

PLUMBING SPECIFICATIONS

- NOTE: MANUFACTURERS' NAMES ON WHICH THIS SPECIFICATION IS BASED INDICATE THE MINIMUM QUALITY OF PRODUCT REQUIRED. SUBSTITUTION MAY BE MADE TO THOSE SPECIFIED IF DEEMED EQUIVALENT BY THE OWNER'S REPRESENTATIVE. ALL WORK AND PRODUCTS SHALL MEET THE REQUIREMENTS.
- ALL WORK INCLUDING INSTALLATION, EQUIPMENT, FIXTURES AND PIPING SHALL BE PERFORMED IN STRICT CONFORMANCE WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS SET FORTH BY THE AHJ (AUTHORITY HAVING JURISDICTION), AND THE OWNER'S MINIMUM REQUIREMENTS AS STATED HEREIN, OR OTHERWISE INDICATED BY THE OWNER.
 - SEE ARCHITECTURAL GENERAL AND SPECIAL CONDITIONS. CONDITION REQUIREMENTS SHALL APPLY UNLESS OTHERWISE NOTED.
 - ALL WORK SHALL BE PERFORMED AS INDICATED ON DRAWINGS UNLESS FIELD CONDITIONS REQUIRE MINOR CHANGES BE MADE. MINOR CHANGES SHALL BE MADE WITH NO ADDITIONAL COST. ROUTING OF ALL SANITARY PLUMBING, DOMESTIC WATER PIPING AND GAS PIPING AS SHOWN ON THE PLANS IS SHOWN WITH THE INTENTION OF INDICATING THE APPROXIMATE LOCATION OF EXISTING CONDITIONS AND NEW ITEMS. THIS CONTRACTOR SHALL COORDINATE THE INSTALLATION OF HIS WORK WITH THE WORK OF ALL OTHER TRADES TO AVOID INTERFERENCE. CONTRACTORS MAY DEViate FROM THE LOCATION OF PIPING SHOWN IF INSTALLATION COMPLIES WITH LOCAL CODES AND INDUSTRY PRACTICES, AND IF THE AHJ AND OWNER'S REPRESENTATIVE APPROVE. ITEMS NOT SHOWN ON THE PLANS OR SHOWN IN CONFLICT WITH ANY CODE, REGULATION OR EXISTING CONDITION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL WORK IN ACCORDANCE WITH LOCAL CODES.
 - ALL WORK SHALL BE GUARANTEED FOR ONE YEAR AFTER ACCEPTANCE OF THE WORK BY OWNER.
 - PRIOR TO SUBMISSION OF THE CONTRACTORS COST ESTIMATE FOR WORK INCLUDED UNDER THIS PROJECT, THE CONTRACTOR SHALL VISIT THE JOBSITE TO EXAMINE ALL EXISTING CONDITIONS RELATED TO HIS WORK, AND UPON FINAL EXAMINATION OF SUCH SHALL SUBMIT A FINAL PROPOSAL AS EVIDENCE THAT THIS CONTRACTOR HAS VISITED SAID SITE AND VERIFIED ALL EXISTING AND PROJECT CONDITIONS. ACTUAL LOCATIONS OF EXISTING SERVICE STUBS MUST BE FIELD VERIFIED. CHANGES TO CONFORM TO ACTUAL POINTS-OF-CONNECTION SHALL BE MADE AT NO ADDITIONAL COST. CLAIMS OF ADDITIONAL WORK OR ADD-ONS DUE TO NON-VERIFICATION OF EXIST. CONDITIONS WILL NOT BE CONSIDERED BY THE OWNER. ALL ADDITIONAL WORK WHICH IS NOT CLEARLY APPROVED PRIOR TO PERFORMANCE OF SUCH WORK WILL BE CHARGED TO THE CONTRACTOR, AND IF NOT SETTLED WILL BE HELD FROM HIS FINAL PAYMENT.
 - CONTRACTOR SHALL PREPARE AND SUBMIT AS-BUILT DRAWINGS TO OWNER AND ENGINEER. AS-BUILT DRAWINGS SHALL INDICATE ACTUAL MANUFACTURER OF THE EQUIPMENT INSTALLED, THE EXACT LOCATION OF EQUIPMENT AND THE ACTUAL CAPACITY.
 - EQUIPMENT, FIXTURES, AND ACCESSORIES SHALL NOT BE SUPPORTED FROM CEILING, SOFFIT, PIPING, DUCTWORK, METAL ROOF DECK, LATERAL BRACING, BRIDGING, OR CONDUIT. ITEMS SHALL ONLY BE SUPPORTED FROM STRUCTURE WHICH HAS BEEN APPROVED BY THE ARCHITECT.
 - ALL ROOF WORK, PENETRATIONS, AND REPAIRS SHALL BE TOTALLY PERFORMED BY ONLY THOSE ROOFING CONTRACTORS APPROVED BY THE OWNER AND GENERAL CONTRACTOR.
 - DEFICIENCIES AND NON-CONFORMING ITEMS SHALL BE CORRECTED BY THE CONTRACTOR. FAILURE TO CORRECT SUCH ITEMS SHALL PERMIT THE OWNER TO CORRECT SAME AT A COST TO THE CONTRACTOR.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL PERMITS AND PAYING FOR SAME. THE CONTRACTOR SHALL INCLUDE IN THEIR BID CHARGES FOR ALL FEES ASSOCIATED WITH THE CONSTRUCTION OF THE SPACE INCLUDING BUT NOT LIMITED TO LOCAL, COUNTY, OR STATE SERVICE CHARGES AND PERMIT FEES, AND LANDLORD'S UTILITY, AND/OR EQUIPMENT CHARGES.
 - SCOPE OF WORK:
FURNISH ALL LABOR, MATERIALS, SUPPLIES, EQUIPMENT, AND FEES REQUIRED TO COMPLETELY INSTALL, TEST, AND PLACE THE SPECIFIED EQUIPMENT, COMPONENTS, CONTROLS AND SYSTEMS IN SERVICE.
SOIL, WASTE AND VENT SYSTEM
DOMESTIC WATER SYSTEM
DOMESTIC WATER HEATER
PLUMBING FIXTURES AND TRIM
ROOF DRAINAGE SYSTEM
MISCELLANEOUS STEEL WORK, FLOOR AND WALL SLEEVES, SLOTS AND INSERTS, PLATES, SUPPORTS AND HANGERS
ALL OTHER PLUMBING ITEMS INDICATED ON THE DRAWINGS, SPECIFIED HEREIN, OR NEEDED FOR A COMPLETE AND FUNCTIONAL PLUMBING INSTALLATION IN ACCORDANCE WITH ALL PERTINENT CODES AND REGULATIONS.
CLEANING AND TESTING OF ALL SYSTEMS
WARRANTY OF ALL WORK FOR A PERIOD OF ONE YEAR
 - MATERIALS:
12.1 SANITARY DRAIN, WASTE, AND VENT SHALL BE:
SOIL AND WASTE, UNDERFLOOR - SERVICE WEIGHT CAST IRON, HUB AND SPIGOT SOIL PIPE AND FITTINGS, COATED INSIDE AND OUT.
SOIL, WASTE, AND VENT, ABOVE FLOOR - HUBLESS CAST IRON PIPE AND FITTINGS, COATED INSIDE AND OUT.
ALL CAST IRON SOIL PIPE/FITTINGS BELOW OR ABOVE GROUND SHALL BEAR THE COLLECTIVE TRADEMARK OF CISPI AND/OR BE "NSF INTERNATIONAL".
ALL STANDARD COUPLINGS SHALL BE IN COMPLIANCE TO CISPI 310 (LATEST EDITION), BEARING THE MARK OF NSF INTERNATIONAL.
OR
AT THE CONTRACTOR'S OPTION AND WHERE ALLOWED BY CODE AND THE LOCAL AUTHORITY HAVING JURISDICTION SCHEDULE 40 PIPING MAY BE USED. PVC SHALL NOT BE USED IN RETURN AIR PLENUMS WHERE PROHIBITED BY CODE.
12.2 DOMESTIC WATER PIPING SHALL BE:
UNDERGROUND TYPE: COPPER, HARD DRAWN
ABOVE GROUND: TYPE L COPPER, HARD DRAWN TYPE M COPPER MAY BE USED WHERE APPROVED BY OWNER AND ENGINEER AND ALLOWED BY ALL AUTHORITIES HAVING JURISDICTION.
SOLDER-FREE SOLDER OR SILVER SOLDER SHALL BE USED AT ALL POINTS OF CONNECTION.

PLUMBING SPECIFICATIONS

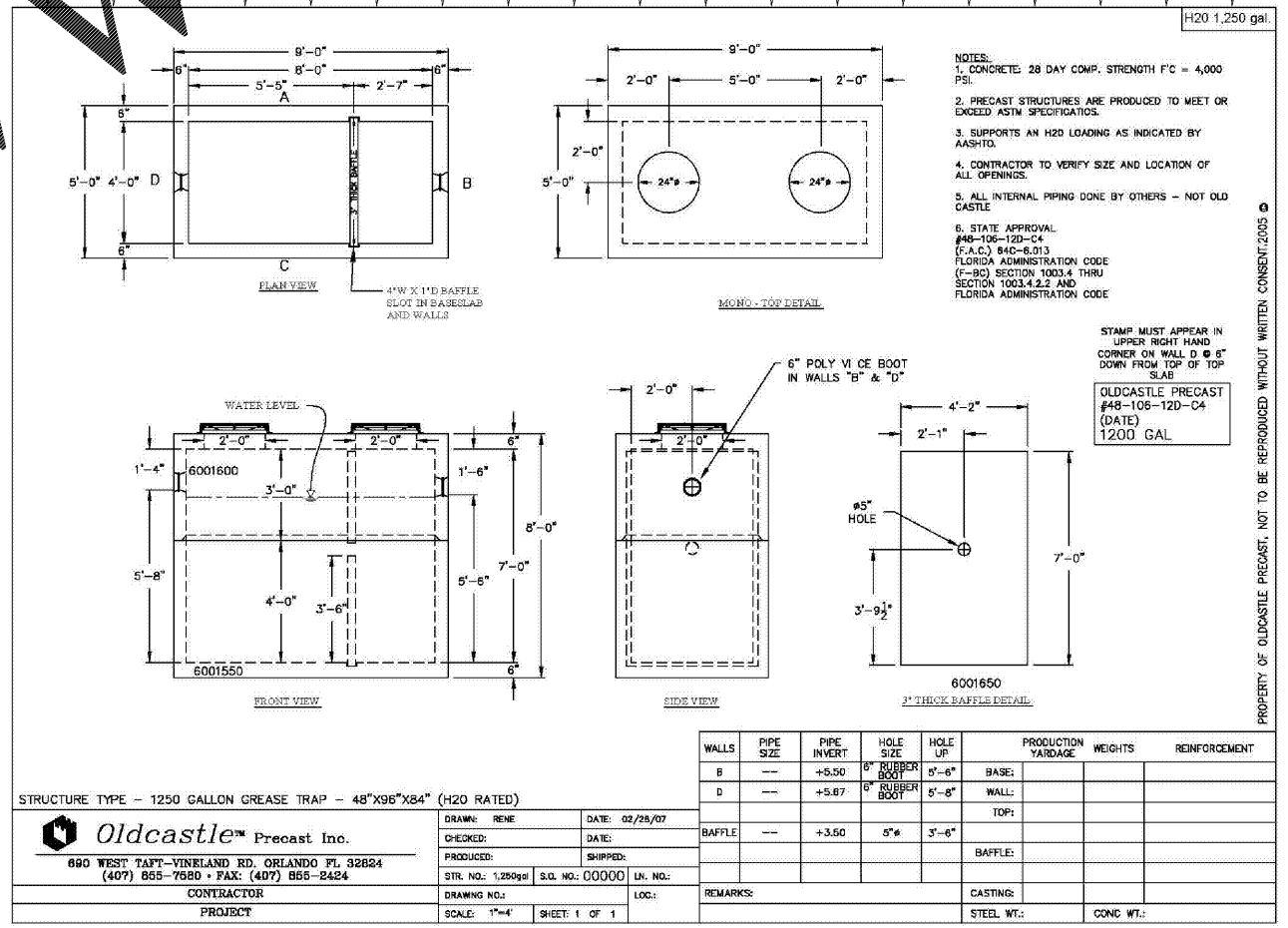
- COMPONENTS OF THE POTABLE WATER SYSTEM SHALL COMPLY WITH THE LEAD FREE REQUIREMENTS AS NOTED IN SECTION 1417 OF THE SAFE DRINKING WATER ACT.
- INSULATION:
INSULATE ALL DOMESTIC WATER PIPING AND ALL HORIZONTAL WASTE PIPING ABOVE CEILINGS WITH INSULATION WHICH MEETS OR EXCEEDS 25/50 RATINGS.
DOMESTIC COLD WATER PIPING SHALL BE COVERED WITH 1" THICK GLASSFIBER WATER PIPE INSULATION WITH VAPOR BARRIER AND ALL SERVICE JACKET. DOMESTIC HOT WATER PIPING LESS THAN 1-1/2" DIA. SHALL BE COVERED WITH 1" THICK GLASSFIBER WATER PIPE INSULATION WITH VAPOR BARRIER AND ALL SERVICE JACKET. DOMESTIC HOT WATER PIPING 1-1/2" DIA. TO 4" DIA. SHALL BE COVERED WITH 1-1/2" THICK GLASSFIBER WATER PIPE INSULATION WITH VAPOR BARRIER AND ALL SERVICE JACKET.
CONTRACTOR MAY PROVIDE PRE-FORMED PIPE INSULATION OF CLOSED CELL ELASTOMERIC FOAM.
HORIZONTAL WASTE PIPING SHALL BE COVERED WITH 1" THICK GLASSFIBER INSULATION WITH VAPOR BARRIER AND ALL SERVICE JACKET.
GLASSFIBER INSULATION SHALL BE OF THE TYPE HAVING A 4.0 LB DENSITY AND A K-FACTOR OF 0.25.
ALL EXPOSED AND CONCEALED INSULATED PIPING TO HAVE AN ALL-SERVICE JACKET SIMILAR TO OWENS-CORNING FIBERGLAS ASJ26 WITH SELF SEALING LAP AND JOINT SEALING STRIPS.
- WATERHAMMER ARRESTORS SHALL BE PROVIDED ON ALL HOT AND COLD WATER LINES, AT INDIVIDUAL FIXTURES, AND OTHER SUCH LOCATIONS TO BRING WATER SYSTEM IN CONFORMANCE WITH PLUMBING AND DRAINAGE INSTITUTE STANDARDS.
IN LIEU OF MANUFACTURED WATERHAMMER ARRESTORS CONTRACTOR MAY PROVIDE 12" HIGH AIR CHAMBERS IF ALLOWED BY LOCAL CODE.
- PLUMBING SPECIALTIES
13.1 HUB DRAINS SHALL BE CAST IRON FUNNEL DRAIN WITH STRAINER AS MANUFACTURED BY "WADE" OR APPROVED EQUAL OR PVC WHERE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION.
13.2 CLEANOUTS: WALL CLEANOUTS SHALL HAVE STAINLESS STEEL COVERS AS MANUFACTURED BY "WADE" OR APPROVED EQUAL. FLOOR CLEANOUTS SHALL HAVE SATIN FINISH NICKEL TOP, IN FINISHED AREAS, AND SATIN BRONZE CAP IN AREAS WHICH ARE NOT FINISHED. CLEANOUTS SHALL BE MANUFACTURED BY "WADE" OR APPROVED EQUAL.
13.3 FIXTURES: PLUMBING FIXTURES SHALL BE AS SPECIFIED ON THESE PLANS OR ON THE ARCHITECTURAL PLANS. ALL FIXTURES SHOULD MEET ADA REQUIREMENTS WHERE APPLICABLE. FIXTURES SHOULD BE OF THE HIGHEST QUALITY BY "AMERICAN STANDARD", KOHLER" OR APPROVED EQUAL.
13.4 WATER HEATERS: IF NEW WATER HEATER(S) ARE TO BE INSTALLED THEY SHALL BE AS SPECIFIED ON THE PLANS, AND SHALL BE OF COMMERCIAL GRADE, AND AGA APPROVED IF GAS FIRED AND UL APPROVED IF ELECTRIC. HEATERS SHALL HAVE A 150 PSI WORKING PRESSURE RATING. WATER HEATER INSTALLATION MANUALS SHALL BE GIVEN TO THE OWNER.
- EXECUTION
14.1 PIPING INSTALLATION:
EXCEPT AS OTHERWISE INDICATED, PROVIDE FACTORY-FABRICATED HANGER & SUPPORTS COMPLYING WITH MSS SP-58. HANGERS AND SUPPORTS SELECTED BY INSTALLER TO SUIT FIELD CONDITIONS SHALL COMPLY WITH MANUFACTURERS PUBLISHED PRODUCT INFORMATION.
PIPE TO BE SUPPORTED SECURELY FROM HANGERS AS FOLLOWS:
PIPE HANGERS TO BE SUPPORTED FROM STRUCTURAL STEEL BEAMS BY MEANS OF BEAM CLAMPS. HANGERS ARE NOT TO BE SUPPORTED FROM STEEL FLOOR AND/OR ROOF DECKING.
CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF ANY REQUIRED AUXILIARY STEEL FOR SUPPORT OF HANGERS.
14.2 DRAIN, WASTE AND VENT
CAST IRON PIPE MUST HAVE HANGERS THAT ARE 10 FEET OR GREATER MAXIMUM, WITH A MINIMUM OF ONE HANGER FOR EACH SECTION OF PIPE, AND A CHANGE IN DIRECTION.
PVC PIPE SHALL BE SUPPORTED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
THE BASE OF EACH RISER OR STACK SHALL BE SUPPORTED AT EACH FLOOR AND AT THE ROOF, IF APPROPRIATE.
ALL HORIZONTAL DRAINAGE AND VENT PIPING SHALL RUN AT A MINIMUM OF 1/4" PER LINEAR FOOT IN THE DIRECTION OF FLOW FOR DRAINS AND AGAINST THE FLOW OF VENT GASSES. NO FIXTURE SHALL HAVE A S-TRAP OR BE DOUBLE TRAPPED.
CHANGES IN DIRECTION OR CHANGE IN PIPE SIZING SHALL BE MADE WITH APPROPRIATE FITTINGS INCLUDING RANGES.
SLIP JOINT FITTINGS SHALL BE PERMITTED ONLY ON TRAP CONNECTIONS.
14.3 DOMESTIC WATER PIPING
HORIZONTAL PIPING SHALL BE SUPPORTED FROM STRUCTURE ABOVE AS REQUIRED BY LOCAL PLUMBING CODE, OR AT A MINIMUM AS FOLLOWS:
1/2" COPPER TUBE - 5'-0"
3/4" & 1" COPPER TUBE - 6'-0"
1-1/2" & 2" COPPER TUBE - 8'-0"
WATER LINES SHALL RUN PARALLEL OR PERPENDICULAR TO THE LINES OF THE BUILDING.
PROVIDE FITTINGS AT EACH CHANGE IN DIRECTION OR CHANGE IN PIPE SIZE
PROPER ALLOWANCE SHALL BE MADE FOR EXPANSION, AND ALL BRANCHES SHALL BE LOCKED AS MAY BE NECESSARY TO PREVENT NOISE OR VIBRATION.
RUN ALL DOMESTIC WATER PIPING AS HIGH AS POSSIBLE. DO NOT HANG OR SUPPORT OTHER EQUIPMENT OR PIPING FROM WATER LINES. SEPARATE HOT AND COLD WATER LINES A MINIMUM OF SIX (6) INCHES.
PROVIDE SHUT OFF VALVE AT CONNECTION TO EACH FIXTURE. LOCATE VALVES SO AS TO BE ACCESSIBLE AND SO THAT SEPARATE SUPPORT CAN BE PROVIDED WHEN NECESSARY. DO NOT INSTALL VALVES TO PIPING OF DISSIMILAR COMPOSITION WITHOUT AN APPROVED DIELECTRIC FITTING
- ALL DRAINS SHALL BE PROVIDED WITH DEEP SEAL TRAP.

PLUMBING SPECIFICATIONS

- THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED TO PERFORM HIS WORK. STALLED CUTTING AND PATCHING SHALL CONFORM TO RELEVANT "GENERAL CONDITIONS" SPECIFICATIONS.
- IF REQUIRED, THIS CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATION AND BACKFILL OF TRENCHES AND ANY CONCRETE SLAB REPLACEMENT.
- FLASH VENT PIPES PASSING THROUGH ROOF WITH LEAD ROOF FLASHING CONSTRUCTED OF NUMBER 4 SHEET LEAD, WITH BASE EXTENDING NO LESS THAN 12 INCHES ON EACH SIDE OF VENT. THE VERTICAL PORTION OF FLASHING SHALL EXTEND UPWARD THE ENTIRE LENGTH OF THE PIPE AND BE TURNED DOWN INSIDE THE PIPE.
MINIMUM VENT THRU THE ROOF SHALL BE 4".
- THIS CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE OWNER AND/OR THE LOCAL UTILITY FOR INSTALLATION OF REQUIRED WATER METER. THIS INCLUDES PURCHASE OF REQUIRED METER, AND INSTALLATION OF SAME IN LOCATION DESIGNATED BY THE OWNER/ARCHITECT/UTILITY.
THIS CONTRACTOR SHALL EXTEND DOMESTIC WATER LINE FROM METER LOCATION TO THE LEASED PREMISE. ROUTING OF WATER LINE THROUGH ANY COMMON AREA IS SUBJECT TO THE APPROVAL OF THE LANDLORD.
THIS CONTRACTOR SHALL PAY ALL FEES REQUIRED, FOR INSTALLATION OF WATER SERVICE AND METER.
- TEST AND STERILIZE ALL PLUMBING PIPING INCLUDING DRAINS, WASTE VENTS AND WATER PIPING PER LOCAL CODES AND REGULATIONS.
- MATERIALS, EQUIPMENT, AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR FROM THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTORS EXPENSE.
FOR THE SAME PERIOD, THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY THEM.

NATURAL GAS PIPING

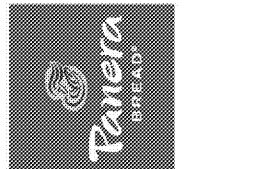
- ALL WORK INCLUDING INSTALLATION, EQUIPMENT, FIXTURES AND PIPING SHALL BE PERFORMED IN STRICT CONFORMANCE WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS SET FORTH BY THE AHJ (AUTHORITY HAVING JURISDICTION), AND THE OWNER'S MINIMUM REQUIREMENTS AS STATED HEREIN, OR OTHERWISE INDICATED BY THE OWNER.
- NATURAL GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL WITH THREADED JOINTS AND MALLEABLE IRON FITTINGS.
- PIPE SEALANT SHALL BE APPLIED TO THE MALE THREADS ONLY AND SHALL BE CHEMICALLY RESISTANT TO NATURAL GAS.
- CONTRACTOR SHALL REMOVE CUTTING AND THREADING BURRS AND SHALL ENSURE THAT THE ENTIRE PIPE IS FREE OF DEBRIS AND BLOCKAGES PRIOR TO PIPING ASSEMBLY.
- CONTRACTOR SHALL PLUG EACH GAS OUTLET, INCLUDING VALVES, WITH A THREADED PLUG OR CAP IMMEDIATELY UPON INSTALLATION. CAP OR PLUG SHALL REMAIN IN PLACE UNTIL CONTINUING PIPING OR CONNECTIONS ARE MADE TO VALVE(S) OR EQUIPMENT
- THE GAS PIPING SYSTEM SHALL BE GROUNDED ELECTRICALLY AND CONTINUOUSLY. BOND PIPING TIGHTLY TO GROUNDING CONNECTORS. GROUNDING OF PIPING SHALL BE PER THE IN COMPLIANCE WITH ALL APPLICABLE CODES.
- PROVIDE FULL SIZE DIRT LEG, GAS COCK AND UNION IN THE SUPPLY PIPING AT ALL CONNECTIONS TO GAS FIRED EQUIPMENT AND AS INDICATED ON THE DRAWINGS. INSTALL FULL SIZE DIRT LEG AT ALL LOW POINTS IN THE SYSTEM.
- ROOF MOUNTED GAS PIPING SHALL BE SUPPORTED ON 4" X 4" X 24" LONG GALVANIZED WOOD BLOCKING WITH 1" GALVANIZED STRAP ANCHOR AND ISOLATION PADDING BELOW BLOCKING.
- GAS PIPING SHALL BE SUPPORTED AT ALL VALVES, FITTINGS, CHANGES IN DIRECTION AND AT 6' O.C. (1/2" PIPE), 8' O.C. (3/4" OR 1" PIPE), AND 10' O.C. (1-1/2" OR LARGER PIPE) AND SHALL NOT DEFLECT WHEN VALVES ARE OPENED OR CLOSED.
- CONTRACTOR SHALL TEST AND LEAK CHECK THE GAS PIPING SYSTEM IN ACCORDANCE WITH LOCAL CODES AND LOCAL AUTHORITY REQUIREMENTS PRIOR TO CONNECTION TO THE GAS METER OR TO GAS PIPING SYSTEM.
- ALL GAS PIPING SHALL BE SIZED IN ACCORDANCE WITH LOCAL CODE, AND SHALL BE INSTALLED IN CONFORMANCE WITH ALL LOCAL CODES WHICH MAY DICTATE PIPE LABELING OR TESTING.
BUSHINGS ARE PROHIBITED. BELL REDUCERS SHALL BE INSTALLED AT REDUCTION IN PIPE SIZE. GROUND JOINTS, SHUT OFF VALVES SHALL BE INSTALLED AT ALL GAS APPLIANCES. FLEXIBLE HOSES ARE PROHIBITED ON STATIONARY APPLIANCES AND SHALL ONLY BE INSTALLED ON FULLY PORTABLE EQUIPMENT. A RESTRAINT CABLE SHALL BE ATTACHED TO ANY FLEXIBLE CONNECTOR AND THE FLOOR SUCH THAT THE FLEXIBLE CONNECTOR SHALL NOT BE OVER EXTENDED.
- GAS VALVES:
GAS COCKS 2" AND SMALLER SHALL BE 150 PSI NON-SHOCK WOG, BRONZE STRAIGHTWAY COCK, FLAT OR SQUARE HEAD WITH THREADED ENDS.
PRESSURE REGULATING VALVES SHALL BE SINGLE STAGE, STEEL JACKETED, CORROSION-RESISTANT, GAS PRESSURE REGULATORS WITH ATMOSPHERIC VENT, ELEVATION COMPENSATOR, THREADED ENDS, PROPER SPRING FOR INLET AND OUTLET GAS PRESSURES AND SIZED FOR SPECIFIC GRAVITY AND VOLUME OF FLOW AS INDICATED AND/OR REQUIRED.



1 GREASE INTERCEPTOR DETAIL
SCALE: NTS

Bakery-Cafe:
#6119
William J. Akers
383 Maplewood
St. Louis, MO 63119
Phone (314) 472-1782
Fax (314) 472-1782
Engineering Consultant

Bakery Cafe #6119
6351 MANATEE AVE. W.,
BRADENTON, FL 34209



| NO. | DESCRIPTION | DATE |
|-----|------------------------------|----------|
| 1 | Building Department Comments | 12-11-18 |
| | | |
| | | |
| | | |

PLUMBING SPECIFICATIONS
Project Number: Sheet Number:
449-18 Drawn: CSH Checked: GSH
Issue Date: 10/01/18
DPM: DM: CPM: BS: DM: ME

P501