PLUMBING SPECIFICATIONS

PART I - GENERAL

1.1 GENERAL CONDITIONS

THE CONTRACTOR SHALL FURNISH ALL PLANT, LABOR, EQUIPMENT, AND SHALL PERFORM ALL OPERATIONS IN CONNECTION WITH THE PLUMBING SYSTEMS(S) AS OUTLINED IN THE DRAWINGS AND IN STRICT ACCORDANCE WITH THE CONDITIONS OF THE CONTRACT. ANY INCIDENTAL WORK SHOWN OR SPECIFIED WHICH CAN REASONABLY BE TAKEN OR INFERRED AS BELONGING TO THE WORK AND NECESSARY TO PROVIDE THE SYSTEM DESCRIBED FOR SHOWN SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE WORK SHALL BE COMPLETE AND READY FOR SERVICE AS SHOWN AND/OR SPECIFIED, AND BE SATISFACTORY TO THE ARCHITECT. REFER TO ARCHITECTURAL SPECIFICATIONS FOR CORRELATIONS AND GENERAL REQUIREMENTS.

1.2 WORK INCLUDED

A. THE SYSTEMS TO BE INSTALLED CONSIST ESSENTIALLY FOR THE FOLLOWING:

1. SANITARY SEWER PIPING AND WATER PIPING.
2. PLUMBING FIXTURES.
3. TRENCHING AND BACKFILL.
4. TESTING AND ADJUSTMENT OF THE PLUMBING SYSTEM.
5. OTHER ITEMS AS MAY BE SPECIFIED OR SHOWN ON THE DRAWINGS.

1.3 WORKMANSHIP

WHERE OTHER INSTURCTIONS ARE NOT GIVEN, EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER AND THE BEST STANDARD PRACTICE FOR THIS TYPE OF WORK.

1.4 RULES, REGULATIONS, AND CODES

A. ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THE LATEST RULES, CODES, AND REGULATIONS OF THE FOLLOWING:

1. NATIONAL FIRE PROTECTION ASSOCIATION.
2. STATE FIRE MARSHAL.
3. PART - 5, 124 CALIFORNIA CODE OF REGULATIONS.
4. STATE HEALTH DEPARTMENT.
5. STATE INDUSTRIAL ACCIDENT COMMISSION'S SAFETY ORDERS.
6. RULES OF LOCAL UTILITY.
7. CALIFORNIA MECHANICAL CODE.
8. CALIFORNIA BUILDING CODE.
9. CALIFORNIA PLUMBING CODE.
10. CALIFORNIA ELECTRIC CODE.

B. RULING AND INTERPRETATIONS OF THE ENFORCING AGENCY WILL BE CONSIDERED PART OF THE REGULATIONS.

C. NOTHING IN THESE SPECIFICATIONS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE ABOVE, AND EXPENSE IN COMPLIANCE WITH THE ABOVE SHALL BE BORNE BY THE CONTRACTOR.

D. WHENEVER THE SPECIFICATIONS AND DRAWINGS REQUIRE HIGHER STANDARDS OR LARGER SIZES THAN THOSE REQUIRED BY THE ORDINANCES AND STATUTES, THE SPECIFICATIONS AND DRAWINGS SHALL TAKE PRIORITY OVER THE SPECIFIC ORDINANCES AND STATUTES.

1.5 SITE EXAMINATION AND CONDITIONS

THIS CONTRACTOR SHALL EXAMINE THE SITE, VERIFY DIMENSIONS AND LOCATIONS AGAINST THE DRAWINGS AND INFORM HIMSELF OF ALL CONDITIONS UNDER WHICH WORK IS TO BE DONE BEFORE SUBMITTING HIS PROPOSAL. NO ALLOWANCE WILL BE MADE IN HIS BEHALF FOR EXTRA EXPENSE ON ACCOUNT OF ERROR.

1.6 AS BUILT DRAWINGS

A. SUPPLEMENTING THE REQUIREMENTS OF THE GENERAL CONDITIONS AND SUPPLEMENTARY GENERAL CONDITIONS, AS-BUILT DRAWINGS SHALL SHOW INVERT ELEVATIONS OF SANITARY SEWERS, RAIN WATER LEADERS AND STORM SEWERS OF CRITICAL LOCATIONS, LOCATIONS OF SHUT-OFF VALVES AND STUB-OUTS FOR FUTURE AND ALL CHANGES MADE DURING THE COURSE OF THE WORK FURNISH REPRODUCIBLE DRAWINGS WHEN WORK IS COMPLETE.

B. THE GRADE OR QUALITY OF MATERIALS DESIRED IS INDICATED BY THE TRADE NAMES OR CATALOG NUMBERS STATED HEREIN.

C. DIMENSIONS, SIZES, AND CAPACITIES SHOWN ARE A MINIMUM AND SHALL NOT BE CHANGED WITHOUT PERMISSION OF THE ARCHITECT.

1.7 MATERIAL LIST AND SUBSITUTIONS

A. PRIOR TO COMMENCEMENT OF WORK AND WITHIN 35 DAYS AFTER SIGNING OF THE CONTRACT BY THE OWNER AND GENERAL CONTRACTOR, THIS CONTRACTOR SHALL SUBMIT IN QUINTUPLE TO THE ARCHITECT FOR APPROVAL A COMPLETE LIST OF EQUIPMENT AND MATERIALS TO BE FURNISHED, INCLUDING ALL SUBSITUTIONS. PARTIAL OR INCOMPLETE LISTS OF MATERIALS WILL NOT BE CONSIDERED. NO SUBSTITUTIONS WILL BE CONSIDERED THEREAFTER ONLY ONE (1) REQUEST FOR SUBSTITUTION WILL BE CONSIDERED ON EACH ITEM OF MATERIAL OR EQUIPMENT.

B. IF THE CONTRACTOR DESIRES TO MAKE A SUBSTITUTION, HE SHALL SUBMIT COMPLETE INFORMATION OR CATALOG DATA TO SHOW THE QUALITY OF THE EQUIPMENT OR MATERIAL OFFERED TO THAT SPECIFIED. NO SUBSTITUTION WILL BE ALLOWED UNLESS REQUESTED AND APPROVED IN WRITING. MATERIALS OF EQUAL MERIT AND APPEARANCE IN THE OPINION OF THE ARCHITECT WILL BE APPROVED FOR USE. ARCHITECT RESERVES THE RIGHT TO REQUIRE ORIGINALLY SPECIFIED ITEM.

C. INSTALLATION OF APPROVED SUBSTITUTION IS THE CONTRACTOR'S RESPONSIBILITY. ANY CHANGES REQUIRED FOR INSTALLATION OF APPROVED SUBSTITUTED EQUIPMENT MUST BE MADE WITHOUT ADDITIONAL COST.

D. SUBMIT TO ARCHITECT FOR APPROVAL, WITHIN A REASONABLE TIME AFTER AWARD OR CONTRACT AND IN AMPLE TIME TO AVOID DELAY OF CONSTRUCTION, SHOP DRAWINGS OR SUBMITTALS ON ALL ITEMS OF EQUIPMENT AND MATERIALS COVERED IN LIST MENTIONED ABOVE. SHOP DRAWINGS SHALL BE SUBMITTED IN FIVE (5) COPIES AND IN A COMPLETE PACKAGE. PARTIAL SUBMITTALS WILL NOT BE CONSIDERED.

1.8 FEES, PERMITS, AND UTILITY SERVICES

THIS CONTRACTOR SHALL ARRANGE TO OBTAIN AND TO PAY FOR ALL PERMITS AND SERVICE CHARGES REQUIRED IN THE INSTALLATION OF HIS WORK, ARRANGE FOR REQUIRED INSPECTIONS, AND SECURE APPROVALS FROM AUTHORITIES HAVING JURISDICTION. CONTRACTOR SHALL ARRANGE FOR UTILITY CONNECTIONS AND PAY CHARGES INCURRED, INCLUDING EXCESS SERVICE CHARGES, IF ANY.

1.9 GUARANTEE

AFTER COMPLETION OF THE INSTALLATION OF EQUIPMENT HEREIN SPECIFIED,THE CONTRACTOR SHALL GUARANTEE SAME AGAINST DEFECTS OF WORKMANSHIP OR MATERIAL FOR A PERIOD OF ONE (1) YEAR. IF WITHIN THE SPECIFIED PERIOD FROM THE DATE OF ACCEPTANCE ANY OF THE SYSTEM IS PROVEN TO BE DEFECTIVE IN WORKMANSHIP AND/OR MATERIAL, IT WILL BE ADJUSTED, REPAIRED, OR REPLACED FREE OF CHARGE BY THIS CONTRACTOR.

1.10 ACCESSIBILITY

CONTRACTOR SHALL BE RESPONSIBLE FOR THE SUFFICIENCY OF SIZE AND THICKNESS OF PARTITIONS FOR ADEQUATE INSTALLATION OF HIS WORK. ANYEQUIPMENT REQUIRING ACCESS FOR OPERATION OR SERVICE SHALL BE MADE ACCESSIBLE BY THE USE OF ACCESS DOORS AS REQUIRED

PART 2 - PRODUCTS

2.1 MATERIAL PIPE

A. SANITARY SEWER PIPING INSIDE BUILDING DROPS SHALL BE SERVICE WEIGHT CAST IRON NO-HUB WITH NO-HUB FASTENERS. FIXTURE BRANCHES AND VENTS 2-1/2" AND SMALLER FROM 6" ABOVE GRADE MAY BE SCHEDULE 40 GALVANIZED STEEL. FITTINGS SHALL BE CAST SERVICE WEIGHT. CONTRACTOR MAY USE APACHE SCHEDULE 40 DWV ABS PIPE AND FITTINGS (ALL AS ALLOWED BY LOCAL CODE).

B. WATER PIPING BELOW GRADE SHALL BE SCHEDULE 40 GALVANIZED STEEL WITH HIGH DENSITY POLYETHYLENE WRAP, X-TRU-COAT, OR EQUAL, APPLIED AND INSTALLED ALL PER THE MANUFACTURER'S INSTRUCTIONS, OR TYPE K COPPER. WATER PIPING ABOVE GRADE SHALL BE SCHEDULE 40 GALVANIZED STEEL OR CONNECTIONS. WATER PIPING OUTSIDE THE BUILDING MAY BE MANVILLE BLUE BRUT TYPE TRX-27 +- INSTALLED PER MANUFACTURER'S INSTRUCTIONS.

C. NATURAL GAS AND FUEL OIL PIPING SHALL BE SEAMLESS OR LAP WELDED BLACK STEEL, 125 PSIG WORKING PRESSURE, FITTINGS SHALL BE 125 PSIG TO SUIT PIPING MATERIAL. THREAD PASTE SHALL BE INSOLUBLE IN WATER. ALL VALVES SHALL BE RATED FOR NATURAL GAS FUEL. STEEL PIPE BURIED BELOW GRADE SHALL HAVE AN APPLIED HIGH DENSITY POLYETHYLENE WRAP, X-TRU-COAT, OREQUAL, APPLIED AND INSTALLED ALL PER THE MANUFACTURER'S INSTRUCTIONS

D. GAS PIPING SHALL BE GRADED TOWARD THE REGULATOR WHEREVER POSSIBLE. PIPING TRAPPED BY CHANGE OF GRAD SHALL BE SUPPLIED WITH A DRIP LINE AT THE LOW POINT BROUGHT OUT TO AN ACCESSIBLE LOCATION. PROVIDE DIRTPOCKETS AT BOTTOMS OF VERTICAL PIPE RISERS, CONSISTING OF TEE FITTINGS PLUGGED WITH CAPPED NIPPLES. HIGH PRESSURE PIPE SHALL BE WELDED (SEEJOINTING).

E. CONDENSATE LINES SHALL BE SCHEDULE 40 GALVANIZED STEEL PIPE WITH GALVANIZED MALLEABLE IRON FITTINGS OR TYPE 'M' COPPER. CONDENSATE LINES BELOW THE ROOF AND CONCEALED AREAS SHALL BE COVERED WITH INSULATION.

F. ROOF DRAINS, DOWNSPOUTS, AND RAINWATER LEADERS: ALL DOWNSPOUTS WHICH ARE INCLUDED IN THIS WORK SHALL BE SCHEDULE 40 GALVANIZED STEEL PIPE WITH BLACK CAST IRON DRAINAGE FITTINGS, EXCEPT PIPING BELOW GRADE OR SLAB TO 5'-0" OUTSIDE BUILDING SHALL BE MANVILLE NON-PRESSURE TRANSITE PIPE, CLASS 1500, OR APACHE SCHEDULE 40 DWV ABX PIPE AND FITTINGS (ALL AS SHOWN ON THE DRAWINGS).

G. ALL PIPE DOWNSPOUTS SHALL BE FURNISHED AND INSTALLED IN THE PLUMBING WORK ALL PIPE DOWNSPOUTS SHALL BE COMPLETE WITH ALL NECESSARY OFFSETS AND FITTINGS AS REQUIRED AND APPROVED. CONNECT TO ROOF DRAINS AS REQUIRED. NO FITTINGS SHALL BE EXPOSED TO VIEW IN FINISHED AREAS.

2.2 PIPE INSULATION

ALL CONDENSATE LINES ON THE INTERIOR OF THE BUILDING AND THE HOT WATER SUPPLY AND RETURN PIPING ABOVE THE SLAB OR GROUND EXCEPT EXPOSED RUNOUTS TO FIXTURES AND UNIONS AND VALVES SHALL BE COVERED WITH ¾" THICK INSULATION FOR PIPE ½" AND ¾" IN DIAMETER AND 1" THICK FOR LARGER PIPE. THE INSULATION SHALL BE MANVILLE FLAME SAFE+- ONE PIECE CONSTRUCTION PREFORMED FIBERGLASS PIPE INSULATION, OR APPROVED EQUAL, WITH A "K" FACTOR OF .22 MAXIMUM AT 75 DEGREES MEAN TEMPERATURE.

2.3 VALVES

A. GATES: CRANE #438, 2-1/2" AND OVER.
B. SOLDER - JOINTS VALVES IN COPPER LINES. CRANE 1324 OR 438 WITH ADAPTERS.

2.4 VALVE BOXES

FURNISH AND INSTALL FOR EACH VALVE IN GROUND A BROOKS, CHRISTY,OR EQUAL TO BROOKS PRODUCTS COMPANY #9 OPEN BOTTOM CONCRETE VALVE BOX WITH COVER MARKED FOR SERVICE.

2.5 FIXTURES

A. FIXTURES SHALL BE KOHLER, AMERICAN STANDARD, CRANE, OR EQUAL. SUBMIT FIVE (5) PORTFOLIOS WITH FULL DESCRIPTION AND CUTS OF FIXTURES AND TRIM PROPOSED FOR USE TO ARCHITECT FOR WRITTEN APPROVAL.
B. FIXTURES SHALL BE AS SCHEDULED ON THE DRAWINGS.
C. PLATE NUMBERS INDICATED ARE AMERICAN STANDARD, COMPLETE AS ILLUSTRATED AND DESCRIBED UNLESS OTHERWISE NOTED. PROVIDE STOPS AS HEREIN BEFORE SPECIFIED FOR ALL CONCEALED SUPPLIES.
D. WATER CLOSET FIXTURE FLOW RATE SHALL NOT EXCEED 1.28 GALLONS PER FLUSH.
E. LAVATORY FAUCET FIXTURE FLOW RATE SHALL NOT EXCEED 0.5 GPM.
F. KITCHEN FAUCET FIXTURE FLOW RATE SHALL NOT EXCEED 1.8 GPM.

PART 3 - EXECUTION

3.1 FRAMING, CUTTING AD PATCHING

SPECIAL FRAMING, RECESSES, CHASES, AND BACKING FOR WORK OF THIS SECTION, UNLESS OTHERWISE SPECIFIED, IS COVERED UNDER OTHER SECTIONS. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER PLACEMENT OF ALL PIPE SLEEVES, HANGERS, AND SUPPORTS AND LOCATION OF OPENINGS FOR WORK OF THIS SECTION.

3.2 EXCAVATION AND BACKFILL

A. THIS CONTRACTOR SHALL DO ALL EXCAVATON REQUIRED FOR THE INSTALLATION OF ALL PIPING AND OTHER WORK THAT APPLIES TO THE WORK OF THIS CONTRACTOR INDICATED ON THE DRAWINGS.
B. EXCAVATIONS SHALL BE OF OPEN VERTICAL CONSTRUCTION OF SUFFICIENT WIDTH TO PROVIDE FREE WORKING SPACE AT BOTH SIDES OF THE TRENCH AND AROUND THE PIPE AS REQUIRED FOR JOINING BACKFILL AND COMPACTING. WHERE INVERT ELEVATIONS ARE NOT SHOWN, TRENCHES SHALL BE DUG TO SUFFICIENT DEPTH TO GIVE A MINIMUM OF SIX INCES (6") OF FILL ABOVE THE TOP OF PIPING, MEASURED FROM THE UNDERSIDE OF THE CONCRETE SLAB.
C. METHOD OF COMPACTION SHALL BE AS DIRECTED BY PROJECT INSPECTOR BACKFILL SHALL BE COMPACTED TO THE ORIGINAL DENSITY OF THE SOILBEFORE EXCAVATION.

3.3 PIPING INSTALLATION

A. GENERAL:

1. NO PIPING SHALL BE PERMANENTLY COVERED BY CONSTRUCTION BEFORE INSPECTION AND APPROVAL.
2. PROVISIONS SHALL BE MADE FOR THE EXPANSION AND CONTRACTION OF ALL PIPING, USING SWING JOINTS MADE UP OF FITTINGS, OR BENDS, OR OTHER METHODS OR DEVICES AS APPROVED.
3. CONNECTION OF PIPING OR EQUIPMENT OF DISSIMILAR MATERIALS SHALL BE MADE WITH DIELECTRIC COUPLINGS OR WITH FLANGES AND INSULATING GASKETS EPCO, OR EQUAL.
4. INSTALL WATER PIPING GENERALLY LEVEL, FREE OF TRAPS AND UNNECESSARY BENDS TO CONFORM WITH BUILDING REQUIREMENTS, AND PROVIDE SPACE FOR OTHER WORK.
5. PIPING SHALL BE CONCEALED IN ALL LOCATIONS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
6. INSTALL PIPING PROMPTLY, CAPPING AND PLUGGING OPEN ENDS.

B. JOINTING:

1. THREADED JOINTS SHALL HAVE TAPERED EVENLY CUT AND SHALL BE MADE WITH UNDERWRITERS' LABORATORIES APPROVED COMPOUND FOR GAS SERVICE CONSISTING OF GRAPHITE COMPOUND OR POLYTETRAFLOURETHYLENE TAPE APPLIED TO THE MALE THREADS ONLY. AFTER CUTTING AND BEFORE THREADING, PIPE SHALL BE REAMED AND SHALL HAVE BURRS REMOVED CAULKING OF THREADED JOINTS TO STOP OR PREVENT LEAKS WILL NOT BE PERMITTED.
2. WELDED JOINTS: CHANGES IN DIRECTION OF PIPING SHALL BE MADE WITH WELDED FITTINGS OF FORGED-BRANCH-CONNECTION FITTINGS. METERING OR NOTCHING PIPE TO FORM ELBOWS AND TEES, OR OTHER SIMILAR FITTINGS, WILL NOT BE PERMITTED.
3. SOLDER JOINTS IN COPPER TUBING FOR ALL INSTALLATIONS (HEATING, REFRIGERATING, AND PLUMBING) SHALL BE MADE WITH SIL-FOS SILVER BRAZING ALLOY. SURFACES TO BE JOINTED SHALL BE FREE OF OIL, GREASE, RUST AND OXIDES. AFTER CLEANING AND BEFORE ASSEMBLY OR HEATING, SUPPLY HANDY-FLUX TO EACH JOINT SURFACE AND SPREAD EVENLY. HEAT SHALL BE APPLIED CAREFULLY WITH AN OXY-ACETYLENE TORCH TO AVOID OVERHEATING FITTINGS, VALVES, ETC. THE 95 5% ANITMONY SOLDER MAY BE PERMITTED ON PLUMBING LINES ABOVE SLAB OR GROUND ONLY WITH PRIOR APPROVAL FOR PIPING 2" AND SMALLER, ONLY.
4. STEEL PIPE AND CONNECTIONS:
   A. SHALL HAVE ENDS REAMED TO FULL INSIDE DIAMETER AND BEVELED BEFORE BEING MADE UP INTO FITTINGS.
   B. ALL CHANGES IN DIRECTION TO BE MADE WITH PROPER FITTINGS.
   C. ALL SCREWED CONNECTIONS TO BE METAL TO METAL TIGHT.
   D. JOINTS BETWEEN PIPE AND FITTINGS TO BE MADE WITH THREADS FULLY COATED WITH KEYS THREAD PASTER PASTE IS TO BE APPLIED TO MALE THREAD.
   E. UNIONS TO BE PLACED ADJACENT TO ALL SCREWED VALVES, CHECK VALVES, OR EQUIPMENT WHICH HAS NO UNION CONNECTIONS. UNIONS ON WATER PIPES ON FIXTURES SIDE OFTRAPS MAY BE SLIP FLANGE JOINTS WITH SOFT RUBBER OR LEAD GASKETS.
5. CAST IRON PIPE JOINTS AND CONNECTIONS:
   A. JOINTS SHALL BE MADE WITH STAINLESS STEEL COUPLING NO-HUB TYPE.
   B. ALL CHANGES IN DIRECTION TO BE MADE WITH PROPER FITTINGS.
   C. ALL SCREWED CONNECTIONS TO BE METAL TO METAL TIGHT.
   D. CLEANOUTS TO BE LOCATED NOT LESS THAN 18" FROM BUILDING CONSTRUCTION FOR EASE OF RODDING.
   E. USE GRAPHITE ON ALL CLEANOUT THREADS.

C. PIPE CUTTING:

PIPE CUTTING SHALL BE DONE WITHOUT DAMAGE TO THE PIPE. UNLESS OTHERWISE AUTHORIZED BY THE ARCHITECT, CUTTING SHALL BE DONE BY MEANS OF AN APPROVED TYPE OF MECHANICAL CUTTER. WHEEL CUTTERS SHALL BE USED WHERE PRACTICABLE. ON PIPE 6" (SIX INCHES) AND LARGER, AN APPROVED GAS-CUTTING-BEVELLING MACHINE MAY BE USED.

3.4 CARE AND CLEANING

ALL BROKEN, DAMAGED, OR OTHERWISE DEFECTIVE PARTS OF THIS WORK SHALL BE REPAIRED OR REPLACED BY THIS CONTRACTOR, AT HIS EXPENSE, AND THE ENTIRE WORK LEFT IN A CONDITION SATISFACTORY TO THE ARCHITECT. AT COMPLETION THIS CONTRACTOR SHALL CAREFULLY CLEAN AND ADJUST ALL EQUIPMENT, FIXTURES, AND TRIM WHICH ARE INSTALLED AS PART OF HIS WORK AND THE SYSTEMS AND EQUIPMENT LEFT IN SATISFACTORY OPERATING CONDITION.

3.5 WATER SYSTEM STERILIZATION

AFTER FLUSHING, ENTIRE WATER SYSTEM FROM NEW POINTS OF CONNECTON SHALL BE STERILIZED BEFORE BEING TURNED OVER TO THE OWNER FOR USE SLOWLY FILL SYSTEM WITH WATER AND ADD CHLORINE CHEMICAL AGENT TO PRODUCE A MINIMUM OF 50 PPM OF CHLORINE IN ENTERING WATER TREATED WATER SHALL BE RETAINED IN PIPE OVERNIGHT. CHLORINE RESIDUAL AT PIPE EXTREMITIES SHALL BE AT LEAST 5 PPM AT END OF THIS TIME. SHOULD CHLORINE RESIDUAL BE LESS THAN THIS AMOUNT, PIPE SHALL BE RE-CHLORINATED.

3.6 TEST OF PIPING

ALL PIPING SHALL BE TESTED AT COMPLETION OF ROUGHING IN, IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE.

3.7 CLOSING IN OF UNINSPECTED WORK

A. THIS CONTRACTOR SHALL NOT ALLOW OR CAUSE ANY OF THE WORK INSTALLED BY HIM TO BE COVERED UP OR ENCLOSED BEFORE IT HAS BEEN INSPECTED, TESTED AND APPROVED.
B. SHOULD ANY OF THE WORK BE ENCLOSED OR COVERED UP BEFORE IT HAS BEEN APPROVED, HE SHALL, AT HIS EXPENSE, UNCOVER THE WORK AFTER IT HAS BEEN TESTED, INSPECTED, AND APPROVED, HE SHALL MAKE ALL REPAIRS NECESSARY TO RESTORE THE WORK OF OTHER CONTRACTORS TO THE CONDITION IN WHICH IT WAS FOUND AT THE TIME OF CUTTING.

PLUMBING NOTES

1. FOR FIXTURE CONNECTION SIZES TO THE VARIOUS FIXTURES, REFER TO THE FIXTURE CONNECTION SCHEDULE.
2. PLUMBING CONTRACTOR TO SET WATER HEATER TEMPERATURE TO 110 DEGREES FAHRENHEIT MAXIMUM PER CEC SECTION 113(b) 3(B).
3. SLOPE ALL SANITARY SEWER LINES WITHIN BLDG. AT ¼ " PER FT.
4. ALL WATER PIPING SHALL BE COPPER AND INSULATED WITH FIBERGLASS JACKET TYPE INSULATION.
5. INSTALLATION INSTRUCTIONS FOR ALL LISTED EQUIPMENT SHALL BE MADE AVAILABLE TO THE BUILDING INSPECTOR AT THE TIME OF INSPECTION PER CMC 304.0.
6. SEISMIC SUPPORT AND BRACING FOR ALL DUCTWORK AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH CBC CHAPTER 16 STANDARDS FOR SUPPORT AND ANCHORAGE METHODS AND MATERIALS PUBLISHED BY SMACNA AND APPROVED BY THE STATE AGENCIES MAY BE USED
7. PROVIDE CLEANOUTS FOR ALL SINKS PER CPC SECTION 707.4 EXCEPTION 1.

PLUMBING SYMBOL LEGEND

PLUMBING PIPING

COLD WATER LINE	CW
HOT WATER LINE	HW
SANITARY SEWER WASTE LINE	SS
GREASE WASTE LINE	GW
HORIZONTAL VENT	HV
STORM DRAIN	SD
CONDENSATE DRAIN	C
NATURAL GAS LINE	GAS

PLUMBING SYMBOLS

HOSE BIBB
GATE VALVE
SHUT-OFF VAVLE — SOV
BALANCING VALVE
GAS COCK
GLOBE VALVE
DIRECTION OF FLOW
CLEANOUT
POINT OF CONNECTION
FLOOR DRAIN
FLOOR SINK
GAS METER
GREASE TRAP — GT
GREASE INTERCEPTOR

PLUMBING ABBREVIATIONS

AP	ACCES PANEL
BFP	BACKFLOW PREVENTION DEVICE
CI	CAST IRON
CL	CENTER LINE
CO	CLEANOUT
DN	DOWN
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FS	FLOOR SINK
HB	HOSE BIBB
HDR	HEADER
MBH	THOUSANDS OF BTU PER HOUR
NIOPC	NOT IN PLUMBING CONTRACT
P	UNDER PLUMBING CONTRACT
V	VENT
VC	VITRIFIED CLAY
VR	VENT RISER
VTR	VENT THROUGH ROOF
WCO	WALL CLEANOUT
WM	WATER METER
YCO	YARD CLEANOUT

Reviewed for Code Compliance
CSG CONSULTANTS INC.
DEC 04 2015
Reviewed By

REVISIONS	BY

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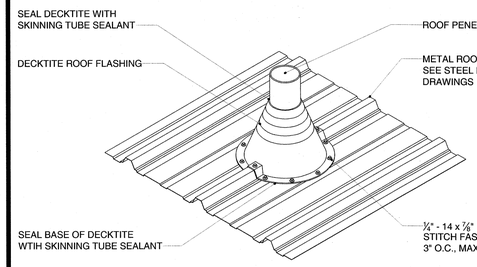
LICENSED ARCHITECT
THEODORE J. BRANDVOLD
C-25449
6-30-15
RENEWAL DATE
STATE OF CALIFORNIA

PROJECT : WAREHOUSE & MAINTENANCE
STORAGE BUILDING
CLIENT : KEYSTONE CORPORATION
LOCATION : KEYSTONE PACIFIC PARKWAY
PATTERSON, CA 95363
A.P.N.: 021-085-020

DRAWN	SLW
CHECKED	TJB
DATE	8/25/15
SCALE	AS SHOWN
JOB NO.	15-101
SHEET	P-1.0
OF	SHEETS

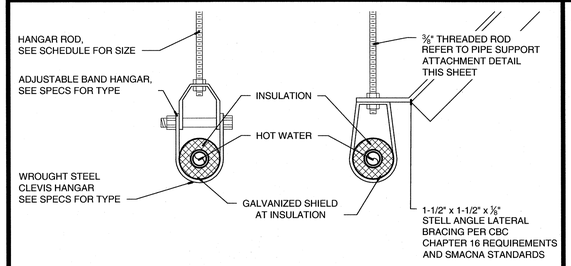
PLUMBING FIXTURE SCHEDULE

#	DESCRIPTION	MANUFACTURER & MODEL	TRIM			CONNECTIONS							REMARKS
						WASTE		VENT	COLD WATER		HOT WATER		
			MAT.	FAUC.	ACC.	BRANCH	OUTLET		BRANCH	OUTLET	BRANCH	OUTLET	
WC-1	ACCESSIBLE WATER CLOSET TANK TYPE	AMERICAN STANDARD CADET 2467.100	VIT. CHINA	--	SEE REMARKS	4	4	2	¾	¾	--	--	COLOR: WHITE OPEN FRONT SEAT 5901.100 17.5" HIGH ELONGATED BOWL ADA COMPLIANT
LAV-1	ACCESSIBLE WALL MOUNTED LAVATORY	AMERICAN STANDARD DECLYN 0321.026	VIT. CHINA	SEE REMARKS	SEE REMARKS	4	2	1-½	¾	½	¾	½	COLOR: WHITE 18-½" x 17" WITH 4" CENTERS FAUCET: AMERICAN STANDARD MONTEREY 6114.110.002
S-1	18 GA. STAINLESS STEEL SINK DUAL COMPARTMENT 18" X 29"	JUST MANUFACTURING DL-1829-A-GR	SS	KOHLER K-8906	SEE REMARKS	4	3	2	¾	½	¾	½	ADA COMPLIANT
WCO	WALL CLEANOUT	ZURN Z1446	CAST IRON	SEE REMARKS	SEE PLAN	--	--	--	--	--	--	--	CAST IRON BODY WITH ABS TAPERED THREAD PLUG, ROUND STAINLESS STEEL WALL ACCESS COVER WITH SECURING SCREW
COTG	GRADE CLEANOUT	ZURN Z1400-VP	CAST IRON	SEE REMARKS	SEE PLAN	--	--	--	--	--	--	--	CAST IRON BODY WITH ABS TAPERED THREAD PLUG AND ROUND HEAVY-DUTY TOP WITH VANDAL PROOF SCREWS
FPWH	FREEZE PROOF WALL HYDRANT	ZURN Z-1320-C	CAST IRON	SEE REMARKS	SEE PLAN	--	--	--	¾"	¾"	--	--	BOX TYPE, CAST BRONZE, INTEGRAL VACUUM BREAKER-BACKFLOW PREVENTER, "T" HANDLE, POLISHED FACE, HINGED LOCKING COVER, BRONZE WALL CASTING, RENEWABLE SEAT, BRONZE OPERATING PARTS
WH-1	SINGLE FIXTURE TANKLESS WATER HEATER	CHRONOMITE LABROTORIES, INC. SR-20L/208	--	--	--	--	--	--	¾"	--	--	¾"	20 AMP, 208 VOLTS, 4160 WATTS TEMP. RISE @0.5 GPM OF 57°
FD	FLOOR DRAIN	ZURN ZN-415-S-P SQUARE FLOOR DRAIN	--	--	--	6	4	--	--	--	--	--	WITH TRAP SEAL PRIMER



1 PLUMBING VENT THROUGH ROOF

NO SCALE



PIPE SUPPORT NOTES:

GAS PIPES:
PIPE 1" DIA. OR LARGER SHALL HAVE TRANSVERSE BRACING @ 14" O.C. (MAX.) AND LONGITUDNAL BRACING @ 20" O.C. (MAX.). PIPES LESS THAN 1" DIA. NEED NO BRACING.

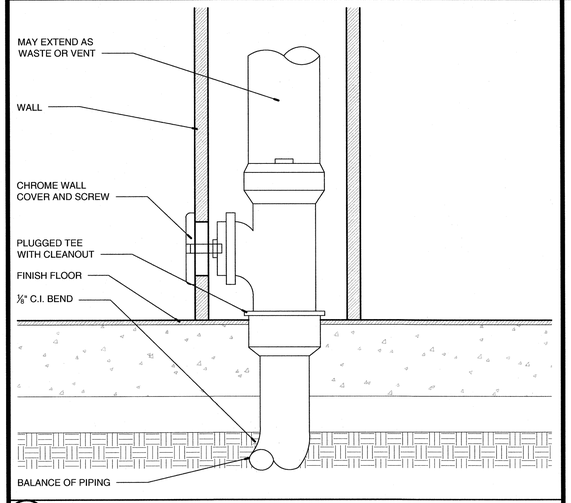
OTHER PIPES:
PIPES 2-1/2" DIA. OR LARGER SHALL HAVE TRANSVERSE BRACING @ 16" O.C. (MAX.) AND LONGITUDNAL BRACING @ 32" O.C. (MAX.). PIPES LESS THAN 2-1/2" DIA. NEED NO BRACING

TYPICAL (ALL PIPES):
FOR PIPES WHERE THE DISTANCE OF THE HANGAR (FROM TOP OF PIPE TO BOTTOM OF SUPPORT) IS LESS THAN 12", NO LATERAL BRACING IS REQUIRED.

PIPE HANGER SCHEDULE		
PIPE SIZE	HANGAR ROD	BOLT
½" THRU ¾"	¼"	¼"
1" THRU 1-½"	⅜"	⅜"
2" THRU 2-½"	⅜"	½"
3"	½"	½"

2 PIPE SUPPORT

NO SCALE



3 WALL CLEANOUT

SCALE: 3" = 1'-0"

PLUMBING ENGINEERING DATA

FIXTURE	QUANTITY	FIXTURE UNIT VALUES			
		COLD WATER		WASTE	
		F.U. EACH	F.U. TOTAL	F.U. EACH	F.U. TOTAL
WATER CLOSET	1	3.5	3.5	4.0	4.0
LAVATORIES	1	1.0	1.0	1.0	1.0
HOSE BIBBS	1	2.5	2.5	-	-
EACH ADD. HOSE BIBB	2	1.0	2.0	-	-
KITCHEN SINK	1	1.5	1.5	2.0	2.0
FIXTURE UNIT TOTALS			9.5		12.0

9.5 FIXTURE UNITS EQUALS: 14 GPM

1. PRESSURE AVAILABLE AT STREET MAIN: 40 PSI
2. PRESSURE LOSS DUE TO HEIGHT (4') x 0.434: 1.74 PSI
3. PRESSURE LOSS THROUGH METER: 5.00 PSI
4. PRESSURE LOSS THORUGH OTHER DEVICES: 10.0 PSI
   (WATER SOFTENER, BACKFLOW PREVENTER, ETC.)
5. TOTAL PRESSURE LOSS: 16.74 PSI
   (ADD LINES 2 THROUGH 4)
6. PRESSURE REQUIRED AT HIGHEST FIXTURE 20.00 PSI
7. PRESSURE AVAILABLE FOR FRICTION LOSS: 3.26 PSI
   (SUBTRACT LINES 5&6 FROM LINE 1)
8. TOTAL DEVELOPED LENGTH OF RUN: 90 FT

FRICTION LOSS CALCULATION:

FROM LINE 7 (3.26) PSI x 100 = 0.30 LBS/IN² PER 100 FT.
FROM LINE 8 (1080) IN.

PER 2013 CPC TABLE 610.4, BUILDING SUPPLY LINE SHALL BE 1"

Reviewed for Code Compliance
CSG CONSULTANTS INC.
DEC 0 4 2015
Reviewed By

REVISIONS	BY
1 PATTERSON BLDG. DEPT.	SLW

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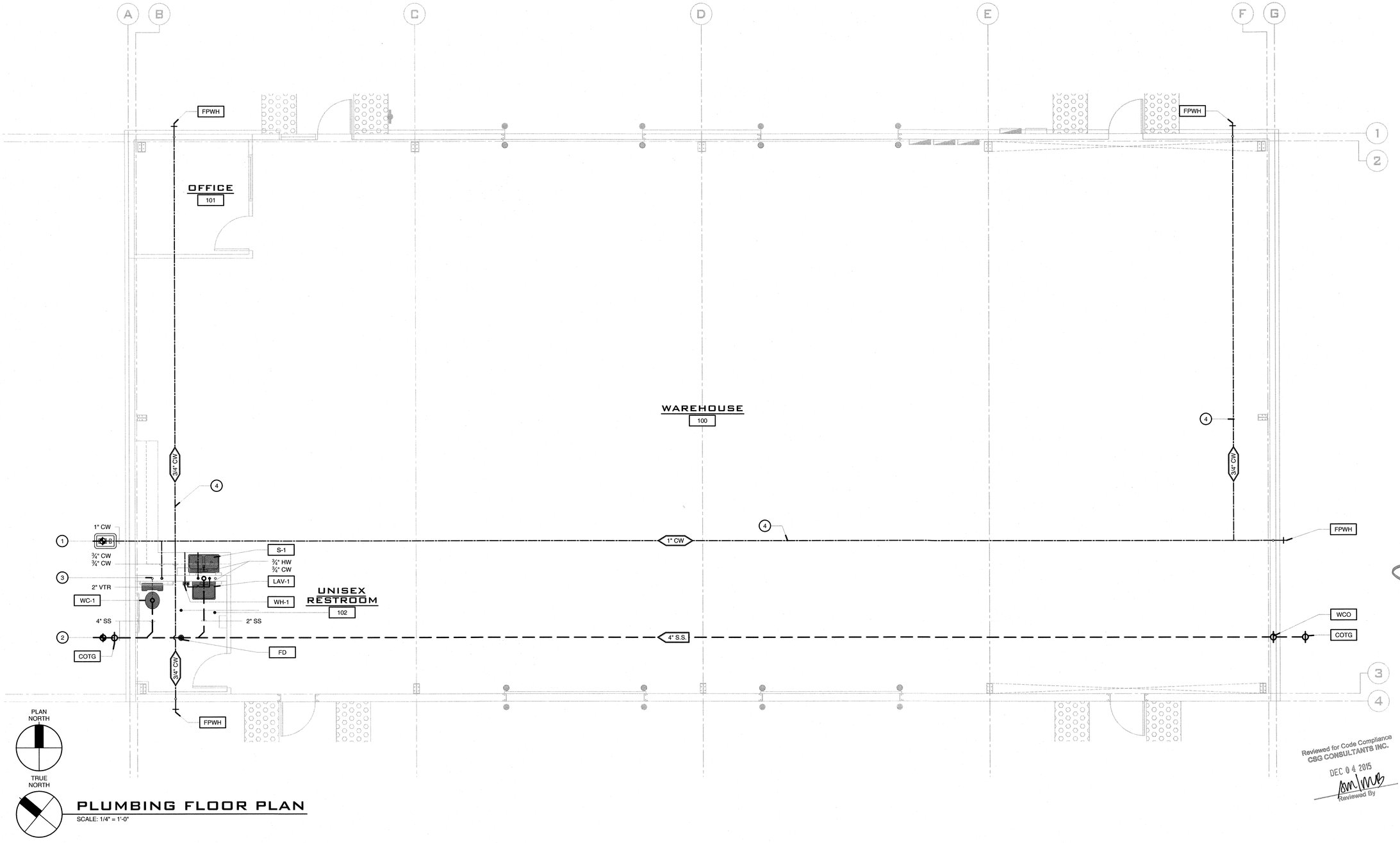
LICENSED ARCHITECT
THEODORE J. BRANDVOLD
C-25449
6-30-2017
RENEWAL DATE
STATE OF CALIFORNIA

PROJECT : WAREHOUSE & MAINTENANCE STORAGE BUILDING
CLIENT : KEYSTONE CORPORATION
LOCATION : KEYSTONE PACIFIC PARKWAY PATTERSON, CA 95363
A.P.N.: 021-085-020

DRAWN	SLW
CHECKED	TJB
DATE	8/25/15
SCALE	AS SHOWN
JOB NO.	15-101
SHEET	P-1.1
OF	SHEETS



PLUMBING FLOOR PLAN

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

Reviewed for Code Compliance
CSG CONSULTANTS INC.
DEC 04 2015
Reviewed By

REVISIONS	BY

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LICENSED ARCHITECT
THEODORE J. BRANDVOLD
C-25449
6-30-16
RENEWAL DATE
STATE OF CALIFORNIA

PROJECT: WAREHOUSE & MAINTENANCE STORAGE BUILDING
CLIENT: KEYSTONE CORPORATION
LOCATION: KEYSTONE PACIFIC PARKWAY PATTERSON, CA 95363
A.P.N.: 021-085-020

DRAWN	SLW
CHECKED	TJB
DATE	8/25/15
SCALE	AS SHOWN
JOB NO.	15-101
SHEET	P-2.0
OF	SHEETS

KEYNOTES

1. DOMESTIC WATER CONNECTION WITH SHUT-OFF VALVE IN BOX MARKED "WATER" TO BE ACCESSIBLE AT GRADE PER CPC 605.6 - SEE CIVIL AND PLUMBING DRAWINGS
2. 4" SANITARY SEWER LINE - SEE CIVIL DRAWINGS FOR CONTINUATION
3. PLUMBING VENT THROUGH ROOF - SEE PLUMBING FIXTURE SCHEDULE FOR SIZING — 1 / P-1.1
4. DOMESTIC WATER PIPING - SEE DETAIL — 2 / P-1.1

SEE DRAWING P-1.1 FOR FIXTURE SCHEDULE AND SPECIFICATIONS