CITY OF Goodyear Approved 07/01/21 21-2119 - VIP PRODUCTS

# PLUMBING SPECIFICATIONS

PART 1 - GENERAL

SCOPE

FURNISH, INSTALL, TEST, PLACE INTO OPERATION AND GUARANTEE, COMPLETE, OPERABLE, AND APPROVED MECHANICAL AND PLUMBING WORK. SECURE AND PAY FOR ALL MATERIALS, EQUIPMENT, LABOR, SUPERVISION, FEES, TESTS, PERMITS, AND ALL OTHER COSTS REQUIRED.

REGULATIONS IN EFFECT

NATIONAL, STATE, AND CITY CODES, ORDINANCES, ETC., HAVING JURISDICTION. RULES AND REQUIREMENTS OF UTILITY SERVING AGENCIES.

NO ADDITIONAL FUNDS WILL BE ALLOCATED FOR WORK REQUIRED TO CONFORM TO REGULATIONS AND REQUIREMENTS.

QUALIFICATIONS OF WORKMEN

USE SUFFICIENT JOURNEYMEN CRAFTSMEN AND COMPETENT SUPERVISORS, TO ENSURE PROMPT, PROPER, AND SAFE EXECUTION OF WORK.

DESIGN DRAWINGS

DESIGN DRAWINGS ARE DIAGRAMMATIC AND ONLY DEFINE BASIC FUNCTIONS REQUIRED. PROVIDE ALL WORK, MATERIAL, ETC., TO ACCOMPLISH THESE REQUIREMENTS. MINOR DEVIATIONS FROM DESIGN LAYOUT ARE ANTICIPATED AND ARE A PART OF WORK INCLUDED, HOWEVER, MAKE NO CHANGES THAT ALTER CHARACTER OF WORK. DO NOT SCALE DESIGN DRAWINGS.

SHOP DRAWINGS

INDEXED BROCHURE COMPLETELY DESCRIBING MAJOR PRODUCTS AND SYSTEMS (SEVEN HARD BOUND COPIES).

FOR INFORMATION AND COORDINATION ONLY. PROVIDE SUFFICIENT DATA TO CLEARLY DEFINE THE WORK REQUIRED OF OTHER TRADES FOR PROPER INSTALLATION, OPERATION, AND SERVICE OF EQUIPMENT.

SHOP DRAWINGS ARE NOT A FORUM FOR CHANGES IN PROJECT SCOPE OR REQUIREMENTS.

PART 2 - PRODUCTS

GENERAL

NEW AND UNUSED PRODUCTS OF ESTABLISHED AND REPUTABLE AMERICAN MANUFACTURERS. SIMILAR ITEMS SHALL BE OF SAME MANUFACTURER.

COMPLETE AND OPERABLE SYSTEMS. INCLUDE ANY AND ALL ACCESSORIES REQUIRED FOR PROPER OPERATION AS THOUGH SPECIFICALLY INDICATED. SUCH AS: FILTERS, CONDENSATE DRAINS WITH VENTED TRAPS, RELIEF VALVES, SERVICE VALVES AND STOPS, THERMOSTATS, LOW VOLTAGE WIRING, VIBRATION ISOLATORS, AND ITEMS SPECIFICALLY RECOMMENDED BY MANUFACTURER.

REFERENCE TO A MANUFACTURER'S PRODUCT IS TO ESTABLISH TYPE, QUALITY, AND PERFORMANCE REQUIRED. THESE QUALIFICATIONS ARE IN ADDITION TO REQUIREMENTS SHOWN ELSEWHERE.

PIPING

SANITARY AND STORM: IAPMO APPROVED ABS OR PVC.

POTABLE WATER: TYPE "L" HARD COPPER, 0.2% MAX LEAD SOLDER. IAPMO APPROVED SCHEDULE 40 PVC MAY BE UTILIZED FOR BURIED COLD WATER LINES, NOT UNDER STRUCTURE, IN ACCORDANCE WITH IAPMO STANDARDS.

RELIEF VALVE AND MISCELLANEOUS DRAINS: TYPE "M" HARD COPPER.

CONDENSATE DRAINS: TYPE "M" HARD COPPER OUTDOORS.

PIPING ACCESSORIES

FLASH PIPING THROUGH ROOF WITH 26 GA GALVANIZED STEEL EXTENDED 6" INTO ROOFING.

PROVIDE CLEANOUTS IN HORIZONTAL DRAINAGE PIPING. PROVIDE APPROPRIATE WALL OR FLOOR COVERS FOR CLEANOUTS IN CONCEALED PIPING. BRING CLEANOUTS IN OUTDOOR PIPING TO GRADE AND SECURE WITH TRAFFIC WEIGHT CLEANOUT BOX AND COVER.

ACORN #8121 HOSE BIBBS WITH INTEGRAL VACUUM BREAKER.

125# BALL VALVES.

BRASS-CRAFT OR FROST STOPS ON WATER SERVICES TO FIXTURE.

PIPE INSULATION

1" ARMAFLEX ON HOT WATER

WATER HEATER

UL APPROVED, STORAGE TYPE WITH GLASS LINED TANK. FIBERGLASS INSULATION WITH DECORATIVE METAL JACKET. MAGNESIUM ANODE RODS. ONE YEAR GUARANTEE AGAINST TANK FAILURE. ASME TEMPERATURE AND PRESSURE RELIEF VALVE, WITH WATER RATING (NOT STEAM RATING) EQUAL TO HEATING CAPACITY. EXTEND FULL SIZE DISCHARGE LINE TO GRADE OR APPROVED RECEPTOR.

PART 3 - EXECUTION

GENERAL

PERFORM ALL WORK IN BEST TRADE PRACTICE. ARRANGE FOR GREATEST PRACTICAL EASE OF OPERATION AND SERVICE. INSTALL SQUARELY WITH BUILDING LINES. PROVIDE RIGID, PERMANENT, LEVEL, BASES AND SUPPORTS. ELIMINATE VIBRATION AND RATTLING.

FOLLOW THESE SPECIFICATIONS AND MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.

COVER AND PROTECT ALL EQUIPMENT AND MATERIALS FROM WEATHER, THEFT, ETC.. PLUG OR CAP ALL OPEN ENDS OF INSTALLED PIPING AND DUCTWORK.

EXCAVATION AND BACKFILL

ACCURATELY GRADE BOTTOM OF TRENCHES TO PROVIDE UNIFORM CONTINUOUS BEARING AND SUPPORT FOR PIPE. BACKFILL IN SIX INCH (6") MECHANICALLY COMPACTED LAYERS, FREE OF ROCKS, WOOD, AND DEBRIS. JETTING IS NOT AN ACCEPTABLE MEANS OF COMPACTION.

ROUGH-IN AND FINAL CONNECTIONS

THE DRAWINGS INDICATE GENERAL ARRANGEMENTS ONLY. PROVIDE ROUGH-IN AND FINAL CONNECTIONS FOR FIXTURES AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S SUGGESTIONS AND PRODUCT REQUIREMENTS.

PIPING

INSTALL EXPOSED PIPING CLOSE TO BUILDING CONSTRUCTION TO MINIMIZE INTRUSION INTO USABLE BUILDING SPACE. UTILIZE FITTINGS FOR ALL JOINTS, OFFSETS AND TURNS.

VERIFY DIMENSIONS AND REQUIREMENTS. BENDING OR OFFSETTING OF PIPING AND "GOCKING" OF FITTINGS WILL NOT BE ACCEPTABLE.

SUPPORT HORIZONTAL PIPING WITH PIPE HANGERS OR BRACKETS. DO NOT USE PERFORATED METAL TAPE. DO NOT SUPPORT PIPING FROM EQUIPMENT.

SANITARY AND STORM: LAY AT A UNIFORM GRADE. MAKE ALL JOINTS CLOSE AND SQUARE.

PIPE INSULATION

SLIP INSULATION OVER PIPING PRIOR TO ASSEMBLY. DO NOT SLIT INSULATION LENGTHWISE. SOLVENT WELD ALL JOINTS. DO NOT USE TAPE TO SECURE INSULATION.

COMMISSIONING

VERIFY PROPER POWER TO ELECTRIC MOTORS AND CONTROLS. TEST AND ADJUST CONTROLS AND SYSTEMS AND CONFIRM PROPER OPERATION.

STERILIZE AND FLUSH DOMESTIC WATER SYSTEM.

AT COMPLETION OF WORK, THOROUGHLY CLEAN EQUIPMENT, PIPING, AND APPARATUS. REMOVE GREASE, DIRT, RUST, CEMENT, AND PLASTER, AND LEAVE SURFACES SMOOTH AND CLEAN. LEAVE PREMISES IN A NEAT, CLEAN AND USABLE CONDITION.

UPON REQUEST OF OWNER, AND AT HIS CONVENIENCE, PROVIDE SUFFICIENT QUALIFIED PERSONNEL AND TIME, TO INSTRUCT OWNER OR HIS REPRESENTATIVE IN THE SAFE AND PROPER OPERATION OF SYSTEMS PROVIDED.

## ENERGY COMPLIANCE PER 2018 IECC:

SEE COMCHECK SHEETS MP1.0 & MP1.1

HEAT TRAPS:
NOT REQUIRED - SYSTEM IS RECIRCULATING

PIPE INSULATION
FOR AUTOMATIC CIRCULATING HOT WATER SYSTEMS, PIPING SHALL BE INSULATED WITH 1 INCH OF INSULATION (CONDUCTIVITY LESS THAN 0.27 BTU/IN/H-SF).

AUTOMATIC SHUTOFF:
AUTOMATIC CIRCULATING HOT WATER SYSTEM PUMPS SHALL BE ARRANGED TO BE CONVENIENTLY TURNED OFF AUTOMATICALLY OR MANUALLY WHEN HOT WATER IS NOT IN IN OPERATION.

WH MEETS IECC FOR MINIMUM EFFICIENCIES. SEE COMCHECK

TEMPERATURE CONTROLS:
PROVIDE WH CONTROLS TO SHOW A SET POINT OF 110° FOR DWELLING UNITS AND 90° FOR EQUIPMENT SERVING OTHER OCCUPANCIES.

HOT WATER SYSTEM CONTROLS:
AUTOMATIC CIRCULATION SYSTEM SHALL BE ARRANGED TO TURN OFF WHEN HOT WATER SYSTEM IS NOT IN USE.

## PLUMBING FIXTURES

ALL FIXTURES TO BE EQUIPPED WITH SHUT OFF VALVE IN ACCESSIBLE LOCATION

WC - ADA BARRIER FREE WATER CLOSET: FLOOR MOUNTED/TOTO DYNAMAX TORNADO FLUSH/TANK TYPE/ELONGATED BOWL/SOLID PLASTIC OPEN FRONT SEAT W/ SOFT CLOSE LID/1.6 GAL PER FLUSH MAX

LV - ADA BARRIER FREE LAVATORY: WALL HUNG/VIT CHINA/20 X 17/DELTA SINGLE LEVER FAUCET WITH UNDER-COUNTER THERMOSTATIC MIXING VALVE (SET TO 110° MAX)/GRID STRAINER .25 GAL PER MINUTE MAX/INSULATE HOT WATER & DRAIN PIPING

SK - SINK: ADA BARRIER FREE/COUNT MOUNTED/SINGLE COMPARTMENT/18 GA SS/22 X 19 1/2/ ELKAY #LRAD2219 WITH AMERICAN STANDARD "MONTERREY" #6409.170 8" GOOSENECK FAUCET W/(2) WRIST BLADE HANDLES & STRAINER/ 1/2 HP ACOUSTIC LINED SELF-REVERSING GARBAGE DISPOSAL/2.75 GAL PER MINUTE MAX/INSULATE HOT WATER & DRAIN PIPING

EDF - ADA BARRIER FREE ELECTRIC DRINKING FOUNTAIN: ELKAY MODEL #LZSTL8WSLP/WALL MOUNTED/SS BASIN/HI-LO CONFIGURATION/FRONT & SIDE EASY TOUCH CONTROLS

MS1 - MOP SINK: PROFLO PFMB SERIES/FLOOR MOUNTED/24 X 24 X 12 COMPLETE W/20 GA SS BACKSPLASH PANELS, RUBBER HOSE, CHICAGO 897-CP FAUCET WITH THREADED SPOUT, VAC BREAKER STRAINER, & MOP HANGER

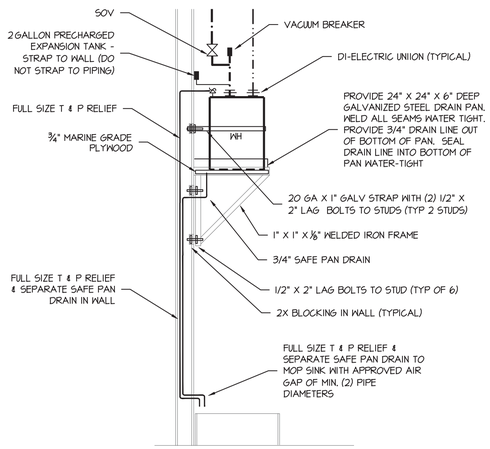
MS2 - MOP SINK: FIAT TERRAZO TSB100/FLOOR MOUNTED/24 X 24 X 12 COMPLETE W/20 GA SS BACKSPLASH PANELS, RUBBER HOSE, CHICAGO 897-CP FAUCET WITH THREADED SPOUT, VAC BREAKER, STRAINER, & MOP HANGER

WF - WATER FILTRATION SYSTEM: PROVIDED BY TENANT/RECESS MOUNT IN WALL

FND - FILTERED WATER DISPENSER: PROVIDED BY TENANT

FNS - FILTERED WATER SPOUT: PROVIDED BY TENANT

WH - WATER HEATER: 20 GALLON "LOWBOY"/1650 WATT @ 120V W/AO SMITH DURA-POWER W/ WATTS SERIES WDS-E220 LEAK DETECTOR/MEET MIN. EFFICIENCY OF 0.90 IN COMPLIANCE WITH IECC C404.2/VERIFY ELECTRICAL REQUIREMENTS WITH ELECTRICIAN PRIOR TO ORDER




WATER HEATER MOUNTING

## WATER CALCULATIONS

| | | | |
|---|---|---|---|
| GPM | | | 100 GPM |
| METER SIZE | | | 1 1/2 " |
| TOTAL DEVELOPED LENGTH SITE | | | 80 FT |
| (WITH 20% FOR FITTINGS) | | | 96 FT |
| 2 1/2 " PIPE (CPVC) @ | 100 GPM | | |
| 6.08 FT/100 FT X | 0.434 | = | 2.64 PSI |
| 2.64 PSI/100 FT X | 96 FT | = | 2.5 PSI/100' |
| TOTAL DEVELOPED LENGTH RISER TO TEE | | | 93 FT |
| (WITH 20% FOR FITTINGS) | | | 112 FT |
| 2 1/2" " PIPE (COPPER) | 100 GPM | | |
| 6.11 FT/100 FT X | 0.434 | = | 2.65 PSI |
| 2.65 PSI/100 FT X | 112 FT | = | 3.0 PSI/100' |
| TOTAL DEVELOPED LENGTH TEE TO STUB | | | 169 FT |
| (WITH 20% FOR FITTINGS) | | | 203 FT |
| 2 " PIPE (COPPER) | 50 GPM | | |
| 5.02 FT/100 FT X | 0.434 | = | 2.18 PSI |
| 2.18 PSI/100 FT X | 203 FT | = | 4.4 PSI/100' |
| PRESSURE AT METER | | | 60.0 PSI |
| METER LOSS | | | -8.0 PSI |
| RPBP LOSS | | | -10.0 PSI |
| SITE LOSS | | | -2.5 PSI |
| PRESSURE AVAILABLE AT BUILDING | | | 39.5 PSI |
| STATIC LOSS ( 14 X | 0.43 ) | = | -6.1 PSI |
| TOTAL BUILDING LOSSES | | | -7.4 PSI |
| PRESSURE AT STUB | | | -8.0 PSI |
| NET | | | 18 PSI |
| TOTAL DEVELOPED LENGTH STUB TO MOST REMOTE FIXTURE | | | 200 FT |
| (WITH 20% FOR FITTINGS) | | | 240 FT |
| FRICTION FACTOR (ALLOWABLE) | | | |
| ( 18.0 PSI / 240 FT X | 100 | = | 7.5 PSI/100' |
| FIXTURE UNITS THIS PROJECT | | | 98.0 FU |
| FIXTURE UNITS AVAILABLE FOR FUTURE | | | 277.0 FU |
| TOTAL FIXTURE UNITS | | | 375.0 FU |

FIXTURE UNITS THIS PROJECT:

| | | | | | |
|---|---|---|---|---|---|
| ( 8 ) | WC | X | 5.00 | = | 40.0 |
| ( 8 ) | LV | X | 2.00 | = | 16.0 |
| ( 2 ) | MS | X | 3.00 | = | 6.0 |
| ( 5 ) | HB | X | 5.00 | = | 25.0 |
| ( 4 ) | EDF | X | 0.25 | = | 1.0 |
| ( 2 ) | SK | X | 4.00 | = | 8.0 |
| ( 1 ) | ICE | X | 1.00 | = | 1.0 |
| ( 1 ) | WD | X | 1.00 | = | 1.0 |
| | TOTAL THIS PERMIT | | | = | 98.0 |

PIPE SIZING BASED ON: 7.4 PSI/100'

| PIPE SIZE | GPM | FU TANK |
|---|---|---|
| 1/2" | 0 - 3 | 0 - 1 |
| 3/4" | 4 - 8 | 2 - 4 |
| 1" | 9 - 17 | 5 - 14 |
| 1 1/4" | 18 - 29 | 15 - 49 |
| 1 1/2" | 30 - 45 | 50 - 106 |
| 2" | 46 - 99 | 107 - 370 |
| 2 1/2" | 100 - 174 | 371 - 776 |

## DRAINAGE CALCULATIONS

| | |
|---|---|
| DRAINAGE FIXTURE UNITS THIS PROJECT | 51.0 DFU |
| FIXTURE UNITS AVAILABLE FOR FUTURE | 129.0 DFU |
| TOTAL DRAINAGE FIXTURE UNITS PER IPC TABLE 710.1(1) | ##### DFU |
| DRAIN PIPE DIAMETER | 4 IN |
| SLOPE OF DRAIN PIPING | 1/8 IN/FOOT |

DRAINAGE FIXTURE UNITS PER IPC TABLE 709.1:

| | | | | | |
|---|---|---|---|---|---|
| ( 4 ) | EDF | X | 0.5 | = | 2.0 |
| ( 1 ) | FS | X | 1.0 | = | 1.0 |
| ( 2 ) | SK | X | 2.0 | = | 4.0 |
| ( 5 ) | LV | X | 1.0 | = | 5.0 |
| ( 2 ) | MS | X | 2.0 | = | 4.0 |
| ( 8 ) | WC | X | 4.0 | = | 32.0 |
| | TOTAL THIS PROJECT | | | = | 51.0 DFU |

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SUN STATE BUILDERS

VIP PRODUCTS
GOODYEAR, ARIZONA
PLUMBING SPECS, DETAILS & CALCS

P3.0
40012.010
25MAR21

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