESSORIES AND SUPPORTS: DOMESTIC COLD WATER, HOT WATER, SANITARY VENT AND SANITARY WASTE.
8. EXISTING PIPING AND EQUIPMENT LOCATIONS ARE SCHEMATICS. CONTRACTOR TO FIELD VERIFY SIZE, LOCATION AND ELEVATION OF EXISTING PIPING PRIOR TO START OF WORK.
9. EXISTING PIPING, FIXTURES AND EQUIPMENT THAT ARE NOT TO BE REUSED SHALL BE REMOVED AND SHALL REMAIN PROPERTY OF THE OWNER IF THEY WISH TO RETAIN OWNERSHIP OF REMOVED EQUIPMENT. IF NOT, EQUIPMENT SHALL BECOME PROPERTY OF THE GENERAL CONTRACTOR AND REMOVED FROM THE SITE AS SOON AS POSSIBLE AND DISPOSED OF ACCORDANCE TO APPLICABLE LAWS AND REGULATIONS.
10. WHERE EXISTING PIPING AND EQUIPMENT THAT ARE TO BE UTILIZED IN THE COMPLETED PROGRAM CONFLICT WITH NEW CONSTRUCTION AND THE REQUIRED DEMOLITION, THEY SHALL BE RELOCATED AND RECONNECTED TO MAINTAIN THE DESIRED SERVICE.
11. ALL WORK MUST BE COORDINATED AND SCHEDULED WITH THE OWNER AND OCCUPANTS OF THIS BUILDING SO AS TO PROVIDE THE LEAST AMOUNT OF DISRUPTION OF BUILDING ACTIVITIES AS POSSIBLE.

1. ALL CONTRACT DOCUMENTS (SPECIFICATIONS AND DRAWINGS), I.E., ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL ARE COMPLEMENTARY AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION.
2. ALL CONFLICTS, WHICH MAY PREVENT THE COMPLETION OF WORK AS INTENDED, SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION. THE CONTRACTOR SHALL NOT PROCEED WITH ANY RELATED WORK UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR BY THE ARCHITECT.
3. IT IS THE INTENTION OF THESE DRAWINGS TO CALL FOR FINISHED WORK, I.E., FULLY ADJUSTED, TESTED, AND READY FOR OPERATION. WHEREVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN, "TURNISH AND INSTALL COMPLETE AND READY FOR USE."
4. THE PLUMBING DRAWINGS ARE DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EVERY COMPONENT AND/OR ACCESSORY REQUIRED FOR A COMPLETE INSTALLATION. THE CONTRACTOR SHALL INCLUDE SUCH ITEMS AS ARE REQUIRED TO ENSURE THAT THE ENTIRE SYSTEM IS FUNCTIONING IN COMPLIANCE WITH APPLICABLE CODES, ACCEPTED INDUSTRY STANDARDS, AND MANUFACTURER'S INSTALLATION REQUIREMENTS/RECOMMENDATIONS UPON COMPLETION OF THE WORK.
5. ALL CUTTING, DRILLING AND PATCHING OF WALLS, FLOORS, AND/OR STRUCTURAL MEMBERS FOR THE INSTALLATION OF THE PLUMBING AND FIRE PROTECTION SYSTEMS SHALL BE PROVIDED. STRUCTURAL COMPONENTS SHALL NOT BE CUT, DRILLED OR MODIFIED IN A WAY WITHOUT THE STRUCTURAL ENGINEER'S REVIEW AND PRIOR WRITTEN APPROVAL.
6. PROVIDE NFPA APPROVED FIRE STOPPING WHERE PIPES PENETRATE FIRE RATED FLOORS AND WALLS.

1. MEP SPECIFICATIONS SHALL APPLY TO ALL WORK ON THIS DRAWING UNLESS OTHERWISE NOTED.
2. ALL CONNECTIONS BETWEEN PIPES OF DISSIMILAR MATERIALS SHALL BE MADE WITH DIELECTRIC UNIONS. PROVIDE ACCESS PANELS WHERE REQUIRED.
3. CONTRACTOR SHALL NOTIFY OWNER OF ANY REQUIRED SHUT DOWNS AND COORDINATE THESE WITH OWNER. DOWNTIME SHALL BE HELD TO A MINIMUM.
4. CONTRACTOR SHALL COORDINATE ALL WORK CLOSELY WITH EXISTING AND NEW MECHANICAL AND ELECTRICAL ITEMS.
5. ALL PROPOSED CORE DRILL LOCATIONS THROUGH (E) FLOOR SLAB ARE TO BE COORDINATED WITH AND APPROVED BY THE OWNER PRIOR TO CORING.
6. CONTRACTOR SHALL REFER TO BUILDING MANAGEMENT'S "RULES AND REGULATIONS" TO COMPLY WITH BUILDING STANDARDS.
7. COORDINATE PLUMBING FIXTURE SIZES WITH MILLWORK PRIOR TO INSTALLATION. COORDINATE ROUGH-IN ELEVATIONS WITH MOUNTING HEIGHTS.
8. DEMOLISH ANY ABANDONED PVC PIPING IN CEILING SPACE. REPLACE ANY EXISTING PVC PIPING STILL IN SERVICE WITH APPROVED MATERIALS. PROVIDE A SEPARATE LINE ITEM PRICE.
9. NEW DOMESTIC WATER SHUT-OFF VALVES TO BE NIBCO MODEL NO. T-585-66-LF. FURNISH WITH EXTENDED STEM FOR VALVES IN INSULATED LINES.
10. REFER TO ARCHITECTURAL DRAWING FOR EXACT LOCATION OF ALL WALLS AND CHASES.
11. REFER TO RISER DIAGRAMS FOR PIPE SIZES NOT SHOWN ON THE DRAWINGS.
12. PER COMMERCIAL ENERGY CODE, ALL HOT WATER PIPING SHALL BE INSULATED: 12, 1-1/4" AND BELOW 1 1/2" REQUIRED, 1-1/2" AND ABOVE 2" REQUIRED PER TABLE 6.8.3. REFER TO SPECS. FOR ADDITIONAL INFORMATION.

1. PROVIDE A COMPLETE FULLY AUTOMATIC WET PIPE SYSTEM HYDRAULICALLY CALCULATED IN ACCORDANCE WITH THE STATE FIRE MARSHAL AND THE LATEST EDITION N.F.P.A. 13, 14, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION.
2. ALL FIRE PROTECTION EQUIPMENT, I.E. PIPING, VALVES, FITTINGS AND ACCESSORIES, ETC. SHALL BE RATED FOR A MAXIMUM WORKING PRESSURE OF 250 PSI.
3. PROVIDE PRESSURE REDUCING VALVES AT ALL SPRINKLER SYSTEM AND FIRE DEPARTMENT HOSE CONNECTIONS WHERE PRESSURES EXCEED 175 PSIG IN ACCORDANCE WITH CODE REQUIREMENTS. CONTRACTOR SHALL FIELD PRESSURE TEST SYSTEM AND DETERMINE WHERE PRESSURE REDUCING VALVES ARE REQUIRED.
4. USE PIPING AND FITTINGS FOR FIRE SUPPRESSION SYSTEMS WHICH ARE APPROVED FOR USE BY UNDERWRITERS' LABORATORIES AND FACTORY MUTUAL SYSTEM AND/OS OF THE FOLLOWING TYPES; AND IN ACCORDANCE WITH NFPA, LOCAL CODES ALL AUTHORITIES HAVING JURISDICTION.  
  
d) BLACK STEEL PIPING: MANUFACTURED TO SATISFY ASTM STANDARDS A53 OR A135.
5. ALL SPRINKLER PIPING SHALL BE INSTALLED SO THAT ALL PORTIONS OF THE SYSTEM CAN BE DRAINED BACK THROUGH THE DRAIN VALVE WHERE REQUIRED. PROVIDE DRAIN VALVES FOR ALL TRAPPED PORTIONS OF THE SYSTEM.
6. ALL FIRE EQUIPMENT THREADS SHALL CONFORM TO LOCAL FIRE DEPARTMENT STANDARDS.
7. ALL CONTROL VALVES – CHECK VALVES AND FLOW ALARM SWITCHES LOCATED ABOVE FINISHED CEILING SHALL BE ACCESSIBLE AND HAVE A NOTIFICATION MARKING TAG AS REQUIRED FOR INSPECTION VERIFICATION.
8. CONTRACTOR SHALL COORDINATE INSTALLATION OF ALL PLUMBING/SPRINKLER PIPING TO MAINTAIN PROPER CLEARANCES OVER AREA.

SANITARY SEWER PIPING  
VENT PIPING  
DOMESTIC COLD WATER  
DOMESTIC HOT WATER  
DOMESTIC HOT WATER RETURN  
EXISTING SANITARY SEWER PIPING  
EXISTING VENT PIPING  
EXISTING DOMESTIC COLD WATER  
EXISTING HOT WATER  
EXISTING HOT WATER RETURN  
NEW CONNECTION TO EXISTING  
ABOVE FINISHED FLOOR  
BELOW FLOOR  
GATE VALVE  
CHECK VALVE  
PRESSURE RELIEF VALVE  
UNION  
PRESSURE GAUGE  
THERMOMETER  
CONDENSATE DRAIN LINE  
EXISTING  
ITEMS TO BE REMOVED  
ELBOW UP  
ELBOW RISE OR DN. THROUGH SLAB  
FLOOR CLEANOUT  
CLEANOUT  
FLOOR DRAIN

## PIPING MATERIAL SCHEDULE

| PIPING FUNCTION             | PIPING MATERIAL             |
|-----------------------------|-----------------------------|
| SANITARY WASTE BELOW GRADE  | SCHEDULE 40 PVC             |
| SANITARY WASTE ABOVE GROUND | NO-HUB CAST IRON            |
| SANITARY VENT               | NO-HUB CAST IRON            |
| DOMESTIC HOT & COLD WATER   | COPPER, TYPE "L" HARD DRAWN |
| FIRE SPRINKLER ABOVE GROUND | BLACK STEEL SCHEDULE 40     |
|                             |                             |

NO HUB COUPLING SHALL HAVE A SHIELD CONSTRUCTED OF 304 CORRUGATED STAINLESS STEEL WITH A MINIMUM THICKNESS OF .016. COUPLING SIZE 1-1/2" - 4" SHALL HAVE FOUR (4) BANDS: APPROVED MANUFACTURES HUSKY SD 4000 AND MISSION. NO TWO BANDS ARE ACCEPT

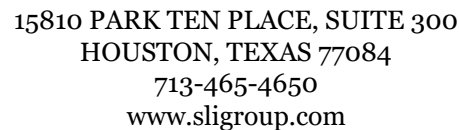
| SYMBOL | DESCRIPTION               | SIZE OF CONNECTION |    |    |      |      | REMARKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | WATER CONSERVATION |
|--------|---------------------------|--------------------|----|----|------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
|        |                           | TRAP               | SS | SV | CW   | HW   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |
| SK-1   | SINK                      | 1 1/4"             | 2" | 2" | 1/2" | 1/2" | REGENCY No. 60DI1101410K SINGLE COMPARTMENT STAINLESS STEEL DROP-IN SINK, 16 GAUGE SELF-RIMMING (13" x 19" x 18" DEEP). PROVIDE TMV-1, RIGID/SWING GOOSENECK SPOUT WITH E3-2 AERATOR, CHICAGO No. 1017, ANGLE SUPPLIES WITH STOP, 1/2" CHROME-PLATED BRASS NIPPLES TO WALL, MCGUIRE No. 151-A CRUMB CUP STRAINER, No. 8912 (1-1/2") ADJUSTABLE SEMI-CAST CHROME-PLATED BRASS P-TRAP WITH TUBING WASTE TO WALL, AND CHROME-PLATED CAST WALL FLANGE WITH SET SCREW SUPPLIES, AND P-TRAP SHALL BE INSULATED WITH TRAP WRAP BY PLUMBEREX SPECIALTY PRODUCTS, INC OR APPROVED EQUAL. |                    |
| HS-1   | HAND SINK                 | 1 1/4"             | 2" | 2" | 1/2" | 1/2" | WALL MOUNTED HAND SINK. SEE ARCHITECTURAL PLANS FOR EXACT SPEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |
| SK-2   | 3 COMPARTMENT SINK        | 1-1/2"             | 2" | 2" | 1/2" | 1/2" | STAND ALONE 3 COMPARTMENT SINK. SEE ARCHITECTURAL PLANS FOR EXACT SPEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |
| WF-1   | WATER FILTER              | -                  | -  | -  | 3/4" | -    | AQUA PURE MODEL NO 7900CLOCITM OR 7900CLOCARTM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |
| FD-1   | FLOOR DRAIN               | 3"                 | 3" | 2" | 1/2" | -    | J.R. SMITH FIGURE No. 2005Y-A06NB-P OR APPROVED EQUAL PAINTED CAST IRON FLOOR DRAIN AND SEEPAGE FLANGE, SIZE AS NOTED ON DRAWINGS, CLAMPING UNIT, QUAD CLOSE TRAP SEAL, AND 6" ROUND ADJUSTABLE POLISHED NICKEL BRONZE STRAINER TYPE TOP AND DEEP SEAL TRAP.                                                                                                                                                                                                                                                                                                                    |                    |
| TMV-1  | THERMOSTATIC MIXING VALVE | -                  | -  | -  | 1/2" | -    | SYMMONS NO #8210CK THERMOSTATIC MIXING VALVE CONSTRUCTION SHALL BE ROUGH BRASS AND BRONZE WITH BRASS AND STAINLESS STEEL FLOW CONTROL COMPONENTS, WITH INTEGRAL CHECKS AND VALVES. 360 DEGREES HANDLE ADJUSTMENT FOR TEMPERATURE SELECTION. @ 110 F. MAX                                                                                                                                                                                                                                                                                                                        |                    |
| ATP-1  | AUTOMATIC TRAP PRIMER     | -                  | -  | -  | 1/2" | -    | PRECISION PRODUCTS "PRIME-RITE" TRAP PRIMER MODEL # PR01-500.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    |
| TS-1   | TIME SWITCH               | -                  | -  | -  | 3/4" | -    | TORK ELECTROMECHANICAL 24 HOUR TIME SWITCH POWERED BY A SELF STARTING SYNCHRONOUS MOTOR. INSTALL ON WALL ADJACENT TO CIRCULATING PUMP. COORDINATE WITH ELECTRICAL AND PROVIDE FOR 120/1/60 HZ POWER REQUIREMENT.                                                                                                                                                                                                                                                                                                                                                                |                    |
| BFP-1  | BACKFLOW PREVENTER        | -                  | -  | -  | 3/8" | -    | WATTS No. LF7. 1/4" BACKFLOW PREVENTER WITH BRONZE. LEAD FREE.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |
| FD-1   | FLOOR DRAIN               | 3"                 | 2" | 2" | 1/2" | -    | J.R. SMITH FIGURE No. 2005Y B06NB-P OR APPROVED EQUAL PAINTED CAST IRON FLOOR DRAIN AND SEEPAGE FLANGE, SIZE AS NOTED ON DRAWINGS, CLAMPING UNIT, TRAP PRIMER TAP, AND 6"x6" SQUARE ADJUSTABLE POLISHED NICKEL BRONZE STRAINER TYPE TOP AND DEEP SEAL TRAP.                                                                                                                                                                                                                                                                                                                     |                    |
| FS-1   | FLOOR SINK                | 3"                 | 2" | 2" | 1/2" | -    | J.R. SMITH FIGURE No. 3101C-12 OR APPROVED EQUAL 8"x8" PAINTED CAST IRON FLOOR DRAIN WITH SEDIMENT BUCKET, 1/2" GRATE, SIZE AS NOTED ON PLANS, CLAMPING UNIT, TRAP PRIMER TAP AND DEEP SEAL TRAP.                                                                                                                                                                                                                                                                                                                                                                               |                    |

| MARK         | SERVICE               | STORAGE<br>IN GALLONS | RECOVERY<br>AT 100° RISE | ELECTRICAL  | ELEMENT<br>WATTS | MAKE AND MODEL                                                                      |
|--------------|-----------------------|-----------------------|--------------------------|-------------|------------------|-------------------------------------------------------------------------------------|
| <u>FWH-1</u> | ELECTRIC WATER HEATER | 20                    | 12 GPH                   | 277/1ø/60Hz | 6KW              | A.O. SMITH MODEL NO. DEL-20. PROVIDE WITH WATERCOP LEAKSTOP+ LEAK DETECTION SYSTEM. |

| MARK          | LOCATION | SERVICE            | GPM | HEAD<br>FT. | MIN.<br>EFF. | HP   | VOLTS/Ø | RPM  | MAKE AND MODEL                                                         |
|---------------|----------|--------------------|-----|-------------|--------------|------|---------|------|------------------------------------------------------------------------|
| <u>HWCp-1</u> | LEVEL 1  | DOMESTIC HOT WATER | 9   | 7           | --           | 1/15 | 120/1Ø  | 1750 | BELL & GOSSET<br>SERIES 100, 1-1/4" FLANGED<br>ALL BRONZE, INLINE TYPE |

| FIXTURES                                                                                    |                               |                    |        |        |      |      |      |
|---------------------------------------------------------------------------------------------|-------------------------------|--------------------|--------|--------|------|------|------|
| SYMBOLS                                                                                     | DESCRIPTION                   | SIZE OF CONNECTION |        |        |      |      |      |
|                                                                                             |                               | SANITARY           | TRAP   | VENT   | C.W. | H.W. | I.W. |
|  W C   | WATER CLOSET<br>(FLUSH VALVE) | 4"                 | —      | 2"     | 1"   | —    | —    |
|  U     | URINAL                        | 2"                 | —      | 2"     | 3/4" | —    | —    |
|  L     | LAVATORY                      | 2"                 | 1-1/4" | 1-1/4" | 1/2" | 1/2" | —    |
|  BT    | BATH TUB                      | 2"                 | 1-1/2" | 1-1/2" | 1/2" | 1/2" | —    |
|  MS    | MOP SINK                      | —                  | 2"     | 2"     | 1/2" | 1/2" | —    |
|  SK—X" | SINK (BY ARCHITECT)           | —                  | 1-1/2" | 2"     | 1/2" | 1/2" | —    |
|  SH    | SHOWER                        | —                  | 2"     | 2"     | 1/2" | 1/2" | —    |
|  EDF   | ELECTRIC DRINKING<br>FOUNTAIN | —                  | 1-1/4" | 1-1/4" | 1/2" | —    | —    |
|  DF    | DRINKING FOUNTAIN             | —                  | 1-1/4" | 1-1/4" | 1/2" | —    | 1/2" |

| SYMBOL      | DESCRIPTION       | P.D.I. FIXTURE<br>UNIT RATING | TYPE NO. PPP |
|-------------|-------------------|-------------------------------|--------------|
| <u>SA-A</u> | SHOCK<br>ARRESTOR | 1-11                          | SC-500       |
| <u>SA-B</u> | SHOCK<br>ARRESTOR | 12-32                         | SC-750       |
| <u>SA-C</u> | SHOCK<br>ARRESTOR | 33-60                         | SC-1000      |
| <u>SA-D</u> | SHOCK<br>ARRESTOR | 61-113                        | SC-1250      |



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WOODLANDS, TEXAS

E/B/E PROJECT NUMBER: 26181.00

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## PLUMBING PLAN

P1.01



COMMENTS

1. CONTRACTOR SHALL PROVIDE INDIVIDUAL BACKFLOW PREVENTERS FOR EACH PIECE OF EQUIPMENT.
2. EACH BACKFLOW PREVENTER MUST HAVE TESTING PORTS.
3. CONTRACTOR SHALL TEST BACKFLOW PREVENTER AND PROVIDE COPY OF TEST TO HEALTH DEPARTMENT.
4. SPLIT OR TEE WATER LINE BEFORE BACKFLOW PREVENTER IF USING LINE TO PROVIDE WATER TO OTHER FIXTURES OR EQUIPMENT

NOTES:

- A. NO COPPER OR BRASS FITTINGS DOWNSTREAM OF BACKFLOW PREVENTER.
- B. WATER FILTRATION BEFORE BACKFLOW PREVENTER.

**PLUMBING KEYED NOTES:**

- 1 NEW WATER HEATER SUSPENDED ABOVE ACCESSIBLE CEILING. COORDINATE WITH MEP IN THE AREA. REFER TO DETAILS.
- 2 EXISTING SINK TO BE REMOVED. CUT AND CAP WASTE AND WATER CONNECTIONS BACK TO POINT OF USE AS REQUIRED.
- 3 CONNECT NEW 1" COLD WATER TO EXISTING WATER ABOVE CEILING. VERIFY SIZE AND LOCATION PRIOR TO START OF WORK.
- 4 ROUTE COMMON 3/4" COLD WATER LINE FOR PLUMBING EQUIPMENT WITHIN COFFEE BAR.
- 5 CONNECT NEW 2" VENT TO EXISTING VENT RISER ABOVE CEILING. PROVIDE CAPPED TEE FOR FUTURE. VERIFY SIZE AND LOCATION PRIOR TO START OF WORK.
- 6 CONNECT NEW 3" WASTE TO EXISTING WASTE STACK. VERIFY SIZE AND LOCATION PRIOR TO START OF WORK.

EXISTING PLUMBING PIPING LOCATIONS SHOWN ON THIS DRAWING ARE APPROXIMATE.  
FIELD VERIFICATION IS REQUIRED. LOCATIONS SHOWN ARE BASED UPON LIMITED SITE  
SURVEY INFORMATION. COORDINATE FOR EXACT LOCATIONS OF NEW PLUMBING  
EQUIPMENT FOR COFFEE BAR WITH ARCHITECT.



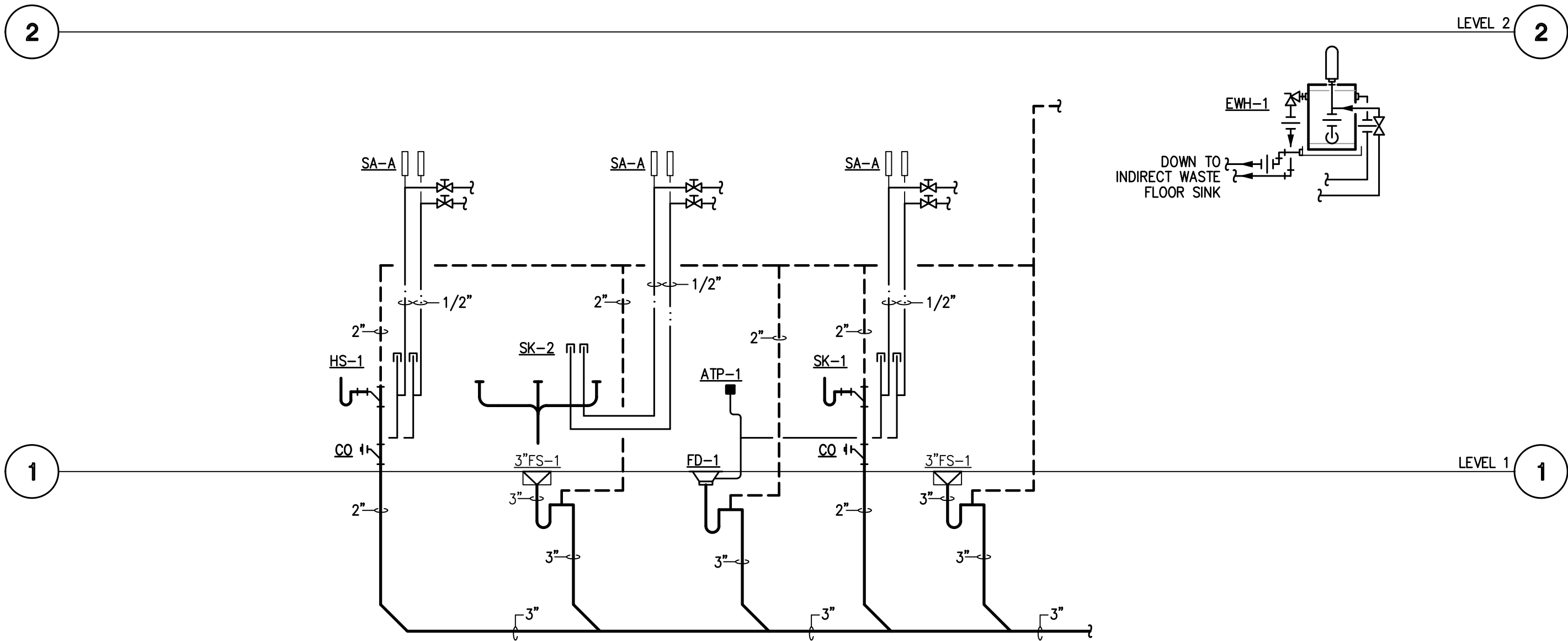


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01 PLUMBING RISER DIAGRAM  
SCALE: NONE

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