

PLUMBING SPECIFICATIONS

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

GENERAL NOTES

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

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

PLUMBING / GENERAL NOTES

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

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

SHOWERS AND TUB-SHOWERS COMBINATIONS IN ALL BUILDINGS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE, THERMOSTATIC, OR COMBINATION OF BOTH THAT PROVIDE SCALD AND THERMAL SHOCK PROTECTION. VALVES SHALL BE ADJUSTED TO DELIVER A MAXIMUM MIXED WATER SETTING OF 120 DEGREES FAHRENHEIT. THE WATER HEATER THERMOSTAT SHALL NOT BE CONSIDERED A SUITABLE CONTROL FOR MEETING THIS PROVISION.

VERIFY AND WHERE WATER PRESSURE EXCEEDS 80 PSI AN APPROVED PRESSURE REGULATOR PRECEDED BY AN ADEQUATE STRAINER SHALL BE INSTALLED

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

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

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

4- A WHOLE HOUSE HAS TEST IS REQUIRED UPON COMPLETION OF THE INSTALLATION, ALTERATION, OR REPAIR OF ANY GAS PIPING.

THE CITY SHALL BE NOTIFIED WHEN GAS PIPING IS READY FOR INSPECTION.

5- 2 GPM SHOWER FIXTURE, MAX.1.5 GPM BATHROOM FAUCET, MAX. 2 GPM KITCHEN FAUCET, AND MAX 1.28 WATER CLOSET TO CONFORM TO CITY GREEN REQUIREMENTS.

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

6-NOTE THAT ALL PLUMBING VENTS SHALL TERMINATE NOT LESS THAN 6" ABOVE ROOF NOR LESS THAN 1' FROM ANY VERTICAL SURFACE. VENTS SHALL TERMINATE NOT LESS THAN 10" FROM OR 3' ABOVE ANY WINDOW, DOOR OPENING AIR INTAKE, OR VENT SHAFT NOR 3' FROM LOT LINE.

IF WATER PRESSURE EXCEEDS 80 PSI, AND EXPANSION TANK AND AN APPROVED PRESSURE REGULATOR SHALL BE INSTALLED.

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

NOTES:

1-Projects which disturb less than one acre of soil shall manage storm water drainage during construction by one of the following: A. Retention basins. B. Where storm water is conveyed to a public drainage system, water shall be filtered by use of a barrier system, wattle or other approved method.

2-Site grading or drainage system will manage all surface water flows to keep water from entering buildings (swales, water collection, French drains, etc.). CGC Section 4.106.3. Exception: Additions not altering the drainage path.

3-When a shower is provided with multiple shower heads, the sum of flow to all the heads shall not exceed 1.8 gpm @ 80 psi, or the shower shall be designed so that only one head is on at a time, CGC Section 4.503.1.3.2.

4-Landscape irrigation water use shall have weather or soil based controllers. CGC Section 4.304.1.

5-The plans that a minimum of 65% of construction waste is to be recycled. CGC Section 4.408.1.

6-The contractor shall submit a Construction Waste Management Plan, per CGC Section 4.408.2.

7-The builder is to provide an operation manual (containing information for maintaining appliances, etc.) for the owner at the time of final inspection. CGC Section 4.410.1.

8-The gas fireplace(s) shall be a direct-vent sealed-combustion type. Woodstove or pellet stoves must be US EPA Phase II rated appliances. CGC Section 4.503.1.

WATER SAVING STANDARDS.

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

1-THE MAXIMUM FLOW FROM A SINK OR LAVATORY FAUCET OR A FAUCET AERATOR SHALL NOT EXCEED 0.5 GALLONS OF WATER PER MINUTE AT A PRESSURE OF 60 POUNDS PER SQUARE INCH WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES. 2-THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A TOILET SHALL NOT EXCEED AN AVERAGE OF 1.28 GALLONS WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES

3-THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A URINAL AND THE ASSOCIATED FLUSH VALVE, IF ANY, SHALL NOT EXCEED AN AVERAGE OF ONE GALLON WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES

SPECIAL NOTICE TO CONTRACTORS

1. ALL CONTRACTORS (GENERAL CONTRACTOR AND SUB-CONTRACTORS) BIDDING THIS PROJECT ARE REQUIRED TO VISIT THE JOB SITE AND VERIFY THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. CONTRACTORS ARE TO CAREFULLY REVIEW ALL CONSTRUCTION DOCUMENTS AND NOTE ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED AT THE JOB SITE PRIOR TO SUBMISSION OF ANY BID. THE BUILDING OWNER REPRESENTATIVE LISTED BELOW MAY BE CONTACTED FOR ACCESS TO THE JOB SITE.

2. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION AND CONDITION OF ALL POINTS OF CONNECTION, LOCATION AND CONDITION OF ALL BUILDING (ROOF/FLOOR/CEILING) PENETRATIONS, LOCATION AND CONDITION OF ALL UTILITIES AND BUILDING SYSTEMS INCLUDING, BUT NOT LIMITED TO, GAS, WATER, SEWER, VENT, ELECTRICAL, BUILDING MECHANICAL SYSTEMS, DUCT CONNECTIONS, EXHAUST/OUTSIDE AIR CONNECTIONS, SECURITY, FIRE ALARM, DATA, AND PHONE PRIOR TO SUBMISSION OF THEIR BID.

3. ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED SHALL BE BROUGHT TO THE ATTENTION, IN WRITING, TO THE ARCHITECT AND/OR ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

PLUMBING LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
P 0.00	PLUMBING GENERAL NOTES AND SPECIFICATIONS.	NTS
P 0.01	PLUMBING CODE CHECKING.	NTS
P 1.01	MAIN FLOOR - WATER SUPPLY LAYOUT.	1/4"=1'-0"
P 2.01	MAIN FLOOR - SEWER LAYOUT.	1/4"=1'-0"
P 3.01	MAIN FLOOR - GAS LAYOUT.	1/4"=1'-0"
P 4.01	GAS CODE CHECKING AND ISOM. RISER DIAGRAM.	NTS
P 5.01	SWIMMING POOL SCHEMATIC & SCHEDULE OF EQUIPMENT.	NTS
P 5.02	POOL PLAN & CALCULATIONS.	NTS
P 5.03	SOLAR POOL CATALOGS	
P 6.01	PLUMBING GENERAL DETAILS.	

General Notes

1.CONTRACTOR SHALL VERIFY ALL DIMENSIONS & COORDINATE WITH TRADES TO ENSURE CONFORMANCE TO THESE PLANS & SPECIFICATIONS.

Firm Name and Address

Project Name and Address

Project

TSE-2021-3782

Date

28/11/2022

Scale

NTS

Sheet

P

0.00



CALIFORNIA PLUMBING CODE CHECKING:

PIPE SUPPORTS:

TABLE 313.3  
HANGERS AND SUPPORTS

MATERIALS	TYPES OF JOINTS	HORIZONTAL	VERTICAL
Cast	Lead and Oakum	5 feet, except 10 feet where 10 foot lengths are installed <sup>1,2</sup>	Base and each floor, not to exceed 15 feet
	Compression Gasket	Every other joint, unless over 4 feet then support each joint <sup>1,2,3</sup>	Base and each floor, not to exceed 15 feet
Cast-iron Hubless	Shielded Coupling	Every other joint, unless over 4 feet then support each joint <sup>1,2,3,4</sup>	Base and each floor, not to exceed 15 feet
Copper & Copper Alloys	Soldered, Brazed, Threaded, or Mechanical	1 ½ inches and smaller, 6 feet; 2 inches and larger, 10 feet	Each floor, not to exceed 10 feet <sup>5</sup>
Steel Pipe for Water or DWV	Threaded or Welded	¾ inch and smaller, 10 feet; 1 inch and smaller, 12 feet	Every floor, not to exceed 25 feet <sup>5</sup>
Steel Pipe for Gas	Threaded or Welded	½ inch, 6 feet; ¾ inch and 1 inch, 8 feet; 1 ½ inches and larger, 10 feet	½ inch, 6 feet; ¾ inch and 1 inch, 8 feet; 1 ½ inches every floor level
Schedule 40 PVC and ABS DWV	Solvent Cemented	All sizes, 4 feet; allow for expansion every 30 feet <sup>3</sup>	Base and each floor; provide mid-story guides; provide for expansion every 30 feet
CPVC	Solvent Cemented	1 inch and smaller, 3 feet; 1 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides
CPVC-AL-CPVC	Solvent Cemented	½ inch, 5 feet; ¾ inch, 45 inches; 1 inch, 4 feet	Base and each floor; provide mid-story guides
Lead	Wiped or burned	Continuous Support	Not to exceed 4 feet
Steel	Mechanical	In accordance with standards acceptable to the Authority Having Jurisdiction	In accordance with standards acceptable to the Authority Having Jurisdiction
PEX	Cold Expansion, Insert and Compression	1 inch and smaller, 32 inches; 1 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides
PEX-AL-PEX	Metal Insert and Metal compression	½ inch } ¾ inch } 1 inch }	All sizes 98 inches Base and each floor; provide mid-story guides
PE-AL-PE	Metal Insert and Metal compression	½ inch } ¾ inch } 1 inch }	All sizes 98 inches Base and each floor; provide mid-story guides
PE-RT	Insert and Compression	1 inch and smaller, 32 inches; 1 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides
Polypropylene (PP)	Fusion weld (socket, butt, saddle, electrofusion), threaded (metal threads only), or mechanical	1 inch and smaller, 32 inches; 1 ¼ inches and larger, 4 feet	Base and each floor; provide mid-story guides

For SI units: 1 inch = 25.4 mm, 1 foot = 304.8 mm

Notes:

<sup>1</sup> Support adjacent to joint, not to exceed 18 inches (457 mm)

<sup>2</sup> Base not to exceed 40 foot (12 192 mm) intervals to prevent horizontal movement.

<sup>3</sup> Support at each horizontal branch connection.

<sup>4</sup> Hangers shall not be placed on the coupling.

<sup>5</sup> Vertical water lines shall be permitted to be supported in accordance with recognized engineering principles with regard to expansion and contraction, where first approved by the Authority Having Jurisdiction.

DRAINAGE:

719.0 Cleanouts.

**719.1 Locations.** Cleanouts shall be placed inside the building in near the connection between the building drain and the building sewer or installed outside the building at the lower end of the building drain and extended to grade.

Additional building sewer cleanouts shall be installed at intervals not to exceed 100 feet (30 480 mm) in straight runs and for each aggregate horizontal change in direction exceeding 135 degrees (2.36 rad)

**719.2 No additional Cleanouts.** Where a building sewer or a branch thereof does not exceed 10 feet (3048 mm) in length and is a straight-line projection from a building drain that is provided with a cleanout, no cleanout will be required at its point of connection to the building drain.

721.0 Location.

**721.1 Building Sewer.** Except as provided in Section 721.2, no building sewer shall be located in a lot other than the lot that is the site of the building or structure served by such sewer nor shall a building sewer be located at a point having less than the minimum distances referenced in Table 721.1.

706.0 Changes in Direction of Drainage Flow.

**706.1 Approved Fittings.** Changes in the direction of drainage piping shall be made by the approximate use of approved fittings and shall be of the angles presented by a one-sixteenth bend, one-eighth bend, or one-sixth bend, or other approved fittings of equivalent sweep.

**706.2 Horizontal to Vertical.** Horizontal drainage lines, connecting with a vertical stack, shall enter through 45 degree (0.79 rad) wye branch, 60 degree (1.05 rad) wye branches, combination wye and one-eighths bend branches, sanitary tee or sanitary tapped tee branches, or other approved fittings of equivalent sweep.

**706.4 Vertical to Horizontal.** Vertical drainage lines connect with horizontal drainage lines shall enter through 45 degree (0.79 rad) wye branches, combination wye and one-eighths bend branches, or other approved fittings of equivalent sweep. Branches, or other approved fittings of equivalent sweep. Branches or offsets of 60 degrees (1.05 rad) shall be permitted to be used where installed in a true vertical position.

**707.4 Location.** Each horizontal drainage pipe shall be provided with a cleanout at its upper terminal, and each run of piping, that is more than 100 feet (30 480 mm) in total developed length, shall be provided with a cleanout for each 100 feet (30 480 mm), or fraction thereof, in length of such piping. An additional cleanout shall be provided in a drainage line for each aggregate horizontal change in direction exceeding 135 degrees (2.36 rad). A cleanout shall be installed above the fixture connecting fitting, serving each urinal, regardless of the location of the urinal in the building.

Exceptions

(1) Cleanouts shall be permitted to be omitted on a horizontal drain line less than 5 feet (1524 mm) in length unless such line is serving sinks or urinals

TABLE 703.2: MAXIMUM UNIT LOADING AND MAXIMUM LENGTH OF DRAINAGE AND VENT PIPING

SIZE OF PIPE (inches)	1 ¼	1 ½	2	3	4	5	6	8	10	12
<b>Maximum Units Drainage Piping<sup>1</sup></b>										
Vertical	1	2 <sup>2</sup>	16 <sup>3</sup>	48 <sup>4</sup>	256	600	1380	3600	5600	8400
Horizontal	1	1	8 <sup>3</sup>	35 <sup>4</sup>	216 <sup>5</sup>	428 <sup>5</sup>	720 <sup>5</sup>	2640 <sup>5</sup>	4680 <sup>5</sup>	8200 <sup>5</sup>
<b>Maximum Length Drainage Piping</b>										
Vertical	45	65	85	212	300	390	510	750	—	—
Horizontal										
<b>Vent Piping</b>										
Horizontal and Vertical <sup>6</sup>										
Maximum Units	1	8 <sup>3</sup>	24	84	256	600	1380	3600	—	—
Maximum Lengths, (feet)	45	60	120	212	300	390	510	750	—	—

For SI units: 1 inch = 25 mm, 1 foot = 304.8 mm

Notes:

<sup>1</sup> Excluding trap arm.

<sup>2</sup> Except for sinks, urinals, and dishwashers – exceeding 1 fixture unit.

<sup>3</sup> Except for six-unit traps or water closets.

<sup>4</sup> Only four water closets or six-unit traps allowed on a vertical pipe or stack, and not to exceed three water closets or six-unit traps on a horizontal branch or drain.

<sup>5</sup> Based on ¼ inch per foot (20.8 mm/m) slope. For ⅓ of an inch per foot (10.4 mm/m) slope, multiply horizontal fixture units by a factor of 0.8.

<sup>6</sup> The diameter of an individual vent shall be not less than 1 ¼ inches (32 mm) nor less than one-half the diameter of the drain to which it is connected. Fixture unit load values for drainage and vent piping shall be computed from Table 702.1 and Table 702.2(2). Not to exceed one third of the total permitted length of a vent shall be permitted to be installed in a horizontal position. Where vents are increased one pipe size for their entire length, the maximum length limitations specified in this table do not apply. This table is in accordance with the requirements of Section 901.3.

**707.5 Cleaning.** Each cleanout shall be installed so that it opens to allow cleaning in the direction of flow of the soil or waste or at right angles thereto and, except in the case of wye branch and end-of-line cleanouts, shall be installed vertically above the flow line of the pipe.

708.0 Grade of Horizontal Drainage Piping.

**708.1 General.** Horizontal drainage piping shall be run in practical alignment and a uniform slope of not less than ¼ inch per foot (20.8 mm/m) or 2 percent toward the point of disposal provided that, where it is impractical due to the depth of the street sewer, to the structural features, or to the arrangement of a building or structure to obtain a slope of ¼ inch per foot (20.8 mm/m) or 2 percent, such pipe or piping 4 inches (100 mm) or larger in diameter shall be permitted to have a slope of not less than ⅛ inch per foot (10.4 mm/m) or 1 percent, where first approved by the Authority Having Jurisdiction.

TABLE 721.1

MINIMUM HORIZONTAL DISTANCE REQUIRED FROM BUILDING SEWER (feet)

Buildings or structures <sup>1</sup>	2
Property line adjoining private property	Clear <sup>2</sup>
Water supply wells	50 <sup>3</sup>
Streams	50
On-site domestic water service line	1 <sup>4</sup>
Public water main	10 <sup>2,4</sup>

WATER CONVERSION & WATER CONSUMPTION:

WATER CONSERVING PLUMBING FIXTURES AND FITTINGS	
Plumbing fixtures and fittings shall comply with the following: (2019 CGBSC, California Plumbing Code (CPC) and Table 1401.1 of the CPC)	
4303.1.1	All Water closets: <1.28 gal/flush Tank type water closet shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-type Toilets.
4303.1.2	Urinals: <0.5 gal/flush
4303.1.3.1	Single showerheads: <1.8 gpm @ 80 psi
4303.1.3.2	Multiple showerheads: combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gpm @ 80 psi or only one shower outlet is to be in operation at a time.
4303.1.4.1	Residential Lavatory Faucets: 0.8 gpm @ 20 psi < Flow Rate <1.2 gpm @ 60 psi
4303.1.4.2	Lavatory Faucets in common and Public Use Areas (outside of dwellings or sleeping units) in residential buildings: <0.5 gpm @ 60 psi
4303.1.4.3	Metering Faucets: <0.25 gallons per cycle
4303.1.4.4	Kitchen Faucets: <1.8 gpm @ 60 psi; Maximum Flow Rate of 1.8 gpm
PLUMBING FIXTURE CERTIFICATION REQUIRED: A plumbing fixture certification must be completed and signed by either a licensed general contractor, or a plumbing subcontractor, or the building owner certifying the flow rate of the fixtures installed. A copy of the certification can be obtained from the development services department.	

407.3 Limitation of Hot water Temperature for Public Lavatories.

Hot water delivered from public-use lavatories shall be limited to a maximum temperature of 120°F (49°C) by a device that complies with ASSE 1070/ASME A112.1070/CSA B125.70. The water heater thermostat shall not be considered a control for meeting this provision.

407.5 Waste Outlet.

Lavatories shall have a waste outlet and fixtures tailpiece not less than 1 ¼ inches (32 mm) in diameter.

409.4 Limitation of Hot Water in Bathbaths and

Whirlpool Bathbaths. The maximum hot water temperature discharging from the bathtub and whirlpool bathtub filler shall be limited to 120°F (49°C) by a device that complies with ASSE 1070/ASME A112.1070/CSA B125.70. The water heater thermostat shall not be considered a control for meeting this provision.

WATER HEATER:

501.1 Applicability.

The minimum capacity for storage water heaters shall be in accordance with the first-hour rating listed in Table 501.1(2).

Number of Bathrooms	1 to 1.5			2 to 2.5				3 to 3.5			
Number of Bedrooms	1	2	3	2	3	4	5	3	4	5	6
First hour rating, <sup>2</sup> Gallons	38	49	49	49	62	62	74	62	74	74	74

For SI units: 1 gallon = 3.785 L.

Notes:

<sup>1</sup> The first-hour rating is found on the "Energy Guide" label.

<sup>2</sup> Solar water heaters shall be sized to meet the appropriate first-hour rating as shown in the table.

504.0 Water Heater Requirements.

**504.1 Location.** Water heater installations in bedrooms and bathrooms shall comply with one of the following [NFPA54:10.27.1]:

- Fuel-burning water heaters shall be permitted to be installed in a closet located in the bedroom or bathroom provided the closet is equipped with a listed, gasketed door assembly and a listed self-closing device. The self-closing door assembly shall meet the requirements of Section 504.1.1. The door assembly shall meet the requirements of Section 504.1.2. Combustion air for such installations shall be obtained from the outdoors in accordance with Section 506.4. The closet shall be for the exclusive use of the water heater.
- Water heater shall be of the direct vent type. [NFPA 54: 10.27.1(2)]

**504.2 Vent.** Water heaters of other than the direct-vent type shall be located as close as practical to the chimney or gas vent.

**507.2 Seismic provisions.** Water heaters shall be anchored or strapped to resist horizontal displacement due to earthquake motion. Strapping shall be at points within the upper one third (⅓) and lower one-third (⅓) of its vertical dimensions. At the lower point, a minimum distance of four (4) inches (102 mm) shall be maintained above the controls with the strapping.

**507.4 Ground Support.** A water heater supported from the earth shall rest on level concrete or other approved base extending not less than 3 inches (76 mm) above the adjoining ground level.

**507.5 Drainage Pan.** Where a water heater is located in an attic, in or on an attic ceiling assembly, floor-ceiling assembly, or floor-suit floor assembly where damage results from a leaking water heater, a watertight pan of corrosion-resistant materials shall be installed beneath the water heater with not less than ¾ of an inch (20 mm) diameter drain to an approved location. Such pan shall be not less than 1 ½ (38 mm) in depth.

**507.13 Installation in Residential Garages.** Appliances in residential garages and in adjacent spaces that open to the garage and are not part of the living space of a dwelling unit shall be installed so that all burners and burner-ignition devices are located not less than 18 inches (457 mm) above the floor unless listed as flammable vapor or ignition resistant. [NFPA 54:9.1.10.1]

**508.4.4 Lighting and Convenience Outlet.** A permanent 120 V receptacle outlet and a lighting fixture shall be installed near the appliance. The switch controlling the lighting fixture shall be located at the entrance to the passageway. [NFPA 54:9.5.3]

**508.2.1 Installation at roof: Clearance.** Appliances shall be installed on a well-drained surface of the roof. At least 6 feet (1829 mm) of clearance shall be available between any part of the appliance, and the edge of a roof or similar hazard, or rigidly fixed rails, guards, parapets, or other building structures at least 42 inches (1067 mm) in height shall be provided on the exposed side. [NFPA 54:9.4.2.2]

VENT:

906.0 Vent Termination.

**906.1 Roof Termination.** Each vent pipe or stack shall extend through its flashing and shall terminate vertically not less than 6 inches (152 mm) above the roof nor less than 1 foot (305 mm) from a vertical surface, ABS and PVC piping exposed to sunlight shall be protected by water based synthetic latex paints.

**906.2 Clearance.** Each vent shall terminate not less than 10 feet (3048 mm) from, or not less than 3 feet (914 mm) above, an operable window, door, opening, air intake, or vent shaft, or not less than 3 feet (914 mm) in every direction from a hot line, alley and street excepted.

909.0 Special Venting for Island Fixtures.

**909.1 General.** Traps for island sinks and similar equipment shall be roughed in above the floor and shall be permitted to be vented by extending the vent as high as possible, but not less than the drainboard height and then returning it down- ward and connecting it to the horizontal sink drain immediately downstream from the vertical fixture drain. The return vent shall be connected to the horizontal drain through a wye-branch fitting and shall, in addition, be provided with a foot vent taken off the vertical fixture vent by means of a wye branch immediately below the floor and extending to the nearest partition and then through the roof to the open air, or shall be permitted to be connected to other vents at a point not less than 6 inches (152 mm) above the flood-level rim of the fixtures served. Drainage fittings shall be used on the vent below the floor level, and a slope of not less than ¼ inch per foot (20.8 mm/m) back to the drain shall be maintained. The return bend used under the drainboard shall be a one-piece fitting or an assembly of a 45 degree (0.79 rad), a 90 degree (1.57 rad), and a 45 degree (0.79 rad) elbow in the order named. Pipe sizing shall be as elsewhere required in this code.

The island sink drain, upstream of the returned vent, shall serve no other fixtures. An accessible cleanout shall be installed in the vertical portion of the foot vent.

WATER SUPPLY:

TABLE 611.4  
SIZING OF RESIDENTIAL WATER SOFTENERS<sup>4</sup>

REQUIRED SIZE OF SOFTENER CONNECTION (inches)	NUMBER OF BATHROOM GROUPS SERVED <sup>1</sup>
¾	up to 2 <sup>2</sup>
1	up to 4 <sup>3</sup>

For SI units: 1 inch = 25 mm

Notes:

<sup>1</sup> Installation of a kitchen sink and dishwasher, laundry tray, and automatic clothes washer permitted without additional size increase.

<sup>2</sup> An additional water closet and lavatory permitted.

<sup>3</sup> Over four bathroom groups, the softener size shall be engineered for the specific installation.

<sup>4</sup> See also Appendix A, Recommended Rules for Sizing the Water Supply Systems, and Appendix C, Alternate Plumbing Systems, for alternate methods of sizing water supply systems.

A backflow preventer shall not be required to separate a stand-alone sprinkler syste from the water distribution system where the sprinkler system material is in accordance with the requirements of Section 604.0.

**606.1 General.** Valves up to and including 2 inches (50 mm) in size shall be copper alloy or other approved material. Sizes exceeding 2 inches (50 mm) shall be permitted to have cast iron or copper alloy bodies. Each gate or ball valve shall be a fullway or full-port type with working parts of the non-corrosive material. Valves carrying water used in potable water systems intended to supply drinking water shall comply with the requirements of NSF 61 and ASME A112.4.14, ASME B16.34, ASTM F1970, ASTM F2389 AWWA C500, AWWA C504, AWWA C507, IAPMO Z1157, MSS SP-67, MSS SP- 70, MSS SP-71, MSS SP-72, MSS SP-78, MSS SP-80, MSS SP-110, MSS SP-122, or NSF 359.

**608.4 Pressure Relief Valves.** Each pressure relief valve shall be an approved automatic type with drain, and each such relief valve shall be set at a pressure of not more than 150 psi (1034 kPa). No shutoff valve shall be installed between the relief valve and the system.

FIRESTOP PROTECTION

1404.0 Combustible Piping Installations.

**1404.2 Fire-Resistance Rating.** Where penetrating a fire-resistance-rated wall, partition, floor, floor-ceiling assembly, roof-ceiling assembly, or shaft enclosure, the fire-resistance rating of the assembly shall be restored to its original rating.

**1404.3 Firestop Systems.** Penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E119, ASTM E814, UL 263, or UL 1479 with a positive pressure differential of not less than 0.01 of an inch of water (0.002 kPa). Systems shall have an F rating of not less than 1 hour but not less than the required fire-resistance rating of the assembly being penetrated. Systems protecting floor penetrations shall have a T rating of not less than 1 hour but not less than the required fire-resistance rating of the floor penetrations shall have a T rating of not less than 1 hour but not less than the required fire-resistance rating of the floor being penetrated. Floor penetrations contained within the cavity of a wall at the location of the floor penetration do not require a T rating. No T rating shall be required for floor penetrations by piping that is not in direct contact with combustible material.

**1404.6 Sleeves.** Where sleeves are used, the sleeves shall be securely fastened to the fire-resistance-rated assembly. The (inside) annular space between the sleeve and the fire-resistance-rated assembly shall be firestopped in accordance with this chapter.

1405.0 Noncombustible Piping Installations.

**1405.3 Firestop Systems.** Penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E119, ASTM E814, UL 263, or UL 1479 with a positive pressure differential of not less than 0.01 of an inch of water (0.002 kPa). Systems shall have an F rating of not less than 1 hour but not less than the required fire-resistance rating of the assembly being penetrated. Systems protecting floor penetrations shall have a T rating of not less than 1 hour but not less than the required fire-resistance rating of the floor being penetrated. Floor penetrations contained within the cavity of a wall at a location of the floor penetration do not require a T rating. No T rating shall be required for floor penetrations by piping that is not in direct contact with combustible material.

**1405.6 Sleeves.** Where sleeves are used, the sleeves shall be securely fastened to the fire-resistance-rated assembly. The (inside) annular space between the sleeve and the penetrating item and the (outside) annular space between the sleeve and the fire-resistance-rated assembly shall be firestopped in accordance with this chapter.

General Notes

1.CONTRACTOR SHALL VERIFY ALL DIMENSIONS & COORDINATE WITH TRADES TO ENSURE CONFORMANCE TO THESE PLANS & SPECIFICATIONS.

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CPC2019 / 603.5.20 SWIMMING POOLS, SPAS, AND HOT TUBS

POTABLE WATER SUPPLY TO SWIMMING POOLS, SPAS, AND HOT TUBS SHALL BE PROTECTED BY AN AIR GAP OR A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER IN ACCORDANCE WITH THE FOLLOWING:

- THE UNIT IS EQUIPPED WITH A SUBMERGED FILL LINE.
- THE POTABLE WATER SUPPLY IS DIRECTLY CONNECTED TO THE UNIT CIRCULATION SYSTEM.

SHEET NOTES:

- DCW, DHW DROP TO LOW LEVEL.
- DCW & DHW DROP IN WALL.
- DHW DROP IN WALL.

(N) PATIO & POOL

FROM 2019 CPC - TABLE 610.3:

WATER SUPPLY FIXTURE UNITS LOADS:

FIXTURE	W.S.F.U	QTY.	TOTAL W.S.F.U
KITCHEN SINK	1.5	1	1.5
DISHWASHER	1.5	1	1.5
TOTAL =			3.0

(E) HOUSE

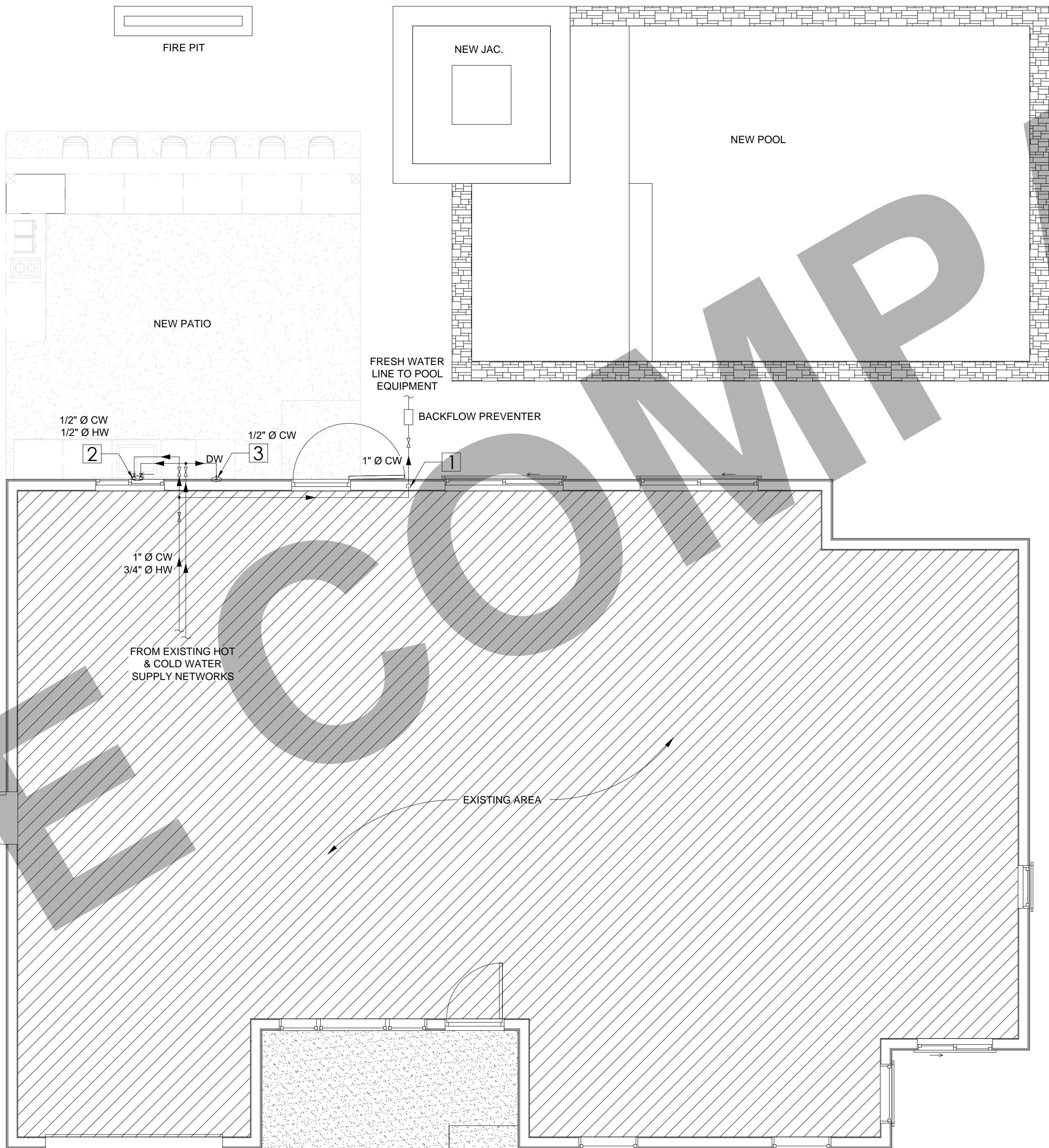
FROM 2019 CPC - TABLE 610.3:

WATER SUPPLY FIXTURE UNITS LOADS:

FIXTURE	W.S.F.U	QTY.	TOTAL W.S.F.U
BATHTUB	4.0	2	8.0
SHOWER HEAD	2.0	1	2.0
KITCHEN SINK	1.5	1	1.5
WATER CLOSET	2.5	2	5.0
LAVATORY	1.0	2	2.0
LAUNDRY SINK	1.5	1	1.5
CLOTHES WASHER	4.0	1	4.0
DISHWASHER	1.5	1	1.5
TOTAL BUILDING WSFU =			25.5

AS PER 2019 CPC - TABE 610.4:

- THE LONGEST RUN IS APPROX. 150 FT.
- W/M PRESSURE RANGE 30-45 PSI.
- (E) HOUSE + (N) POOL & PATIO = 25.5 + 3.0 = 28.5 WSFU
- MAIN PIPE SIZE NOT LESS THAN: 1 1/4"
- WATER METER SIZE: 1"



GENERAL NOTES:

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

FROM 2019 CPC - TABLE 610.3:

WATER SUPPLY FIXTURE UNITS (WSFU) AND MINIMUM FIXTURE BRANCH PIPE SIZES:

FIXTURE	CWP (INCH)	CWP (INCH)	WSFU - PRIVATE
BATHTUB	1/2"	1/2"	4.0
SHOWER HEAD	1/2"	1/2"	2.0
KITCHEN SINK	1/2"	1/2"	1.5
WATER CLOSET	1/2"	-	2.5
LAVATORY	1/2"	1/2"	1.0
LAUNDRY SINK	1/2"	1/2"	1.5
CLOTHES WASHER	1/2"	1/2"	4.0
DISHWASHER	-	1/2"	1.5

General Notes

1.CONTRACTOR SHALL VERIFY ALL DIMENSIONS & COORDINATE WITH TRADES TO ENSURE CONFORMANCE TO THESE PLANS & SPECIFICATIONS.

1	A / FOR REVIEW	28/11/22
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WATER SUPPLY LAYOUT

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Date 28/11/2022	
Scale 1/4"=1'-0"	

PLUMBING SHEET NOTES

- 1 → WASTE DROP AND 2" VENT RISE.  
2 → 4" FLOOR CLEAN-OUT.  
3 → 3" VENT STACK TO ABOVE.  
4 → INDIRECT WASTE CONNECTION  
5 → 2 1/2" FLOOR CLEAN-OUT.

(N) POOL & PATIO

FROM 2019 CPC - TABLE 702.1:

DRAINAGE FIXTURE UNIT VALUES (DFU)

FIXTURE	D.F.U	QTY.	TOTAL D.F.U
KITCHEN SINK	2.0	1	2.0
DISHWASHER	2.0	1	2.0
TOTAL BUILDING DFU =			4.0

(E) HOUSE

FROM 2019 CPC - TABLE 702.1:

DRAINAGE FIXTURE UNIT VALUES (DFU)

FIXTURE	D.F.U	QTY.	TOTAL D.F.U
KITCHEN SINK	2.0	1	2.0
LAUNDRY SINK	2.0	1	2.0
WATER CLOSET	3.0	2	6.0
LAVATORY	1.0	2	2.0
SHOWER	2.0	1	2.0
BATHTUB	2.0	2	4.0
DISHWASHER	2.0	1	2.0
WASHING MACHINE	3.0	1	3.0
TOTAL BUILDING DFU =			23.0

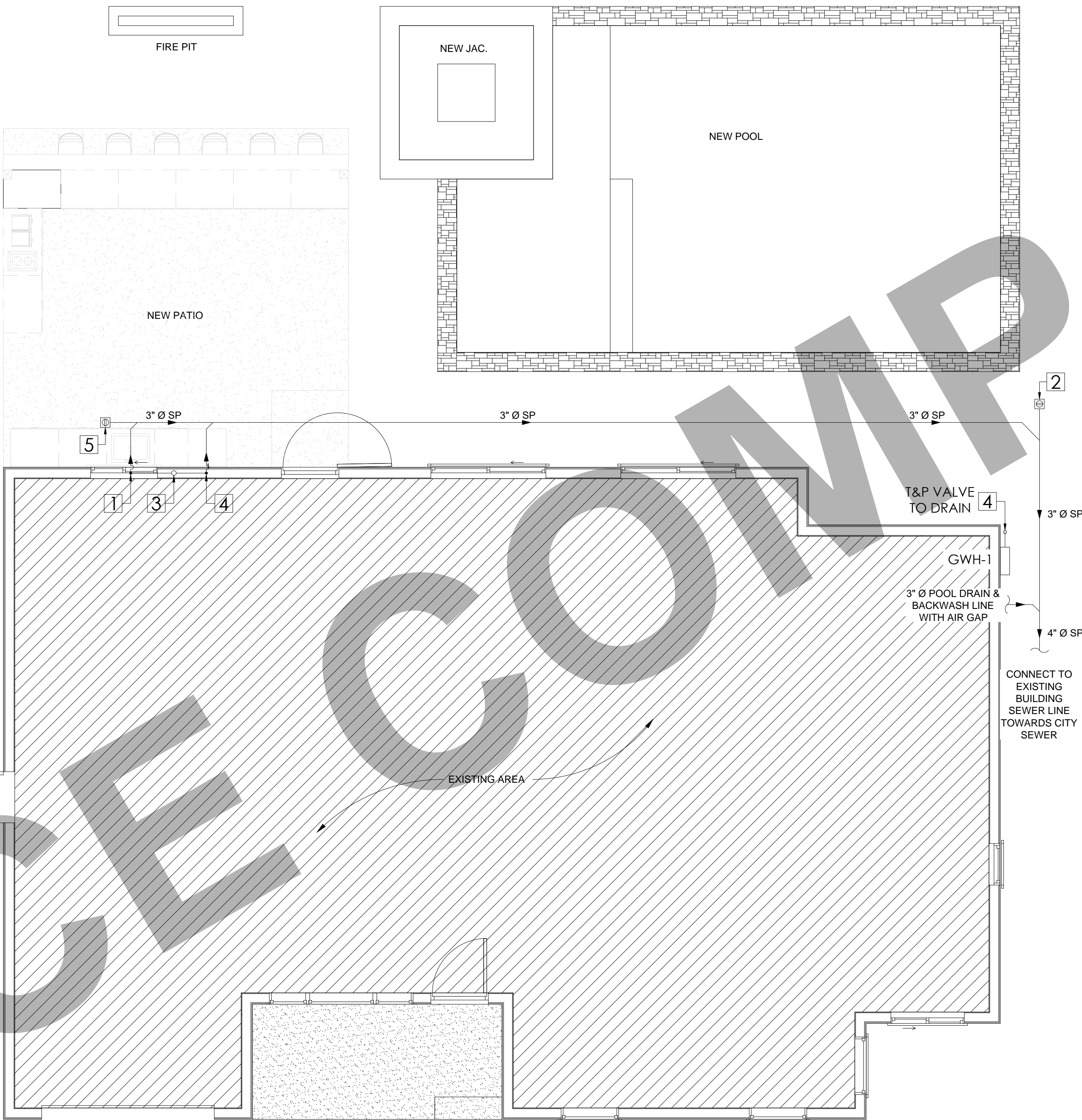
AS PER 2019 CPC - TABLE 703.2:

- TOTAL DFU = 4 + 23 = 27 DFU  
- MAIN SEWER PIPE: 4"Ø

FROM 2019 CPC - TABLE 702.1:

PIPE SIZE PER FIXTURE

FIXTURE	DR (INCH)	VENT (INCH)
KITCHEN SINK	1 1/2	2
DISHWASHER	1 1/2	2



GENERAL NOTES:

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

PLUMBING PIPING MATERIAL SCHEDULE

PIPING SYSTEM	LOCATION	ACCEPTABLE PIPING MATERIAL
WASTE & VENT	BELOW AND ABOVE GRADE	ASTM D 2665 PVC SCHEDULE 40, SOCKET FITTINGS DWV
	FROM SECOND TO FIRST FLOOR	ASTM A 888 CAST IRON, NO HUB SYSTEM

General Notes

1.CONTRACTOR SHALL VERIFY ALL DIMENSIONS & COORDINATE WITH TRADES TO ENSURE CONFORMANCE TO THESE PLANS & SPECIFICATIONS.

1 A / FOR REVIEW 28/11/22

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Project Name and Address

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Date 28/11/2022

Scale 1/4"=1'-0"

Sheet

P 2.01



GENERAL NOTES:

1. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE EXACT PIPE SIZES, INVERT ELEVATIONS, PRESSURES FOR LOCATIONS OF ANY SEWER, WATER PIPING AND WATER METER WITH CIVIL UTILITIES DRAWINGS, AND ANY OTHER ENGINEER AS APPLICABLE.
2. PRIOR TO PERFORMING WORK, CONTRACTOR TO COORDINATE PIPE ROUTING WITH ALL OTHER TRADES AND EXISTING FIELD CONDITIONS.
3. REFER TO MECHANICAL PLANS FOR PLUMBING SPECIFICATION OF MATERIAL, INSULATION AND INSTALLATION REQUIREMENTS.
4. CONTRACTOR IS RESPONSIBLE FOR ROUGH-IN COORDINATION AND LOCATIONS. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS AND FIXTURES.
5. CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED CUTTING AND PATCHING.
6. ALL NOTCHING, BORING, AND CUTTING OF HOLES IN WALL STUDS AND FLOOR JOISTS SHALL BE PERFORMED BASED ON THE LATEST ADOPTED AND APPROVED EDITION OF THE BUILDING CODE.
7. ALL PLUMBING FIXTURES SHALL BE OF WATER CONSERVATION TYPE AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
8. ALL WATER PIPING SHALL BE INSTALLED ON INTERIOR SIDE OF THE BUILDING WALL INSULATION.
9. CONTRACTOR SHALL PROVIDE VALVES LOCATED ABOVE LAY-IN CEILING OR 24"x24" CEILING ACCESS PANEL COORDINATE FINAL LOCATION AND SIZE WITH ARCHITECT. PROVIDE BALANCING VALVES FOR HOT WATER RETURN SYSTEM AS REQUIRED.
10. ALL SANITARY DRAINAGE PIPING 3" AND SMALLER SHALL BE SLOPED AT  $\frac{1}{4}$ " PER FOOT. PIPING 4" AND LARGER SHALL BE SLOPED AT  $\frac{1}{8}$ " PER FOOT.
11. ALL CONDENSATE DRAIN PIPING SHALL BE SLOPED AT  $\frac{1}{8}$ " PER FOOT AND PROVIDE ACCESSIBLE CLEANOUTS AT ALL CHANGES OF DIRECTION.
12. VENTS THAT TERMINATE AT THE ROOF SHALL BE A MINIMUM OF 10' FROM ANY FRESH AIR INTAKE.
13. REFER TO THE PLUMBING DIAGRAMS FOR GUIDANCE OF INSTALLATION INTENT. CONTRACTOR IS TO PROVIDE ALL COMPONENTS NECESSARY TO MEET THE DESIGN INTENT, WHETHER SHOWN IN DIAGRAM OR NOT.
14. EACH VENT PIPE OR STACK SHALL EXTEND THROUGH ITS FLASHING AND SHALL TERMINATE VERTICALLY NOT LESS THAN 6 INCHES (152 MM) ABOVE THE ROOF NOR LESS THAN 1 FOOT (305 MM) FROM A VERTICAL SURFACE.
15. EACH VENT SHALL TERMINATE NOT LESS THAN 10 FEET (3048 MM) FROM, OR NOT LESS THAN 3 FEET (914 MM) ABOVE, AN OPENABLE WINDOW, DOOR, OPENING, AIR INTAKE, OR VENT SHAFT, OR NOT LESS THAN 3 FEET (914 MM) IN EVERY DIRECTION FROM A LOT LINE, ALLEY AND STREET EXCEPTED.

(N) PATIO & POOL

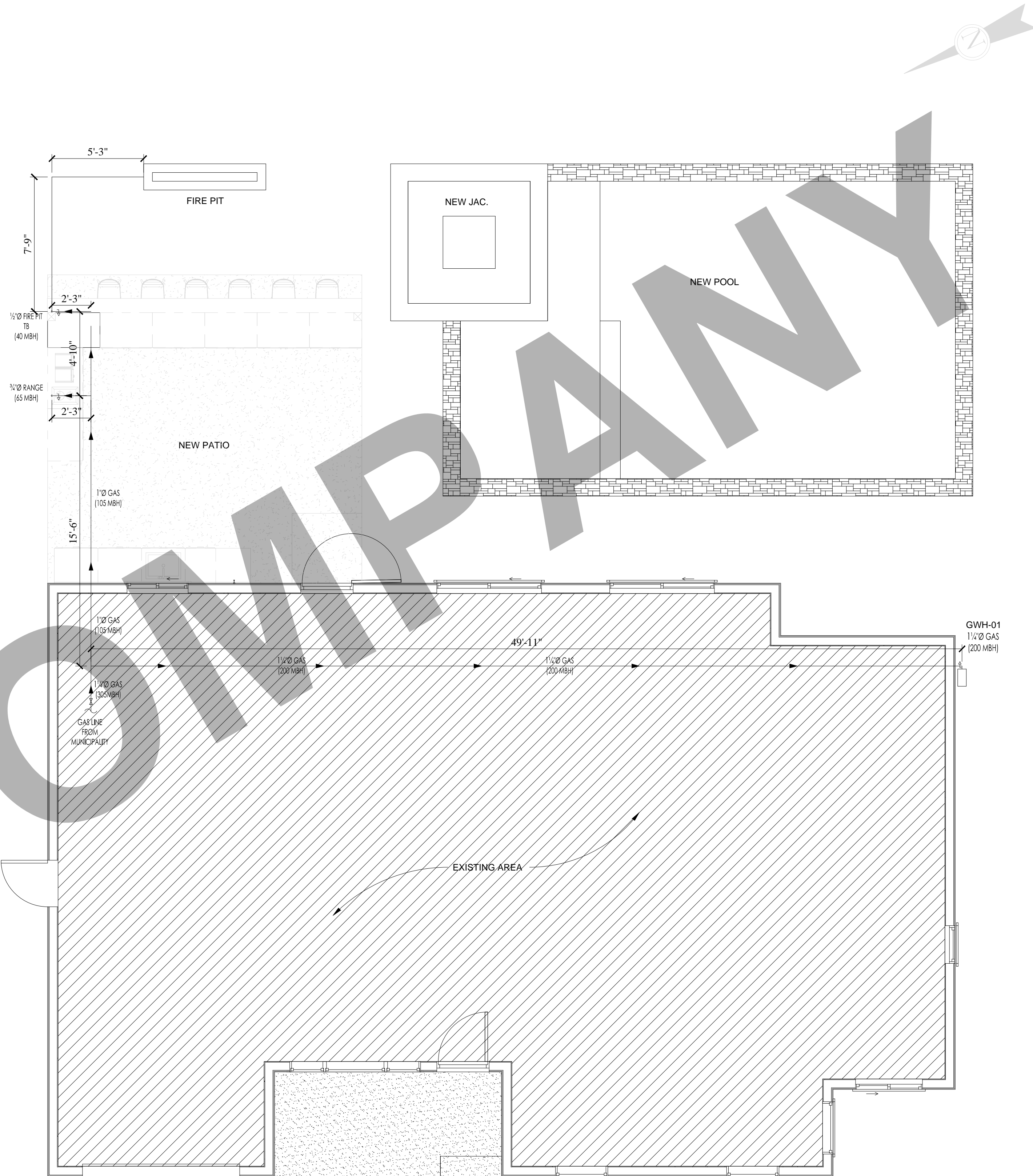
MBH:

ITEM	MBH
RANGE	65
FIRE PIT	40
GAS WATER HEATER	200
TOTAL =	305

(E) HOUSE

MBH:

ITEM	MBH
RANGE	65
DRYER	35
FURNACE	100
WATER HEATER- (50 GALL)	50
TOTAL =	250



General Notes

1.CONTRACTOR SHALL VERIFY ALL DIMENSIONS & COORDINATE WITH TRADES TO ENSURE CONFORMANCE TO THESE PLANS & SPECIFICATIONS.

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Scale  
1/4"=1'-0"

Sheet

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CALIFORNIA GAS  
CODE CHECKING:

GAS:

**1208.7 Gas Meters.** Gas meters shall be selected for the maximum expected pressure and permissible pressure drop. [NFPA 54:5.7.1]

**1208.7.1 Location.** Gas meters shall be located in ventilated spaces readily accessible for examination, reading, replacement, or necessary maintenance. [NFPA54:5.7.2.1]

**1208.7.1.1 Subject to Damage.** Gas meters shall not be placed where they will be subjected to damage, such as adjacent to a driveway; under a fire escape; n public passages, halls, or where they will be subject to excessive corrosion or vibration. [NFPA 54:5.7.2.2]

**1208.7.1.2 Extreme Temperatures.** Gas meters shall not be located where they will be subjected to extreme temperatures or sudden extreme changes in temperature or in areas where they are subjected to temperatures beyond those recommended by the manufacturer. [NFPA 54:5.7.2.3]

**1208.7.2 Supports.** Gas meters shall be supported or connected to rigid piping so as not to exert a strain n the meters. Where flexible connectors are used to connect a gas meter to downstream piping at mobile homes in mobile home parks, the meter shall be supported by a post or bracket placed in a firm footing or by other means providing equivalent support. [NFPA 54:5.7.3]

**1208.7.3 Meter Protection.** Meters shall be protected against overpressure, backpressure, and vacuum. [NFPA54:5.7.4]

**1208.7.4 Identification.** Gas piping at multiple meter installations shall be marked by a metal tag or other permanent means designating the building or the part of the building being supplied and attached by the installing agency. [NFPA 54:5.7.5]

**1208.8 Gas Pressure Regulators.** A line pressure regulator or gas appliance pressure regulator, as applicable, shall be installed where the gas supply pressure exceeds that at which the branch supply line or appliances are designed to operate or vary beyond design pressure limits. [NFPA 54:5.8.1]

1210.0 Gas Piping Installation.

**1210.1 Piping Underground.** Underground gas piping shall be installed with sufficient clearance from any other underground structure to avoid contact therewith, to allow maintenance, and to protect against damage from proximity to other structures. In addition, underground plastic piping shall be installed with sufficient clearance or shall be insulated from sources of heat to prevent the heat from impairing the serviceability of the pipe. [NFPA 54:7.1.1]

**1212.6 Appliance Shutoff Valves and Connections.** Each appliance connected to a piping system shall have an accessible, approved manual shutoff valve with a non-displaceable valve member or a listed gas convenience outlet.

Appliance shutoff valves and convenience outlets shall serve a single appliance only. The shutoff valve shall be located within 6 feet (1829 mm) of the appliance it serves. Where a connector is used, the valve shall be installed upstream of the connector. A union or flanged connection shall be provided downstream from the valve to permit removal of appliance controls. Shutoff valves serving decorative appliances shall be permitted to be installed in fireplaces if listed for such use. [NFPA 54:9.6.5, 9.6.5.1(A)(B)]

Exceptions:

- (1) Shutoff valves shall be permitted to be accessible located inside or under an appliance where such appliance is removed without removal of the shutoff valve.
- (2) Shutoff valves shall be permitted to be accessibly located inside wall heaters and wall furnaces listed for recessed installation where necessary maintenance is performed without removal of the shutoff valve.

TABLE 1208.4.1  
APPROXIMATE GAS INPUT FOR TYPICAL APPLIANCES [NFPA 54: TABLE A.5.4.2.1]

APPLIANCE	INPUT (Btu/h approx.)
Space Heating Units	
Warm air furnace	
Single family	100 00
Multifamily, per unit	60 000
Hydronic boiler	
Single family	100 000
Multifamily, per unit	60 000
Space and Water Heating Units	
Hydronic boiler	
Single family	120 000
Multifamily, per unit	75 000
Water Heating Appliances	
Water heater, automatic storage	
30 to 40 gallon tank	35 000
Water heater, automatic storage	
50 gallon tank	50 000
Water heater, automatic instantaneous	
Capacity at 2 gallons per minute	142 800
Capacity at 4 gallons per minute	285 000
Capacity at 6 gallons per minute	428 400
Water heater, domestic, circulating or side-arm	35 000
Cooking Appliances	
Range, freestanding, domestic	65 000
Built-in oven or broiler unit, domestic	25 000
Built-in top unit, domestic	40 000
Other Appliances	
Refrigerator	3000
Clothes dryer, Type 1 (domestic)	35 000
Gas fireplace direct vent	40 000
Gas log	80 000
Barbecue	40 000
Gaslight	2500

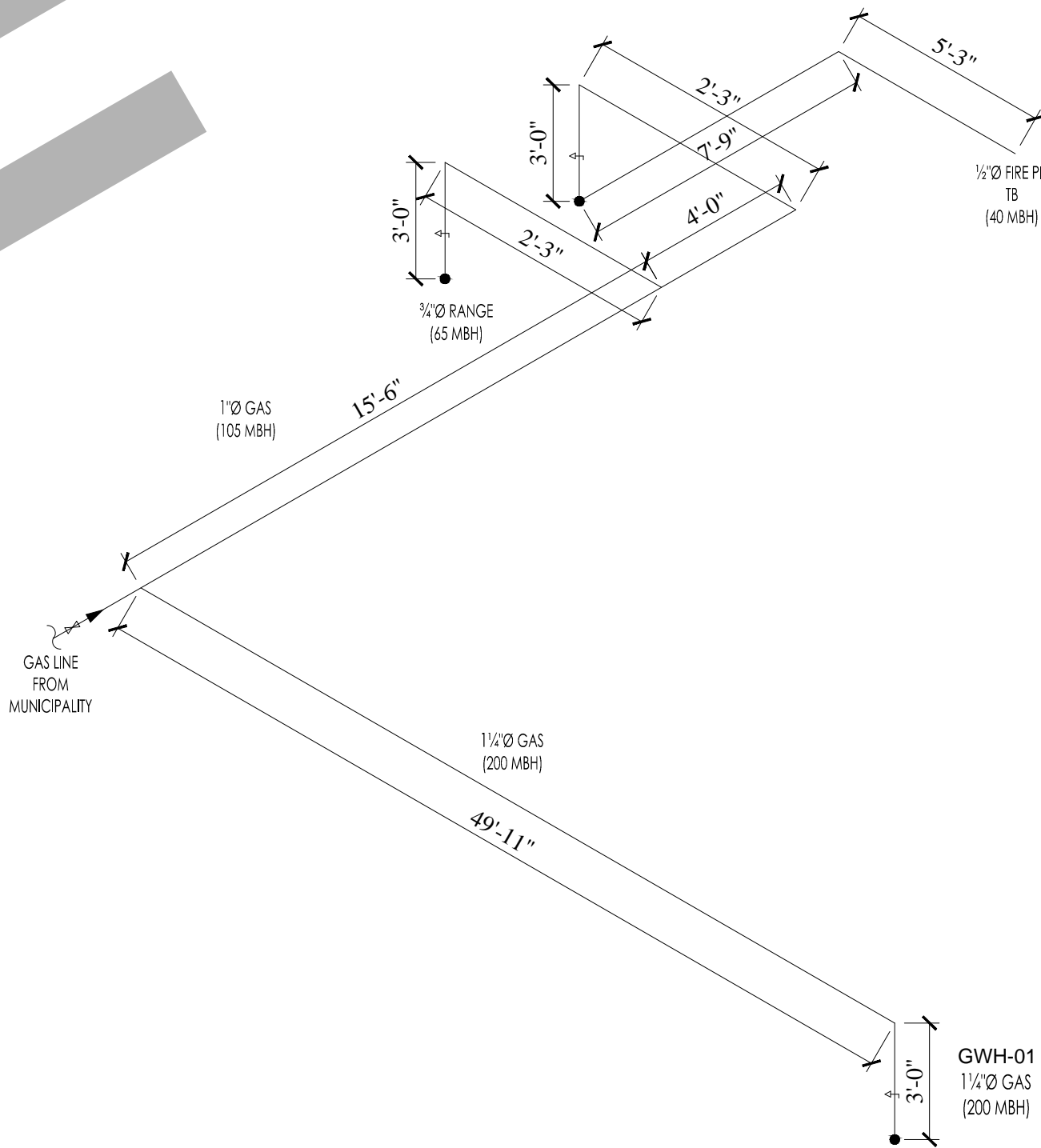


TABLE 1215.2(1)  
SCHEDULE 40 METALLIC PIPE

PIPE SIZE (inch)														
Nominal	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12
Actual ID	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026	5.047	6.065	7.981	10.020	11.938
Length (ft)	Capacity in Cubic Feet of Gas Per Hour													
10	131	273	514	1,060	1,580	3,050	4,860	8,580	17,500	31,700	51,300	105,000	191,000	303,000
20	90	188	353	726	1,090	2,090	3,340	5,900	12,000	21,800	35,300	72,400	132,000	208,000
30	72	151	284	583	873	1,680	2,680	4,740	9,660	17,500	28,300	58,200	106,000	167,000
40	62	129	243	499	747	1,440	2,290	4,050	8,270	15,000	24,200	49,800	90,400	143,000
50	55	114	215	442	662	1,280	2,030	3,590	7,330	13,300	21,500	44,100	80,100	127,000
60	50	104	195	400	600	1,160	1,840	3,260	6,640	12,000	19,500	40,000	72,600	115,000
70	46	95	179	368	552	1,060	1,690	3,000	6,110	11,100	17,900	36,800	66,800	106,000
80	42	89	167	343	514	989	1,580	2,790	5,680	10,300	16,700	34,200	62,100	98,400
90	40	83	157	322	482	928	1,480	2,610	5,330	9,650	15,600	32,100	58,300	92,300
100	38	79	148	304	455	877	1,400	2,470	5,040	9,110	14,800	30,300	55,100	87,200
125	33	70	131	269	403	777	1,240	2,190	4,460	8,080	13,100	26,900	48,800	77,300
150	30	63	119	244	366	704	1,120	1,980	4,050	7,320	11,900	24,300	44,200	70,000
175	28	58	109	224	336	648	1,030	1,820	3,720	6,730	10,900	22,400	40,700	64,400
200	26	54	102	209	313	602	960	1,700	3,460	6,260	10,100	20,800	37,900	59,900
250	23	48	90	185	277	534	851	1,500	3,070	5,550	8,990	18,500	33,500	53,100
300	21	43	82	168	251	484	771	1,360	2,780	5,030	8,150	16,700	30,400	48,100
350	19	40	75	154	231	445	709	1,250	2,560	4,630	7,490	15,400	28,000	44,300
400	18	37	70	143	215	414	660	1,170	2,380	4,310	6,970	14,300	26,000	41,200
450	17	35	66	135	202	389	619	1,090	2,230	4,040	6,540	13,400	24,400	38,600
500	16	33	62	127	191	367	585	1,030	2,110	3,820	6,180	12,700	23,100	36,500
550	15	31	59	121	181	349	556	982	2,000	3,620	5,870	12,100	21,900	34,700
600	14	30	56	115	173	333	530	937	1,910	3,460	5,600	11,500	20,900	33,100
650	14	29	54	110	165	318	508	897	1,830	3,310	5,360	11,000	20,000	31,700
700	13	27	52	106	159	306	488	862	1,760	3,180	5,150	10,600	19,200	30,400
750	13	26	50	102	153	295	470	830	1,690	3,060	4,960	10,200	18,500	29,300
800	12	26	48	99	148	285	454	802	1,640	2,960	4,790	9,840	17,900	28,300
850	12	25	46	95	143	275	439	776	1,580	2,860	4,640	9,530	17,300	27,400
900	11	24	45	93	139	267	426	752	1,530	2,780	4,500	9,240	16,800	26,600
950	11	23	44	90	135	259	413	731	1,490	2,700	4,370	8,970	16,300	25,800
1,000	11	23	43	87	131	252	402	711	1,450	2,620	4,250	8,720	15,800	25,100
1,100	10	21	40	83	124	240	382	675	1,380	2,490	4,030	8,290	15,100	23,800
1,200	NA	20	39	79	119	229	364	644	1,310	2,380	3,850	7,910	14,400	22,700
1,300	NA	20	37	76	114	219	349	617	1,260	2,280	3,680	7,570	13,700	21,800
1,400	NA	19	35	73	109	210	335	592	1,210	2,190	3,540	7,270	13,200	20,900
1,500	NA	18	34	70	105	203	323	571	1,160	2,110	3,410	7,010	12,700	20,100
1,600	NA	18	33	68	102	196	312	551	1,120	2,030	3,290	6,770	12,300	19,500
1,700	NA	17	32	66	98	189	302	533	1,090	1,970	3,190	6,550	11,900	18,800
1,800	NA	16	31	64	95	184	293	517	1,050	1,910	3,090	6,350	11,500	18,300
1,900	NA	16	30	62	93	178	284	502	1,020	1,850	3,000	6,170	11,200	17,700
2,000	NA	16	29	60	90	173	276	488	1,000	1,800	2,920	6,000	10,900	17,200

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895kPa, 1-inch water column = 0.2488 kPa, 1 British thermal unit per hour = 0.2931 W, 1 cubic foot per hour = 0.0283 m3/h, 1 degree = 0.01745 rad.

Notes:  
1. NA means a flow of less than 10 cfh.  
2. All table entries have been rounded to three significant digits.

CALIFORNIA PLUMBING CODE 2019 ®

GAS PIPING INSTALLATIONS

Gas	Natural
Inlet Pressure	Less than 2 psi
Pressure Drop	0.5 in. w.c.
Specific Gravity	0.60

General Notes

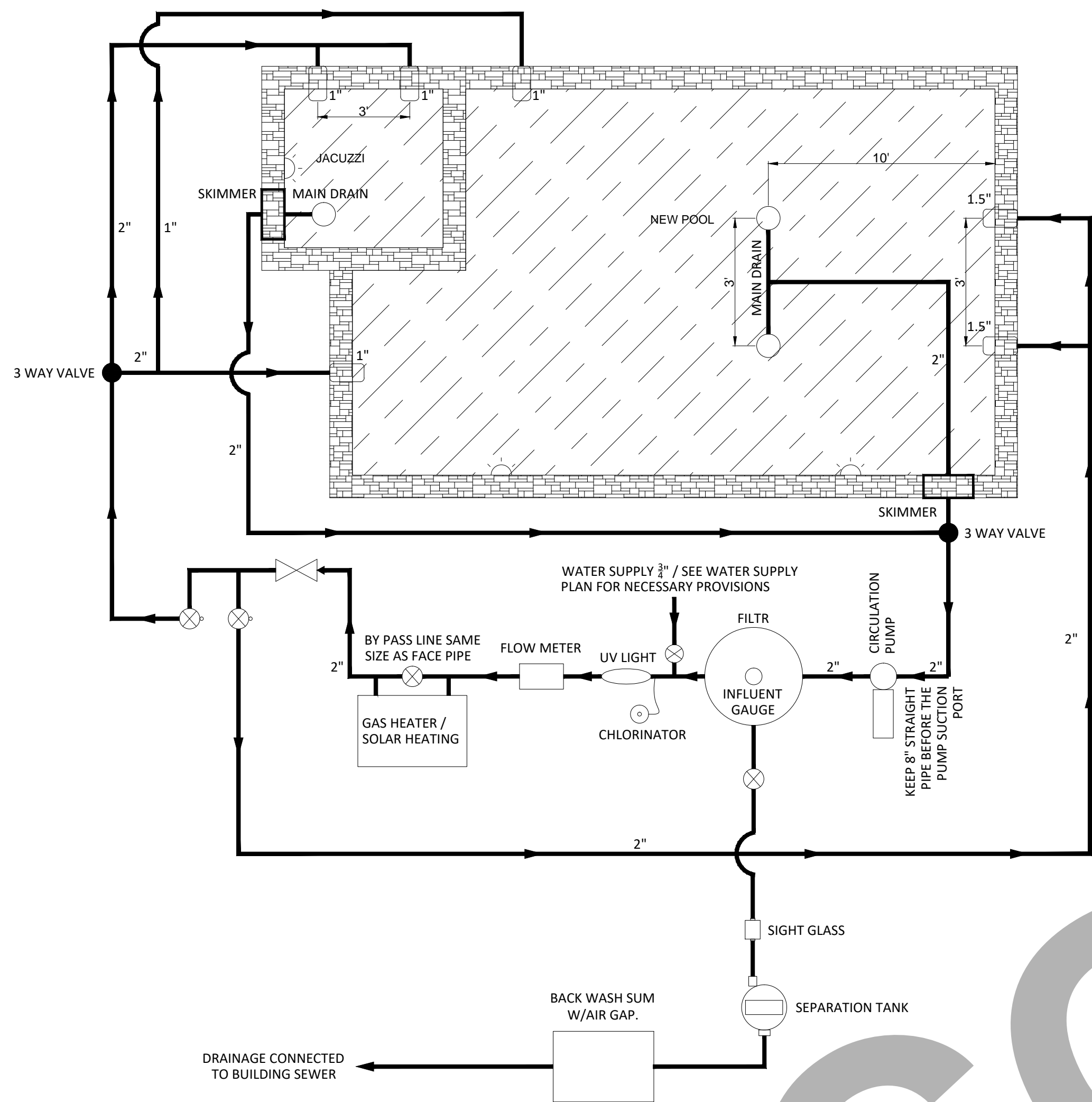
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MAXIMUM GPM IN PIPE							
PIPE DESCRIPTION /PIPE SIZE	1"	1 1/2"	2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
SCHEDULE 40 PVC SUCTION @ 6 F.P.S	16	38	63	90	138	238	540
SCHEDULE 40 PVC SUCTION @ 8 F.P.S	22	51	84	119	184	317	720
TYPE 'L' COPPER @ 6 F.P.S	15	53	58	89	127	224	502

LEGEND:

	ELECTRONIC VALVE
	MANUAL VALVE
	RETURN TO POOL
	FLOW DIRECTION
	CHECK VALVE
	LIGHT

PROVIDE MAINTENANCE & SAFETY EQUIPMENT INCLUDING:

- VACUUM / SKIMMER WITH 35' HOSE OR POLE.
- COMPLETE SET OF SAFETY FLOAT LINES, POOL HOOKS & SWIM TEACHER.
- SKIMMER / LEAF RAKE.
- COMPLETE pH, CHLORINE, TA & TOTAL HARDNESS TEST KITS.
- TUBE THERMOMETER.

POOL & JACUZZI EQUIPMENT SCHEDULE

EQUIPMENT TYPE	MANUFACTURER	MODEL NO.	DESCRIPTION	QTY
FILTER	PENTAIR	FNSP36	FIBERGLASS D.E. FILTER - Ø21.5" - 72GPM MAX.	1
SEPARATION TANK	PANTAIR	SEP100	DE SEPARATION TANK WITH REPLACEABLE BAG.	1
CIRCULATION PUMP	PENTAIR	INTELLIFLO VSF	VARIABLE SPEED & FLOW PUMP 55 GPM @35' WG & 3.95 THP	1
SKIMMER(S)	WATERWAY	560-D3C60L	13.65" x 7.65" FACEPLATE & LONG THROAT SKIMMER ASSEMBLY.	2
CHLORINATOR	PENTAIR	INTELLICHLOR	SALT CHLORINE GENERATOR WITH AUTOMATIC RECYCLING.	1
FLOW METER	BLUE-WHITE	F-30200P	VARIABLE AREA ACRYLIC FLOW METER - 20 TO 120 GPM. SUITABLE FOR 2" PIPE.	1
CIRCULATION SUCTION OUTLET	PRAMOUNT	MDXR3	VGB COMPLIANT DEBRIS DRAIN IAPMO TESTED TO MEET THE ANSI/APSPICC-16 -2017 ANTI-ENTRAPMENT REQUIREMENTS.	3
LIGHT(S)	PENTAIR	EC-601307	12V WHITE POOL LED LIGHTS WITH 500W INCANDESCENT EQUIVALENT CAPACITY.	3
ELECTRONIC VALVE(S)	JANDY	JVA 2444	24V VALVE ACTUATOR + 2 PORT VALVE Ø2".	2
MANUAL VALVE	JANDY	BVDU020	DOUBLE UNION GRAY PVC Ø2 BALL VALVE.	SEE SCHEME
3 WAY VALVE	PENTAIR	263026	LUBE FREE PVC 3 WAY CHECK & DIVERTER VALVE Ø2".	2
UV LIGHT SYSTEM	AQUA ULTRAVIOLET	A00140	100W SINGLE LAMP, PLASTIC BODY WITH Ø3" INLET & OUTLET SUITABLE FOR 68GPM FLOW & 25,000 GALLONS POOL VOLUME.	1

SCHEDULE No. 1  
GAS WATER HEATER SCHEDULE

TAG	GW-H-01
LOCATION	POOL STATION
MANUFACTURER	AOSMITH
MODEL	ATO-540H-N
TYPE	GAS / NATURAL
GPM (@ 76°F RISE)	10.0
MAX. GAS INPUT (BTU/hr)	199,000
ENERGY FACTOR (EF)	0.95
APPROX. WEIGHT (lbs)	59
DIMENSION WxHxD (IN.)	17.75x23.6x11.25
HOT & COLD WATER CONX. SIZE	3/4" & 3/4"
GAS INLET CONNECTION	3/4"

NOTES:

- PROVIDE A PRESSURE-RELIEF VALVE WITH DRAIN.
- PROVIDE ISOLATION VALVES ON BOTH THE COLD-WATER SUPPLY AND THE HOT-WATER PIPE LEAVING THE INSTANTANEOUS WATER HEATERS, AND PROVIDE HOSE BIB OR OTHER FITTINGS ON EACH VALVE FOR FLUSHING.
- PROVIDE 110V RECEPTACLE W/WATER-RESISTANT ENCLOSURE/COVER FOR TANKLESS W/H.
- TANKLESS WATER HEATER SUITABLE FOR OUTDOORS INSTALLATION.

General Notes

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CALIFORNIA BUILDING CODE:

Section 3122B Pool Equipment Enclosure

- For pools constructed on or after January 1, 2013, pool equipment shall be enclosed as follows:
- All equipment installed for recirculation, filtration and disinfection of pool water shall be installed so that access is limited to persons authorized by the pool owner or operator; and
  - Pool equipment shall be mounted on a continuous slab of concrete or other equivalent easily cleanable and nonabsorbent material; and
  - Floors shall be sloped a minimum of  $\frac{1}{4}$  inch (6.4 mm) per foot to a drain.

3139B.1

Solar heating systems shall comply with the following:

- Solar heating system suction outlets shall comply with Section 3137B; and
- Solar heating system suction outlets shall be located no closer than 5 feet (1525 mm) to any pool inlet fitting; and
- The installation of a solar heating system on a new or existing pool shall not interfere with the required turnover rate as specified in Section 3124B nor exceed the pipe flow velocities as specified in Section 3125B.1.

3116B.4.3

A means to limit the hot water to 110°F (43°C) maximum shall be provided to prevent scalding. This temperature limit control shall not be adjustable by the pool user

POOL & JACUZZI DIMENSIONS:

SURFACE AREA = 505 FT<sup>2</sup>  
AVERAGE DEPTH = 5 FT.  
TOTAL VOLUME = 2,525 FT<sup>3</sup> = 18,887 GAL.

PUMP FLOW RATE:

POOL TURNOVER = 6 Hrs  
PUMP FLOW RATE = 18,887 / (6 \* 60) = 52.5 GPM

FILTER SIZE:

52.5 GPM / 2 GPM / FT<sup>2</sup> = 26.5 FT<sup>2</sup>.  
USE (1) 26.5 FT<sup>2</sup> SAND FILTER MIN VELOCITY CIRCULATION.

SUCTION & DISCHARGE: USE 2" SUCTION & 2" RETURN

RETURNS REQUIRED:

1+ (2,525 / 10,000) = 2 RETURNS

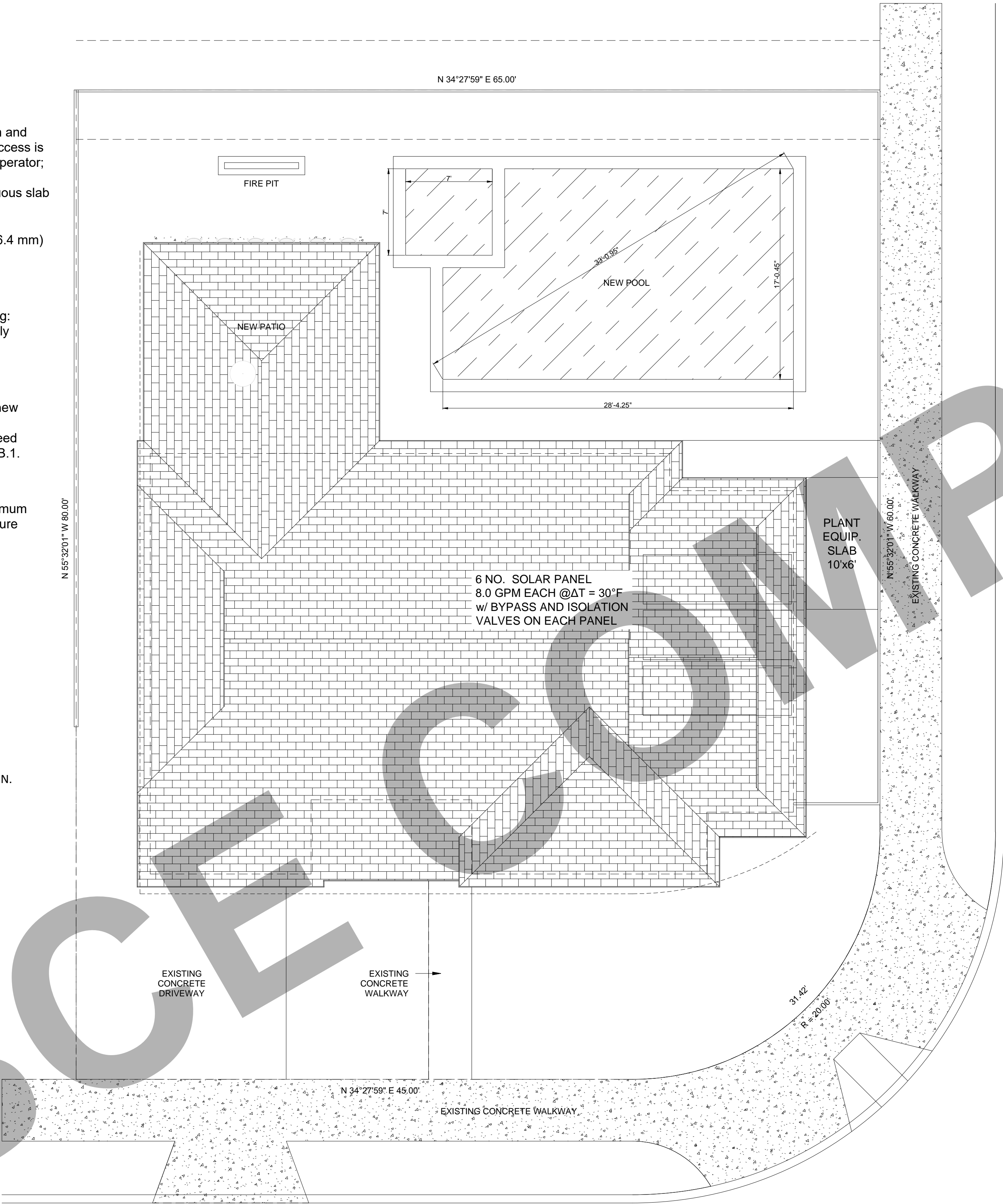
POOL HEATER CAPACITY:

$\Delta T = 30^{\circ}F$   
Water Constant = 8.3 lbs./gal. of water  
 $E = 18,887 \times 8.3 \times 30 = 4,702,116 \text{ BTUs}$   
 $P = 4,702,116 / 24 = 195,922 \text{ BTU/hr}$

THE SOLAR POOL HEATING WILL BE BACKED UP WITH A GAS TANKLESS WATER HEATER WITH A CAPACITY OF 200 MBH.

POOL HEATING SOLAR PANEL:

$\Delta T = 30^{\circ}F$   
Flow Rate = 8.0 GPM  
No. of Panel = 52.5 / 8.0 = 6 SOLAR PANELS.



SECTION 110.4 - MANDATORY REQUIREMENTS FOR POOL AND SPA SYSTEMS AND EQUIPMENT

(a) **CERTIFICATION BY MANUFACTURERS.** ANY POOL OR SPA HEATING SYSTEM OR EQUIPMENT MAY BE INSTALLED ONLY IF THE MANUFACTURER HAS CERTIFIED THAT THE SYSTEM OR EQUIPMENT HAS ALL OF THE FOLLOWING:

- EFFICIENCY.** A THERMAL EFFICIENCY THAT COMPLIES WITH THE APPLIANCE EFFICIENCY REGULATIONS; AND
- ON-OFF SWITCH.** A READILY ACCESSIBLE ON-OFF SWITCH, MOUNTED ON THE OUTSIDE OF THE HEATER THAT ALLOWS SHUTTING OFF THE HEATER WITHOUT ADJUSTING THE THERMOSTAT SETTING; AND
- INSTRUCTIONS.** A PERMANENT, EASILY READABLE, AND WEATHERPROOF PLATE OR CARD THAT GIVES INSTRUCTION FOR THE ENERGY EFFICIENT OPERATION OF THE POOL OR SPA HEATER AND FOR THE PROPER CARE OF POOL OR SPA WATER WHEN A COVER IS USED; AND
- ELECTRIC RESISTANCE HEATING.** NO ELECTRIC RESISTANCE HEATING.  
**EXCEPTION 1 TO SECTION 110.4(A)4:** LISTED PACKAGE UNITS WITH FULLY INSULATED ENCLOSURES, AND WITH TIGHT-FITTING COVERS THAT ARE INSULATED TO AT LEAST R-6.  
**EXCEPTION 2 TO SECTION 110.4(A)4:** POOLS OR SPAS DERIVING AT LEAST 60 PERCENT OF THE ANNUAL HEATING ENERGY FROM SITE SOLAR ENERGY OR RECOVERED ENERGY.

(b) **INSTALLATION.** ANY POOL OR SPA SYSTEM OR EQUIPMENT SHALL BE INSTALLED WITH ALL OF THE FOLLOWING:

- PIPING.** AT LEAST 36 INCHES OF PIPE SHALL BE INSTALLED BETWEEN THE FILTER AND THE HEATER OR DEDICATED SUCTION AND RETURN LINES, OR BUILT-IN OR BUILT-UP CONNECTIONS SHALL BE INSTALLED TO ALLOW FOR THE FUTURE ADDITION OF SOLAR HEATING EQUIPMENT;
- COVERS.** A COVER FOR OUTDOOR POOLS OR OUTDOOR SPAS THAT HAVE A HEAT PUMP OR GAS HEATER; AND
- DIRECTIONAL INLETS AND TIME SWITCHES FOR POOLS.** IF THE SYSTEM OR EQUIPMENT IS FOR A POOL:
  - THE POOL SHALL HAVE DIRECTIONAL INLETS THAT ADEQUATELY MIX THE POOL WATER; AND
  - A TIME SWITCH OR SIMILAR CONTROL MECHANISM SHALL BE INSTALLED AS PART OF A POOL WATER CIRCULATION CONTROL SYSTEM THAT WILL ALLOW ALL PUMPS TO BE SET OR PROGRAMMED TO RUN ONLY DURING THE OFF-PEAK ELECTRIC DEMAND PERIOD AND FOR THE MINIMUM TIME NECESSARY TO MAINTAIN THE WATER IN THE CONDITION REQUIRED BY APPLICABLE PUBLIC HEALTH STANDARDS.

General Notes

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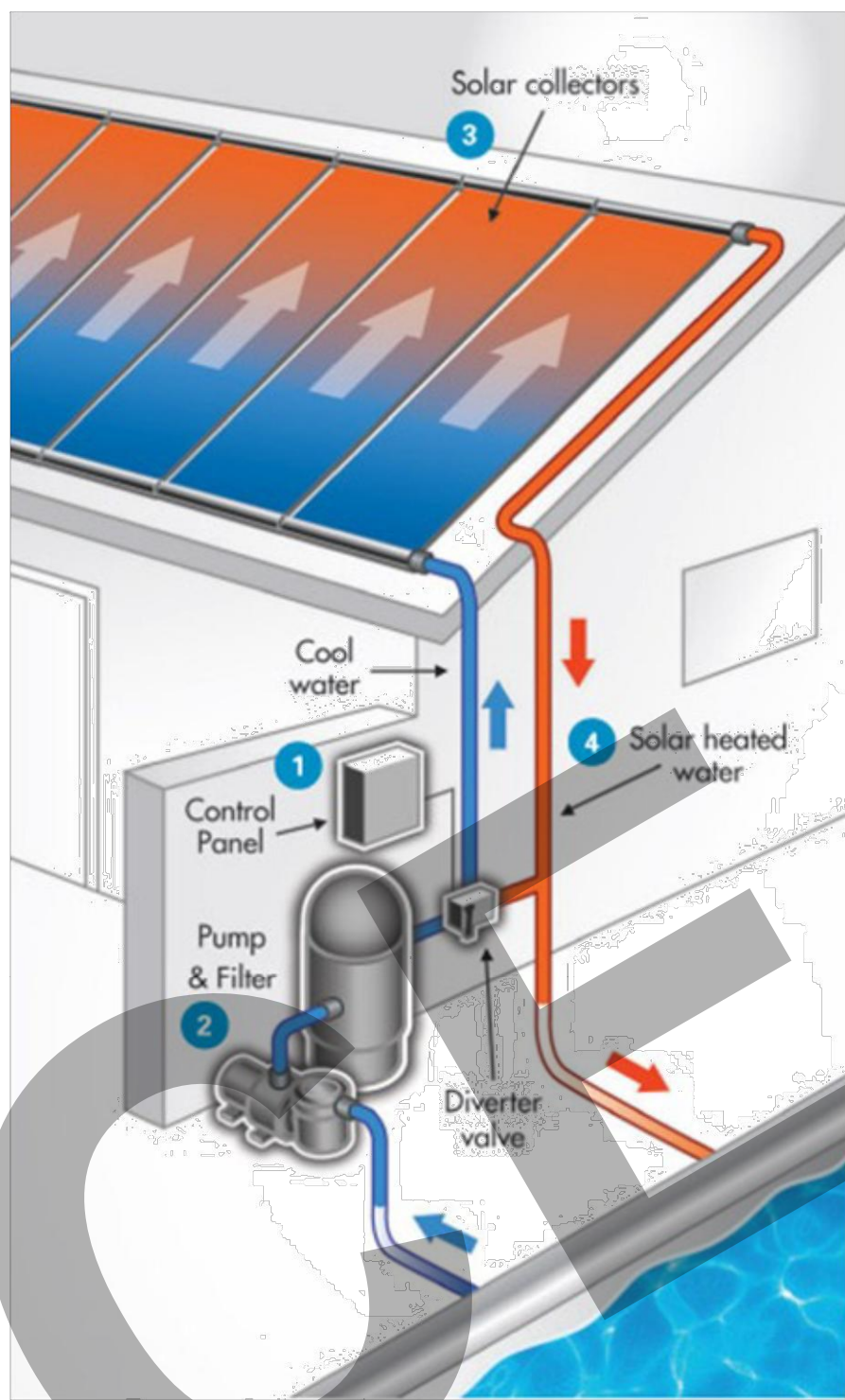


- Industry best warranty
- Revolutionary technology mixes the water in a spiral motion
- Water evenly and efficiently moves through the header
- More tubes than competitor panels
- Dramatically reduces or eliminates pool heating costs
- Adds value to your pool and to your home
- Heats your pool to a warm, comfortable temperature with environment friendly energy, free from the sun

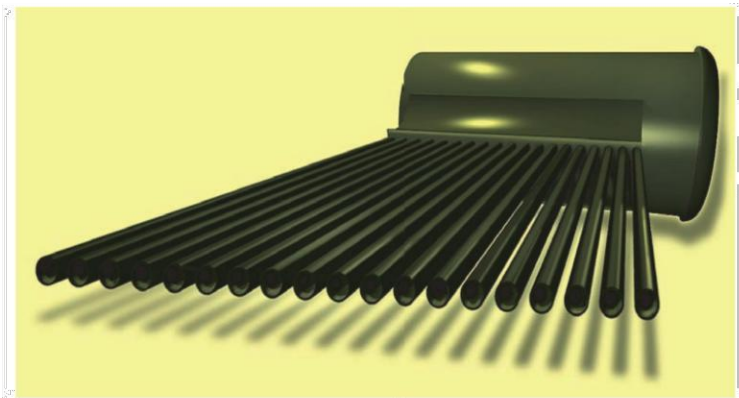
## SunSaver ST™ Solar Pool Heating System

### How It Works

FAFCO's 40 years of innovation and patented technology have made it easy to heat your pool with solar energy. Cold water is pumped from your pool through our patented solar collector design. Like a garden hose lying in the sun, the collector heats the water inside, which is then pumped back into your pool giving you luxuriously warm water and a significantly longer swim season.



1. Set your desired water temperature and a sensor determines the most efficient run time.
2. Your pool pump sends cold water from the pool through the solar collectors
3. FAFCO's polymer solar collectors heat the water as it is channeled through the collector array
4. Luxuriously warm, solar heated water flows back into your pool



## SunSaver ST™ Solar Pool Heating System

### DESCRIPTION:

The SunSaverST™ Solar Collector is manufactured in Chico, California. The collector is a specially developed, highly stabilized polyolefin and is of parallel, circular channel design with separated tubes. It is unglazed, un-insulated, and designed for low temperature applications such as swimming pool heating, heat pumps, aquaculture, and hydroponics.

### DIMENSIONS:

Header Length = 50.875 in. (1.29 m)  
Width (Panel body) = 47.5 in. (1.21 m)

Overall Dimensions	Effective Area
4 ft. X 8 ft. (1.22 X 2.44 m)	30.8 ft <sup>2</sup> (2.86 m <sup>2</sup> )
4 ft. X 10 ft. (1.22 X 3.05 m)	38.8 ft <sup>2</sup> (3.60 m <sup>2</sup> )
4 ft. X 12 ft. (1.22 X 3.66 m)	46.6 ft <sup>2</sup> (4.33 m <sup>2</sup> )

### ROOF MOUNTING SPACE:

Width = [Number of panels X 50.875 in. (129 cm)] + 24 in. (61 cm)  
Length = Panel length + 24 in. (61 cm)

### RACK SPACE:

Width = [Number of panels X 50.875 in. (129 cm)] + 2 in. (5 cm)  
Length = Panel length + 6 in. (15 cm)

### FLOW:

Maximum recommended flow = 8 gpm per panel  
3.47 psi head loss (1,817 l/hr, 0.244 kg/cm<sup>2</sup>)  
Minimum recommended flow = 2 gpm per panel  
0.23 psi head loss (454 l/hr, 0.016 kg/cm<sup>2</sup>)  
Recommended flow = 4 gpm per panel  
0.87 psi head loss (908 l/hr, 0.061 kg/cm<sup>2</sup>)

### PANELS PER BANK: (maximum)

12 panels single end feed  
17 panels diagonal feed

### PRESSURE:

80°F (27°C)

212°F (100°C)

70°F (21°C)

### TEMPERATURE:

### WEATHERABILITY:

### WEIGHT:

NORMAL OPERATING PRESSURE	MAXIMUM INTERMITTENT PRESSURE
0 to 30 psi (0 - 2.2 kg/cm <sup>2</sup> )	45 psi (3.21 kg/cm <sup>2</sup> )
0 to 5 psi (0 - 0.35 kg/cm <sup>2</sup> )	5 psi (0.35 kg/cm <sup>2</sup> )

Measured burst pressure of panel body = Over 300 psi (21.0 kg/cm<sup>2</sup>)

Normal operating temperature = 60°F to 90°F (16°C to 32°C)  
Maximum continuous operating temperature = 212°F (100°C)  
Maximum intermittent temperature (unpressured) = 250°F (121°C)  
Melt temperature = 338°F (170°C)

Weatherometer, accelerated outdoor exposure, and other extensive laboratory testing demonstrates long-term weatherability of SunSaverST™ collectors (see warranty). Additionally, FAFCO's experience of over 30 years and over 1,000,000 collectors installed confirms that the proprietary stabilization and high mechanical strength results in negligible warranty over the twelve-year warranty period.

Without Water:	
4 ft. X 8 ft.	12.2 lbs (4.54 kg) or 0.38 lbs/ft <sup>2</sup> (1.85 kg/m <sup>2</sup> )
4 ft. X 10 ft.	14.3 lbs (5.34 kg) or 0.36 lbs/ft <sup>2</sup> (1.76 kg/m <sup>2</sup> )
4 ft. X 12 ft.	16.47 lbs (6.15 kg) or 0.34 lbs/ft <sup>2</sup> (1.67 kg/m <sup>2</sup> )

With Water:	
4 ft. X 8 ft.	46 lbs (17.2 kg) or 1.44 lbs/ft <sup>2</sup> (7.03 kg/m <sup>2</sup> )
4 ft. X 10 ft.	53.8 lbs (20.1 kg) or 1.35 lbs/ft <sup>2</sup> (6.59 kg/m <sup>2</sup> )
4 ft. X 12 ft.	61.7 lbs (23.07 kg) or 1.29 lbs/ft <sup>2</sup> (6.28 kg/m <sup>2</sup> )

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### General Notes

1.CONTRACTOR SHALL VERIFY ALL DIMENSIONS & COORDINATE WITH TRADES TO ENSURE CONFORMANCE TO THESE PLANS & SPECIFICATIONS.

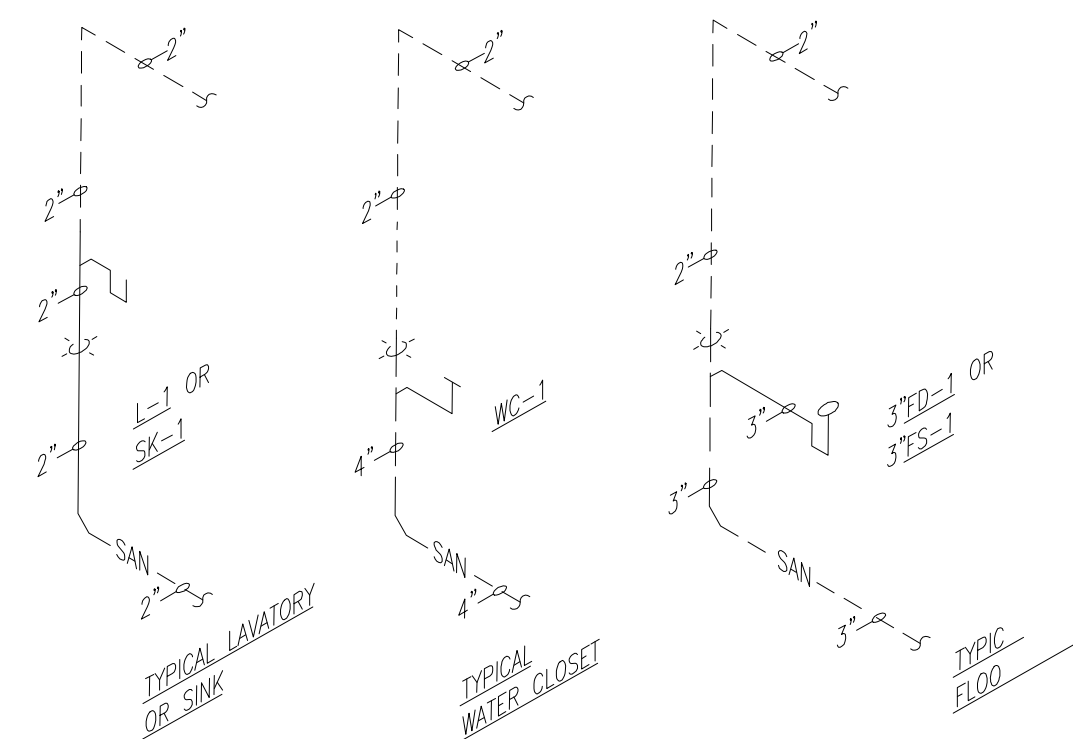
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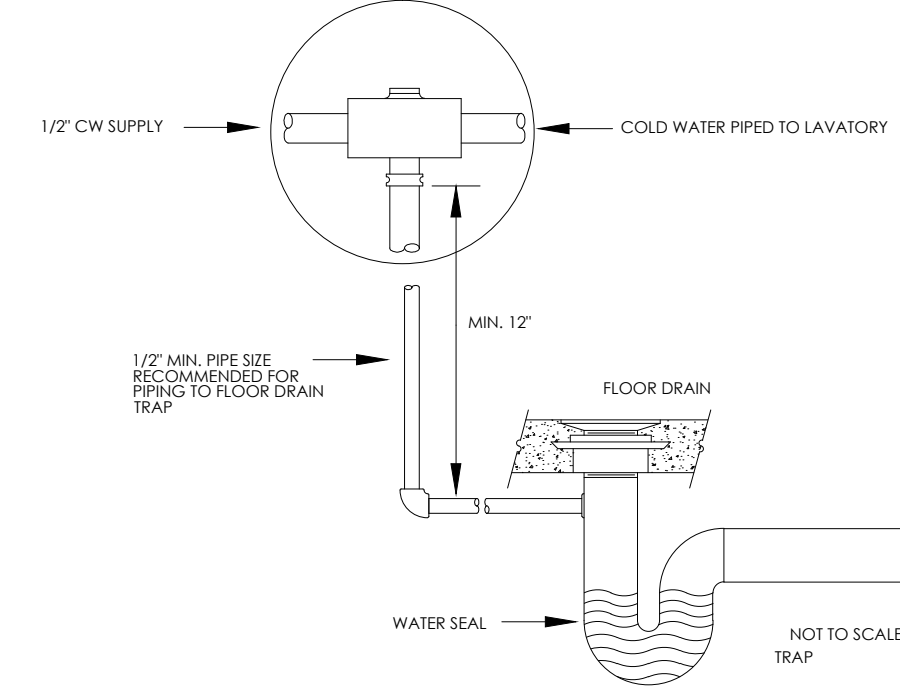
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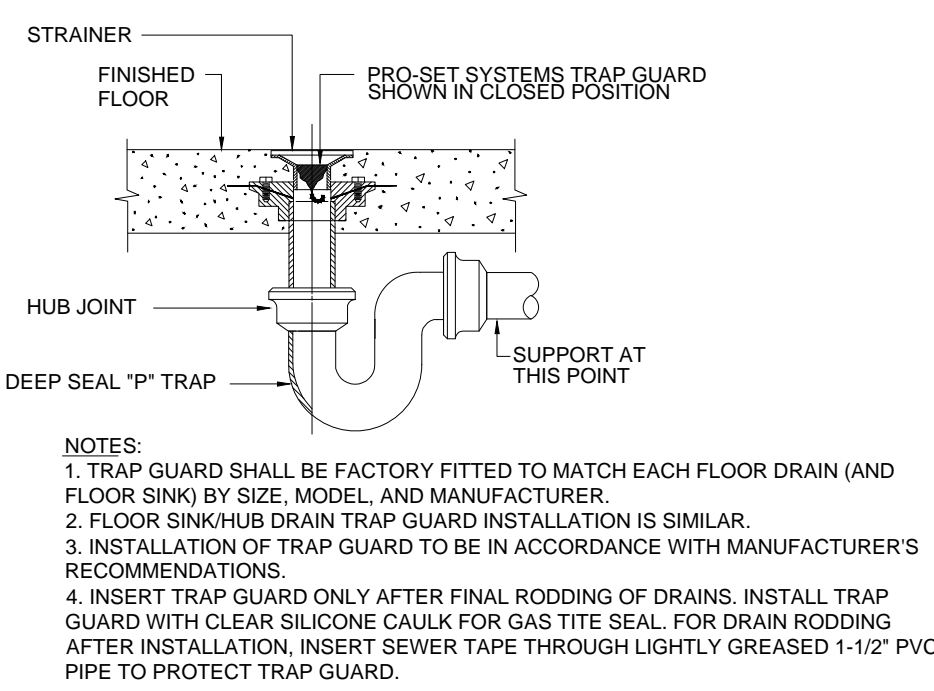




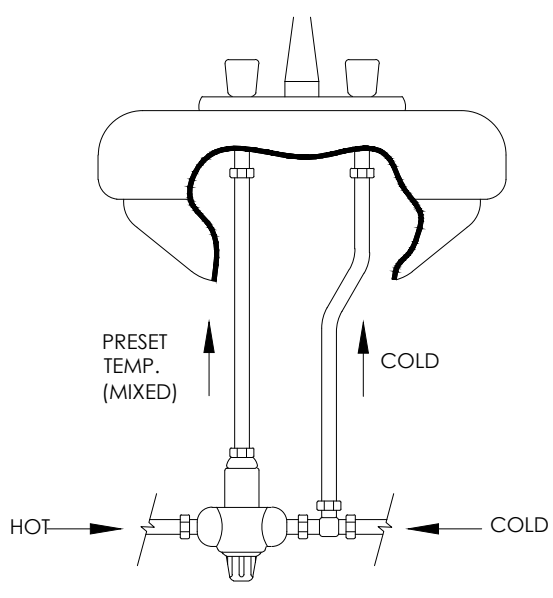
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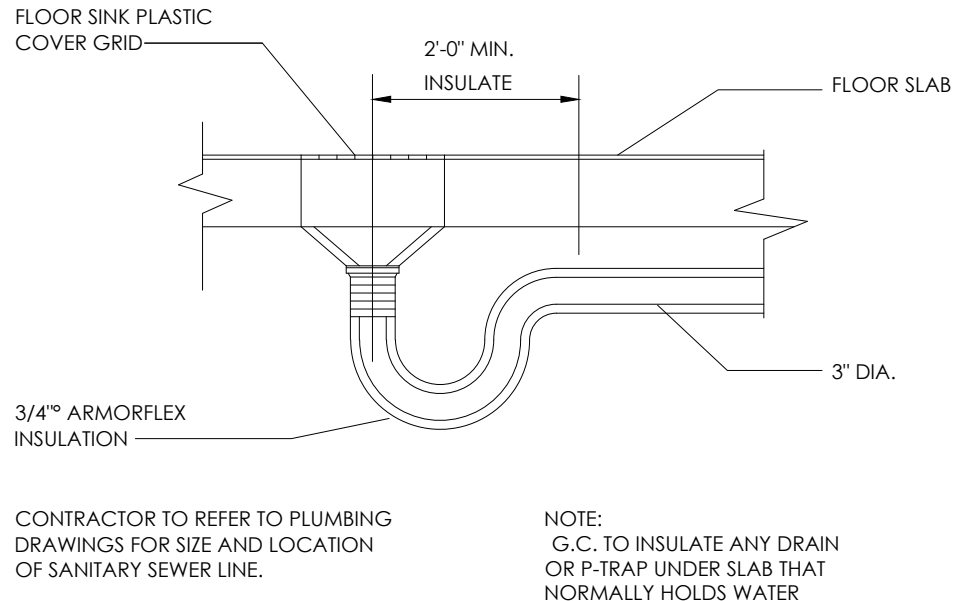
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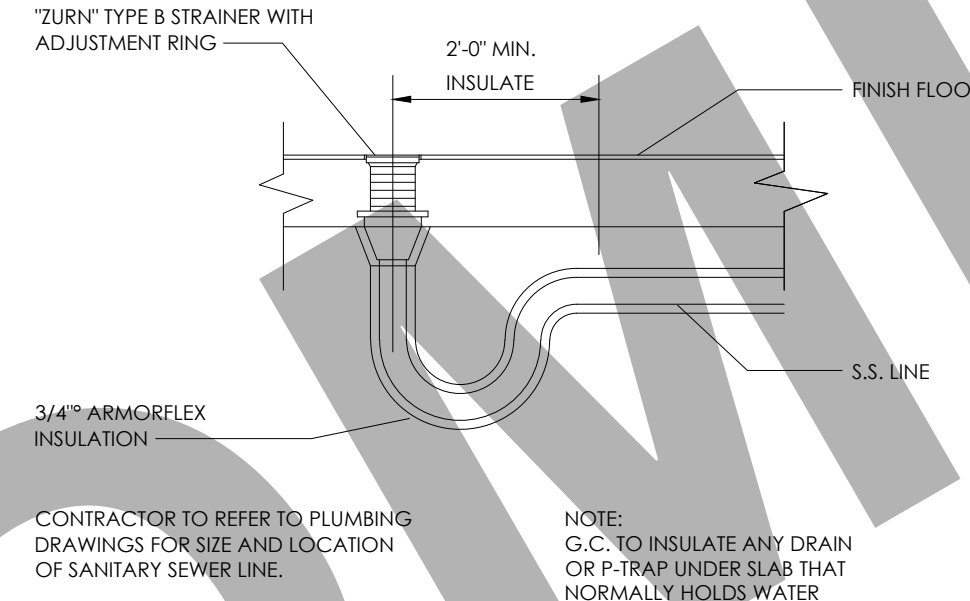
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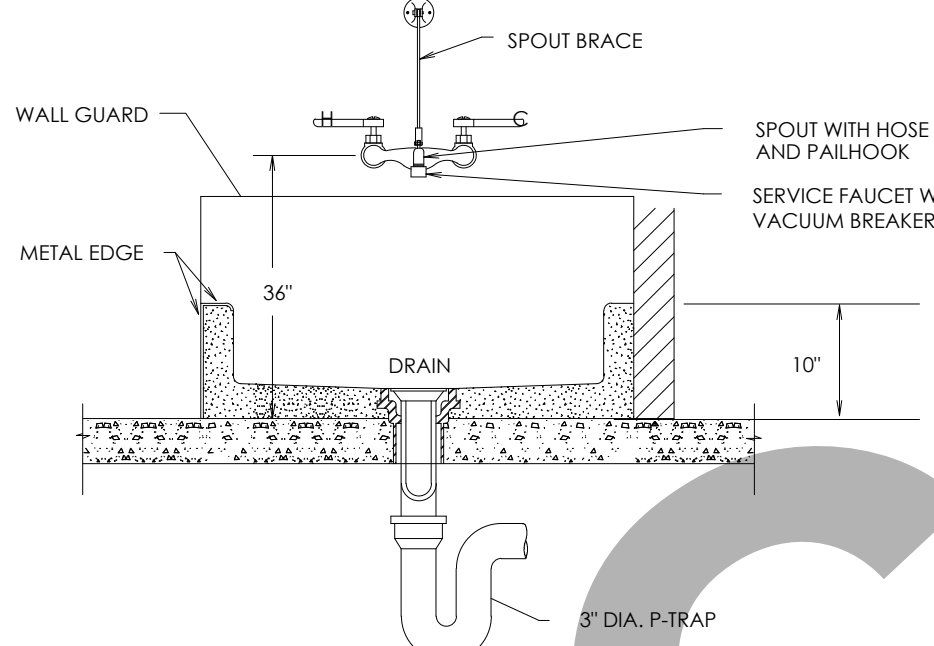
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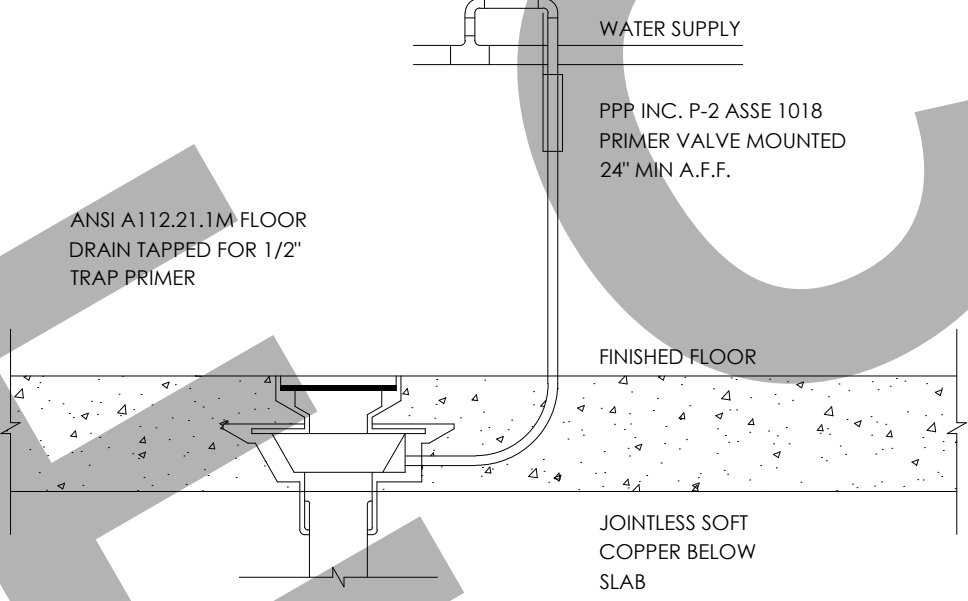
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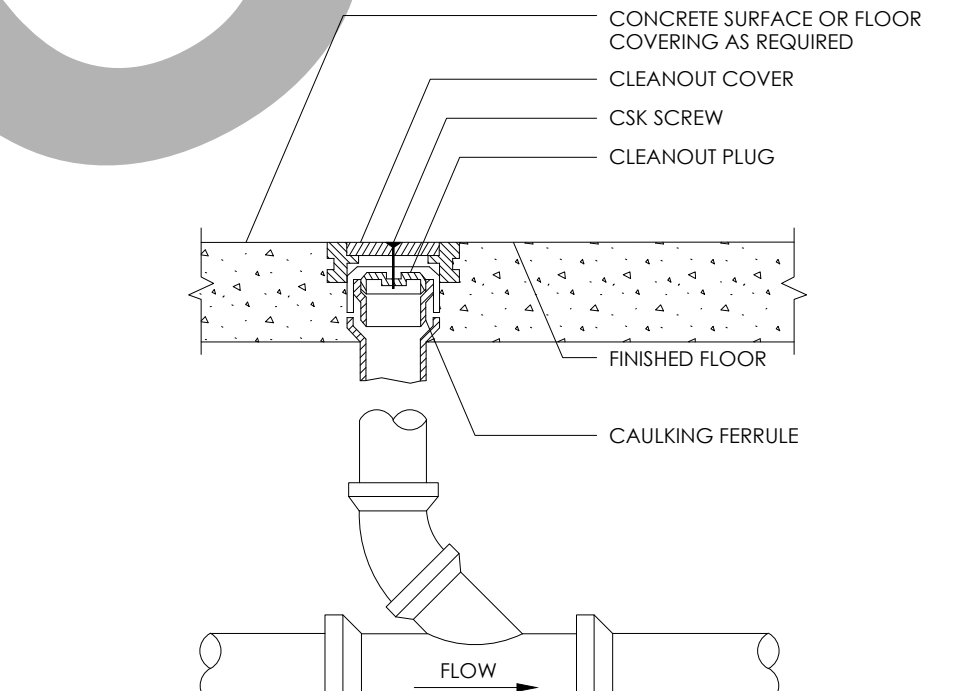
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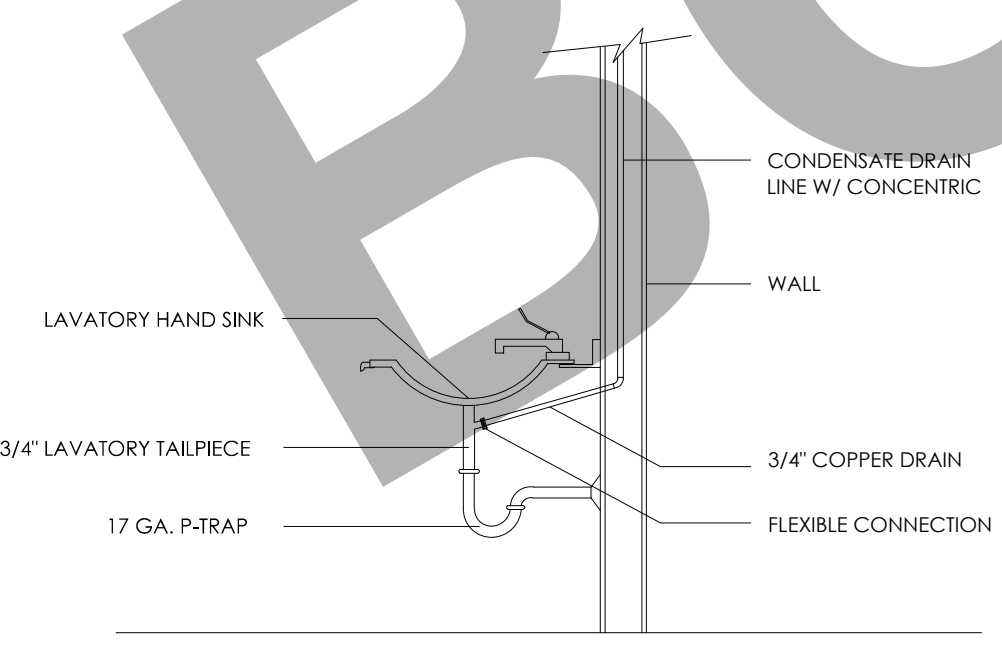
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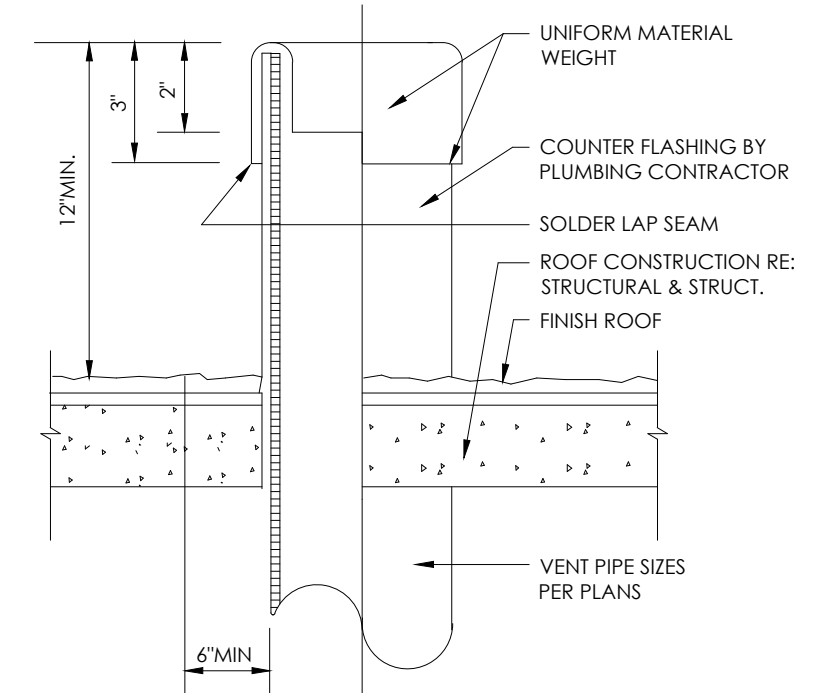
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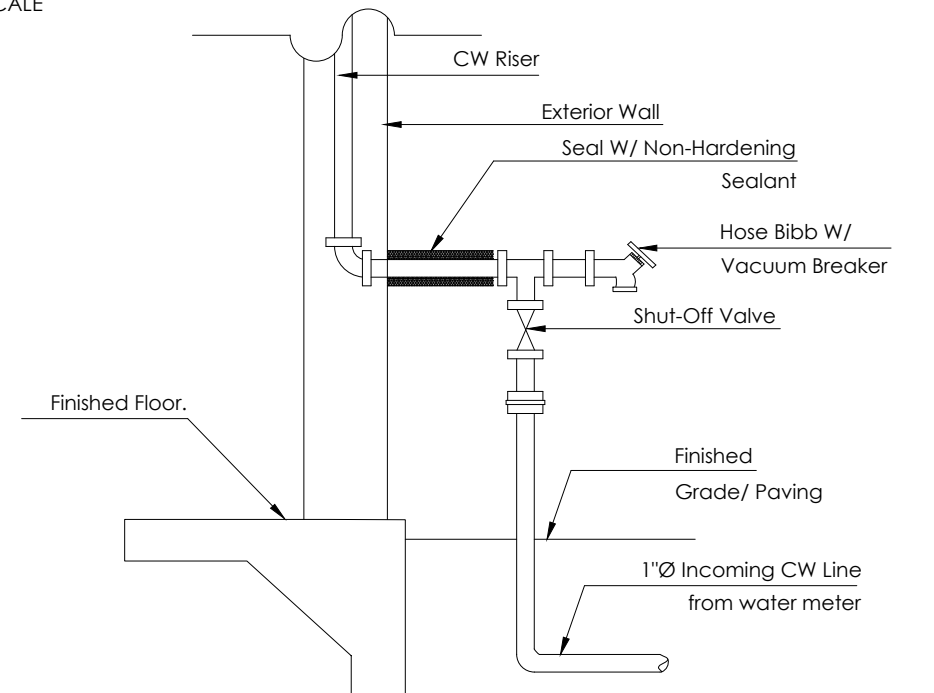
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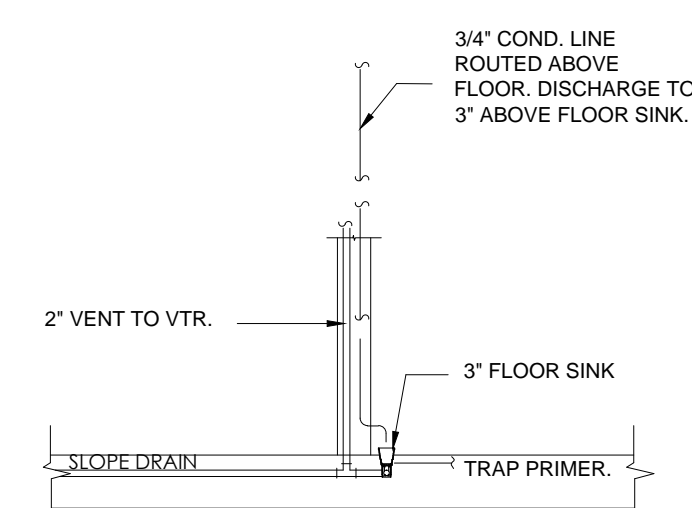
CONDENSATE DETAIL  
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VENT THRU ROOF DETAIL  
NO SCALE



WATER ENTRY DETAIL  
NO SCALE



COND. ON FLOOR SINK DETAIL  
NO SCALE

General Notes

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ELECTRICAL SPECIFICATIONS

1.ELECTRICAL GENERAL NOTES

- A. GC SHALL VERIFY ANY THIRD PARTY INSPECTIONS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO BIDDING THIS PROJECT.
- B. ALL LOW VOLTAGE WIRING TO BE IN CONDUIT UNLESS APPROVED OTHERWISE BY AUTHORITY HAVING JURISDICTION.
- C. ALL EMERGENCY LIGHTS & EXIT SIGNS ARE TO BE CONNECTED TO THE UNSWITCHED PORTION OF THE ADJACENT LIGHTING CIRCUIT. ALL EMERGENCY FIXTURES TO REMAIN ACTIVE FOR 90 MINUTE MINIMUM.
- D. ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES, AND EQUIPMENT SHALL BE LABELED AND LISTED BY A CERTIFIED TESTING LABORATORY OR AGENCY.
- E. ALL LIGHTING, DUCTWORK, SOFFITS, AND CEILING COMPONENT HEIGHTS ARE TO BE COORDINATED WITH THE ARCHITECT.
- F. ATTENTION LIGHTING SUPPLIER AND CONTRACTOR: ENSURE ALL LIGHTING EXPOSED TO PLENUM IS PLENUM RATED.
- G. COORDINATE THE MOUNTING OF ALL HIGH-BAY FIXTURES AND CEILING FANS WITH ARCHITECT PRIOR TO INSTALLATION.
- H. . VERIFY MOUNTING HEIGHTS OF ALL FIXTURES WITH ARCHITECTURAL ELEVATIONS PRIOR TO ROUGH-IN.
- I. FIRE ALARM CONTRACTOR SHALL VERIFY ALL BUILDING AND FIRE DEPARTMENT REQUIREMENTS REGARDING SHUT OFF OF ANY NECESSARY COMPONENTS UPON ACTIVATION OF THE FIRE ALARM. THIS INCLUDES, BUT IS NOT LIMITED TO:
- a. AUDIO/MUSIC SYSTEM(S)
- b. ROOFTOP UNITS
- c. TANNING EQUIPMENT
- d. EXERCISE FANS
- J. PROVIDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR (SIZE PER NEC) IN PVC TYPE CONDUIT, POWER CIRCUITS, ISOLATED GROUND CIRCUITS, OR AS SHOWN ON PLANS. CONDUIT SHALL BE SIZED PER NEC BASED ON THIN 600 VOLT COPPER SINGLE CONDUCTORS, PLUS THE EQUIPMENT GROUNDING CONDUCTOR.
- K. WIRING SHALL INCLUDE FINAL CONNECTION TO ALL EQUIPMENT IN CONFORMANCE WITH EQUIPMENT SUPPLIER WIRING DIAGRAMS.
- L. CONTRACTOR IS RESPONSIBLE FOR PROVIDING COMPLETE PANELBOARD IDENTIFICATION SCHEDULES.
- M. BRANCH CIRCUIT CONDUCTORS SHALL BE MINIMUM #12 AWG UNLESS NOTED OTHERWISE IN SCHEDULES. WHERE 20A BRANCH CIRCUITS HAVE #8 AND LARGER WIRE SPECIFIED, #10 AWG WIRE SHALL BE USED FOR THE FINAL CONNECTION (15 FOOT MAXIMUM).
- N. WHERE BRANCH CIRCUITS ARE GROUPED, SIZE CONDUIT AND DERATE CURRENT CARRYING CONDUCTORS PER NEC.
- O. PROVIDE HANDLE TIES ON ALL MULTI-WIRE BRANCH CIRCUITS TO MEET NEC REQUIREMENTS.
- P. SUPPORT FROM STRUCTURE: NO ATTACHMENT OF ANY TYPE SHALL BE MADE TO BRIDGING OR JOIST WEB MEMBERS. UTILIZE ONLY THE TOP AND BOTTOM CHORDS FOR SUPPORTING THE ELECTRICAL SYSTEM INSTALLATIONS. REFER TO STRUCTURAL PLANS.
- Q. WHERE GROUPED CONDUITS ARE INSTALLED WITHIN THE JOIST SPACE, COORDINATE WITH SPRINKLER CONTRACTOR PRIOR TO INSTALLATION IN ORDER TO MAINTAIN REQUIRED CLEARANCES FROM SPRINKLERS.
- R. SEAL PENETRATIONS IN FIRE RATED WALLS PER NEC 300.21.
- S. ELECTRICAL EQUIPMENT, FIXTURES, DEVICES, AND OTHER ITEMS SHOWN IN THESE PLANS IN GREY HALFTONE ARE EITHER EXISTING TO REMAIN OR PART OF LANDLORD SHELL PACKAGE.
- T. PROVIDE ARC-FLASH COORDINATION STUDY PER NEC.
- U. PROVIDE (1) 1/2" CONDUIT AND (1) 4" SQUARE BOX WITH SINGLE GANG DEVICE RING FOR ALL THERMOSTAT LOCATIONS INDICATED ON MECHANICAL DRAWINGS. ROUTE CONDUIT FROM BOX TO ACCESSIBLE CEILING CAVITY. PROVIDE PLASTIC BUSHING ON EXPOSED CONDUIT ENDS. PROVIDE PULL STRING IN ALL EMPTY CONDUIT SYSTEMS. COORDINATE EXACT LOCATIONS AND MOUNTING HEIGHTS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
- V. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE LOW VOLTAGE CONTRACTOR TO CLARIFY SCOPE OF WORK BEFORE BID OR INSTALLATION.
- W. WIRING DEVICES: DEVICE MOUNTING HEIGHTS ARE FROM FINISHED FLOOR TO CENTER OF OUTLET BOX UNLESS NOTED OTHERWISE ON PLANS. COORDINATE THE STANDARD MOUNTING HEIGHTS WITH MASONRY:
- a. SWITCHES 48" AFF
- b. RECEPTACLES 18" AFF
- c. VOICE/DATA 18" AFF








2. ELECTRICAL POWER NOTES

- A. ALL REQUIRED DOCUMENTATION REGARDING THE DESIGN OF FIRE DETECTION, ALARM, AND COMMUNICATIONS SYSTEMS AND THE PROCEDURES FOR MAINTENANCE, INSPECTION, AND TESTING OF FIRE DETECTION, ALARM, AND COMMUNICATIONS SYSTEMS SHALL BE MAINTAINED AT AN APPROVED, SECURED LOCATION FOR THE LIFE OF THE SYSTEM PER IFC 901.6.2.1.
- B. THE FIRE ALARM CONTROL PANEL DISCONNECTING MEANS SHALL HAVE A RED MARKING, SHALL ONLY BE ACCESSIBLE TO AUTHORIZED PERSONNEL, AND SHALL BE IDENTIFIED AS "FIRE ALARM CIRCUIT". THE LOCATION OF THE CIRCUIT DISCONNECTING MEANS SHALL BE IDENTIFIED AT THE FIRE ALARM CONTROL UNIT PER NFPA 72 4.4.1.4.2.2 AND 4.4.1.4.2.3.
- C. ROUTE ALL CONDUIT TIGHT TO DECK IN ACCORDANCE TO NEC 300.4(E)
- D. FIRE ALARM SYSTEM SHALL BE INSTALLED PER CURRENT NFPA STANDARDS.
- E. ALL ELECTRICAL THAT MAY NEED TO BE MAINTAINED WHILE ENERGIZED SHALL BE FIELD MARKED WITH ARC FLASH LABELING AND BE FULLY VISIBLE TO QUALIFIED PERSONNEL PRIOR TO EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF EQUIPMENT.
- F. SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT. THE FIELD MARKINGS SHALL INCLUDE THE DATE THE FAULT CURRENT CALCULATIONS WERE PERFORMED AND BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
- G. FIRE ALARM DEVICE LOCATIONS ARE SHOWN FOR REFERENCE ONLY. THE ELECTRICAL CONTRACTOR SHALL INCLUDE A PRICE IN THE ELECTRICAL BID FOR A LANDLORD APPROVED FIRE ALARM SYSTEM, INCLUDING PLANS AND ALL ASSOCIATED DOCUMENTATION REQUIRED. THESE PLANS SHALL BE SUBMITTED TO THE LOCAL AUTHORITIES HAVING JURISDICTION BY A QUALIFIED AND LICENSED DESIGN-BUILD FIRE ALARM CONTRACTOR FOR A COMPLETE AND APPROVED FIRE ALARM SYSTEM. THE PLANS SHALL BE SIGNED AND SEALED BY THEIR LOCAL DESIGN ENGINEER AND SUBMITTED FOR PLAN REVIEW PRIOR TO RECEIVING SPECIFIC PERMITS FOR THIS WORK. THE FIRE ALARM CONTRACTOR SHALL ALSO SUBMIT ALL SHOP DRAWINGS, BATTERY CALCULATIONS, SPECIFICATION SHEETS, ETC. AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION TO THEIR LOCAL DESIGN ENGINEER FOR REVIEW AND APPROVAL.
- H. COORDINATE WITH MECHANICAL INSTALLER TO PROVIDE AND INSTALL CONDUIT AND JUNCTION BOXES FOR MECHANICAL THERMOSTATS.

3.ELECTRICAL ABBREVIATIONS:

ABC ABOVE COUNTER  
AFF ABOVE FINISHED FLOOR  
CF CEILING FAN  
CP CIRCULATING PUMP  
EC ELECTRICAL CONTRACTOR  
ECB ENCLOSED CIRCUIT BREAKER  
EDF ELECTRIC DRINKING FOUNTAIN  
EF EXHAUST FAN  
GC GENERAL CONTRACTOR  
GFCI GROUND FAULT CIRCUIT INTERRUPT  
GR GROUND  
HC HVAC CONTRACTOR  
JB JUNCTION BOX  
PC PLUMBING CONTRACTOR  
TTB TELEPHONE TERMINATION BOARD  
UC UNDERCOUNTER  
UH UNIT HEATER  
UNO UNLESS NOTED OTHERWISE  
VIF VERIFY IN FIELD  
WH WATER HEATER  
WP WEATHER PROOF DEVICE  
WR WEATHER RESISTANT DEVICE  
GFCI GROUND FAULT CIRCUIT INTERRUPTER

ELECTRICAL LEGEND

-  RECESSED MOUNTED ROUND LED LIGHTING FIXTURE  
SIMILAR TO PHILIPS DN1308 D165 1xLED 105/640.
-  CHANDLER (ADDITIONAL SUPPORT STUDS WITH 5/8" PLYWOOD)
-  LIGHTING OUTLET FOR WALL 20W
-  ONE WAY LIGHTING SWITCH
-  DUPLEX RECEPTACLE - WALL MOUNTED @ +18" AFF  
UNLESS NOTED GFCI DENOTES: GROUND FAULT PROTECTION
-  DUPLEX RECEPTACLE - FLOOR MOUNTED  
GFCI DENOTES: GROUND FAULT PROTECTION
-  NON-FUSED DISCONNECT SWITCH - SIZE AS INDICATED

General Notes

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS & COORDINATE WITH TRADES TO ENSURE CONFORMANCE TO THESE PLANS & SPECIFICATIONS.
- 2.ALL DIMENSIONS HEREIN ARE IN IMPERIAL UNITS UNLESS STATED OTHERWISE.
3. THESE DRAWINGS ARE TO BE READ IN 4.THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.
- 5.ALL LIGHTING SHALL BE HIGH EFFICACY.

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ELECTRICAL SPECIFICATIONS

1. DO NOT SCALE DRAWINGS. VERIFY DIMENSIONS IN FIELD PRIOR TO COMMENCEMENT OF WORK.
2. WHEREVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN TO "PROVIDE AND INSTALL".
3. FINAL CONNECTIONS TO EQUIPMENT SHALL BE PER MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
4. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO ESTABLISH A STANDARD OF QUALITY. THE ENGINEER RESERVES THE RIGHT TO APPROVE METHODS AND MATERIALS NOT REFLECTED HEREIN.
5. CONTRACTOR SHALL REVIEW ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND OTHER RELATED DRAWINGS PRIOR TO BID.
6. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND VERIFY THAT CONDITIONS ARE AS INDICATED IN THE CONTRACT DOCUMENTS. CONTRACTOR SHALL INCLUDE IN HIS BID, ANY COSTS REQUIRED TO MAKE HIS WORK MEET THE CONTRACT SCOPE UTILIZING EXISTING CONDITIONS.
7. WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER TO THE SATISFACTION OF THE ARCHITECT.
8. WORK, MATERIALS AND EQUIPMENT SHALL CONFORM TO THE LATEST EDITIONS OF LOCAL, STATE AND NATIONAL CODES AND ORDINANCES.
9. PROVIDE PERMITS AND INSPECTIONS REQUIRED.

10. GUARANTEE THE INSTALLATION AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP WHICH MAY OCCUR UNDER NORMAL USAGE FOR A PERIOD OF ONE YEAR AFTER OWNER'S ACCEPTANCE. DEFECTS SHALL BE PROMPTLY REMEDIED WITHOUT COST TO THE OWNER.

11. PROVIDE RECORD DRAWINGS TO ENGINEER. DRAWINGS SHALL INCLUDE ALL ADDENDUM ITEMS, CHANGE ORDERS, ALTERATIONS, REROUTINGS, ETC.

12. VERIFY SPECIFIC LOCATION OF EQUIPMENT TO BE FURNISHED BY OTHERS PRIOR TO ROUGH-IN.

13. ELECTRICAL SYSTEMS SHALL BE TESTED FOR PROPER OPERATION. IF TESTS SHOW THAT WORK IS DEFECTIVE, CONTRACTOR SHALL MAKE CORRECTIONS NECESSARY AT NO COST TO OWNER.

14. RECESSED LIGHT FIXTURES INSTALLED IN GYP. BOARD OR PLASTER CEILINGS SHALL HAVE PLASTER FRAMES INSTALLED PRIOR TO CEILING MATERIAL.

15. RECESSED FIXTURES INSTALLED INDOORS SHALL BE THERMALLY PROTECTED.

16. SEE DIVISION 15 DRAWINGS FOR LOCATION OF MECHANICAL EQUIPMENT. PROVIDE SERVICE TO AND CONNECT EQUIPMENT AS REQUIRED.

17. PROVIDE EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS.

18. ALL ELECTRICAL SYSTEMS COMPONENTS SHALL BE LISTED OR LABELED BY U.L. OR OTHER RECOGNIZED TESTING FACILITY.

19. WIRE TERMINATION PROVISIONS FOR PANELBOARDS, CIRCUIT BREAKERS, SAFETY SWITCHES, AND ALL OTHER ELECTRICAL APPARATUS SHALL BE LISTED AS SUITABLE FOR 75 DEGREE C.

20. THE FOLLOWING CONDUCTOR SIZES SHALL BE UTILIZED FOR 20 AMP CIRCUITS PERTAINING TO DISTANCES (IN FEET) INDICATED:

120VOLT, 1PH	CONDUCTOR	240 VOLT, (1PH)
0-64	#12AWG	0-129
65-106	#10AWG	130-212
107-160	#8AWG	213-321

NOTE: BASED ON 75°C COPPER CONDUCTORS INSTALLED IN EMT WITH 16AMP LOAD @ 85% P.F.

21. CONTRACTOR SHALL REVIEW ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS AND SHALL PROVIDE LIGHTS, SWITCHES, RECEPTACLES, EQUIPMENT CONNECTIONS, ETC., AND ASSOCIATED CIRCUITING IN NEW AND REMODELED AREAS, EVEN IF SUCH AREAS ARE NOT SHOWN ON ELECTRICAL DRAWINGS. LAYOUTS, FIXTURE TYPES, QUANTITIES AND SPACING SHALL BE IN ACCORDANCE WITH SIMILAR AREAS ON THIS PROJECT. CONTRACTOR SHALL INCLUDE COSTS FOR THE ABOVE IN HIS BID. IN ADDITION, CONTRACTOR SHALL PROVIDE LAYOUT DRAWINGS FOR WORK IN SUCH AREAS AND SUBMIT FOR APPROVAL PRIOR TO ROUGH-IN.

22. WIRE SHALL BE COPPER, 75 DEGREES C RATED FOR GENERAL USE, FOR WIRING WITHIN 3 INCHES OF FLUORESCENT BALLASTS WIRE SHALL BE COPPER, MINIMUM 90 DEGREES C RATED. SIZES INDICATED ARE FOR INSTALLATION IN A MAXIMUM 30 DEGREES C AMBIENT. CONDUCTOR AMPACITY SHALL BE DERATED FOR HIGHER AMBIENT INSTALLATIONS. 600 VOLT COMPACT ALUMINUM WIRE AND CABLE IN SIZES 1/0 AND LARGER MAY BE SUBSTITUTED FOR COPPER ON SERVICES AND FEEDERS IF AMPACITY IS EQUIVALENT TO OR GREATER

23. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING EQUIPMENT WHICH IS DAMAGED DUE TO INCORRECT FIELD WIRING PROVIDED UNDER THIS SECTION OR FACTORY WIRING IN EQUIPMENT PROVIDED UNDER THIS SECTION.

24. CONTRACTOR'S FAILURE TO ORDER OR RELEASE ORDER FOR MATERIALS AND/OR EQUIPMENT WILL NOT BE ACCEPTED AS A REASON TO SUBSTITUTE ALTERNATE MATERIALS, EQUIPMENT OR INSTALLATION METHODS.

25. ELECTRICAL SYSTEMS SHALL BE COMPLETE, OPERABLE AND READY FOR CONTINUOUS OPERATION AT COMPLETION OF PROJECT.

26. RECEPTACLES WHICH ARE SHOWN WALL MOUNTED ON THE ELECTRICAL DRAWINGS ON WALLS WHICH, ON THE ARCHITECTURAL DRAWINGS AND ELEVATIONS ARE SHOWN AS GLASS OR PARTITIONS, SHALL BE FLUSH FLOOR DUPLEX RECEPTACLES MOUNTED ADJACENT TO BAS OR WALLS.

27. RECEPTACLES AT COUNTER SHALL BE MOUNTED WITH THEIR LONG AXIS HORIZONTAL AT +46" UNLESS NOTED.

28. FLUSH FLOOR RECEPTACLE OUTLETS SHALL BE WIREMOLD 862 SERIES. PROVIDE CARPET OR TILE FLANGE TO MATCH FLOOR FINISH.

29. THE COLOR OF THE DEVICES AND COVER PLATES SHALL BE AS DIRECTED BY ARCHITECT. IN DAMP OR WET LOCATIONS COVER PLATES SHALL BE STAINLESS STEEL. IN DRY LOCATIONS COVER PLATES SHALL BE SMOOTH HIGH ABUSE NYLON OR EQUIVALENT. PROVIDE COVER PLATES FOR SWITCHES, RECEPTACLES, TELEPHONE, TELEVISION, COMPUTER AND I-BOX OUTLETS AS REQUIRED.

30. ROMEX CABLE WITH A GROUNDING CONDUCTOR MAY BE USED WHERE PERMITTED BY BOTH THE N.E.C. AND LOCAL ORDINANCES.

31. DISCONNECT SWITCHES SHALL BE GENERAL DUTY TYPE. FUSIBLE SWITCHES SHALL ACCEPT CLASS 'R' FUSES ONLY AND REJECT ALL OTHERS.

32. FINAL CONNECTIONS TO VIBRATING EQUIPMENT SHALL BE WITH FLEX (LIQUIDTIGHT FOR EXTERIOR APPLICATIONS) AND APPROVED FITTINGS. DO NOT SECURE CONDUITS, DISCONNECTS OR DEVICES TO DUCTWORK OR MECHANICAL EQUIPMENT.

33. THE ENGINEER OF RECORD HAS PERFORMED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS INDICATED FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.

34. THE ENGINEER OF RECORD HAS PERFORMED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUITS AND FEEDERS COMPLY WITH NEC 210-19(A) FPN NO.4.

35. THE CONTRACTOR SHALL PROVIDE 120V CONNECTION TO NEAREST MAINTENANCE RECEPTACLE WHERE REQUIRED FOR CONDENSATE PUMPS ASSOCIATED WITH FAN COIL UNITS. COORDINATE WITH MECHANICAL CONTRACTOR.

36. THE CONTRACTOR SHALL COORDINATE THE SPECIFIC LOCATION, MOUNTING HEIGHT, ROTATION, TYPE, COLOR, ETC. OF ALL DEVICES PRIOR TO INSTALLATION.

37. CONNECTIONS TO HYDROMASSAGE BATHTUBS, JACUZZI TUBS OR SIMILAR EQUIPMENT SHALL BE MADE IN ACCORDANCE WITH ARTICLE 680.70 OF THE NEC. PROVIDE BONDING AS REQUIRED BY ARTICLE 680.74 OF THE NEC.

38. ALL INDOOR FLUORESCENT FIXTURES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE OR BALLASTED LUMINAIRES THAT ARE SUPPLIED FROM MULTIWIRE BRANCH CIRCUITS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL COMPLY WITH 410.73 (G) OF THE NEC.

39. CEILING MOUNTED SMOKE AND CARBON MONOXIDE DETECTORS PER NFPA 72, SECTION R314 MUST COMPLY WITH U.L. 2075 AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.

40. ALL SMOKE DETECTORS AND COMBINATION SMOKE/CARBON MONOXIDE DETECTORS SHALL BE HARDWIRED ON SAME CIRCUIT AND HAVE A BATTERY BACKUP SYSTEM.

41. WHEN MORE THAN EITHER ONE (1) SMOKE ALARM OR MORE THAN ONE (1) CARBON MONOXIDE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT, ALL ALARM DEVICES SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTIVATION OF ONE ALARM WITH ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT. SMOKE AND CARBON MONOXIDE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS. (IRC SECTION R314.5 AS AMENDED)
- A. SMOKE ALARMS IN EACH SLEEPING ROOM.
- B. SMOKE ALARMS OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.
- C. SMOKE ALARMS ON EACH ADDITIONAL STORY OF THE DWELLING INCLUDING BASEMENTS BUT NOT INCLUDING CRAWL SPACE AND UNINHABITABLE ATTICS, IN DWELLINGS OR DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DO OR BETWEEN THE ADJACENT LEVELS. A SMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL..
- D. CARBON MONOXIDE ALARMS OUTSIDE OF SLEEPING AREAS IN THE IMMEDIATE VICINITY OF THE BEDROOMS IN DWELLING UNITS WITHIN WHICH FUEL-FIRED APPLIANCES ARE INSTALLED AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES.
- E. CARBON MONOXIDE ALARMS WITHIN EACH BEDROOM WHICH CONTAINS A FUEL-FIRED APPLIANCE.

43. ALL BRANCH CIRCUITS THAT SUPPLY 125-VOLT, SINGLE PHASE, 15 AND 20 AMP BRANCH CIRCUITS SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DEN, BEDROOMS, SLEEPING ROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION-TYPE, INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. NEC ARTICLE 210.12 (A).

44. ALL ATTIC ACCESSES SHALL BE PROVIDED WITH A SWITCHED LIGHT AND 120 VOLT GFI OUTLET AT OR NEAR THE FORCED AIR UNIT. LOCATE LIGHT SWITCH AT THE ATTIC ACCESS OPENING.

LIGHTING SCHEDULE

ID	SYMBOL	DESCRIPTION	MANUF.	MODEL	LUMIN. TYPE	COLOR / FINISH	REMARKS
L1							

- NOTES:
1. THIS PLAN SHALL BE USED IN CONJUNCTION WITH THE ELECTRICAL, MECHANICAL AND PLUMBING PLANS.
2. COORDINATION REQUIRED. NOTIFY ARCHITECT IN CASE OF DISCREPANCIES FOUND.
3. MANUFACTURERS AND MODELS ARE SHOWN FOR CODE COMPLIANCE AND BIDDING PURPOSES ONLY. PRIOR ORDERING / INSTALLING ANY LIGHT FIXTURES CONTRACTOR SHALL PROVIDE SAMPLES AND CUT SHEETS TO OWNER FOR APPROVAL AND CONFIRM MANUFACTURER, MODEL, COLOR AND BUDGET / COSTS.

- NOTES:
1. FIXTURES SHALL HAVE APPROPRIATE U.L. LABEL (E.g., DAMP OR WET) AS REQUIRED BY CODES AND ORDINANCES.
2. FIXTURES SHALL INCLUDE ALL ACCESSORIES NECESSARY FOR INSTALLATION ACCORDING TO MANUFACTURER'S SHOP DRAWINGS AND AS REQUIRED BY CODES AND LOCAL ORDINANCES.
3. PRIOR TO ORDERING ANY LIGHTING EQUIPMENT, THE CONTRACTOR SHALL COORDINATE ALL FIXTURE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND CEILING CAVITY DEPTHS.
4. ALL LAMPS SHALL BE PROVIDED AND INSTALLED ACCORDING TO THE ATTACHED FIXTURE SCHEDULE AND SPECIFICATIONS ENSURE COMPATIBILITY BETWEEN FIXTURE, LAMP(S) AND BALLAST(S). (OSRAM SYLVANIA SERIES)
5. CONTRACTOR SHALL VERIFY FIXTURE VOLTAGES AND CEILING TRIM COMPATIBILITY PRIOR TO ORDERING FIXTURE.
6. PROVIDE APPROVED PRE-PAID ENCLOSURES FOR ALL LIGHTING FIXTURES LOCATED IN FREESATE CEILINGS.
7. LIGHTING FIXTURE CATALOG NUMBERS ARE SERIES TYPE ONLY. PROVIDE ALL NECESSARY HARDWARE AS REQUIRED BY THE SPECIFICATIONS, DRAWINGS, AND PROJECT CONDITIONS FOR A COMPLETE INSTALLATION.
8. ALL FIXTURES SHALL BE ORDERED WITH APPROPRIATE BALLAST(S) THAT HAVE U.L. AND CUL LABELS. ALL BALLASTS MUST CONFORM TO TITLE 24 AND/OR IECC REQUIREMENTS FOR PERFORMANCE. PROVIDE MULTIPLE BALLASTS FOR DUAL LEVEL SWITCHING AND WIRING (e.g., TANDEN) AS INDICATED ON THE PLANS.
9. UPON INITIAL ENERGIZING OF ALL NEW FLUORESCENT LAMPS, A CONTINUOUS PERIOD OF 30 HOURS SHALL OCCUR PRIOR TO DE-ENERGIZING OF LAMPS FOR MANUFACTURER REQUIRED.
10. ALL FLUORESCENT BALLASTS SHALL BE ELECTRONIC TYPE. PROVIDE END OF LIFE (EOL) SHUT-DOWN PROTECTION FOR COMPACT FLUORESCENT LAMPS.
11. ENSURE COMPATIBILITY OF ALL LIGHTING SYSTEM COMPONENTS, ESPECIALLY DIMMED SYSTEMS, FIXTURES, LAMPS, BALLAST(S), AND DIMMING SYSTEMS/INDIVIDUAL CONTROLS MUST BE FACTORY CERTIFIED COMPATIBLE FOR FULL RANGE OF DIMMING COMPATIBILITY.
12. PROVIDE CLEARANCES FROM COMBUSTIBLES, A MINIMUM OF 3/4" (OTHER THAN AT POINTS OF SUPPORT) AND 3" FROM INSULATION FOR RECESSED LIGHTING FIXTURES WHICH ARE NON-IC RATED.
13. PROVIDE A MINIMUM OF TWO (2) #12 SUPPORT WIRES ATTACHED TO BUILDING FRAME IN ADDITION TO T-BAR CLIPS FOR FLUORESCENT FIXTURES RECESSED IN SUSPENDED T-BAR CEILING.
14. FIXTURES WITH EMERGENCY BATTERY BACKUP SHALL BE WIRED AHEAD OF ANY LOCAL SWITCHING IN COMPLIANCE WITH NEC ARTICLE 700.
15. EMERGENCY LIGHTING UNITS SHALL BE EQUIPPED WITH FACTORY-INSTALLED INTEGRAL TEST SWITCHES.
16. PROVIDE DOOR-TO-FRAME AND LENS-TO-DOOR GASKETING, INVERTED LENS, AND FOOD SERVICE RATING FOR ALL FIXTURES LOCATED IN FOOD SERVICE AREAS.
17. FLUORESCENT LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE, OR BALLASTED LUMINAIRES THAT ARE SUPPLIED FROM MULTI-WIRE BRANCH CIRCUITS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE, SHALL HAVE DISCONNECTING MEANS EITHER INTERNAL OR EXTERNAL TO EACH LUMINAIRE SO TO DISCONNECT SHIELD/ARRESTOR FROM THE SOURCE OF SUPPLY AND CONDUCTORS OF THE BALLAST (INCLUDING THE GROUNDING CONDUCTOR IF ANY), IN ACCORDANCE WITH NEC ARTICLE 410, THE LINE-SIDE TERMINALS OF THE DISCONNECTING MEANS SHALL BE LOCATED SO AS TO BE ACCESSIBLE TO QUALIFIED PERSONS BEFORE SERVICING OR MAINTAINING THE BALLAST.
18. ALL FLUORESCENT LAMPS SHALL BE OF A LOW MERCURY DESIGN, HAVE A MINIMUM CRI RATING OF 85 AND 3500K COLOR TEMPERATURE UNLESS NOTED OTHERWISE.

General Notes

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2. ALL DIMENSIONS HEREIN ARE IN IMPERIAL UNITS UNLESS STATED OTHERWISE.
3. THESE DRAWINGS ARE TO BE READ IN 4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.
5. ALL LIGHTING SHALL BE HIGH EFFICACY.

1	A / FOR REVIEW	28/1/22
No.	Revision/Issue	Date

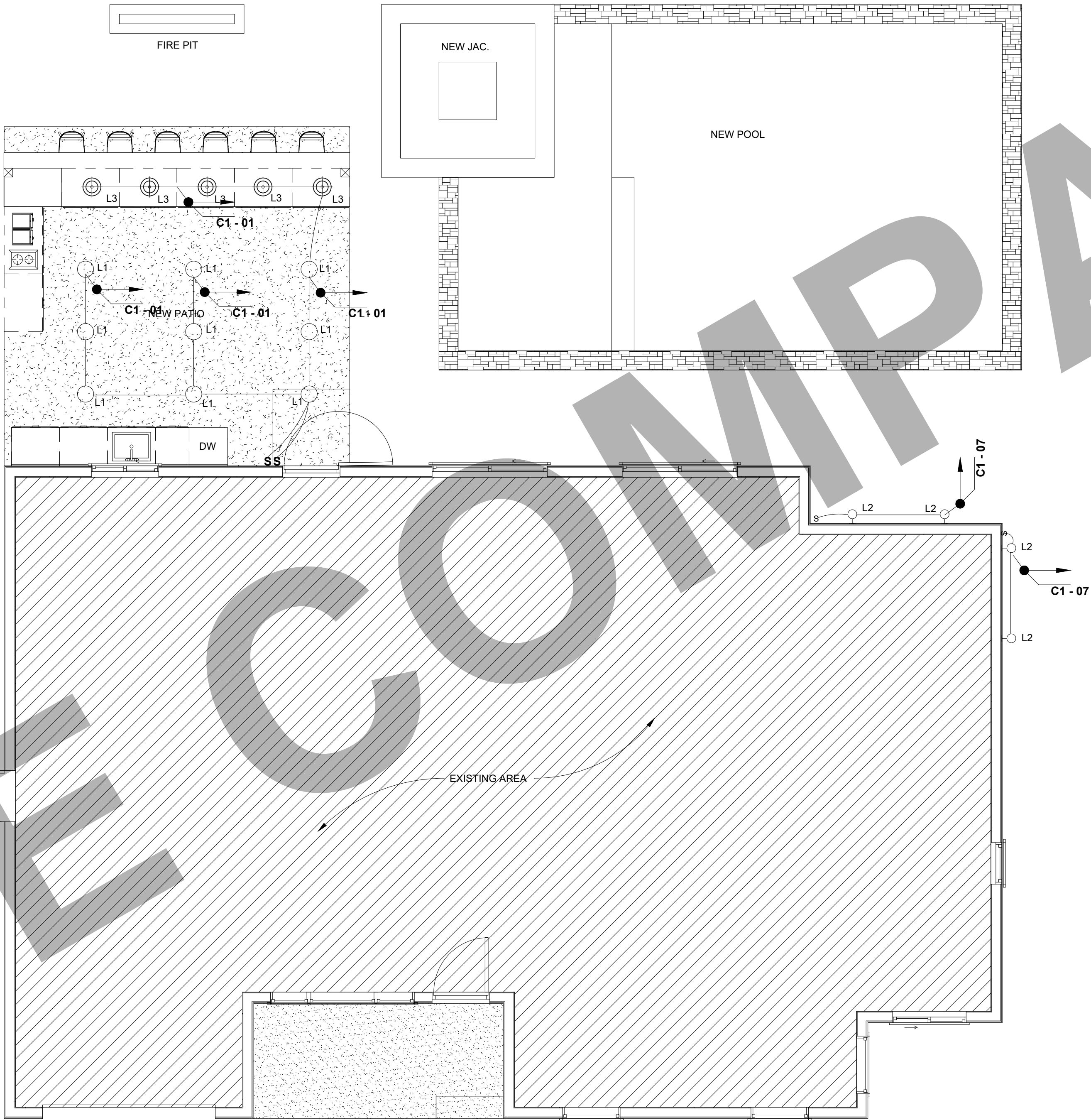
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Project Name and Address

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Date	08/12/2022	E 0.01
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GENERAL NOTES:

- ALL 120 VOLT, SINGLE PHASE 15 AND 20 AMPERE BRANCH CIRCUIT SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION TYPE INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. (NEC ARTICLE 210.12(A))
- IN EVERY KITCHEN, FAMILY ROOM, DINING ROOM, LIVING ROOM, PARLOR, LIBRARY, DEN, SUNROOM, BEDROOM, RECREATION ROOM OR SIMILAR ROOM OR AREA OF DWELLING UNITS RECEPTACLE OUTLETS SHALL BE INSTALLED IN ACCORDANCE WITH THE GENERAL PROVISIONS SPECIFIED IN THE FOLLOWING ARTICLES.
  - NEC ARTICLE 210.52(A) (1) SPACING. RECEPTACLES SHALL BE INSTALLED THAT NO POINT ALONG THE FLOOR LINE OF THE WALL IS MORE THAN 6- FEET FROM A RECEPTACLE
  - NEC ARTICLE 210.52(A) (2) AS AMENDED WALL SPACE. ANY WALL 24-INCHES OR MORE IN LENGTH SHALL BE PROVIDED WITH A RECEPTACLE OUTLET. WALL SPACE SHALL INCLUDE AROUND CORNERS, THE FIRST SLIDING PANEL OF A SLIDING DOOR, FIXED ROOM DIVIDERS SUCH AS A FREESTANDING BAR TYPE COUNTER. WALL SPACE NEED NOT INCLUDE THE SPACE BEHIND OPERABLE DOORS. AND NEED NOT INCLUDE ENTRIES, HALLWAYS ETC. LESS THAN 5- FEET WIDE LOCATED IN BEDROOMS.
  - NEC ARTICLE 210.52(A) (3) AS AMENDED FLOOR RECEPTACLES.
- IN EVERY KITCHEN, FAMILY ROOM, DINING ROOM, LIVING ROOM, PARLOR, LIBRARY, DEN, SUNROOM, BEDROOM, RECREATION ROOM OR SIMILAR ROOM OR AREA OF DWELLING UNITS, ALL 125 VOLT 15 AND 20 AMP RECEPTACLES SHALL BE LISTED TAMPER-RESISTANT RECEPTACLES (NEC 406.12)



General Notes

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1	A / FOR REVIEW	28/11/22
No.	Revision/Issue	Date

Firm Name and Address

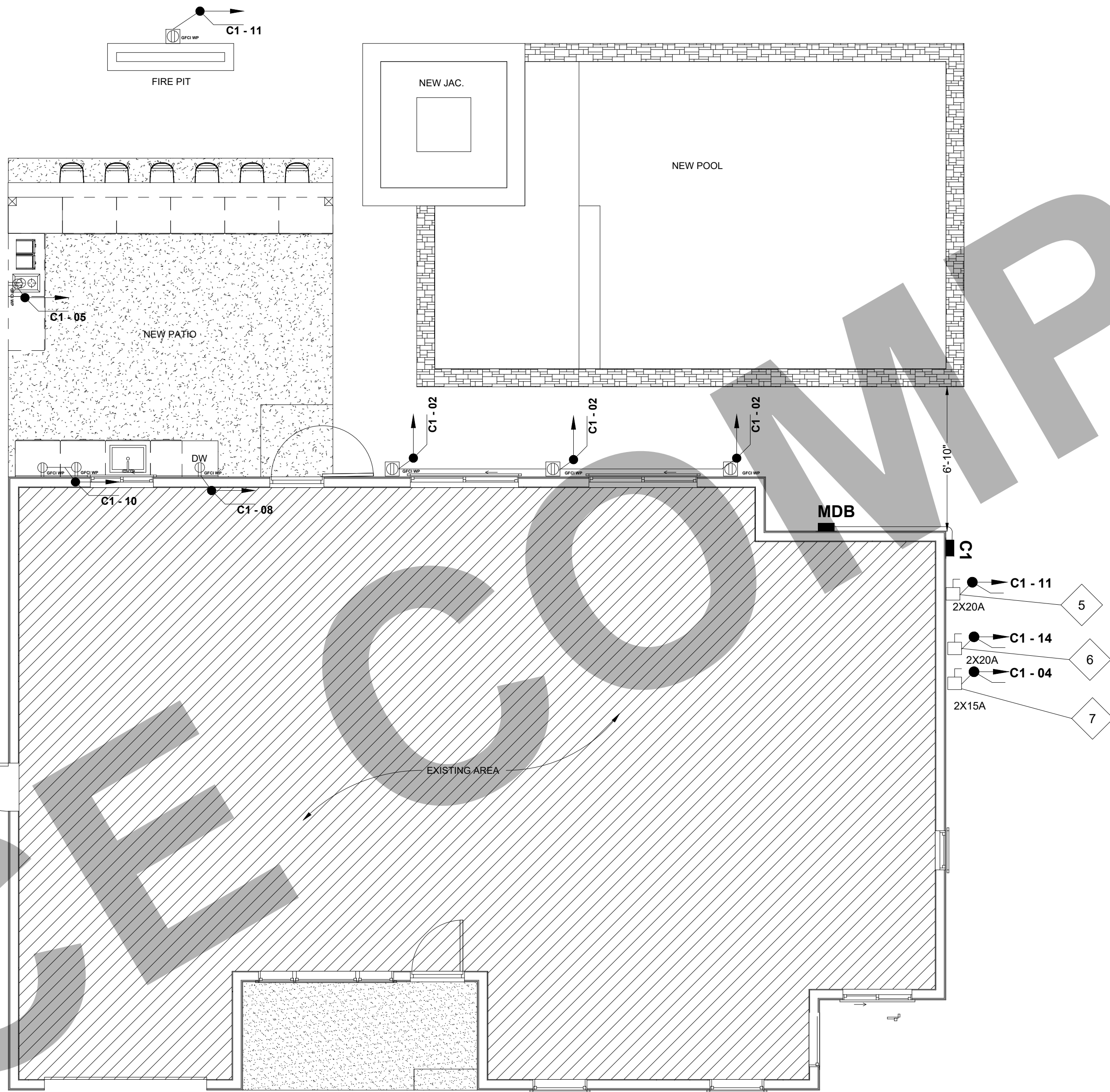
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**LIGHTING**

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Date	28/11/2022		
Scale	1/4" = 1'-0"		

GENERAL NOTES:

1. ALL 120 VOLT, SINGLE PHASE 15 AND 20 AMPERE BRANCH CIRCUIT SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION TYPE INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. (NEC ARTICLE 210.12(A))
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SHEET NOTES:

- 5 — PROVIDE NEMA RATED 3R DISCONNECT SWITCH FOR GWH-01 .
- 6 — PROVIDE NEMA RATED 3R DISCONNECT SWITCH FOR SOLAR & POOL CONTROLLER
- 7 — PROVIDE NEMA RATED 3R DISCONNECT SWITCH FOR GROUNDED BREAKER .

General Notes

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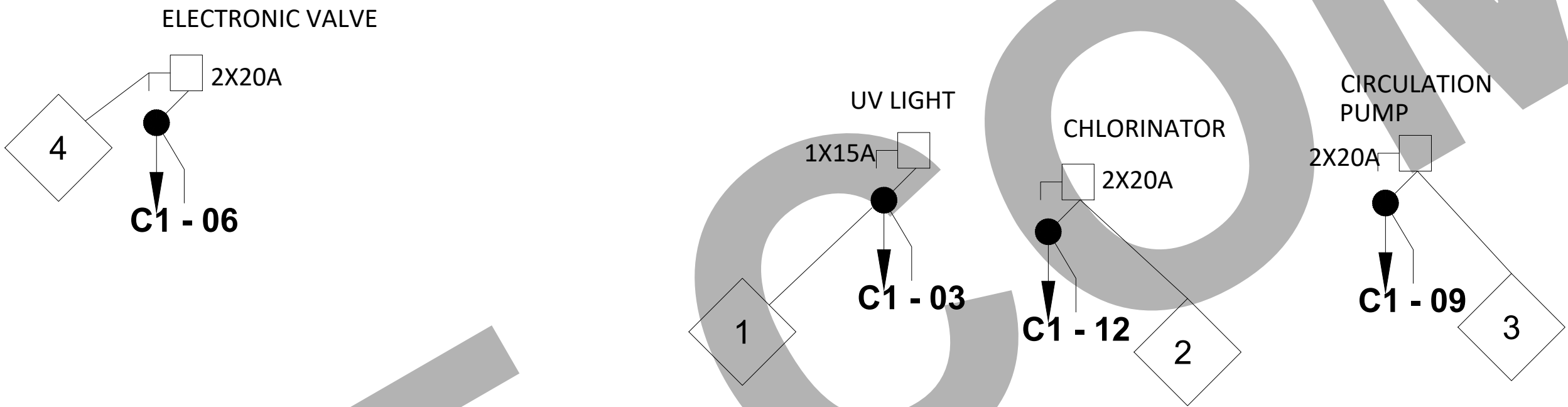
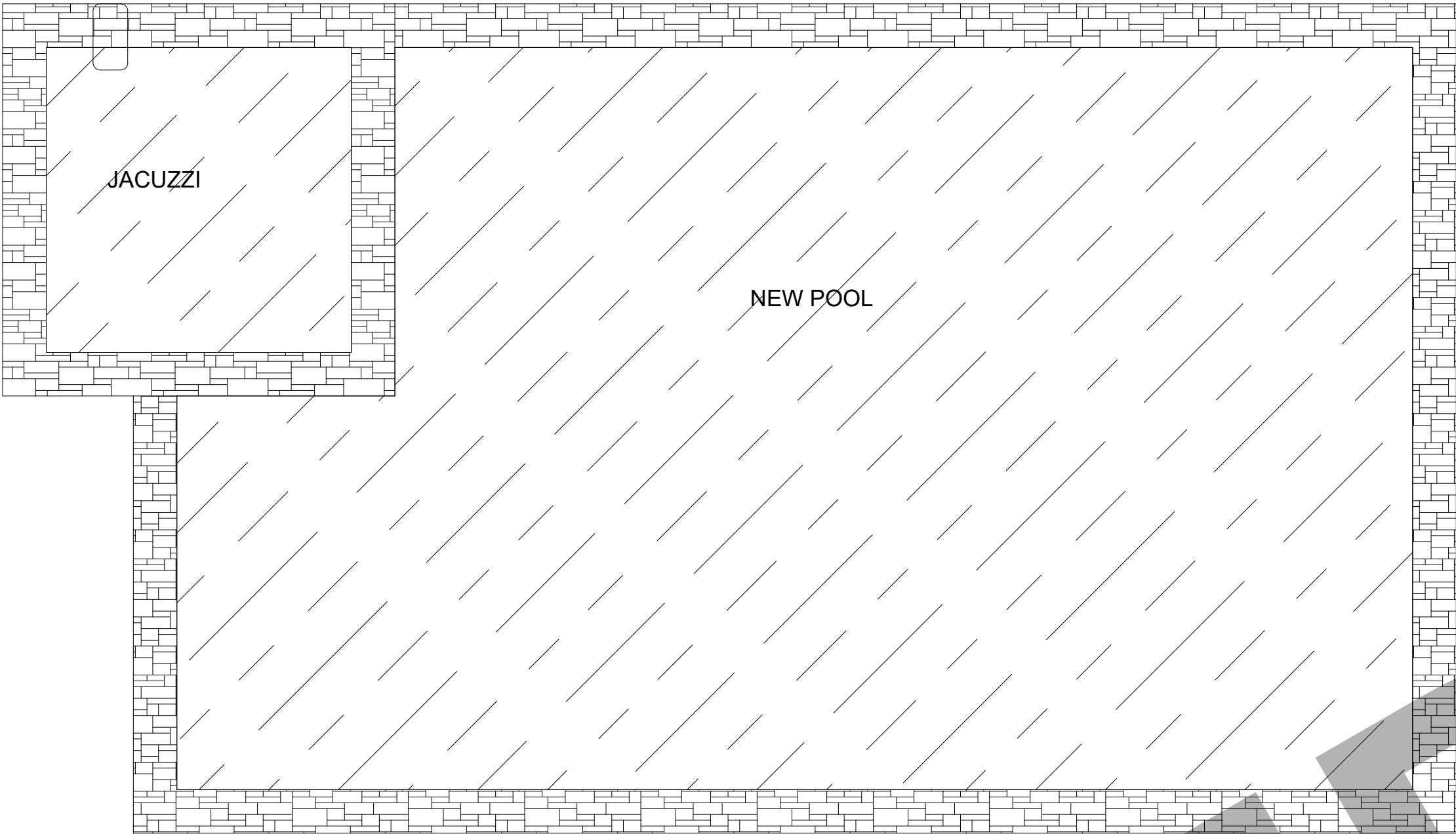
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Date	08/12/2022		
Scale	1/4" = 1'-0"		





**SHEET NOTES:**

- 1 → PROVIDE NEMA RATED 3R DISCONNECT SWITCH FOR UV LIGHT
- 2 → PROVIDE NEMA RATED 3R DISCONNECT SWITCH FOR CHLORINATOR .
- 3 → PROVIDE NEMA RATED 3R DISCONNECT SWITCH FOR CIRCULATION PUMP.
- 4 → PROVIDE NEMA RATED 3R DISCONNECT SWITCH FOR ELECTRONIC VALVE.

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**POWER**

Project  
TSE-2021-3782

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