

THE USE OF THESE PLANS AND SPECIFICATIONS SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH THEY WERE PREPARED AND PUBLICATION THEREOF IS EXPRESSLY LIMITED TO SUCH USE. RE-USE, REPRODUCTION, OR PUBLICATION BY ANY METHOD, IN WHOLE OR IN PART, IS PROHIBITED. DUE TO THE PLANS AND SPECIFICATIONS REMAINING WITH THE ENGINEER WITHOUT RESERVATION, USUAL CONTACT WITH THESE PLANS AND SPECIFICATIONS SHALL CONSTITUTE FORMAL ADOPTION OF THE ACCEPTANCE OF THESE RESTRICTIONS. CANTELMI ENGINEERING

## PLUMBING ABBREVIATIONS

CL (E) (N) #	CENTER LINE PROPERTY LINE DIAMETER or ROUND EXISTING NEW PERPENDICULAR POUND or NUMBER	HW HI HORIZ H HP HR HT HVAC	HARDWARE HIGH HORIZONTAL HIGH PRESSURE HOUR HEIGHT HEATING, VENTILATING, AIR CONDITIONING
A/C AP ADJ ADM AGGR AL APPROX APPT ARCH. ASB ASPH ASST AUTO.	AIR CONDITIONING ACCESS PANEL AREA DRAIN ADJUSTABLE ADMINISTRATION AGGREGATE ALUMINUM APPROXIMATE APPOINTMENTS ARCHITECTURAL ASBESTOS ASPHALT ASSISTANT AUTOMATIC	ID INS INT IW LAV LPG	INSIDE DIAMETER (DIM.) INSULATION INTERIOR IRRIGATION WATER LAVATORY LIQUID PETROLEUM GAS
BD (BF) (BG) BLDG BLKG BM BOT BV	BOARD BELOW FINISH FLOOR BELOW FINISH GRADE BUILDING BLOCKING BEAM BOTTOM BALL VALVE	M MAX. MECH MS MFG MIN MISC MONIT	MEN MACHINE MATERIAL MAXIMUM MECHANICAL MOP SINK METAL MANUFACTURER MANHOLE MINIMUM MISCELLANEOUS MONITOR
CB CD CEM CER CI CJ CLG CLKG CLR CO COL COMP CONC CONF CONN CONST CONT CORR COTT CPTG CKS CTR CV	CATCH BASIN CONDENSATE DRAIN CEMENT CERAMIC CAST IRON CONTROL JOINT CEILING CAULKING CLEAR CLEANOUT COLUMN COMPRESSED CONCRETE CONFERENCE CONNECTION CONSTRUCTION CONTINUOUS CORRIDOR CLEANOUT TO GRADE CIRCULATING PUMP COUNTERSINK CENTER CHECK VALVE	N NO. or # NOM NTS	NORTH NOT IN CONTRACT NUMBER NOMINAL NOT TO SCALE
DBL DCW DET DF DHW DHW DIA or Ø DIR DN DR DS DTW DWG	DOUBLE DOMESTIC COLD WATER DEPARTMENT DETAIL DRINKING FOUNTAIN DOMESTIC HOT WATER DOMESTIC HOT WATER RETURN DIAMETER DIRECTOR DOWN DOOR DOWNSPOUT DRY STANDPIPE DOMESTIC TEMPERED WATER DRAWING	R RAD. RD REF REINF REQD RM RWL	RISER RADIUS ROOF DRAIN REFERENCE REINFORCED REQUIRED ROOM RAINWATER LEADER
E EA EDF ELEC ELEV EMER ENCLOSURE EO EP EQ EXP EXPO. EXT	EAST EACH ELECTRIC DRINKING FOUNTAIN ELECTRICAL ELEVATION EMERGENCY ENCLOSURE ELECTRICAL OUTLET ELECTRICAL PANEL EQUAL EQUIPMENT (E) EXISTING EXPANSION EXPOSED EXTERIOR	S SA SB SCHD SECT. SH SHT SMT SL SPEC SOV SS SST STD STL STOR STRUC SUVP SUSP S&W	SINK or SOUTH WATER HAMMER ARRESTER SPLASH BLOCK SCHEDULE STORM DRAIN LINE SECTION SHOWER SHEET SIMILAR SPRINKLER LINE SPECIFICATION SHUT-OFF VALVE SERVICE SINK STAINLESS STEEL STANDARD STEEL STORAGE STRUCTURAL SUPERVISOR SUSPENDED SOIL & WASTE
FA FCO FD FDN FE FEC FH FHC FHMS FIN. FL FLASH. FM FOC FOF FR FRPF FS FSH FSL FTR FUNC FURR FUT	FIRE ALARM FLOOR CLEANOUT FLOOR DRAIN FOUNDATION FIRE EXTINGUISHER FIRE EXTINGUISHER CABINET FIRE HYDRANT FIRE HOSE CAB. FLAT HEAD METAL SCREW FINISH FLASHING FIRE MAIN FACE OF CONCRETE FACE OF FINISH FRAME FIREPROOFING FLOOR SINK FIRE SPRINKLER HEAD FIRE SPRINKLER LINE FLUE THRU ROOF FUNCTION FURRING FUTURE	TA TEL TER THK TOC TP TRANS TREAT. TYP. TV	TRAP ARM TOP OF CURB TELEPHONE TERRAZZO THICK TOP OF CONCRETE TRAP PRIMER TRANSCRIPTION TREATMENT TYPICAL TEMPERING VALVE
GA GALV GC GEN GI GL GR GRD G GW	GAUGE GALVANIZED GAS COCK GENERAL GALVANIZED IRON GLASS GRADE GROUND GAS LINE GREASE WASTE	W W/ WCO WH WHA W/O WMF WP WT YD	WASTE LINE WITH WATER CLOSET WALL CLEANOUT WATER HEATER WATER HAMMER ARRESTOR WITHOUT WASHING MACHINE FITTING WATERPROOF WEIGHT YARD

## SYMBOLS

	BRANCH TOP CONNECTION
	BRANCH BOTTOM CONNECTION
	CAPPED PIPE
	CHECK VALVE
	CLEANOUT
	CLEANOUT TO GRADE
	CIRCULATING PUMP
	LAVATORY
	CONDENSATE DRAIN
	CONDENSATE "P" TRAP
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RETURN
	EXISTING WASTE OR SOIL & WASTE
	FIRE HYDRANT
	FLOOR CLEANOUT
	FLOOR SINK
	GAS
	GAS COCK
	GAS PRESSURE REGULATOR
	GATE VALVE
	HOSE BIBB
	PIPE RISER (ELBOW)
	PIPE DROP (ELBOW)
	PIPE DROP OR RISER
	POINT OF CONNECTION
	PROCESS WASTE
	SHUT-OFF VALVE
	SHUT-OFF VALVE IN YARDBOX
	SOIL & WASTE
	TRAP PRIMER
	VENT
	VENT OFFSET
	VENT THRU ROOF
	WALL CLEANOUT
	WASTE
	WATER HAMMER

### WASTE SERVICE CALCULATION

FIXTURES	NO. OF UNIT	FIXTURE UNIT	TOTAL
DRINKING FOUNTAIN OR WATERCOOLER	2.0	0.5	1.0
LAVATORY (25GPM PER CYCLE)	6.0	1.0	6.0
KITCHEN SINK (1.8GPM)	2.0	1.5	3.0
SERVICE SINK OR MOP BASIN	1.0	3.0	3.0
HAND SINK, EACH SET OF FAUCETS	0.0	2.0	0.0
URINAL (0.5 GPF)	1.0	2.0	2.0
WASHFOUNTAIN(CIRCULAR SPRAY)(1.8GPM)	0.0	3.0	0.0
WATER CLOSET FV (1.28GPF)	7.0	4.0	28.0
WATER CLOSET GT (1.28GPF)	0.0	3.0	0.0
FOOD-WASTE GRINDER (COMMERCIAL)	0.0	3.0	0.0
FLOOR DRAIN (EMERGENCY)	0.0	0.0	0.0
FLOOR DRAIN	2.0	2.0	4.0
			0.0
			0.0
TOTAL FIXTURE UNITS			47.0
MAIN LINE SIZE PER CPC TABLE BASED ON SLOPE OF 1/4" PER FOOT			4"
FV - FLUSH VALVE			
GT- GRAVITY TANK			
GPF - GALLONS PER FLUSH			

### WATER SERVICE CALCULATIONS PER CPC 2016

FIXTURE	NO.	FIX. UNIT.	TOTAL COLD	TOTAL HOT
WATER CLOSET FV (1.28GPF)	7.0	-	135.0	-
URINAL (0.5 GPF)	1.0	-	20.0	-
HOSE BIBB	1.0	2.5	2.5	-
HOSE BIBB (ADDITIONAL)	4.0	1.0	4.0	-
LAWN SPRINKLERS	1.0	1.0	1.0	-
WASHFOUNTAIN(CIRCULAR SPRAY)(20GPM)	0.0	4.0	0.0	0.0
SERVICE SINK OR MOP BASIN (2.2 GPM)	1.0	3.0	3.0	2.3
WATER CLOSET GT (1.28GPF)	0.0	2.5	0.0	0.0
DISHWASHER, DOMESTIC	0.0	1.5	0.0	0.0
HAND SINK- EACH SET OF FAUCETS	0.0	2.0	0.0	0.0
KITCHEN SINK (1.8GPM)	2.0	1.5	3.0	2.3
LAVATORY (20GPM PER CYCLE)	6.0	1.0	6.0	4.5
DRINKING FOUNTAIN OR WATERCOOLER	2.0	0.5	1.0	0.0
TOTAL FIXTURE UNITS			175.5	9.0
TOTAL GPM CPC CHARTS A 103.1(1) & 103.1(2)				84.5
MAIN LINE SIZE				2"
WATER METER SIZE				1.5"
TOTAL ENVELODED LENGTH (FROM METER TO MOST REMOTE FIXTURE IN FT.)				200.00'
PRESSURE LOSS IN PSI				
TOTAL RISE FOR HEAD LOSS			43 X 10.00'	4.3
PSI REQUIRED FOR WATER CLOSET/URINAL (FV=15.0 FTH=8.0 PSI)				15.0
PSI FLOW LOSS THROUGH WATER METER CPC CHART A 102.2				5.5
PSI FLOW LOSS THROUGH BACKFLOW PREVENTOR				12.0
TOTAL PRESSURE LOSS IN SYSTEM				36.8
MINIMUM PSI AVAILABLE @ JOB SITE (PLUMBER TO VERIFY)				60.0
REMAINING PSI AVAILABLE (IF NEGATIVE USE BOOSTER PUMP)				23.2
PSI DROP PER 100'-0" AVAILABLE				11.6
CALIFORNIA PLUMBING CODE SECTION 610.12				
DOMESTIC COLD WATER MAX. (8) FOOT PER SECOND				
DOMESTIC HOT WATER MAX. (5) FOOT PER SECOND				

### GAS SERVICE CALCULATIONS

LOW PRESSURE - CPC TABLE 1216.2(1)		
AC/1		72,000
AC/2		72,000
AC/3		72,000
AC/4		72,000
AC/5		72,000
AC/6		72,000
AC/7		72,000
AC/8		40,000
TOTAL BTU/HR INPUT		544,000
TOTAL CFH - BTUH/1000 (BTU/CF)		544.0
MAIN LINE SIZE - CPC TABLE 12-3		(2) 1-1/2"
8"WATER COLUMN (SG.60)		
TOTAL ENVELOPED LENGTH		400'

A. OBTAIN, PAY FOR, AND DELIVER PERMITS, CERTIFICATION OF INSPECTION, AND OTHER SUCH ITEMS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION, DELIVER CERTIFICATION TO THE CONSTRUCTION MANAGER PRIOR TO FINAL ACCEPTANCE OF THE WORK. AN INSPECTION CERTIFICATE FOR EACH CLASS OF WORK REQUIRING INSPECTION MUST BE SUBMITTED PRIOR TO OR WITH THE FINAL PAYMENT INVOICE. THE RESPONSIBLE TRADE CONTRACTOR MUST MAKE APPLICATION FOR THE INSPECTION, COORDINATE SAME AND PAY THE REQUIRED INSPECTION FEE.

#### 1.1.3 EXTENDED WARRANTIES

A. WORK FURNISHED UNDER THE CONTRACT SHALL BE WARRANTED AGAINST DEFECTS IN WORKMANSHIP AND (CONTRACTOR FURNISHED) MATERIALS FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR, OR AS OTHERWISE SPECIFIED, FROM THE DATE OF FINAL ACCEPTANCE OF THE INSTALLATION. DEFECTS OF WORKMANSHIP DEVELOPING DURING THIS PERIOD SHALL BE REMEDIED, AND DEFECTIVE MATERIAL REPLACED, WITHOUT ADDITIONAL COST. WHEN DEFECTS IN A TRADE CONTRACTOR'S WORK CAUSES DAMAGE TO THE WORK OF THE OTHER TRADE CONTRACTORS, SUCH DAMAGE SHALL BE REPAIRED BY THE TRADE CONTRACTOR CAUSING DAMAGE AND WORK RESTORED TO ITS ORIGINAL CONDITION, AT THE EXPENSE OF THE TRADE CONTRACTOR THAT CAUSED THE DAMAGE.

#### PART 2 - PRODUCTS

##### 2.1 MATERIALS AND EQUIPMENT

A. WITHIN THE CONTRACT DOCUMENTS RELATING TO PLUMBING WORK, MANUFACTURER'S NAMES, CATALOG NUMBERS, AND OTHER PROPRIETARY REFERENCES TO MATERIALS AND EQUIPMENT ARE MADE. SUCH REFERENCES ARE MADE TO ESTABLISH THE STANDARDS OF QUALITY AND TYPE REQUIRED, AND NOT TO LIMIT COMPETITION. ACCEPTABLE MANUFACTURERS OF COMPETING PRODUCTS ARE LISTED IN APPLICABLE SECTIONS AS "APPROVED EQUALS". REASONABLE REQUESTS FOR SUBSTITUTION OR ADDITIONS TO "APPROVED EQUALS" WILL BE CONSIDERED, BUT THE MECHANICAL ENGINEER WILL BE THE SOLE JUDGE OF ACCEPTABILITY OF ITEMS PROPOSED AS SUBSTITUTES.

B. MATERIALS AND EQUIPMENT USED IN CARRYING OUT THESE SPECIFICATIONS SHALL BEAR UL OR OTHER RECOGNIZED TESTING LABORATORY LABEL WHEN SUCH LABELS ARE AVAILABLE.

#### PART 3 - EXECUTION

##### 3.1 LOCATIONS

A. PLUMBING LAYOUTS INDICATED ON DRAWINGS ARE DIAGRAMMATIC. EXACT LOCATIONS OF PIPES, AND EQUIPMENT MAY VARY BECAUSE OF CONFLICTS WITH WORK OF OTHER TRADES. WORK OUT CONFLICTS WHERE RELOCATIONS WILL NOT AFFECT OPERATION OR APPEARANCE OF SYSTEMS.

B. LOCATE EQUIPMENT REQUIRING PERIODIC SERVICING SO THAT IT IS EASILY ACCESSIBLE. DO NOT BACK UP SERVICE SIDES TO WALLS, NOR PLACE IT TOO CLOSE TO OTHER EQUIPMENT TO MAKE SERVICE IMPRACTICAL. EQUIPMENT SERVICE CLEARANCE SHALL MEET MINIMUM ACCEPTABLE DISTANCE AS RECOMMENDED BY EQUIPMENT MANUFACTURER.

##### 3.2 UTILITIES EXCAVATING AND BACKFILLING

A. PERFORM TRENCHING, EXCAVATING, BACKFILLING FOR PLUMBING WORK IN ACCORDANCE WITH THE APPROPRIATE SECTIONS AND AS SET FORTH BELOW.

1. PERFORM WORK NECESSARY FOR INSTALLATION OF PLUMBING UTILITIES.  
2. DEPTH OF EXCAVATION TO PROVIDE A MINIMUM OF 3" ABOVE TOP OF PIPE. EXCAVATION TO BE CARRIED TO A DEPTH OF AT LEAST 6" BELOW BOTTOM OF PIPE ELEVATION. FILL BELOW PIPE (6") AROUND PIPE, AND A MINIMUM OF 12" ABOVE PIPE WITH SAND OR CLASS "B" CRUSHED STONE TAMPED FIRM AND EVEN. SEPARATE TOPSOIL DURING EXCAVATION. FINAL LAYER OR DIRT (12" MINIMUM) TO BE TOPSOIL. TRENCHES TO BE AT LEAST 18" WIDER THAN PIPE WITH BATTER BOARDS PLACED EVERY 25'. BACKFILLING SHALL BE DONE TO EXCLUDE USE OF ROCK OR STONE ABOVE SAND OR CRUSHED STONE.

##### 3.3 CUTTING AND PATCHING

A. REPAIR OR REPLACE ROUTINE DAMAGE CAUSED BY CUTTING IN PERFORMANCE OF CONTRACT.

B. PERFORM REPAIRS WITH MATERIALS WHICH MATCH EXISTING AND INSTALL IN ACCORDANCE WITH THE APPROPRIATE SECTION OF THESE SPECIFICATIONS OR THE BEST STANDARDS OF THE INDUSTRY.

##### 3.4 CONNECTION TO EQUIPMENT

A. CONNECT OR INSTALL EQUIPMENT SHOWN ON MECHANICAL DRAWINGS THAT REQUIRE PLUMBING

1. ROUGH - IN PIPING AND CONNECT EQUIPMENT  
2. PROVIDE PIPING, SHUTOFF VALVES, AND UNIONS REQUIRED FOR A COMPLETE INSTALLATION,

##### 3.5 SERVICE OF SYSTEM

A. EMPLOY COMPETENT, QUALIFIED PERSONNEL IN OPERATION OF THE EQUIPMENT.

B. PROVIDE FOR PROPER OPERATION AND CLEANLINESS.

END OF SECTION

#### SECTION 2

##### PLUMBING

#### PART 1 - GENERAL

##### 1.1 SCOPE OF WORK

A. FURNISHING OF ALL LABOR, MATERIALS, TOOLS, TRANSPORTATION, SERVICE, AND RELATED ITEMS NECESSARY TO COMPLETE THE INSTALLATION OF THE PLUMBING SYSTEM AS ILLUSTRATED ON THE DRAWING AND AS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

- HOT & COLD WATER SYSTEM WITH COMPLETE CONNECTIONS FROM METER TO ALL PLUMBING FIXTURES & EQUIPMENT REQUIRING WATER CONNECTIONS
- SOIL, WASTE, VENT AND CONDENSATE SYSTEM LINES INSIDE AND OUTSIDE THE BUILDING.
- TRENCHING AND BACKFILLING.
- FINAL PLUMBING CONNECTIONS TO HEATING AND AIR CONDITIONING EQUIPMENT.
- GAS PIPING TO HEATING, WATER HEATERS AND ALL OTHER GAS BURNING EQUIPMENT.

#### PART 2 - PRODUCTS

##### 2.1 DESCRIPTION

A. SOIL, WASTE, AND VENT PIPING BELOW FLOOR TO 5'-0" OUTSIDE BUILDING: STANDARD WEIGHT COATED CAST IRON SOIL PIPE AND CAST IRON/ NEOPRENE GASKET FITTINGS. YARD PIPING, PIPE AND FITTINGS. A.B.S. OR P.V.C. SCHEDULE 40 PIPE AND FITTINGS MAY BE INSTALLED, AS APPROVED BY LOCAL AUTHORITY IN CONCEALED LOCATIONS ONLY, EXCEPTION: ALL SOIL, WASTE & VENTS LOCATED WITHIN A FIRE RATED WALL SHALL BE METALLICS(STEEL, CAST IRON ECT., NO PVC) IT SHALL BE THE RESPONSIBILITY OF THE PLUMBER TO VERIFY ALL FIRE RATED WALLS & CONSTRUCTION AS SHOWN ON THE ARCHITECTURAL DRAWINGS & COORDINATE WITH THE GENERAL CONTRACTOR

B. SOIL, WASTE AND VENT PIPING ABOVE FLOOR: STANDARD WEIGHT COATED CAST IRON PIPE AND STAINLESS STEEL/ NEOPRENE GASKET FITTING, OR A.B.S. OR P.V.C. SCHEDULE 40, AS APPROVED BY LOCAL AUTHORITY IN CONCEALED LOCATIONS.

C. HOT & COLD WATER PIPING ABOVE FLOOR: TYPE "L" COPPER, HARD DRAWN. BELOW GROUND OUTSIDE OF BUILDING: TYPE "K" SOFT DRAWN COPPER TUBING WITH JOINTS.

D. CONDENSATE DRAIN PIPING: TYPE "M" COPPER WITH 95-5 TIN ANTIMONY SOLDER AND WROUGH COPPER FITTINGS.

E. INDIRECT WASTE PIPING: TYPE "M" COPPER WITH 95-5 TIN ANIMONY SOLDER AND WROUGHT COPPER FITTINGS OR P.V.C. SCHEDULE 40, AS APPROVED BY LOCAL AUTHORITY.

F. UNDERGROUND GAS PIPING: SCHEDULE 40 BLACK STEEL PIPE WITH LONG RADIUS STEEL WELDING FITTINGS INCLUDING CATHODIC PROTECTION OR POLYETHYLENE AS APPROVED BY LOCAL GAS COMPANY AND AUTHORITY HAVING JURISDICTION. INSTALLATION OF GAS SERVICE PIPING IN VENTED CONDUIT AND MEETING WITH THE LOCAL GAS COMPANY'S APPROVAL.

G. GAS PIPING ABOVE GROUND: SCHEDULE 40 BLACK STEEL WITH 125 POUND BLACK MALLEABLE IRON SCREWED FITTINGS. GAS PIPING COMPOUND AT JOINTS IN COMPLIANCE WITH NFPA BULLETIN #45 AND LOCAL APPLICABLE CODES AND SUITABLE FOR NATURAL GAS SERVICE. INSTALL MOISTURE TRAPS ON HVAC UNITS, WATER HEATERS, AND KITCHEN EQUIPMENT. 4" GAS LINE TO BE WELDED AND WELDED BY CERTIFIED WELDER.

H. STORM PIPING BELOW GROUND: STANDARD WEIGHT COATED CAST IRON PIPE AND STAINLESS STEEL/ NEOPRENE GASKET FITTING, OR A.B.S. OR P.V.C. SCHEDULE 40, AS APPROVED BY LOCAL AUTHORITY IN CONCEALED LOCATIONS.

I. STORM PIPING ABOVE GROUND: STANDARD WEIGHT COATED CAST IRON PIPE AND STAINLESS STEEL/ NEOPRENE GASKET FITTING, OR A.B.S. OR P.V.C. SCHEDULE 40, AS APPROVED BY LOCAL AUTHORITY.

J. TRAPS AND VENTS FOR SERVICE SINK: A.B.S. OR P.V.C. SCHEDULE 40, AS APPROVED BY LOCAL AUTHORITY.

##### 2.2 INSULATION

A. INSULATE ALL HOT AND COLD WATER COPPER PIPING WITH AT LEAST 1/2" THICK FOAM RUBBER OR FOAM PLASTIC TYPE PIPE INSULATION

##### 2.3 FIXTURES

A. ALL FIXTURES: AS INDICATED ON DRAWINGS WITH EQUAL PRODUCTS FURNISHED BY AMERICAN STANDARD, KOHLER, ELJER OR EQUAL.

2.4 CLEANOUTS, FLOOR DRAINS, FLOOR SINKS, AND ROOF DRAINS.

A. ALL ACCESSORIES, AS INDICATED ON DRAWING WITH EQUAL PRODUCTS FURNISHED BY WADE, JOSAM, OR ZURN BEING ACCEPTABLE.

##### 2.5 EQUIPMENT

A. SHUTOFF VALVES UNDERNEATH LAVATORIES, TANK TYPE WATER CLOSETS, AND KITCHEN EQUIPMENT WITH CHROME PLATED ANGLE STOP VALVES WITH CHROME PLATED ESCUTCHEON PLATES.

B. HOSE BIBBS - AS SCHEDULED ON DRAWINGS.

C. VACUUM BREAKERS - AS SCHEDULED ON DRAWINGS.

D. BACKFLOW PREVENTERS - AS SCHEDULED ON DRAWINGS.

E. GAS COCK - PLUG VALVE IRON BODY, BRONZE TAPERED PLUG, LUBRICATED, THREADED ENDS. RATED FOR 200 CWP, ASA AND UL LISTED.

#### PART 3 - INSTALLATION

##### 3.1 PIPING

A. RUN ALL PIPING CONCEALED EXCEPT WHERE OTHERWISE INDICATED ON DRAWINGS.

B. INSTALL VALVES TRAPS CLEANOUT AND OTHER APPARATUS IN AN EASILY ACCESSIBLE LOCATION

C. INSTALL SOIL, WASTE VENT OFFSETS AND CONDENSATE DRAINS WITH A MINIMUM UNIFORM GRADE OF ONE QUARTER INCH TO THE FOOT.

D. MAINTAIN HOT AND COLD WATER LINES AT LEAST 6 INCHES APART WHERE PIPING IS PARALLEL.

E. PROVIDE ESCUTCHEON PLATES WHERE ALL PIPES PASS THROUGH A FINISHED WALL.

##### 3.2 PLUMBING FIXTURES

A. FURNISH AND INSTALL ALL PLUMBING FIXTURES COMPLETE WITH ALL EQUIPMENT FITTINGS, TRIMMING, AND ACCESSORIES.

B. ALL FIXTURES: GRADE A, WHITE.

C. EXPOSED PIPING TO FIXTURES: A PRODUCT OF THE FIXTURE MANUFACTURE.

D. PROVIDE STOPS AS MANUFACTURED BY THE FIXTURE MANUFACTURER, WITH METAL - TO - SEAT FOR ALL FIXTURES AND EQUIPMENT.

##### 3.3 TEST

A. THE PLUMBING SYSTEM AND ASSOCIATED SYSTEM IS SUBJECT TO FINAL APPROVAL OF THE OWNER'S REPRESENTATIVE AND CODE AUTHORITIES HAVING JURDICTION. PERFORM ALL TESTS REQUIRED TO SHOW CODE COMPLIANCE AS DIRECTED.

##### 3.4 CLEANING AND PROTECTION

A. AFTER THE PLUMBING PIPING HAS BEEN INSTALLED, INSPECTED, AND APPROVED, FLUSH THE PIPING SYSTEM TO REMOVED ANY FOREIGN MATTER FROM THE PIPES.

##### 3.5 MAINTENANCE

A. MAINTAIN ALL PARTS OF THE PLUMBING FIXTURES AND ASSOCIATED EQUIPMENT THROUGHOUT THE GUARANTEE

END OF SECTION

## PLUMBING NOTES & SYMBOLS

### MICHAEL FLOORING, INC.

6500 DISTRICT BLVD.  
BAKERSFIELD, CA 93313

CANTELMI ENGINEERING  
MECHANICAL/ELECTRICAL  
2130 F STREET BAKERSFIELD, CA 93301  
TEL: (661) 324-5252 FAX: (661) 324-8439 Cantelmi@cantelmi.net

DATE	ISSUED
12.21.18	FOR BID

DATE	MARK	ISSUED

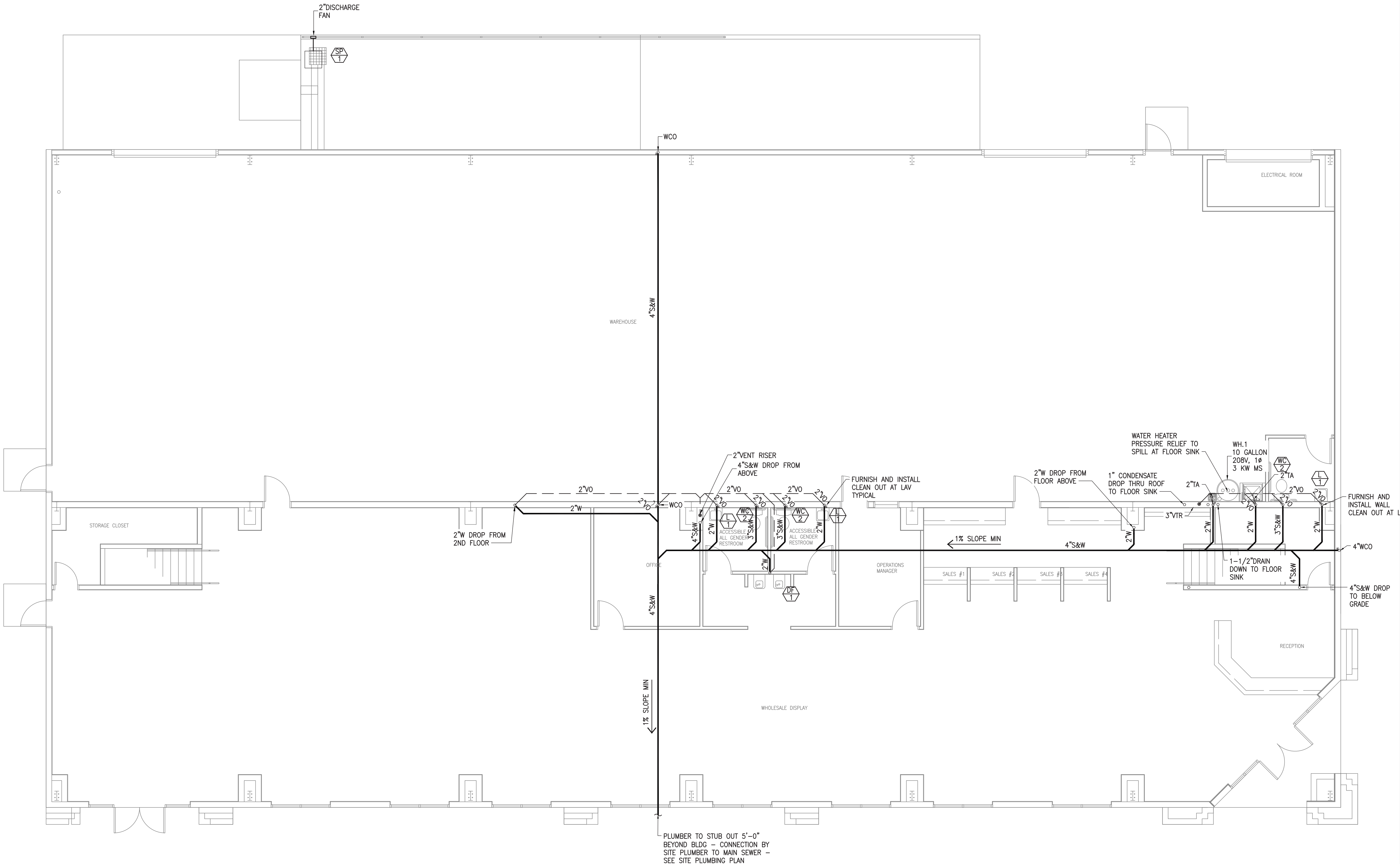
DWG. BY	DBC
CHK'D BY	FJC
DATE	12-21-18
JOB NO.	C18-135
FILE NO.	

SHEET  
**P1.0**  
SHEET

NOTHING IN THE DRAWINGS AND/OR SPECIFICATIONS SHALL BE CONSTRUED TO PERMIT AN INSTALLATION IN VIOLATION OF APPLICABLE CODES AND/OR RESTRICTIONS. SHOULD ANY CHANGE IN THE DRAWINGS AND/OR SPECIFICATIONS BE NECESSARY IN ORDER TO COMPLY WITH APPLICABLE CODES AND/OR REQUIREMENTS, THE CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD. THE WORK PERFORMED UNDER THIS CONTRACT SHALL BE IN FULL ACCORDANCE WITH THE LATEST CODES, REGULATIONS, RESTRICTIONS AND REQUIREMENTS. CONTRACTOR TO OBTAIN CLARIFICATION FROM ENGINEER OF RECORD WHERE CONFLICTS IN DRAWING OR DIMENSIONS ARISE PRIOR TO PROCEEDING WITH CONSTRUCTION.



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FIRST FLOOR PLUMBING PLAN - WASTE

SCALE: 3/16" = 1'-0"

FIRST FLOOR SOIL & WASTE PLAN  
MICHAEL FLOORING, INC.  
6500 DISTRICT BLVD.  
BAKERSFIELD, CA 93313

DATE	ISSUED
12.21.18	FOR BID

DATE	MARK	ISSUED

DWG. BY	DBC
CHK'D BY	FJC
DATE	12-21-18
JOB NO.	C18-135
FILE NO.	

SHEET  
**P2.0**  
SHEET

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[illegible]

SCALE: 3/16" = 1'-0"

**CANTELM ENGINEERING**  
MECHANICAL/ELECTRICAL  
2130 F STREET BAKERSFIELD, CA 93301  
TEL: (661) 324-5252 FAX: (661) 324-8439 [Cantelmi@Cantelmi.NET](mailto:Cantelmi@Cantelmi.NET)

SECOND FLOOR SOIL / WASTE / VENT  
MICHAEL FLOORING, INC.  
6500 DISTRICT BLVD.  
BAKERSFIELD, CA 93313

DATE	ISSUED
12.21.18	FOR BID

DATE	MARK	ISSUED

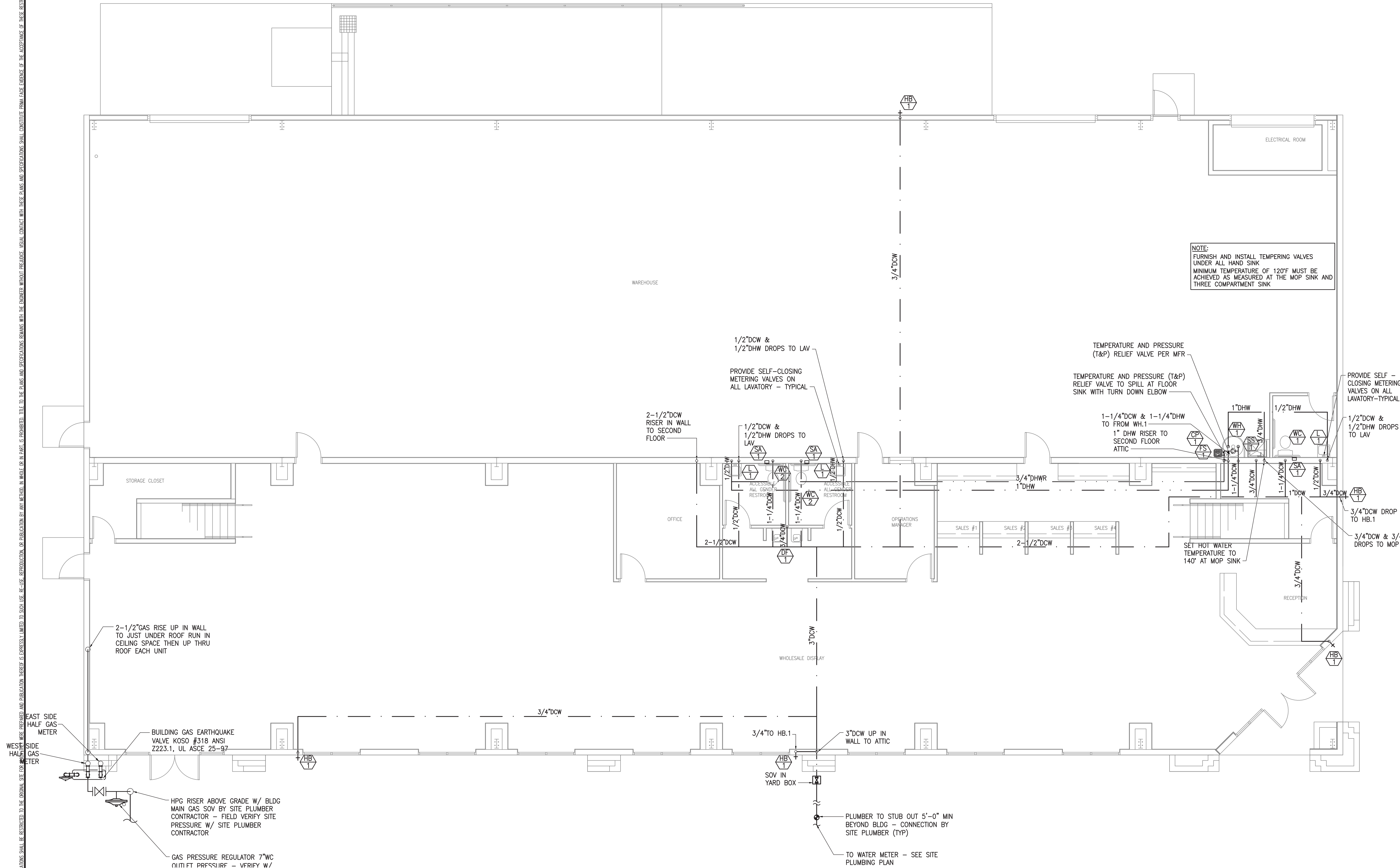
DWG. BY	DBC
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SHEET

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FIRST FLOOR PLUMBING PLAN - DCW/DHW

SCALE: 3/16" = 1'-0"

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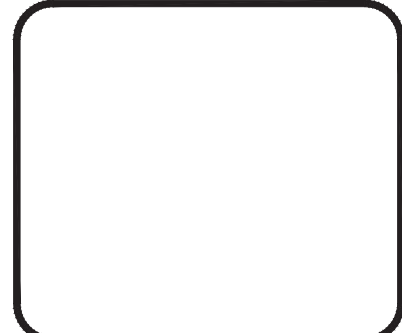
CANTelmi ENGINEERING  
MECHANICAL/ELECTRICAL  
2130 F STREET BAKERSFIELD, CA 93301  
TEL: (661) 324-5252 FAX: (661) 324-8439 Contemlmi@cantelmi.net

FIRST FLOOR DOMESTIC WATER PLAN  
MICHAEL FLOORING, INC.  
6500 DISTRICT BLVD.  
BAKERSFIELD, CA 93313

DATE	ISSUED
12.21.18	FOR BID

DATE	MARK	ISSUED

DWG. BY	DBC
CHK'D BY	FJC
DATE	12-21-18
JOB NO.	C18-135
FILE NO.	



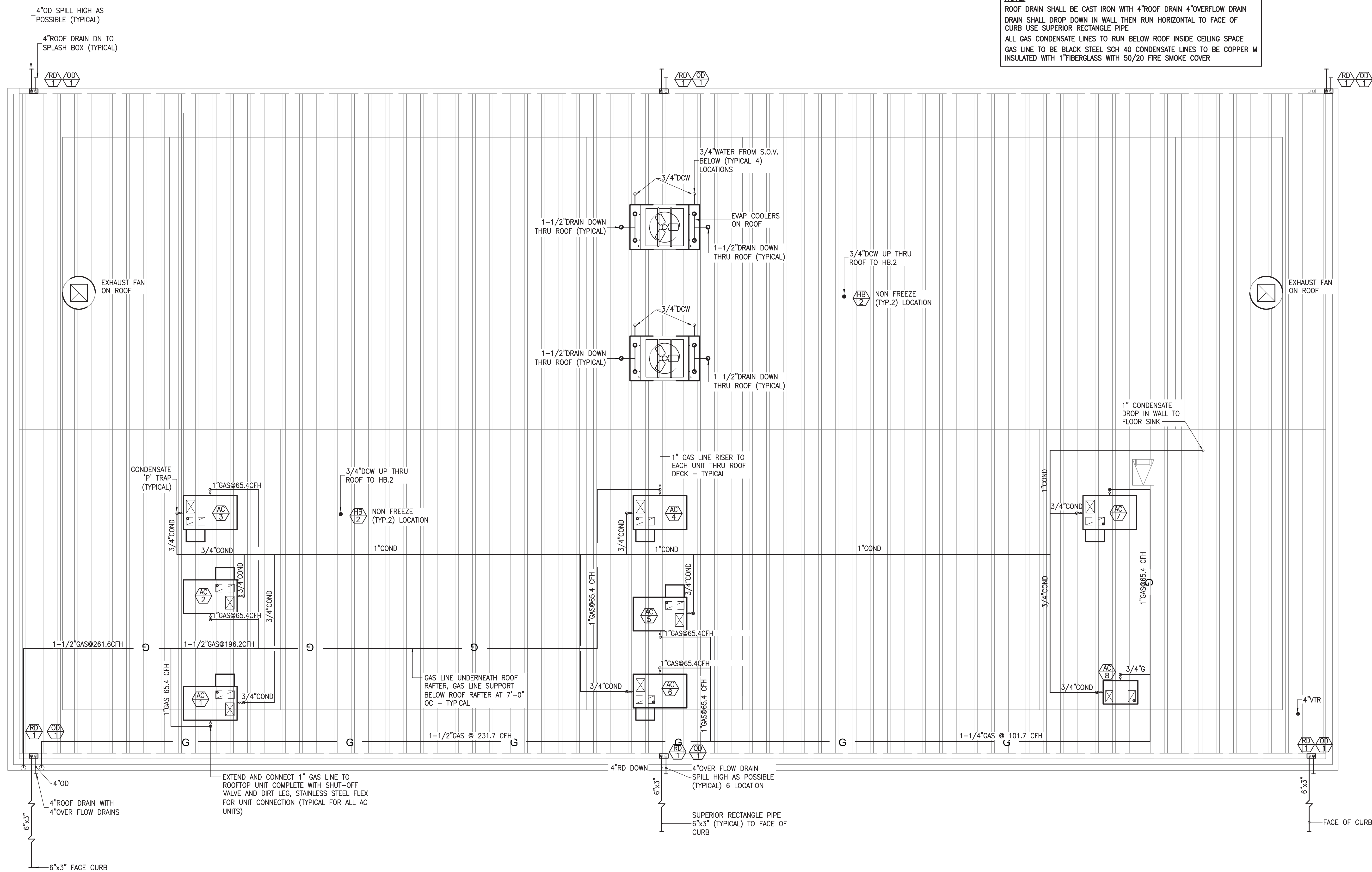
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SHEET



SCALE: 3/16" = 1'-0"

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X OF X SHEET

THE USE OF THESE PLANS AND SPECIFICATIONS SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH THEY WERE PREPARED AND PUBLICATION THEREOF IS EXPRESSLY LIMITED TO SUCH USE. RE-USE, RE-PRODUCTION OR PUBLICATION BY ANY METHOD, IN WHOLE OR IN PART, IS PROHIBITED. TITLE TO THE PLANS AND SPECIFICATIONS REMAINS WITH THE ENGINEER WITHOUT PREJUDICE. VISUAL CONTACT WITH THESE PLANS AND SPECIFICATIONS SHALL CONSTITUTE PRIMA FAE EVIDENCE OF THE ACCEPTANCE OF THESE RESTRICTIONS. CANTILEVER ENGINEERING



NOTE:  
ROOF DRAIN SHALL BE CAST IRON WITH 4" ROOF DRAIN 4" OVERFLOW DRAIN  
DRAIN SHALL DROP DOWN IN WALL THEN RUN HORIZONTAL TO FACE OF  
CURB USE SUPERIOR RECTANGLE PIPE  
ALL GAS CONDENSATE LINES TO RUN BELOW ROOF INSIDE CEILING SPACE  
GAS LINE TO BE BLACK STEEL SCH 40 CONDENSATE LINES TO BE COPPER M  
INSULATED WITH 1" FIBERGLASS WITH 50/20 FIRE SMOKE COVER

## PLUMBING ROOF PLAN

SCALE: 3/16" = 1'-0"

**CANTELM ENGINEERING**  
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TEL: (661) 324-5252 FAX: (661) 324-8439 Cantelmi@Cantelmi.NET  
LICENSE #21190

PLUMBING ROOF PLAN  
MICHAEL FLOORING, INC.  
6500 DISTRICT BLVD.  
BAKERSFIELD, CA 93313

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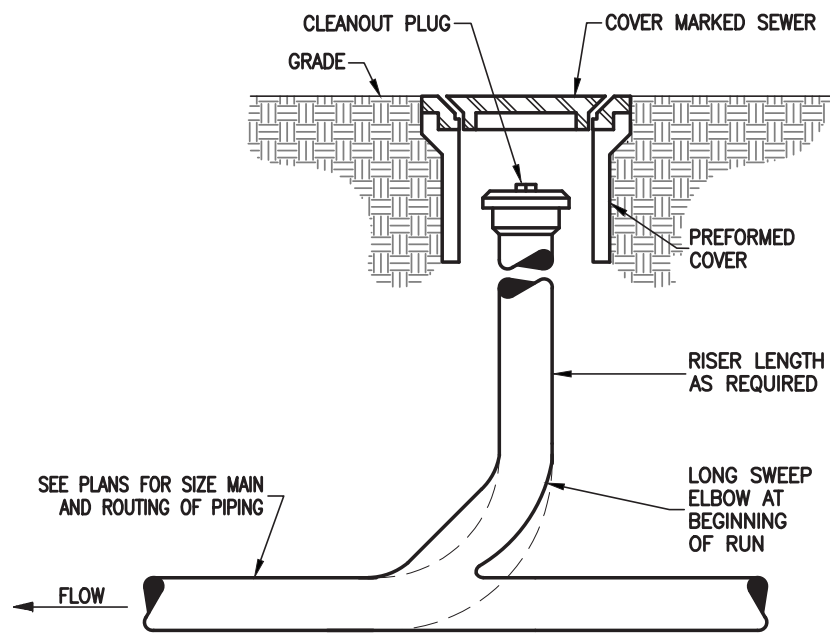
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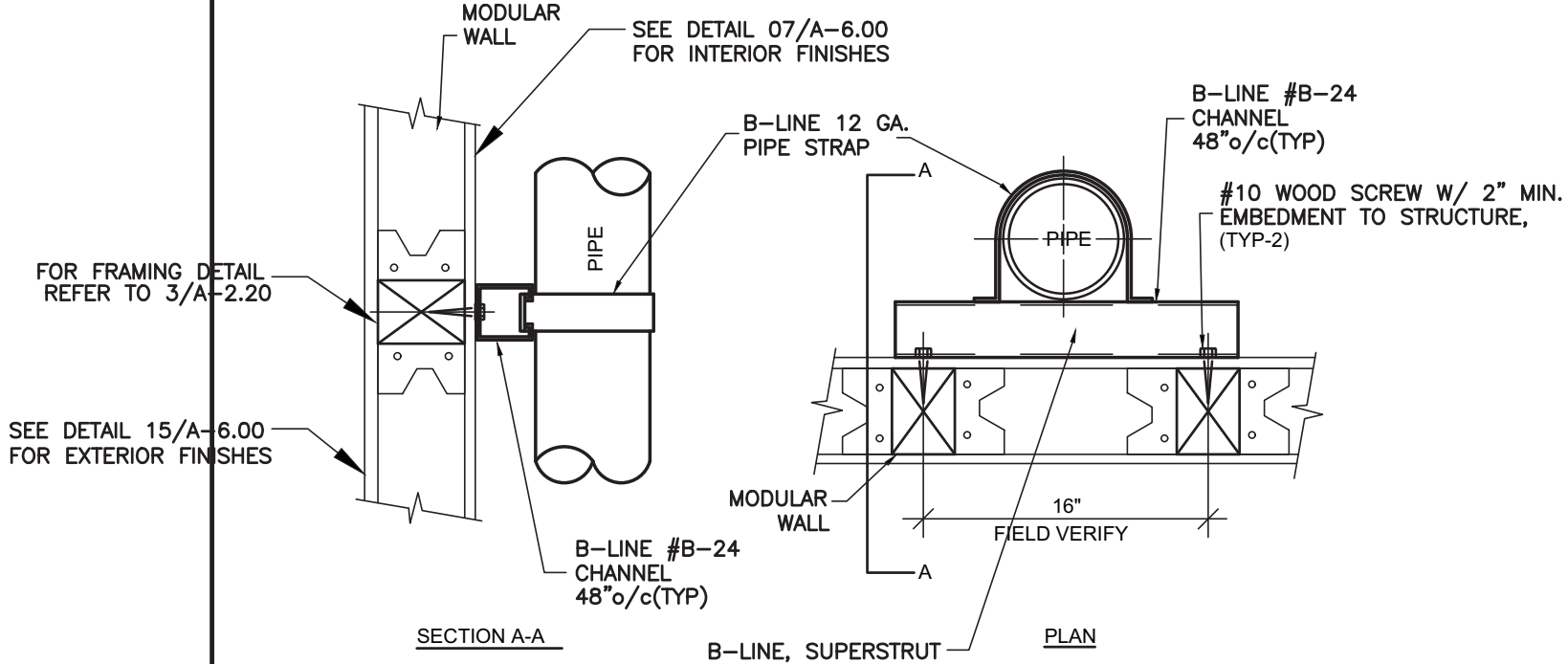
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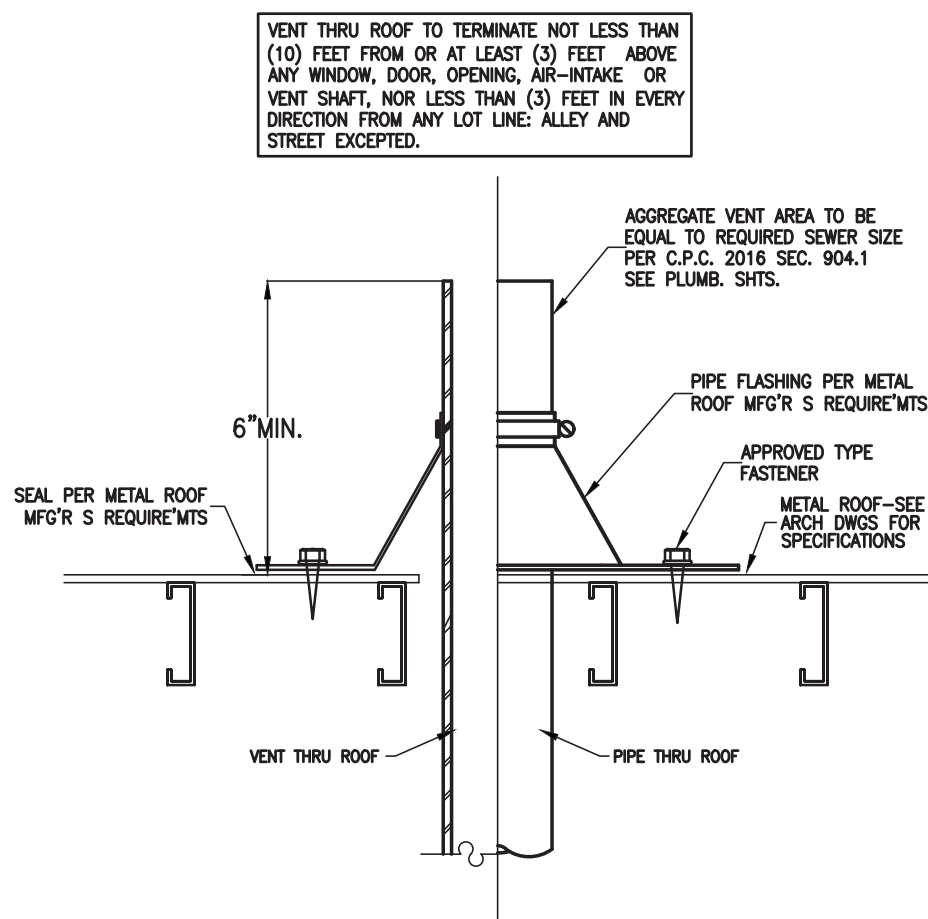
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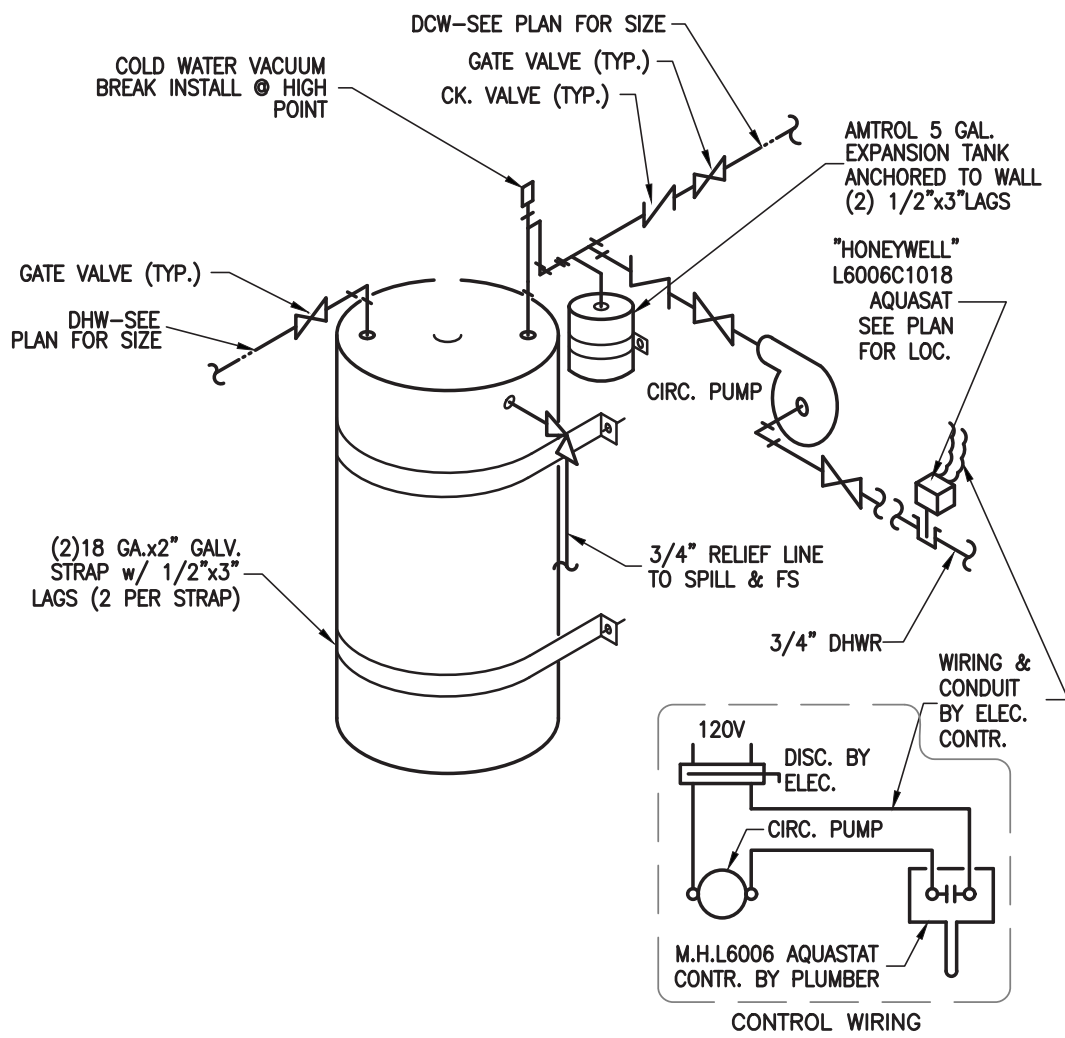
1 CLEANOUT TO GRADE - TYP. NTS



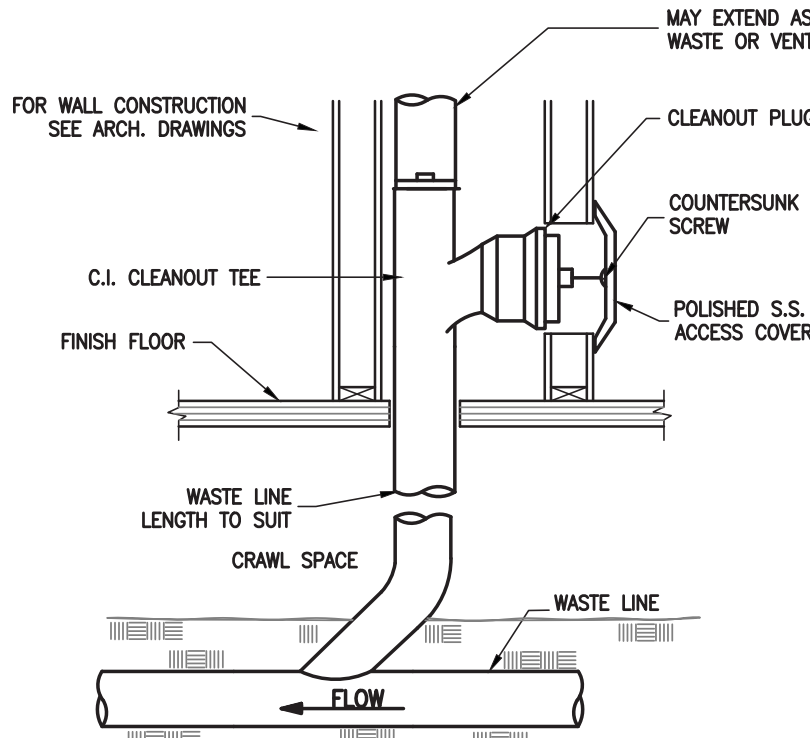
4 PIPE MOUNTING - TYP. N.T.S.



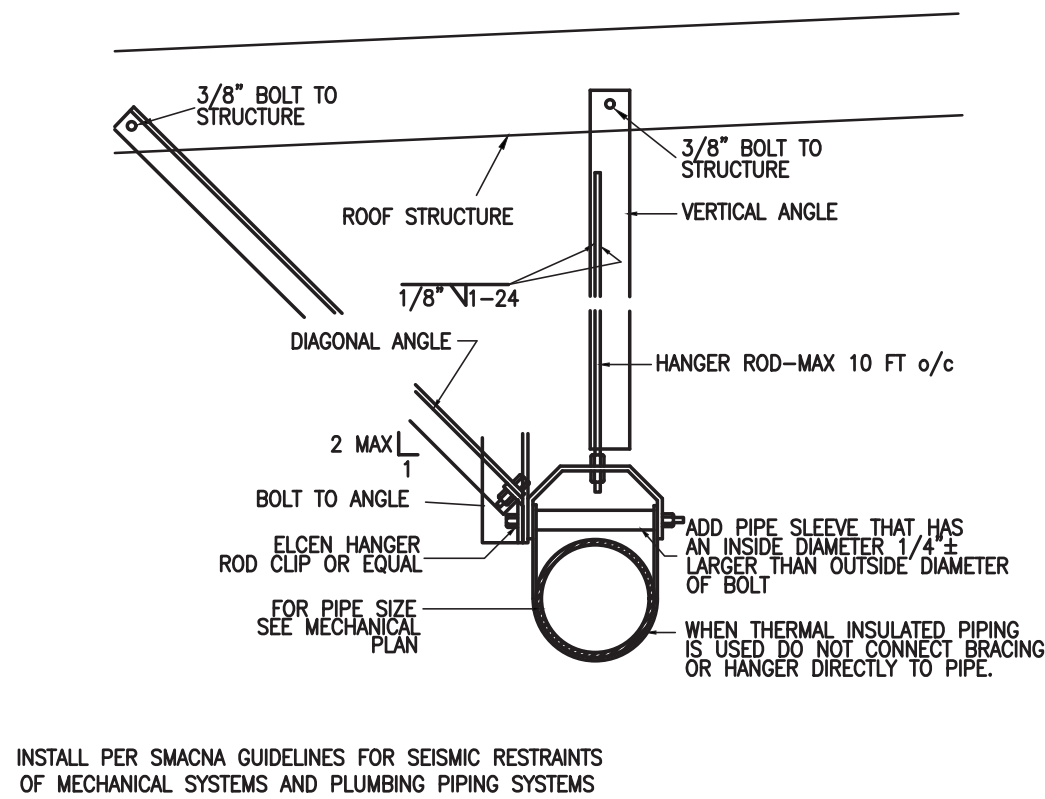
2 VENT/PIPE THRU ROOF - TYP. NTS



5 WATER HEATER MTG/PIPING NTS



3 WALL CLEANOUT - TYP. NTS



6 PIPE HANGER/BRACING - TYP. NTS

## PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	DCW	DHW	S&W	TRAP	VENT	DESCRIPTION
WC 1	TOILET	1 1/4"	-	4"	INT.	2"	ZURN #Z5655-BWL ECOVANTAGE TOILET - FLOOR MOUNTED - ELONGATED BOWL - 1.28 GPF - SIPHON JET ACTION - SLOAN # 8111-1.28 BATTERY POWERED SENSOR OPERATED FLUSH VALVE - OLSONITE #95 OPEN FRONT SEAT LESS COVER - (2) BOLT CAPS
WC 2	ACCESSIBLE TOILET	1 1/4"	-	4"	INT.	2"	ZURN #Z5665-BWL ECOVANTAGE TOILET - FLOOR MOUNTED - ELONGATED BOWL - ADA 16.75"HT - 1.28 GPF - SIPHON JET ACTION - SLOAN #8111-1.28 BATTERY POWERED SENSOR OPERATED FLUSH VALVE - OLSONITE #95 OPEN FRONT SEAT LESS COVER (2) BOLT CAPS
UR 1	WALL HUNG URINAL	1"	-	2"	INT.	2"	ZURN #Z5738-U ECOVANTAGE URINAL - ULTRA LOW CONSUMPTION - 1/8 GPF - VITREOUS CHINA - SLOAN #8186-0.25 BATTERY POWERED SENSOR OPERATED FLUSH VALVE - SEE ARCH DWGS FOR ADA COMPLIANT MOUNTING HEIGHT
L 1	LAVATORY ADA	1/2"	-	2"	1-1/4"	2"	AMERICAN STANDARD LUCERNE #0355.012 - WALL MTD - VITREOUS CHINA - CHICAGO FAUCET #3300-ABCP - .5 GPM, MIN. - LA PATTEN P-TRAP W/ ACCESSIBLE INSULATION WRAP BY PLUMBEREX "HANDY SHIELD MAXX" #2003 - MEETS AST E84-07 TESTING STANDARD - CHICAGO SUPPLY & STOPS # 1017-ABCP - JR SMITH WALL CARRIER #0723 - VERIFY HOLE DRILLING FOR FAUCET - LAVATORY SHALL BE ADA COMPLIANT & MEET CALGREEN MAX. .4 GPM FLOW RATE (OR EQUAL)
S 1	SINK	3/4"	3/4"	2"	1-1/2"	2"	JUST #SLN-ADA-1921-A-OR - 19"x21"x4" - SINGLE COMPARTMENT TYPE 304 STAINLESS STEEL SELF-RIMMING SINK - JUST #J-35 DRAIN - CHICAGO #350-317CP FAUCET
MS 1	MOP SINK	3/4"	3/4"	3"	3"	2"	PROFLO #PFMD2424 SERVICE SINK - ENAMELED CAST IRON CHICAGO FAUCET #897RCF w/VACUUM BREAKER, TOP BRACE, 3/4" HOSE CONNECTION - PAIL HOOK - #7721.038 STRAINER w/SOCKET - VINYL-COATED RIM GUARD WALL BRACE AND ADJUSTABLE R INTEGRAL SUPPLY ARMS - "P" TRAP
WH 1	WATER HEATER	1-1/2"	1-1/2"	-	-	-	A.O. SMITH #DRE-52-18ELECTRIC WATER HEATER - 50 GAL - 6 KW - 74 GPH @ 100" RISE 50.0 FLA @ 208v/3ph (VERIFY SITE VOLTAGE PRIOR TO ORDERING) PRESSURE RELIEF VALVE 670 LBS (OR EQUAL)
HB 1	HOSE BIBB	3/4"	-	-	-	-	WOODFORD #24P-3/4 HOSE BIBB w/LOCKSHIELD - POLISHED CHROME - NON-REMOVABLE VACUUM BREAKER - LOOSE TEE KEY HANDLE - 3/4" HOSE CONNECTION
FD 1	FLOOR DRAIN	-	-	2"	2"	2"	JR SMITH #2005-A-HP FLOOR DRAIN - 6"Ø CHROME PLATED GRATE - DOUBLE DRAINAGE FLANGE - NO HUB OUTLET - TRAP PRIMER CONNECTION
SA 1	SHOCK ABSORBER	-	-	-	-	-	ZURN Z1700 - SERIES SIZED PER MANUFACTURER'S REQUIREMENTS
TP 1	TRAP PRIMER	1/2"	-	-	-	-	PRECISION PLUMBING PRODUCTS #P2-500 TRAP PRIMER MOUNTED IN WALL BOX WITH HINGED COVER PRIMER LINE BELOW FLOOR TO FLOOR DRAIN (MAX. 4 FLOOR DRAINS PER TRAP PRIMER)
FS 1	FLOOR SINK	-	-	2"	2"	2"	PROFLO #PF906K - CAST IRON - DOME BOTTOM STRAINER - NO HUB OUTLET - 2" "P" TRAP
RD 1	ROOF DRAIN	-	-	4"	-	-	J.R.SMITH #1330Y ROOF DRAIN - 8.5" DIAMETER - DUCO CAST IRON BODY WITH COMBINED FLASHING CLAMP AND GRAVEL STOP WITH POLYETHYLENE DOME - UNDERDECK CLAMP - 4" NO-HUB OUTLET - REFER TO ARCH DWGS FOR ROOF MOUNTING DETAILS
OD 1	OVERFLOW DRAIN	-	-	4"	-	-	J.R.SMITH #1330Y ROOF DRAIN - 8.5" DIAMETER - DUCO CAST IRON BODY WITH COMBINED FLASHING CLAMP AND GRAVEL STOP WITH POLYETHYLENE DOME - UNDERDECK CLAMP - 4" NO-HUB OUTLET - 2" WATER DAM - REFER TO ARCH DWGS FOR ROOF MOUNTING DETAILS
CP 1	CIRCULATOR PUMP	-	-	-	-	-	BELL & GOSSETT #NBF-BS/LW CIRCULATOR PUMP - 8.5 GPM @ 8 FT HD - BRONZE CONSTRUCTION - 39 WATTS - 115v - 9 LBS - CONTROL WITH AQUASTAT
DF 1	ACCESSIBLE DRINKING FOUNTAIN	1/2"	-	2"	1-1/4"	2"	ELKAY #EZSTL8C BARRIER FREE WALL MOUNTED "HI-LO" ELECTRIC DRINKING FOUNTAIN - WALL MOUNTED - DUAL HEIGHT FOUNTAINS - WALL MOUNT SUPPORT CARRIER - PUSH BUTTON OPERATED VANDAL RESISTANT BUBBLER HEADS WITH INTEGRAL LAMINAR ANTI-SQUIRT FLOW - VANDAL RESISTANT FOR WASTE STRAINERS & BOTTOM PLATES - 18 GA. TYPE 304 STAINLESS STEEL SATIN FINISH CHILLER 4.7 AMPS @ 115VAC - REFER TO ARCH FOR MTG HT - ADA COMPLIANT -

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