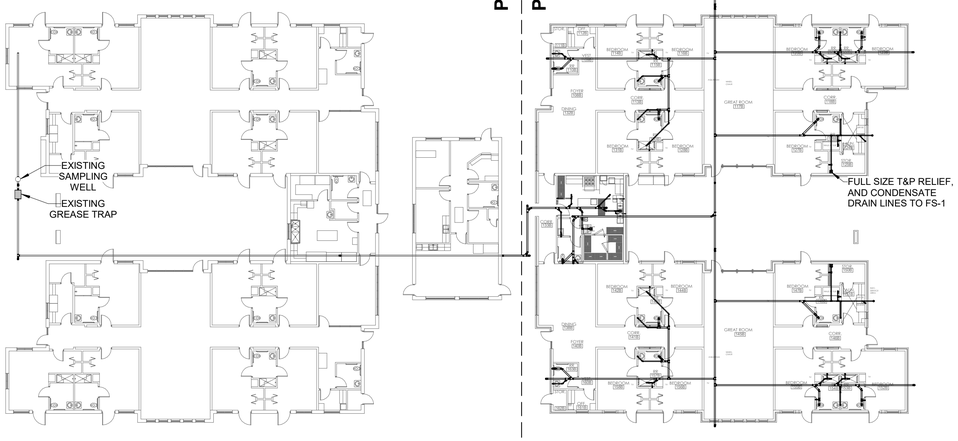
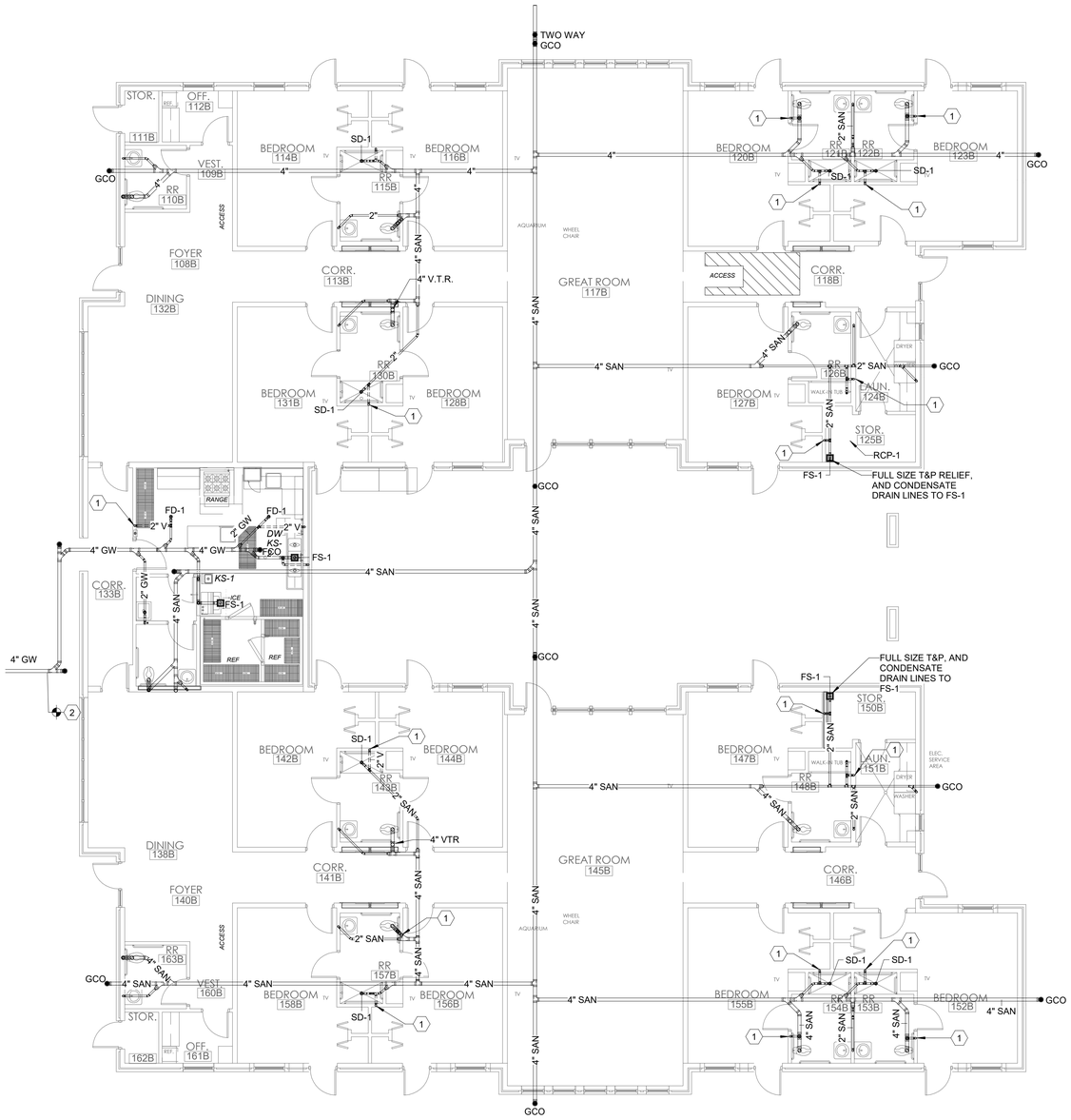


3 PLUMBING PLAN - OVERALL PLAN

3/64" = 1'-0"



1 PLUMBING PLAN - AREA B - BELOW FLOOR

1/8" = 1'-0"

KEYED NOTES

1 VENT PIPING UP, SEE AREA "B" ABOVE FLOOR PLAN FOR CONTINUATION.

2 CONNECT TO EXISTING GREASE WASTE PIPING STUBOUT.

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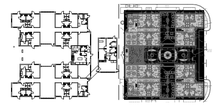
	10-26-18	PERMIT, PRICING, AND CONSTRUCTION
	02-14-19	CITY COMMENTS



Project No.

PLUMBING PLAN - AREA B - BELOW FLOOR

Sheet No.

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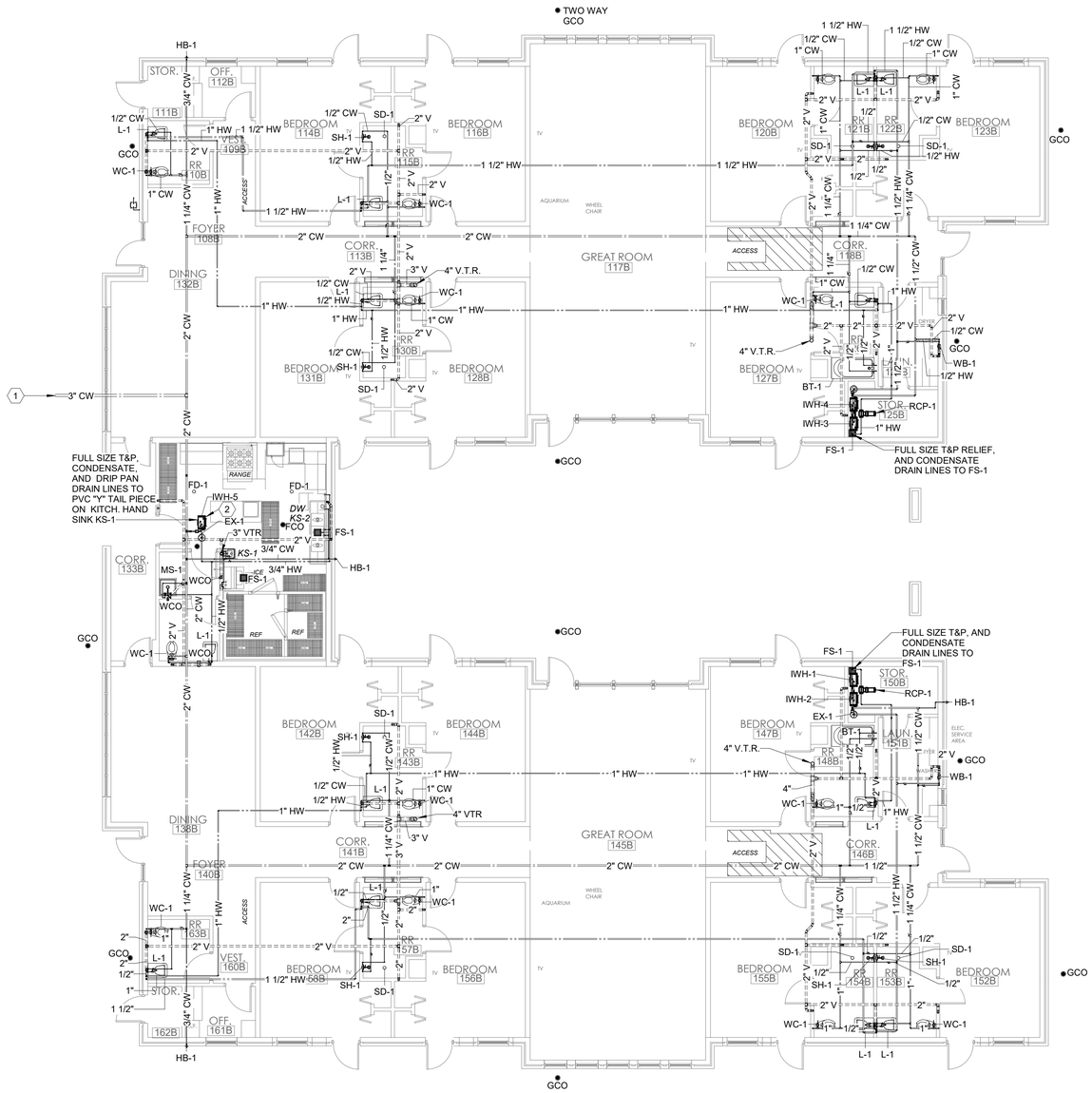

KEYED NOTES

1 EXTEND TO WATER METER BY CIVIL.

2 IWH-5 IN ATTIC SPACE ABOVE. COORDINATE LOCATION WITH WORK PLATFORM BY OTHERS.

1 PLUMBING PLAN - AREA B - ABOVE FLOOR

1/8" = 1'-0"

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PLUMBING PLAN - AREA B - ABOVE FLOOR

Sheet No.

P1.02

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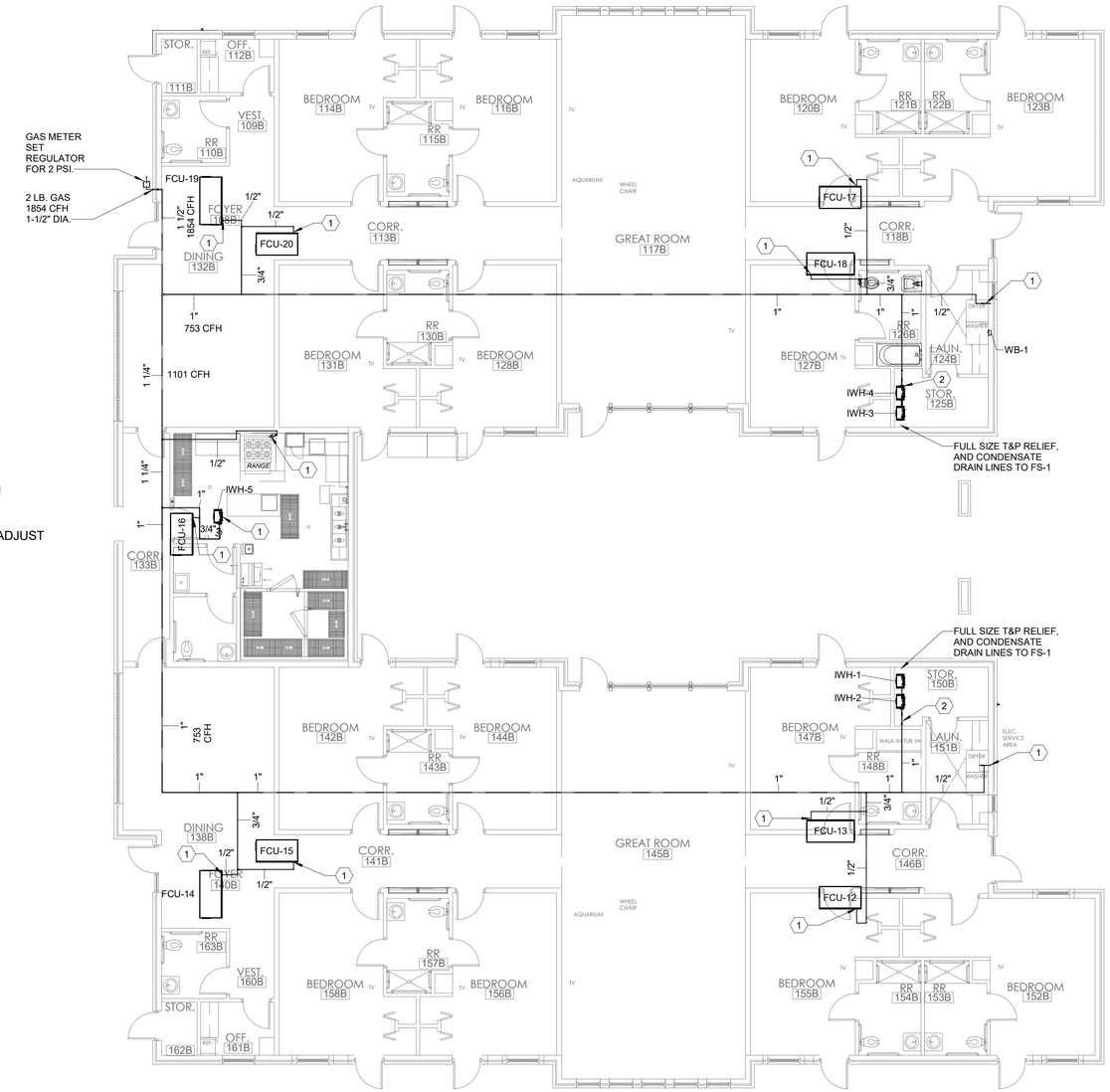
KEYED NOTES

1 PROVIDE PIETRO FIORENTINI VENTLESS GAS PRESSURE REGULATOR MODEL # 30051. ADJUST FOR 7" WATER COLUMN DELVERY.

2 PROVIDE PIETRO FIORENTINI VENTLESS GAS PRESSURE REGULATOR MODEL # 30051 FOR PAIR OF WATER HEATERS. ADJUST FOR 7" WATER COLUMN DELVERY.



1 PLUMBING PLAN - AREA B - NATURAL GAS

1/8" = 1'-0"

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PLUMBING NATURAL GAS PLAN

Sheet No.

P1.03

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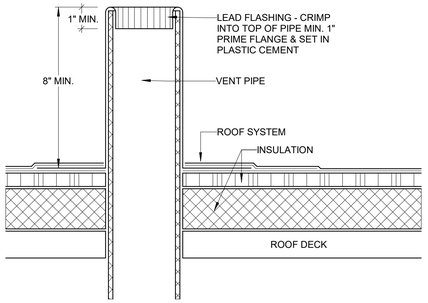

2 VENT THRU ROOF
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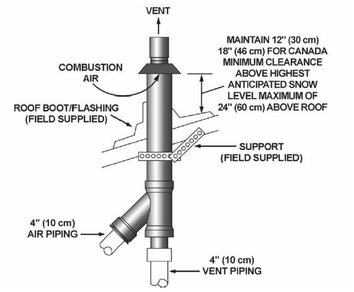

3 CONCENTRIC VENT THRU ROOF
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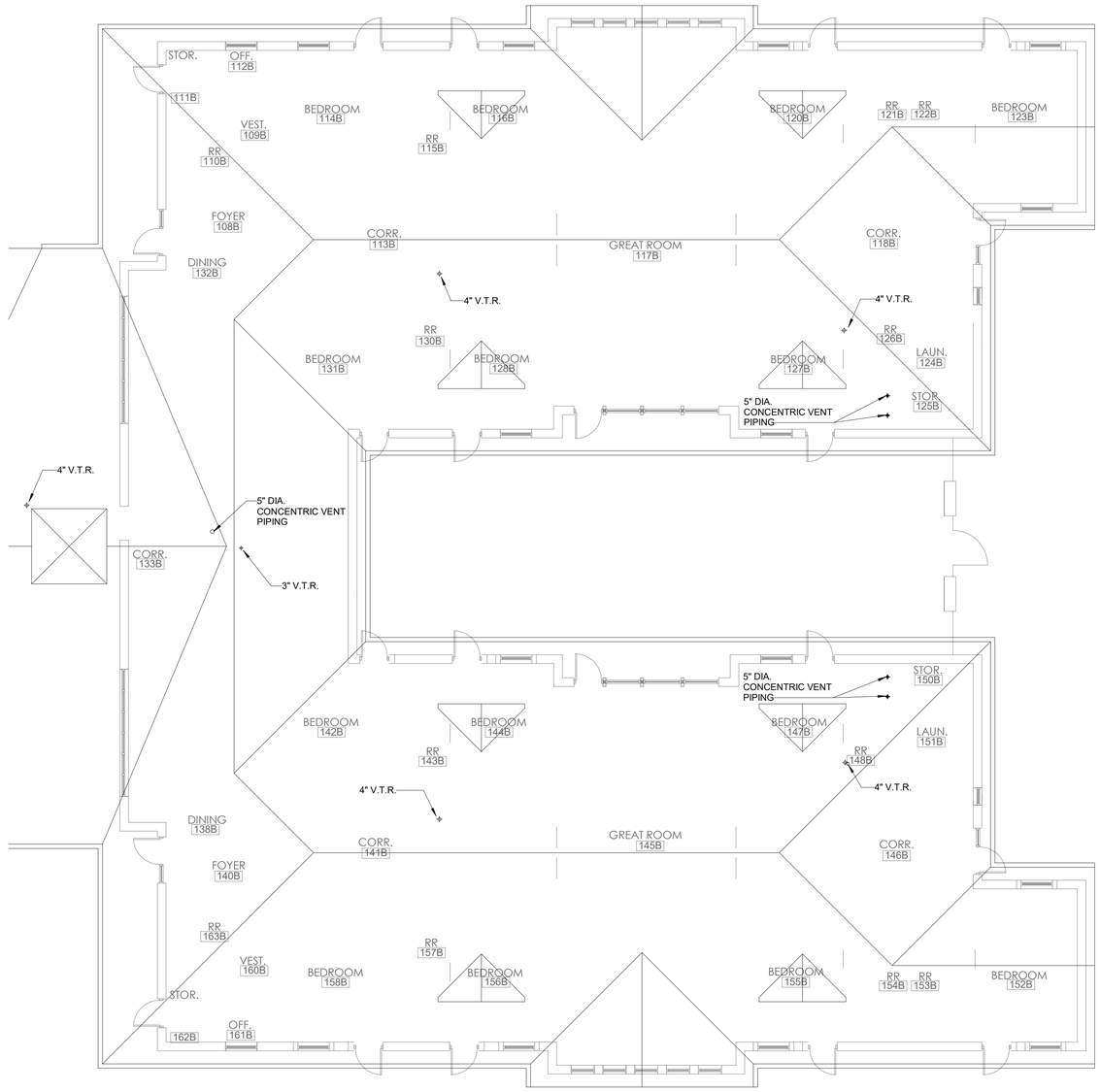

1 PLUMBING ROOF PLAN
1/8" = 1'-0"

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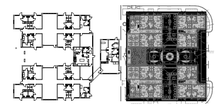

Project No.

PLUMBING ROOF PLAN

Sheet No.

P1.04

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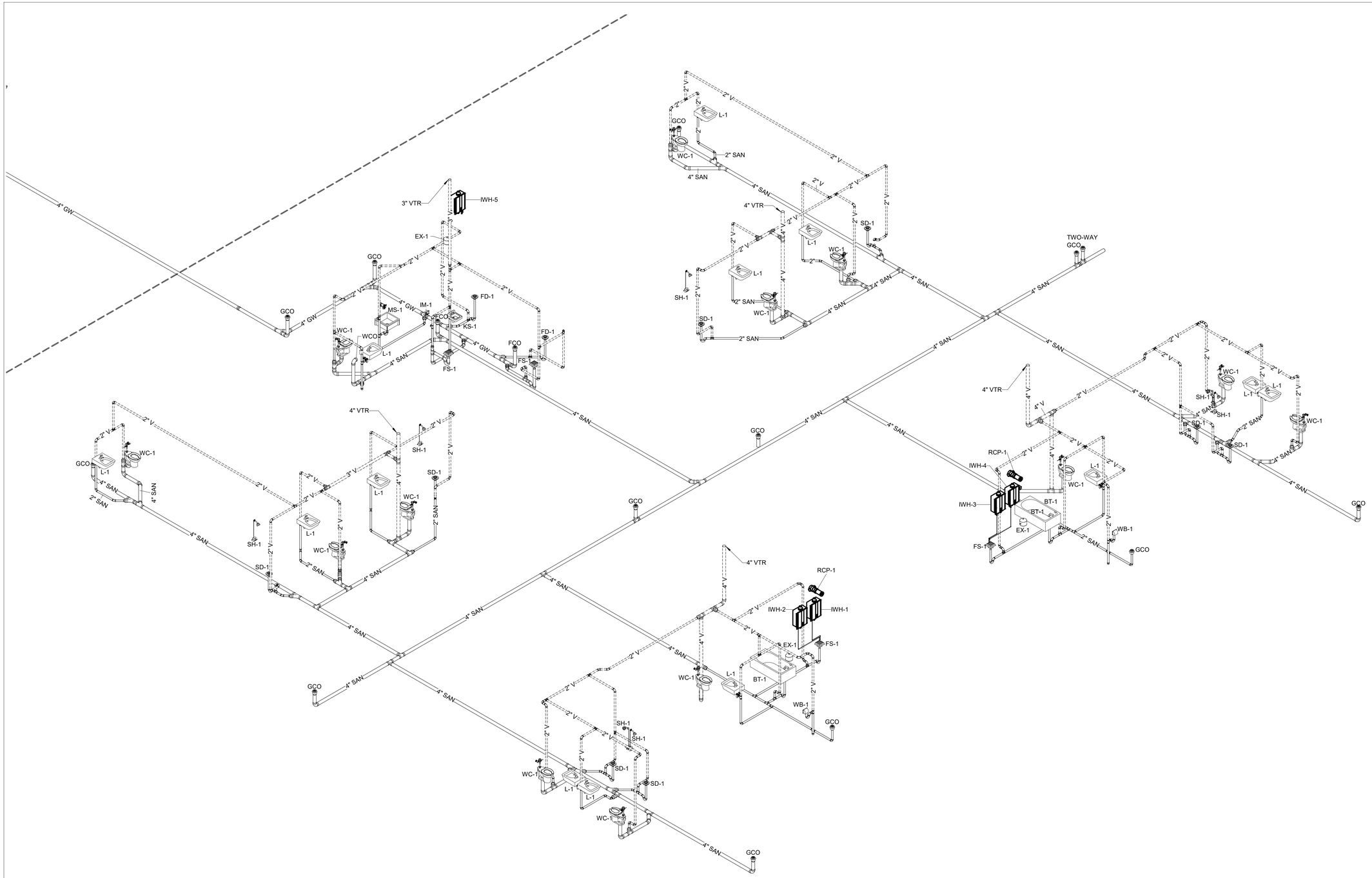

1 PLUMBING RISER DIAGRAM - SANITARY AND VENT

N.T.S.

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PLBG RISER DIAGRAM - SANITARY & VENT

Sheet No.

P2.01

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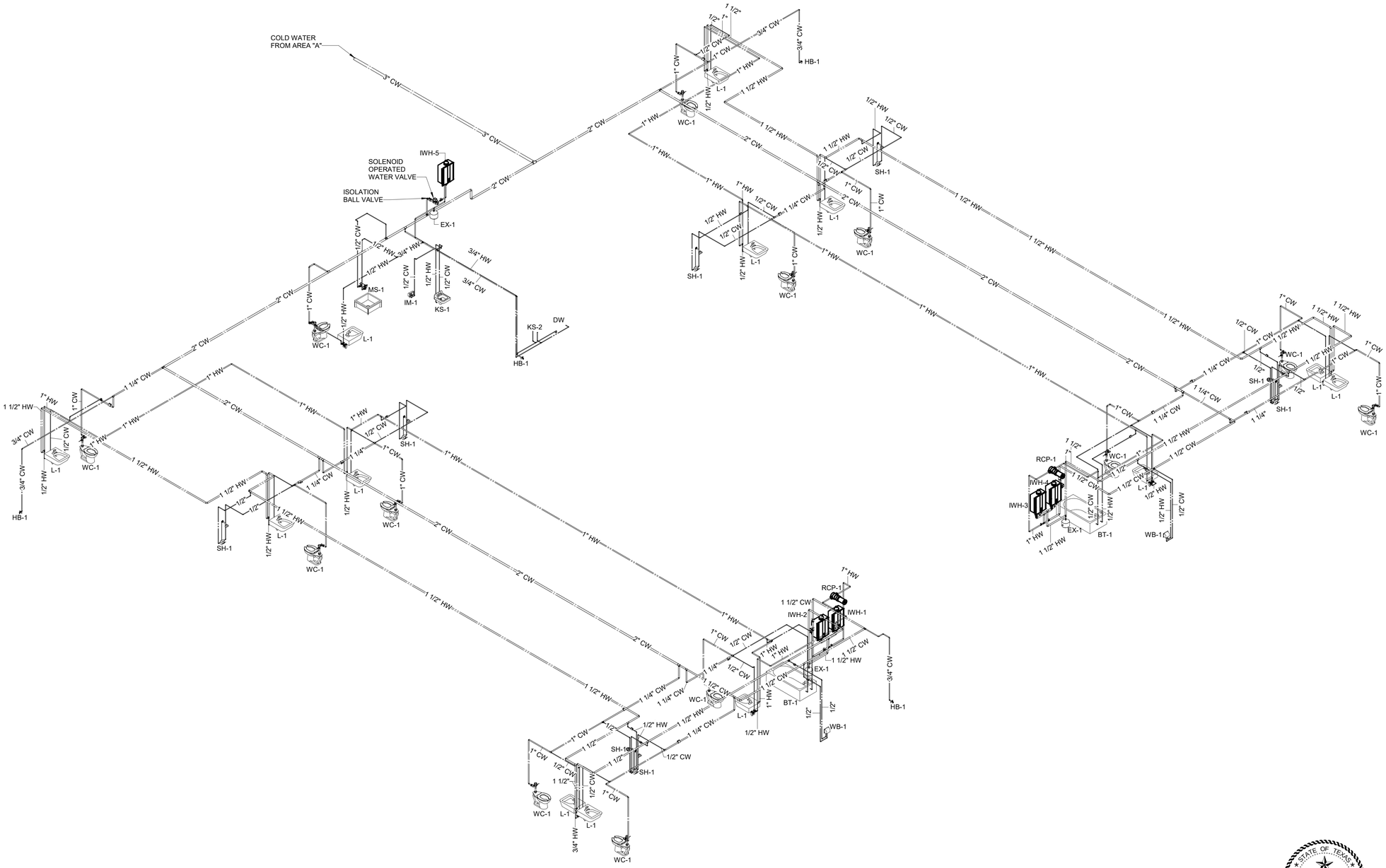

1 PLUMBING RISER DIAGRAM - DOMESTIC WATER - AREA A

N.T.S.

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Project No.

PLBG RISER DIAGRAM - DOMESTIC WATER

Sheet No.

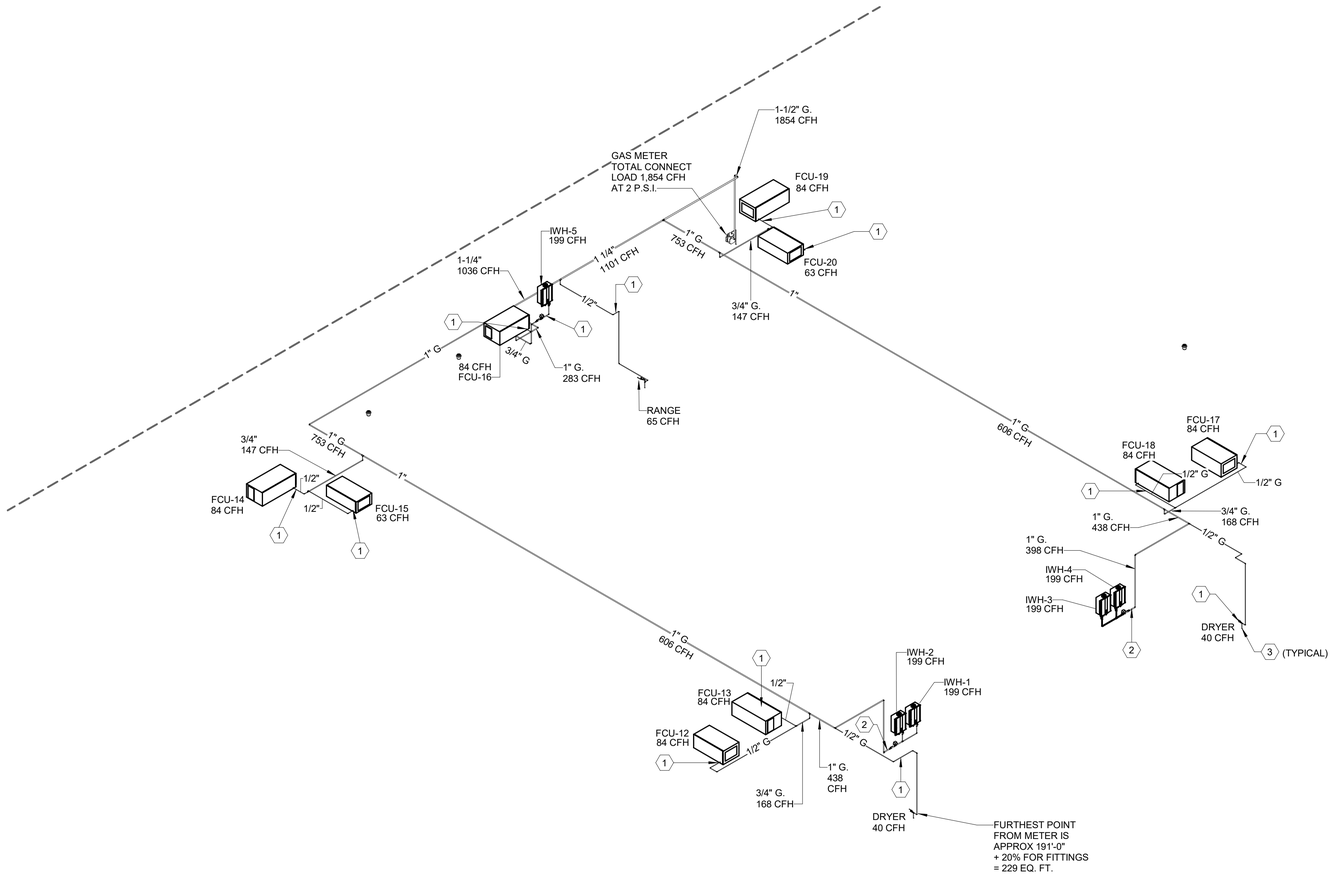
P2.02

KEYED NOTES

1 PROVIDE PIETRO FIORENTINI VENTLESS GAS PRESSURE REGULATOR MODEL # 30051. ADJUST FOR 7" WATER COLUMN DELVERY.

2 PROVIDE PIETRO FIORENTINI VENTLESS GAS PRESSURE REGULATOR MODEL # 30051 FOR PAIR OF WATER HEATERS. ADJUST FOR 7" WATER COLUMN DELVERY.

3 PROVIDE 9" DIRT LEG AT EQUIPMENT CONNECTION.



1 PLUMBING RISER DIAGRAM - NATURAL GAS

N.T.S.

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PLBG RISER DIAGRAM - NATURAL GAS

Sheet No.

P2.03

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WATER HEATER SCHEDULE

MARK	MFG / MODEL #	SERVICE AREA	FUEL	INPUT BTUH/HR	TANK SIZE (GAL)	ACCESSORIES
GWH-1	A.O. SMITH "CYCLONE HE" BTX-80	RESIDENT ROOMS	NATURAL GAS	76,000	50	PROVIDE T&P VALVE & VACUUM RELIEF VALVE
GWH-2	A.O. SMITH "CYCLONE HE" BTX-80	RESIDENT ROOMS	NATURAL GAS	76,000	50	PROVIDE T&P VALVE & VACUUM RELIEF VALVE
GWH-3	A.O. SMITH "CYCLONE HE" BTH-120	KITCHEN	NATURAL GAS	120,000	60	PROVIDE T&P VALVE & VACUUM RELIEF VALVE
GWH-4	A.O. SMITH "CYCLONE HE" BTX-80	OFFICE/SALON	NATURAL GAS	76,000	50	PROVIDE T&P VALVE & VACUUM RELIEF VALVE
IWH-1 & 2	RINNAI RUC98	RESIDENT ROOMS	NATURAL GAS	199,000 EACH	---	PROVIDE RINNAI COMBO INTAKE/DISCHARGE KIT No. 184162PP, 224000PP SERIES COMBO VENT PIPE EXTENSIONS, 189000 SERIES ROOF FLASHING, AND T&P VALVE & EXPANSION TANK
IWH-3 & 4	RINNAI RUC98	RESIDENT ROOMS	NATURAL GAS	199,000 EACH	---	PROVIDE RINNAI COMBO INTAKE/DISCHARGE KIT No. 184162PP, 224000PP SERIES COMBO VENT PIPE EXTENSIONS, 189000 SERIES ROOF FLASHING, AND T&P VALVE & EXPANSION TANK
IWH-5	RINNAI RUC98	KITCHEN	NATURAL GAS	199,000	---	PROVIDE RINNAI COMBO INTAKE/DISCHARGE KIT No. 184162PP, 224000PP SERIES COMBO VENT PIPE EXTENSIONS, 189000 SERIES ROOF FLASHING, AND T&P VALVE & EXPANSION TANK

PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	MANUFACTURER & MODEL NO.	RATED CAPACITY	RATED CAPACITY	NOTES
RCP-1	IN-LINE CIRCULATION PUMP	GRUNDFOS #UP 15-100F	8.4 GPM @ 36 FT HEAD	1/2 HP 115V - 1 PH	

PLUMBING MATERIAL SCHEDULE

SERVICE PIPE	MATERIALS
WATER PIPING	COLD WATER-PVC, HOT WATER -CPVC
WASTE / VENT PIPING	SCHED 40-PVC
NATURAL GAS PIPING	SCHEDULE 40 BLACK STEEL

PLUMBING SYMBOLS & ABBREVIATIONS

MARK	DESCRIPTION	MARK	DESCRIPTION
CW	COLD WATER LINE	— — —	COLD WATER LINE
HW	HOT WATER LINE	— – —	HOT WATER LINE
HWR	HOT WATER RECIRC LINE	— – – —	HOT WATER RECIRC LINE
SAN	SANITARY DRAIN LINE	———	SANITARY DRAIN LINE
V	SANITARY VENT LINE	– – – –	SANITARY VENT LINE
GW	GREASE WASTE DRAIN LINE	—GW—	GREASE WASTE DRAIN LINE
GV	GREASE VENT LINE	—GV—	GREASE VENT LINE
NAT	NATURAL GAS LINE	—NAT—	NATURAL GAS LINE
WCO	WALL CLEAN OUT	A.F.F.	ABOVE FINISHED FLOOR
FCO	FLOOR CLEAN OUT	HB	HOSE BIB
COTG	CLEAN OUT TO GRADE	VTR	VENT THRU ROOF
	PIPE DOWN		BALL VALVE
	PIPE UP		BUTTERFLY VALVE
	FCO / COTG		GATE VALVE
	END OF LINE CLEANOUT		GLOBE VALVE
	END CAP		CHECK VALVE
	HOSE BIB	P 1	RISER DESIGNATION

UNLESS NOTED OTHERWISE, WATER AND VENT PIPING SHOWN ARE ABOVE CEILING AND WASTE IS BELOW FLOOR.

PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	MANUFACTURER & MODEL NO.	ACCESSORIES	ROUGH-IN SIZES SAN	VENT	CW	HW
WC-1	FLOOR MOUNTED, WHITE VITREOUS CHINA. TOP SPUD, ELONGATED BOWL, OPEN FRONT SEAT LESS COVER SELF-SUSTAINING WITH STAINLESS STEEL POSTS AND DURAGUARD®, RIM HEIGHT 15", MANUAL FLUSH VALVE (1.28 GPF)	AMERICAN STANDARD "MADERA" FLOWISE #2234.001	BEMIS #1955SSTFR SLOAN ROYAL #111-1.28	4"	2"	1"	---
L-1	WALL MOUNTED, VITEROUS CHINA, 4" CENTERS, SINGLE LEVER FAUCET, GRID STRAINER AND THERMOSTATIC MIXING VALVE. PROVIDE TRUEBRO INSULATION.	AMERICAN STANDARD "COMRADE" 0124.31	DELTA #523LF-HGMHDF, WATTS #L111 THERMOSTATIC MIXING VALVE, McGUIRE STOPS AND P-TRAP.	2"	2"	1/2"	1/2"
SH-1	SHOWER ENCLOSURE BY ARCHITECT. PROVIDE THERMOSTATIC VALVE WITH LEVER VOLUME TEMPERATURE CONTROL, DIVERTER VALVE, 60" METAL HOSE, HAND SPRAY, 24" SLIDE BAR AND IN-LINE VACUUM BREAKER		DELTA #T17TH3-2-5 AND SEPARATE ORDER OF R10700-UNWS ROUGH IN	---	---	1/2"	1/2"
SD-1	CHROME PLATED SHOWER DRAIN	J.R. SMITH #2005A-CP	SURE SEAL TRAP GUARD #SS2009	2"	2"	---	---
BT-1	60"x30"x14" GLOSSY PORCELAIN FINISH, INTEGRAL OVERFLOW, FULL SLIP RESISTANT. (FIELD VERIFY LEFT/RIGHT HAND REQ'TS)	AMER. STD. #2390.202 (LEFT) #2391.202 (RIGHT)	DELTA #T17TH9-2-5 AND SEPARATE ORDER OF R10700-UNWS ROUGH IN	2"	2"	1/2"	1/2"
SK-1	SELF-RIMMING DOUBLE BOWL, 18 GA STAINLESS STEEL, SINGLE LEVER FAUCET AND CRUMB STRAINER	ELKAY #LRAD3322-6.5-1	DELTA #101LF-HDF DELTA #72010 (STRAINER)	2"	2"	1/2"	1/2"
IM-1	ICE MAKER VALVE BOX	GUY GRAY #BIM875		---	---	1/2"	---
WB-1	WASHER BOX, GALV. STEEL CENTER DRAIN WITH HOT & COLD WATER HOSE BIBBS (BOTTOM MTD)	GUY GRAY #B-200		2"	2"	1/2"	1/2"
FCO	ROUND FLOOR CLEAN OUT, ADJUSTABLE NICKEL BRONZE TOP	J.R. SMITH #4020		SEE PLAN	---	---	---
GCO	EXTERIOR CLEAN OUT	J.R. SMITH #4020		SEE PLAN	---	---	---
HB-1	RECESSED FREEZE PROOF BRONZE HYDRANT WITH SQUARE CHROME FACE, INTEGRAL VACUUM BREAKER & LOOSE "T" HANDLE	WOODFORD #B65		---	---	3/4"	---
KS-1	KITCHEN HAND SINK	SPECIFIED BY OWNER/ARCHITECT		2"	2"	1/2"	1/2"
KS-2	KITCHEN 3-COMPARTMENT SINK	SPECIFIED BY OWNER/ARCHITECT		2"	2"	1/2"	1/2"
TMV-1	MASTER MIXING VALVE	POWERS #432		---	---	---	---
HS-1	BEAUTY SALON HAIR WASHING STATION	SPECIFIED BY OWNER/ARCHITECT	PROVIDE WITH HAIR TRAP	2"	2"	1/2"	1/2"
MS-1	MOLDED STONE MOP SERVICE BASIN 24"x24"x10", 3" OUTLET WITH STAINLESS STEEL STRAINER	FIAT #MSB2424	FIAT #830AA (FAUCET), #832AA (HOSE & BRACKET), #889-CC (MOP HANGER), MSG2424 (WALL GUARD)	3"	2"	1/2"	1/2"
FD-1	ROUND CAST IRON FLOOR DRAIN WITH ADJUSTABLE NICKEL BRONZE STRAINER AND TRAP PRIMER CONNECTION	J.R. SMITH #2005-P050-NB		2"	2"	1/2"	1/2"
FS-1	SQUARE CERAMIC COATED CAST IRON FLOOR SINK WITH SEEPAGE HOLES, NICKLE BRONZE RIM AND DOME BOTTOM STRAINER AND 1/2 GRATE	J.R. SMITH #3100-12		2"	2"	1/2"	1/2"

NOTE:
ADJUST ALL THERMOSTATIC MIXING VALVE TEMPERATURE LIMIT STOPS PER MFR'S PUBLISHED INSTALLATION INSTRUCTIONS

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PLUMBING SCHEDULES & DETAILS

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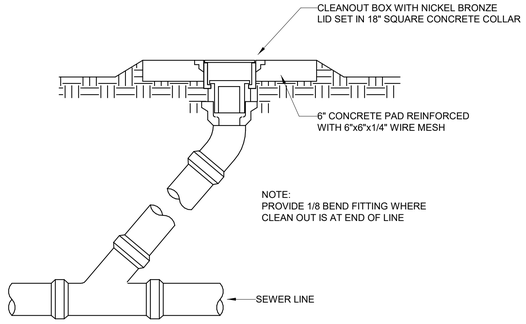
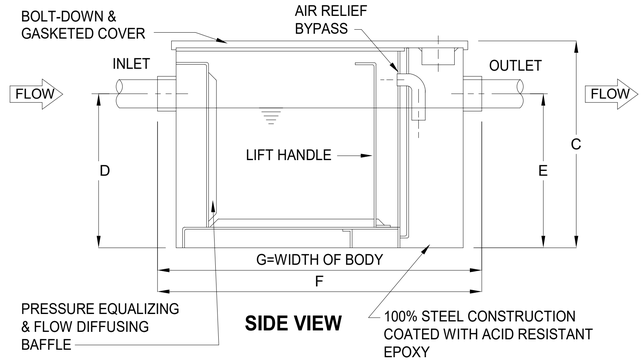
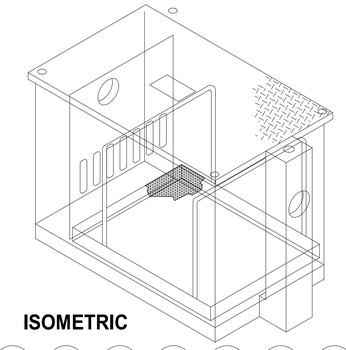


3 EXTERIOR CLEANOUT
N.T.S.



SIDE VIEW



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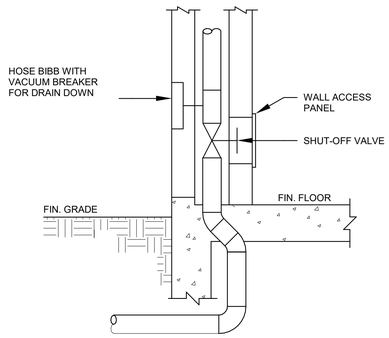


4 WATER ENTRY DETAIL
N.T.S.

Condensing Tankless
Two Unit Circulation

Note:

Condensate piping shall be CPVC or PVC material and shall not be smaller than the drain connection on the appliance.

Components of the condensate drainage shall be CPVC or PVC material. All components shall be selected for the pressure and temperature rating of the installation.

Where the drain pipes from more than one unit are manifolded together for condensate drainage, the pipe or tubing shall be sized in accordance with an approved method as dictated by local codes.

Condensate must be disposed of according to local codes.

Pump should be controlled by an Aquastat, Timer or Combination Aquastat and Timer.

Pump should be sized to maintain circulation loop temperature.

The pump should be sized to overcome the pressure loss through the tankless water heater, supply, and return plumbing. Reference the Rinnai Hot Water System Design Manual, Pump Sizing for Circulation.

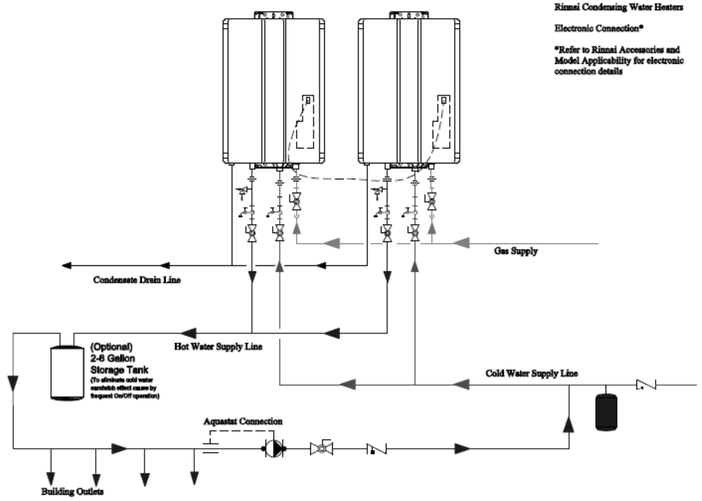
Pump should be of bronze or stainless construction.

Rinnai Equipment List

Rinnai Condensing Water Heaters

Electronic Connection*

***Refer to Rinnai Accessories and Model Applicability for electronic connection details**



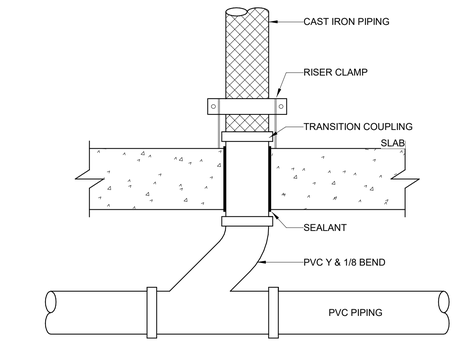
5 TANKLESS GAS WATER HEATER
N.T.S.

GREASE INTERCEPTOR

MODEL	FLOW RATE GPM	GREASE CAPACITY LBS	VOLUME GAL	C	D	E	F	G	EMPTY WT LBS	INLET/OUTLET NO-HUB CONN.
PARK EQUIP MGTL-250	125	250	150	30-1/8"	24-1/2"	24-1/2"	49-1/4"	40"	750	3"

NOTE: FLOW RATE GPM DESIGNED ON TOTAL FLOW RATE OF A 4" DIAMETER PIPE. 4" DIAMETER MAXIMUM FLOW RATE = 125 GPM.

1 MECHANICAL GREASE INTERCEPTOR
N.T.S.



2 CAST IRON TO PVC - BELOW SLAB
N.T.S.

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Revision Schedule

#	Date	Description
	10-26-18	PERMIT, PRICING, AND CONSTRUCTION
	02-14-19	CITY COMMENTS

STATE OF TEXAS
CLAYTON F. CLEMENTS
109793
LICENSED
PROFESSIONAL ENGINEER
02-18-19

ENGINEERS
PLANNERS
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Project No.

PLUMBING DETAILS

Sheet No.

P3.02

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PLUMBING GENERAL NOTES (apply to all sheets)

1. Drawings are diagrammatic; confirm dimensions and locations in the field. If conflicting dimensions are shown, use larger dimension.
2. Contractor shall field verify size, location, and condition of existing piping before proceeding with bid and construction. Any reused piping found to be in poor condition or not per current code requirements shall be documented and the engineer shall be made aware of this condition immediately.
3. All plumbing piping, equipment, and fixture installations shall be performed by a licensed plumbing contractor. All plumbing work shall be supervised by a licensed Master Plumber.
4. Guarantee labor and materials for 1-year. Warranties begin upon Owner's acceptance of substantial completion of the installation.
5. All plumbing materials, installation, testing, cleaning, supports, and workmanship shall be in strict accordance with the below listed applicable codes:
   a. 2015 International Plumbing Code
   b. 2015 International Energy Conservation
   c. 2015 International Fire Code
6. All exceptions or substitutions taken to specified materials, fixtures, equipment, or requirements of these documents shall be submitted to the owner, Architect, and Engineer for review and approval prior to purchase and installation.
7. Refer to project contract documentation and architectural drawings for additional requirements and information.
8. See Architectural plans and elevations for exact location of fixtures and wall mounted devices.
9. Plenums are crowded and not all obstacles are indicated. Allow for additionalpipe offsets, as required, and when not indicated on drawings.
10. Properly seal all penetrations of floors, exterior walls, and rated walls.
11. Secure all permits and provide any required temporary utilities.
12. All plumbing vents thru roof shall have the minimum separation from HVAC outside air inlets, per the applicable code; coordinate WITH HVAC contractor.
13. All work in or above occupied areas shall be at Owner's convenience and may be during evenings or weekends. Schedule all service interruptions in advance with Owner.
14. Location of existing underslab plumbing is estimated – allow for exploratory chipping to confirm actual locations.
15. Contractor shall visit site prior to bid – no extras will be allowed for conditions that could be readily observed.
16. Piping shall not be routed over electrical panels or transformers.
17. Provide water hammer arrestors as noted on the plumbing riser diagram. Size as per PDI standards; or, as specified. The use of air chambers shall not be acceptable and are not allowed.
18. The general contractor shall make an allowance in his price to pay all gas company setup fees associated with installation of gas service and meter at the building.

CONNECTIONS TO FOOD SERVICE EQUIPMENT
Portions of the Plumbing Contractor's scope of work are shown on Food Service drawings. All references on Food Service drawings to installation of piping and fixtures by 'Owner,' 'others,' or 'Plumber' shall mean the Plumbing Contractor. Contractor shall confirm all rough-in requirements with the Food Service drawings. Contractor shall make rough-in and final connections to kitchen equipment, install all fittings and fixtures shipped loose, route insulated condensate drains from freezer and cooler fan coils, route drains from Food Service equipment to floor sinks, install gas solenoid or mechanical valves provided by Food Service Contractor, provide any required sleeves for beverage lines, and provide required field connections between booster heaters and dish-washing machines.

PLUMBING SPECIFICATIONS

22 05 00 Common Work Results for Plumbing
Shop drawings:
Submit all fixtures, trim, equipment, specialties and insulation for review by Engineer-of-Record.
Operations and maintenance instructions:
Provide 3-copies of operation and maintenance manuals to Owner. Provide instruction on system operation to Owner's representatives.
Record drawings:
Provide record drawings in AutoCAD 2000 or higher, along with a hard copy on reproducible media, showing exact dimensions to all under-slab piping and indicate flow lines. Drawing CAD files can be ordered for a fee from Redding Linden Burr, Inc.
Coordination:
Provide Electrical Contractor with electrical requirements of approved equipment in sufficient time to order panel boards, disconnects, and related appurtenances.
Access doors
Provide Milcor, or equal, for access to all valves, controls, water hammer arrestors, or other devices requiring maintenance. Doors shall match wall or ceiling rating. Architect must approve location and appearance of all access doors, prior to installation.
Sleeves:
Provide metal sleeves where pipes or control wiring penetrate walls.

22 05 29 HANGERS AND SUPPORTS
Pipe and equipment hangers and supports shall be per local code.
Support all above floor piping utilizing support systems manufactured for the applicable installation. Wire or tape supports are not acceptable.
Provide 4" reinforced concrete housekeeping pad with chamfered edges for all floor or ground mounted equipment.
Isolate all water piping from direct contact with structural members (studs, joists, beams, etc.) to prevent the transmission of sound.
Flash and seal equipment, pipe stacks, and roof penetrations.

22 05 48 VIBRATION ISOLATION
Inline circulating pump: suspend or support with rubber or spring isolators.

22 05 73 PLUMBING COMPONENTS IDENTIFICATION
Equipment: permanent label (stencil, metal tag or engraved plastic) with unit tag or name and area or space served.
Piping: provide Brady or Seton pipe markers every 20 feet. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping.
Valve tags: Install engraved metal tags with corrosion resistant chain. Number tags consecutively by location.
Valve Tag Chart: Typewritten letter size list in anodized aluminum, or plastic laminated, frame.

22 07 19 PIPING INSULATION
All insulation must have flame spread less than 25 and smoke developed less than 50 as per ASTM E84, NFPA 255, and UL 273.
Provide galvanized sheet metal shields at all pipe hangers for pipes 1½" or larger. For pipe 4" and larger, provide high-density insulation (calcium silicate) inserts at hangers.

Domestic cold water in exterior walls, attics above building insulation, or other areas subject to freezing – 1" fiberglass.

Domestic hot water – For pipe sizes 1½" or less, provide 1" fiberglass insulation with all-service jacket. 1 ½" and larger, provide 1 ½" fiberglass insulation with all-service jacket
(RE: IECC 2015 – Table C403.2.10 Minimum Pipe Insulation Thickness)

Insulate all exposed drain and water supply piping beneath handicap accessible sinks with closed cell insulating kit as manufactured by 'Truebro' or equal by 'McGuire.'

Floor drains receiving condensate from HVAC units or ice machines shall be insulated minimum 5-feet downstream of drain except buried pipes below
slab.

22 10 00 PLUMBING PIPING
Domestic hot/cold – ASTM B88 Type "L" copper with wrought copper or cast bronze fittings using lead-free solder joints. Or, press fit type copper tubing, up to 4" diameter and meeting ASME B16.18 and B16.22. Alternately copper, or galvanized, grooved piping materials may be used with Engineer approval. System shall be drainable.

Waste and vent – ASTM A74 cast iron, copper, and/or Schedule 40 PVC with DWV no-hub fittings and clamps. No-hub clamps shall be manufactured by 'Tyler Pipe,' 'Clamp-All,' 'Husky,' or 'Mission.' Transitions between underslab PVC and above slab cast iron shall be as detailed on plans.

Testing: upon completion of construction, all domestic water piping shall be thoroughly flushed and sterilized. Submit Certificates of Testing for Engineer review.

Make connections between dissimilar piping materials with adaptors manufactured for the applicable type of transition.

Provide dielectric isolation device (dielectric union or coupling) where copper lines connect to ferrous lines or equipment.

Support piping every 10' or less for 1" and larger pipe size; every 6' for ¾" or smaller piping. When installing non-insulated copper pipe, use copper hangers or tape at contact point.

All piping penetrations through floors shall be sealed with UL listed firestop except slab on grade penetrations.

Natural Gas
ABOVE GRADE AND INSIDE BUILDING**:** Provide Schedule 40, ASTM A53 black steel with black 150-pound malleable iron fittings, 2" and larger shall be welded. Install, inspect, test, and purge as per City of Sugarland Code and National Fire Protection Association 54 Fuel Gas Code. All welds shall be by certified welders. Pitch lines toward appliance; tap branches off top of main. Provide dirt leg, union, and flexible connections and lever handle plug valve at each device.

UNDERGROUND PIPING, OUTSIDE BLDG: Polyethylene or other plastic conforming to ASTM D2513 or reinforced epoxy resin conforming to ASTM D2517. When connecting to above ground metal piping, provide minimum 12" horizontal length of metallic pipe underground with AWWA C105 polyethylene jacket or double layer, half- lapped, 10-mil polyethylene tape.

21 13 00 Fire Suppression Sprinkler Systems
New project area shall be fully sprinklered.

All head locations shall be approved by Architect and shall typically be centered (+/-2") in ceiling tiles or ceiling elements.

Work shall be by a licensed fire sprinkler contractor in accordance with current NFPA 13, Texas Department of Insurance Fire Sprinkler Rules and Factory Mutual (FM).

Piping: Up to 4" diameter – Schedule 40 black steel, ASTM A135 with class 125 cast iron threaded, or grooved, fittings. 4" diameter & larger – Schedule 10 iron pipe may be used. All piping shall be concealed above finished ceilings; seal penetrations of floors and rated walls. Coordinate pipe routing with other trades.

Fire Sprinkler Contractor shall be responsible for system design and a layout that provides proper coverage. Submit the following to Engineer for review: hydraulic calculations and pipe/head shop drawings, approved in writing by a licensed Professional Engineer or Contractor's "Responsible Managing Employee." Contractor shall be responsible for all required submittals to City/County, Fire Marshall and FM (or insurance agency designated by Owner). Test system in presence of local authorities. Work shall proceed prior to receiving State Board and FM approvals, however after receipt of agency reviews, Contractor shall return to site and make all required modifications or additions at no additional cost.

Provide Dry Pipe System for attic and other areas subject to freezing.

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PLUMBING SPECIFICATIONS

Sheet No.

P4.01

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