GENERAL HVAC NOTES

1. SCOPE OF WORK

   A. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.

   B. ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE 2009 INTERNATIONAL MECHANICAL CODE, ALL STATE AND LOCAL CODES AND ALL OTHER REGULATIONS GOVERNING WORK OF THIS NATURE.

   C. THE CONTRACTOR SHALL, BEFORE SUBMITTING ANY PROPOSAL, EXAMINE THE PROPOSED SITE AND SHALL DETERMINE FOR HIMSELF THE CONDITIONS THAT MAY EFFECT THE WORK. NO ALLOWANCE SHALL BE MADE IF THE CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS.

   D. ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED EQUAL" BY THE ENGINEER OR ARCHITECT.

2. PERMITS

   A. THE CONTRACTOR SHALL SECURE ALL PERMITS OR APPLICATIONS AND PAY ANY AND ALL FEES.

3. SHOP DRAWINGS

   A. SUBMIT MATERIAL LIST AND SHOP DRAWINGS FOR MAJOR EQUIPMENT TO THE ACHITECT/ENGINEER FOR APPROVAL. THE CONTRACTOR SHALL SUBMIT FIVE SETS OF SHOP DRAWINGS AND THEY SHALL BE CLEARLY LABELED.

4. FLEXIBLE TYPE DUCT

   A. SHALL BE OF TWO ELEMENT SPIRAL CONSTRUCTION COMPOSED OF A CORROSION RESISTANT METAL SUPPORTING SPIRAL AND COATED FABRIC WITH A MINERIAL BASE. FLEXIBLE DUCT CONNECTORS SHALL BE LISTED BY U.L., CLASS 1 DUCTS, AND SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50.

   B. USE OF FLEXIBLE DUCTWORK SHALL BE LIMITED TO NO MORE THAN 14 LINEAR FEET PER RUN.

   C. CONTRACTOR SHALL BE CAREFUL SO AS NOT TO KINK OR COLLAPSE FLEXIBLE DUCT.

5. REFRIGERANT PIPING

   A. CONTRACTOR SHALL PROVIDE AND INSTALL REFRIGERANT PIPING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND IN SUCH A WAY AS TO BE INCONSPICIOUS AND FREE FROM ANY POSSIBLE CONDENSATION. INSULATE REFRIGERANT LINES WITH ARMOURFLEX TYPE INSULATION.

   B. SHALL BE TYPE "K" COPPER TUBING, WITH WROUGHT COPPER SOLDER TYPE FITTINGS SUITABLE FOR CONNECTION WITH SILVER SOLDER.

6. DUCTWORK

   A. THE DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "SMACNA" APPLICABLE MANUALS. ALL DUCTWORK SHALL BE THE LOW VELOCITY TYPE, UNLESS SPECIFIED OTHERWISE.

   B. CONTRACTOR SHALL PROVIDE AND INSTALL APPROVED FIRE DAMPERS AND ACCESS PANELS IN ANY AND ALL DUCTWORK WHICH PENETRATES A HORIZONTAL OR VERTICAL FIRE PARTITION, OR AS OTHERWISE SHOWN ON DRAWINGS.

   C. ALL BRANCH DUCTS TO HAVE VOLUME DAMPERS.

   D. SMOOTH TURN RADIUS DUCTWORK OR TURNING VANES SHALL BE USED THROUGHOUT WHERE FLOW EXCEEDS 150 CFM.

   E. ALL DUCT JOINTS TO BE SEALED IN ACCORDANCE WITH "SMACNA" STANDARDS AND ACCEPTED GOOD PRACTICE.

   F. ALL DUCT DIMENSIONS SHOWN ARE NET INSIDE VALUES. DIMENSIONS MAY BE CHANGED SO LONG AS THE NET FREE FACE AREA IS MAINTAINED.

   G. ALL CONCEALED DUCTWORK SHALL BE INSULATED WITH 1-1/2" FIBERGLASS INSULATING BLANKET WITH ALUMINUM FOIL FACING.

   H. ALL SUPPLY AND RETURN DUCTWORK 15 FEET DOWNSTREAM OF THE HVAC UNIT SHALL BE INTERNALLY LINED WITH A 1/2" ACOUSTICAL DUCT LINER.

7. DRAINAGE PIPING (CONDENSATE)

   A. SHALL BE SCHEDULE 40 PVC PIPE WITH SOLVENT JOINTS. PITCH HORIZONTAL LINES 1" IN 10'-0". CONDENSATE DRAINS SHALL BE ROUTED TO FLOOR DRAIN OR INDIRECT WASTE DRAIN.

8. HVAC CONTROLS

   A. CONTRACTOR TO SUPPLY AND INSTALL ALL CONTROL WIRING AND THERMOSTATS AS REQUIRED.

9. ELECTRICAL

   A. CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR FOR LOCATION OF WIRING FOR EACH HVAC UNIT.

10. HANGERS & SUPPORTS

   A. ALL DUCTWORK SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. SPACING OF DUCT SUPPORTS SHALL NOT EXCEED 10 FEET.

   B. ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE OR METAL STRAP TO SUPPORT PIPES WILL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL NOT EXCEED 8 FEET FOR ALL PIPING. PLASTIC PIPING TO BE SUPPORTED EVERY 4 FEET.

11. MISCELLANEOUS

   A. ALL EXTERIOR OPENINGS TO BE PROPERLY CAULKED AND SEALED WITH A SEALANT OF HIGH QUALITY AND LONG LIFE, TO PREVENT INFILTRATION OF OUTSIDE AIR INTO CONDITIONED SPACE.

   B. COORDINATE INSTALLATION OF ALL ROOF FLASHING AT ROOF PENETRATION.

   C. DO NOT SCALE THIS DRAWING FOR EXACT DIMENSIONS. VERIFY ALL FIGURES, CONDITIONS, AND DIMENSIONS AT THE JOB SITE.

   D. THE MECHANICAL PLANS ARE INTENDED TO BE DIAGRAMMATIC AND ARE BASED ON ONE MANUFACTURE'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL THE DETAILS OF THE EQUIPMENT. THE CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO ENSURE THAT THE EQUIPMENT WILL FIT IN THE AVAILABLE SPACE.

12. TESTING AND BALANCING

   A. THE HVAC SYSTEM SHALL BE TESTED AND AND BALANCED BY AN INDEPENDENT AGENCY, UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. A SEALED TYPE WRITTEN REPORT SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL.

13. GUARANTEE

   A. MATERIALS, EQUIPMENT AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE(1) YEAR FROM DATE OF ACCEPTANCE. DEFECTS WHICH APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THIS CONTRACTOR'S EXPENSE.

   B. FOR THE SAME PERIOD, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PREMISES CAUSED BY DEFECTS IN WORKMANSHIP OR IN THE WORK OR EQUIPMENT FURNISHED AND/OR INSTALLED BY HIM.

DRAWING LIST

MECHANICAL LEGEND

AP	ACCESS PANEL
ACD	ACCESS DOOR
ADR	AUTOMATIC DAMPER
BDD	BACK DRAFT DAMPER
CS	CHILLED WATER SUPPLY
CR	CHILLED WATER RETURN
CD	CEILING DIFFUSER
DBR	DOWN BLOW REGISTER
DN	DOWN
DL	DOOR LOUVER
EG	EXHAUST GRILLE
ER	EXHAUST REGISTER
EF	EXHAUST FAN
FDR	FIRE DAMPER
HS	HOT WATER HEATING SUPPLY
HR	HOT WATER HEATING RETURN
LID	LINEAR DIFFUSER
LAD	LOUVER/AUTO DAMPER
LMD	LOUVER/MANUAL DAMPER
MVD	MANUAL VOLUME DAMPER
OAI	OUTSIDE AIR INTAKE
RG	RETURN GRILLE
RR	RETURN REGISTER
SG	SUPPLY GRILLE
SF	SUPPLY FAN
SR	SUPPLY REGISTER
SD	SPLITTER DAMPER
SC	STEAM COIL
UNO	UNLESS NOTED OTHERWISE
WMS	WIRE MESH SCREEN

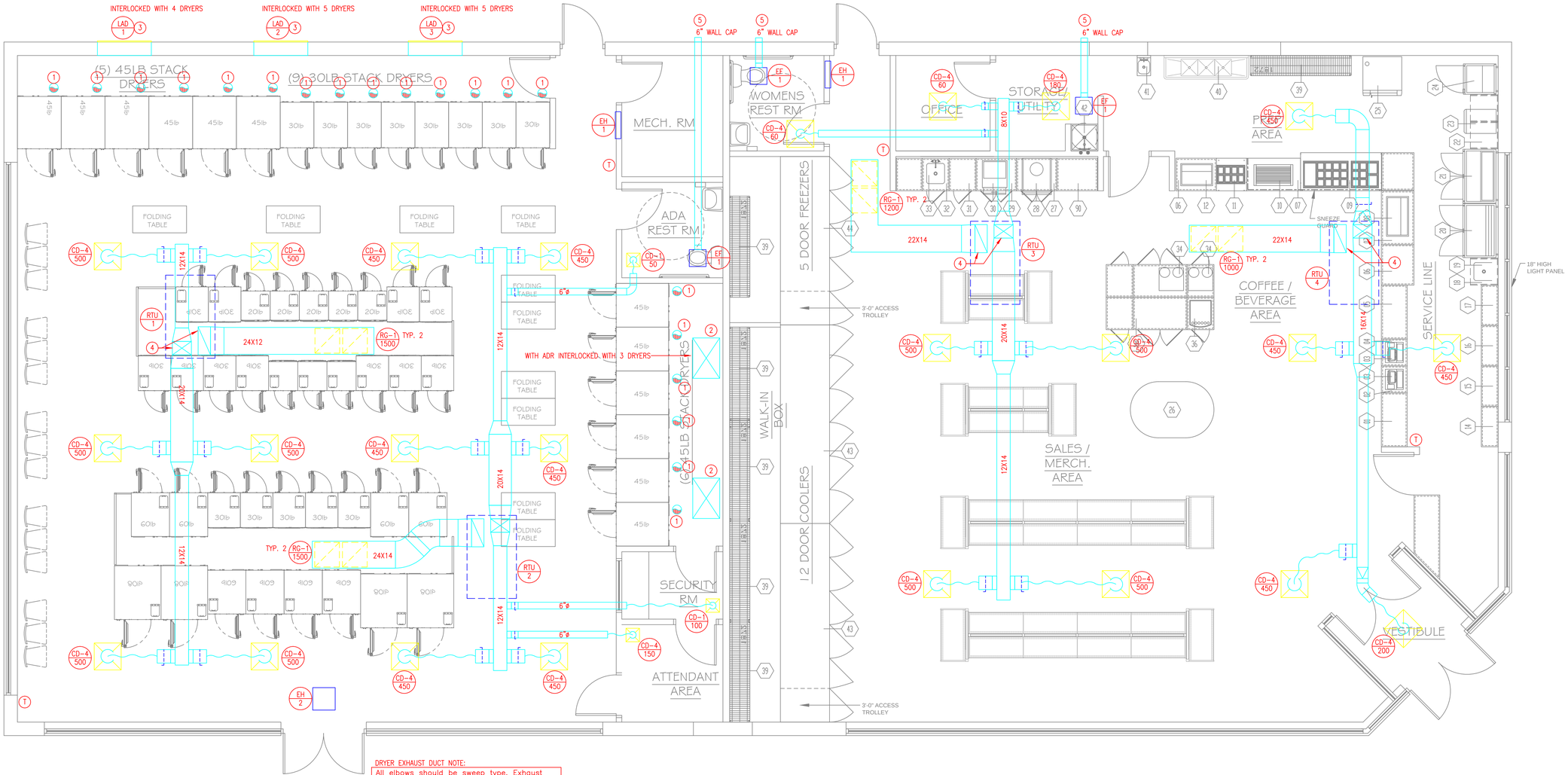
S	STEAM SUPPLY
CDS	CONDENSER WATER SUPPLY
CDR	CONDENSER WATER RETURN
HS	HOT WATER HEATING SUPPLY
HR	HOT WATER HEATING RETURN
CS	CHILLED WATER SUPPLY
CR	CHILLED WATER RETURN
	GATE VALVE
	CHECK VALVE
	RELIEF VALVE
	AUTOMATIC THREE-WAY VALVE
	GLOBE VALVE
	PRESSURE REDUCING VALVE
	AUTOMATIC TWO-WAY VALVE
	PLUG OR BALL VALVE
	BALANCING VALVE
	STRAINER
	UNION
T	THERMOSTAT
H	HUMIDISTAT
	THERMOMETER
	PRESSURE GAUGE W/GAUGE COCK
AAV	AUTOMATIC AIR VENT
	FLEXIBLE CONNECTION
	NEW CONNECTION TO EXISTING
	DUCT REDUCER

KEYED SHEET NOTES - HVAC

1. 8" DRYER EXHAUST DUCT UP THRU ROOF. DUCT MATERIAL, CONSTRUCTION AND ROOF TERMINATION PER DRYER MFG. REQUIREMENTS
3. 48X48 LOUVER AND DUCT OPEN TO DRYER PLENUM WITH AUTOMATIC DAMPER INTERLOCKED WITH DRYER OPERATION
3. 36X24 DUCT WITH AUTOMATIC DAMPER OPEN TO DRYER PLENUM UP THRU ROOF TO GOOSENECK
4. SUPPLY AND RETURN AIR DUCT UP THRU ROOF TO UNIT. DUCT TO BE FULL SIZE OF UNIT OPENING. PROVIDE FLEX CONNECTION
5. 6" WALL CAP ON DUCT THRU WALL FROM EXHAUST FAN.

HVAC COVER SHEET

MC



DRYER EXHAUST DUCT NOTE:

All elbows should be sweep type. Exhaust ducts must be assembled so the interior surfaces are smooth, so the joints do not permit the accumulation of lint. DO NOT use sheet metal screws or fasteners on exhaust pipe joints which extend into the duct and catch lint.

FIRST FLOOR HVAC PLAN

1/4"=1'-0"

HVAC FLOOR PLAN

M1

PACKAGED AIR CONDITIONING UNIT SCHEDULE

SYMBOL: AC

NO.	COOL CAPY. MBH	HEAT CAPY. MBH	CFM	ESP.	H.P.	O.A. CFM (MIN.)	ELECTRICAL			REMARKS
							VOLTS	PHASE	HERTZ	
1	90.0	120.0	3000	.5	2	150	208	3	60	CARRIER 48TCEA08 (1)(2)(3)(4)(5)(6)
2	90.0	120.0	3000	.5	2	150	208	3	60	CARRIER 48TCEA08 (1)(2)(3)(4)(5)(6)
3	72.0	120.0	2400	.5	2	150	208	3	60	CARRIER 48TCEA07 (1)(2)(3)(4)(5)(6)
4	60.0	120.0	2000	.5	1.5	180	208	3	60	CARRIER 48TCEA06 (1)(2)(3)(4)(5)(6)

(1) PROVIDE ROOF CURB
(2) PROVIDE GAS FIRED HEATING
(3) PROVIDE ECONOMIZER WITH BUILT-IN RELIEF
(4) PROVIDE PROGRAMMABLE THERMOSTAT
(5) PROVIDE HOT GAS REHEAT OPTION
(6) PROVIDE SMOKE DETECTOR

ELECTRIC HEATER SCHEDULE

SYMBOL: EH

NO.	HEATING CAPACITY KW	TYPE	ELECTRICAL			MANUFACTURER MODEL NUMBER	REMARKS
			VOLTS	PHASE	HERTZ		
1	2.0	WALL HEATER	208	1	60	QMARK SERIES AWH	(1)
2	4.0	CLG. HEATER	208	1	60	QMARK SERIES	(1)

(1) WITH INTERGAL VANDAL PROOF THERMOSTAT

SUPPLY/EXHAUST FAN SCHEDULE

SYMBOL: EF SF

NO.	CFM	S.P.	RPM	H.P.	TYPE	DRIVE	ELECTRICAL			MANUFACTURER MODEL NUMBER	NOTES
							VOLTS	PHASE	HERTZ		
1	100	.5	1050	60 WATTS	CLG. CENTRIFUGAL	BELT	115	1	60	COOK GC-240 OR EQUAL	(1)(2)

NOTES:
(1) PROVIDE SOLID STATE CONTROL FOR BALANCING
(2) PROVIDE BACK DRAFT DAMPER

DIFFUSER SCHEDULE

SYMBOL: D-# CFM

MARK	CFM RANGE	SUPPLY RETURN EXHAUST	TYPE	SIZE		MAX. S.P. IN W.G.	MAX. N.C.	MANUFACTURER MODEL NUMBER
				FACE	NECK			
1	0 – 150	S	LAY-IN	24X24	6"ø	0.08	20	TITUS OMNI
2	151-250	S	LAY-IN	24X24	8"ø	0.08	20	TITUS OMNI
3	251-380	S	LAY-IN	24X24	10"ø	0.08	20	TITUS OMNI
4	381-650	S	LAY-IN	24X24	12"ø	0.08	20	TITUS OMNI

RETURN GRILLE SCHEDULE

SYMBOL: RG-# CFM

MARK	CFM RANGE	SUPPLY RETURN EXHAUST	TYPE	SIZE		MAX. S.P. IN W.G.	MAX. N.C.	MANUFACTURER MODEL NUMBER
				FACE	NECK			
1	0-1800	R	SURFACE	22X22	20X20	0.08	20	TITUS OMNI

LOUVER SCHEDULE

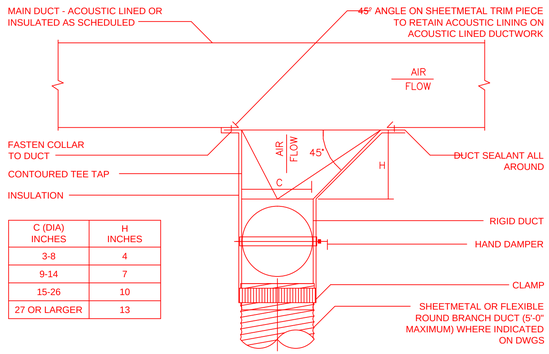
SYMBOL: LAD-# CFM

EQUIPMENT NO.	SERVICE	WIDTH	HEIGHT	THICKNESS OF WALL	MATERIAL	SCREEN	MANUFACTURER & MODEL	OPTIONS-ACCESSORIES
LAD-1	DRYER COMB AIR	48	48	0.125"	ALUM.	INSECT	RUSKIN ELF375DXH	DAMPER INTERLOCKED TO DRYERS
LAD-2	DRYER COMB AIR	48	48	0.125"	ALUM.	INSECT	RUSKIN ELF375DXH	DAMPER INTERLOCKED TO DRYERS

DUCT CONSTRUCTION SCHEDULE

DUCT SYSTEM	SMACNA PRESSURE CLASS	SMACNA PRESSURE CLASS	DUCT MATERIAL	JOINING METHOD	INSULATION TYPE	INSULATION THICKNESS
SUPPLY	+ 1 INCH	B	GALV. STL.	DUCTMATE RECT	RIDGED FIBERGLASS W/ FSK JACKET	1/2"
EXHAUST	– 1 INCH	B	GALV. STL.	DUCTMATE RECT	NONE	N/A

NOTE:
EXISTING DUCTWORK REQUIRING DEMOLITION SHALL BE TERMINATED PROPERLY IN ACCORDANCE WITH SMACNA STDS. FOR +2 OR –2 PRESSURE RATING.

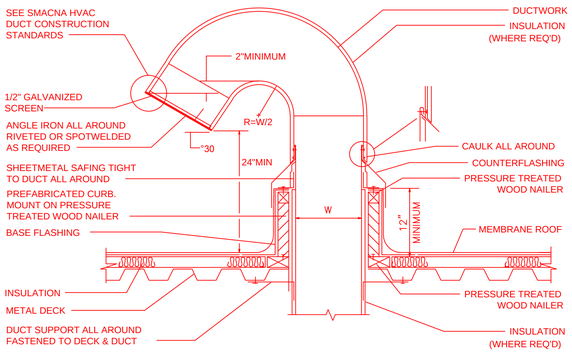


C (DIA) INCHES	H INCHES
3-8	4
9-14	7
15-26	10
27 OR LARGER	13

1 DETAIL - CONTOURED TEE TAP BRANCH DUCT TAKE - OFF

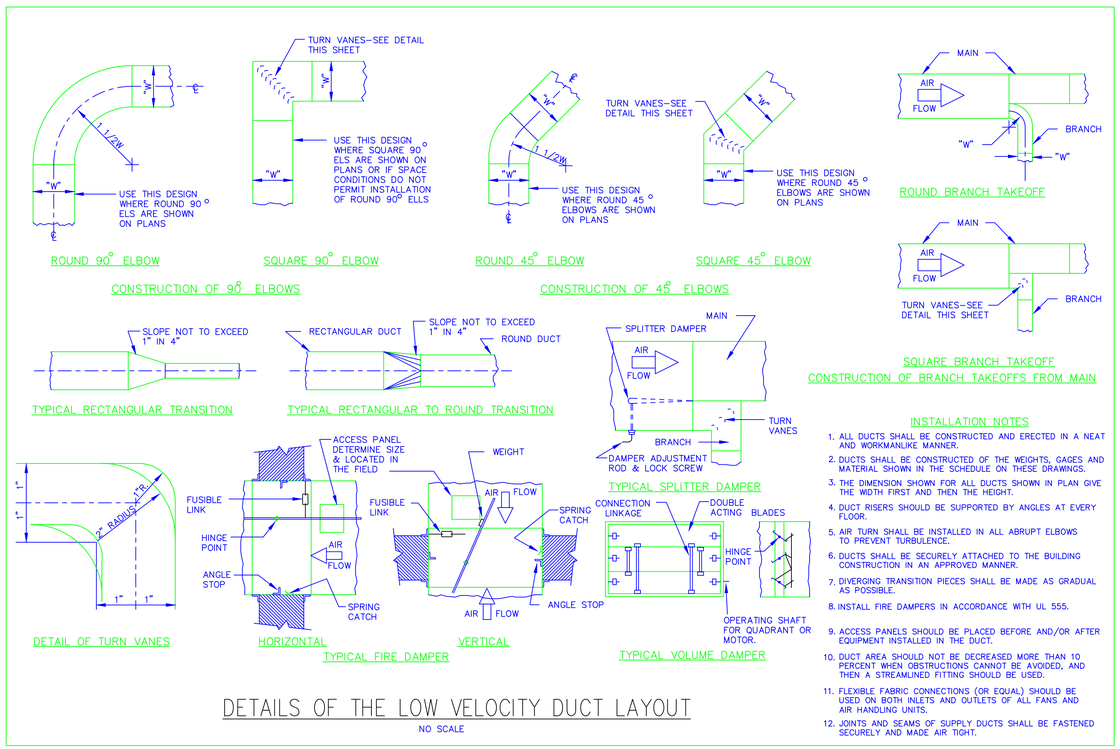
NOTE: NO FLEX DUCT ALLOWED IN AREAS OF EXPOSED DUCTWORK

NOT TO SCALE



2 DETAIL - DUCT PENETRATION-GOOSENECK

NOT TO SCALE



DETAILS OF THE LOW VELOCITY DUCT LAYOUT

NO SCALE

INSTALLATION NOTES

1. ALL DUCTS SHALL BE CONSTRUCTED AND ERECTED IN A NEAT AND WORKMANLIKE MANNER.
2. DUCTS SHALL BE CONSTRUCTED OF THE WEIGHTS, GAGES AND MATERIAL SHOWN IN THE SCHEDULE ON THESE DRAWINGS.
3. THE DIMENSION SHOWN FOR ALL DUCTS SHOWN IN PLAN GIVE THE WIDTH FIRST AND THEN THE HEIGHT.
4. DUCT RISERS SHOULD BE SUPPORTED BY ANGLES AT EVERY FLOOR.
5. AIR TURN SHALL BE INSTALLED IN ALL ABRUPT ELBOWS TO PREVENT TURBULENCE.
6. DUCTS SHALL BE SECURELY ATTACHED TO THE BUILDING CONSTRUCTION IN AN APPROVED MANNER.
7. DIVERGING TRANSITION PIECES SHALL BE MADE AS GRADUAL AS POSSIBLE.
8. INSTALL FIRE DAMPERS IN ACCORDANCE WITH UL 555.
9. ACCESS PANELS SHOULD BE PLACED BEFORE AND/OR AFTER EQUIPMENT INSTALLED IN THE DUCT.
10. DUCT AREA SHOULD NOT BE DECREASED MORE THAN 10 PERCENT WHEN OBSTRUCTIONS CANNOT BE AVOIDED, AND THEN A STREAMLINED FITTING SHOULD BE USED.
11. FLEXIBLE FABRIC CONNECTIONS (OR EQUAL) SHOULD BE USED ON BOTH INLETS AND OUTLETS OF ALL FANS AND AIR HANDLING UNITS.
12. JOINTS AND SEAMS OF SUPPLY DUCTS SHALL BE FASTENED SECURELY AND MADE AIR TIGHT.

DUCT CONSTRUCTION MINIMUM SHEET METAL THICKNESSES

RECTANGULAR DUCTS

MAXIMUM SIZE (INCHES)	STEEL (MINIMUM THICKNESS, NOMINAL)	ALUMINUM (MINIMUM THICKNESS, NOMINAL)
THROUGH 12	0.022 INCH (26 GAGE, GALV.)	0.020 INCH (NO. 24 B&S GAGE)
13 THROUGH 30	0.028 INCH (24 GAGE, GALV.)	0.025 INCH (NO. 22 B&S GAGE)
31 THROUGH 54	0.034 INCH (22 GAGE, GALV.)	0.032 INCH (NO. 20 B&S GAGE)
55 THROUGH 84	0.040 INCH (20 GAGE, GALV.)	0.040 INCH (NO. 18 B&S GAGE)
OVER 84	0.052 INCH (18 GAGE, GALV.)	0.051 INCH (NO. 16 B&S GAGE)

ROUND DUCTS

MAXIMUM SIZE (INCHES)	SPIRAL SEAM DUCT STEEL (MINIMUM THICKNESS, NOMINAL)	LONGITUDINAL SEAM DUCT STEEL (MINIMUM THICKNESS, NOMINAL)	FITTINGS STEEL (MINIMUM THICKNESS, NOMINAL)
THROUGH 12	0.019 INCH (28 GAGE, GALV.)	0.022 INCH (26 GAGE, GALV.)	0.022 INCH (26 GAGE, GALV.)
13 THROUGH 18	0.022 INCH (26 GAGE, GALV.)	0.028 INCH (24 GAGE, GALV.)	0.028 INCH (24 GAGE, GALV.)
19 THROUGH 28	0.028 INCH (24 GAGE, GALV.)	0.034 INCH (22 GAGE, GALV.)	0.034 INCH (22 GAGE, GALV.)
29 THROUGH 36	0.034 INCH (22 GAGE, GALV.)	0.040 INCH (20 GAGE, GALV.)	0.040 INCH (20 GAGE, GALV.)
37 THROUGH 52	0.040 INCH (20 GAGE, GALV.)	0.052 INCH (18 GAGE, GALV.)	0.052 INCH (18 GAGE, GALV.)

PLUMBING ABBREVIATIONS

A	AIR
ACL	ABOVE CEILING LEVEL
AD	AREA DRAIN (EXPOSED TO RAIN)
AFF	ABOVE FINISHED FLOOR
AFR	ABOVE FIXTURE RIM
ARL	ABOVE ROOF LEVEL
BCL	BELOW CEILING LEVEL
BCT	BELOW COUNTER TOP
BFL	BELOW FLOOR LEVEL
BFP	BACKFLOW PREVENTER
BLJ	BELOW JOISTS
BP	BOOSTER PUMP
BWJ	BETWEEN JOISTS
BLR	BOILER (STEAM ONLY)
BWV	BACKWATER VALVE
C OR COND	CONDENSATE
CD	CONDENSATE DRAIN
CF	CHEMICAL FEED
CHWS/R	CHILLED WATER SUPPLY/RETURN
CP	CIRCULATOR PUMP
CS	CLINIC SINK
DCW/HW	DOMESTIC COLD WATER/HOT WATER (POTABLE)
DHWS/R	DOMESTIC HOT WATER SUPPLY/RETURN
DD	DECK DRAIN
DF	DRINKING FOUNTAIN
DFU	DRAIN FIXTURE UNIT
DP	DUPLEX PUMP
DR	DOOR
DSTP	DRY STANDPIPE
DV	DRY VENT
DVC	DRY VENT CONNECTION (ABOVE FIXTURE RIM LEVEL)
DWH	DOMESTIC WATER HEATER (POTABLE)
DWM	DISH WASHER MACHINE
E	EAST
(E)	EXISTING
EL	ELEVATION (STRUCTURAL HEIGHT)
EW	EYE WASH
EWC	ELECTRIC WATER COOLER
EXP	EXPANSION TANK
FAI	FRESH AIR INTAKE
FCO	FLOOR CLEANOUT
FCW	FILTERED COLD WATER
FD	FLOOR DRAIN (NOT EXPOSED TO RAIN)
FHC	FIRE HOSE CONNECTION
FND	FUNNEL DRAIN
FP	FIRE PUMP
FS	FLOOR SINK
FW	FIRE WATER
FWG	FOOD WASTE GRINDER
FT	FLOAT & THERMOSTATIC
FU	FIXTURE UNIT
GHC	GARDEN HOSE CONNECTION
GI	GREASE INTERCEPTOR
GD	GUTTER DRAIN
GWM	GLASS WASHER MACHINE
HCO	HORIZONTAL CLEANOUT
HI	HAIR INTERCEPTOR
HP	HIGH PRESSURE
HS	HAND SINK
HWG	HOT WATER GENERATOR (HYDRONIC SYSTEM)
HWS/R	HOT WATER SUPPLY/RETURN (HYDRONIC SYSTEM)
IB	INVERTED BUCKET
IPS	IRON PIPE SIZE
IKS	ISLAND KITCHEN SINK
IW	INDIRECT WASTE
IL	INTERMEDIATE LANDING
INV	INVERT
IWH	INSTANTANEOUS WATER HEATER
JP	JOCKEY PUMP
2KS	KITCHEN SINK (2 COMPARTMENT)
KS OR K	KITCHEN SINK
LAV OR L	LAVATORY
LP	LOW PRESSURE
LS	LEVEL SENSOR
LWM	LAUNDRY WASHER MACHINE
M	METER
MECH	MECHANICAL
MH	MANHOLE
MP	MEDIUM PRESSURE
MR	MOP RECEPTOR
MV	MIXING VALVE
N	NORTH
NG	NATURAL GAS
O	OXYGEN
O/H	OVERHEAD
OVF	OVERFLOW
PI	PRESSURE INDICATOR
PRV	PRESSURE REDUCING VALVE
PW	PURE WATER
RD	ROOF DRAIN
RH	RADIANT HEATER
RM	ROOM
RO	REVERSE OSMOSIS
RTC	RUNNING TRAP WITH CLEANOUT
RV	RELIEF VALVE
RWC	RAIN WATER CONDUCTOR
S	SOUTH OR STEAM
SAN	SANITARY/WASTE
SF	SQUARE FOOT
SFU	SUPPLY FIXTURE UNIT
SH OR S	SHOWER
SLV	SOLENOID VALVE
SP	SUMP PUMP OR SEWAGE PUMP
SS	SERVICE SINK OR LAUNDRY SINK OR STAINLESS STEEL
ST	STORM WATER
STK	STACK
STM	STEAM
SV	SAFETY VALVE
TD	TRENCH DRAIN OR THERMO DYNAMIC
TEA	THERMAL EXPANSION ABSORBER
TI	TEMPERATURE INDICATOR
TP	TRAP PRIMER
TS	TEMPERATURE SENSOR
T	TUB OR TRAP
U/G	UNDERGROUND
UR	URINAL
V	VACUUM
VB	VACUUM BREAKER
VBD	VALVE BOX AND DRAIN
VR	VENT RISER (DRY VENT)
VST	VENT STACK
VT	VENT
VTR	VENT THROUGH ROOF
W	WEST
WBP	WATER BOOSTER PUMP
WC OR W	WATER CLOSET
WCO	WALL CLEANOUT
WHA	WATER HAMMER ARRESTOR
WP	WHIRLPOOL
WTSP	WET STANDPIPE
YV	YOKE VENT
YVR	YOKE VENT RISER
ZV	ZONE VALVE

PLUMBING LEGEND

- BUTTERFLY VALVE
- ANGLE GLOBE VALVE
- SAFETY OR RELIEF VALVE
- GATE VALVE OR VALVE IN GENERAL
- BALL VALVE
- GLOBE VALVE
- BALANCING VALVE
- PRESSURE REDUCING VALVE (SPRING LOADED)
- PRESSURE REDUCING VALVE (PILOT TYPE)
- FLOOR/DECK OR AREA DRAIN
- FUNNEL DRAIN
- ROOF DRAIN
- 90 DEG. ELBOW FAR FLOW
- 90 DEG. ELBOW NEAR FLOW
- TEE NEAR FLOW
- TEE FAR FLOW
- PLUG VALVE
- BACKFLOW PREVENTER
- GARDEN HOSE/WASHDOWN OR FIRE DEP. HOSE CONNECTION
- COLD WATER
- DOMESTIC HOT WATER
- DOMESTIC HOT WATER RETURN
- SANITARY SEWER – UNDER GROUND/SLAB/FLOOR
- STORM WATER
- VENT PIPING
- FIRE PROTECTION PIPE
- GAS PIPE
- PIPE CLEANOUT (HORIZONTAL OR WALL)
- PIPE CLEANOUT (GRADE OR FLOOR)
- FUNNEL DRAIN
- REDUCER
- FLOOR DRAIN, AREA DRAIN OR FLOOR SINK
- TEMPERATURE INDICATOR
- PRESSURE INDICATOR
- VALVE BOX AND DRAIN
- KITCHEN SINK WITH DISHWASHER MACHINE
- TARGET POINTING TO CONNECTION BETWEEN EXISTING AND NEW OR TO THE EXTENT OF DEMOLITION

PLUMBING NOTES

1. THE PRIORITY OF ILLUSTRATED PIPING ON PLANS IS TO SHOW CLEARLY THE SERVICE FROM ONE POINT TO ANOTHER WITH MINIMUM OR NO OBSTRUCTION BY THE BACKGROUND. PHYSICALLY THE PIPE RUNS ARE INSTALLED INSIDE WALLS, ABOVE CEILING OR WITHIN PIPE CHASES. ARCHITECT SHALL REVIEW AND APPROVE THE FINAL LOCATION OF PLUMBING COMPONENTS WHERE THEY AFFECT ARCHITECTURAL FINISHES.

2. UNLESS THE INSTALLATION IS DIMENSIONED, DRAWINGS ARE DIAGRAMMATIC AND INDICATING THE GENERAL ARRANGEMENT OF PIPING NETWORK TO BE PERFORMED. ALL MINOR DETAILS ARE NOT SHOWN ON PLANS OR SPECIFIED, BUT NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF ALL SYSTEMS, SHALL BE PROVIDED BY THE CONTRACTOR WITH NO ADDITIONAL CHARGES TO THE OWNER.

3. DOMESTIC WATER SERVICE TO FAUCETS (COLD OR COLD AND HOT) SHALL BE 1/2" PIPE SIZE UNLESS NOTED OTHERWISE. ALL FIXTURES AND EQUIPMENT SHALL HAVE ONE FULL PORT AND PIPE SIZE SHUTOFF VALVE PER PIPE CONNECTION FOR MAINTENANCE PURPOSE. ALL DOMESTIC SERVICES SHALL BE INSULATED.

4. PLUMBING CONTRACTOR SHALL CHECK AND VERIFY ALL MEASUREMENTS, ILLUSTRATED PIPING LOCATIONS AND AREAS AFFECTED BY STRUCTURAL, MECHANICAL AND ELECTRICAL CONDITIONS PRIOR TO PRECEDING WITH DEMOLITION AND/OR NEW WORK.
ANY CONFLICT OR DISCREPANCY BETWEEN SUBMITTED DRAWINGS AND FIELD CONDITION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEERS WITHOUT DELAY.

5. AVOID INSTALLING WATER SERVICE PIPE IN EXTERNAL WALL DUE TO FREEZING CONDITION. (ELECTRICAL HEAT TRACE FOR PIPING IS EXPENSIVE AND NOT RELIABLE, SHALL BE CONSIDERED ONLY AS A LAST RESOURCE.)
INSULATION ON WATER PIPE DOES NOT PREVENT FREEZING, IT ONLY EXTENDS THE SOLIDIFICATION TIME.
WHERE WATER SERVICE IS NEAR EXTERIOR WALL, PROVIDE STUDDED PARTITION FLUSH TO THE EXTERIOR WALL FOR PIPE INSTALLATION. APPLY INSULATION ON THE EXTERIOR WALL SIDE OF THE PARTITION WITH NO INSULATION ON THE ROOM SIDE.
ALL SANITARY PIPING LAID BELOW SURFACE OF FREEZING TEMPERATURE SHALL HAVE MINIMUM 3'-0" COVER.

PLUMBING DRAWING LIST

KEYED SHEET NOTES – PLUMBING

1. EXISTING INCOMING GAS SERVICE. CONTRACTOR TO VERIFY WITH GAS COMPANY THE NEW CONNECTED LOAD.
2. NEW INCOMING WATER SERVICE PER LOCAL WATER COMPANY REQUIREMENTS.
3. NEW WATER SERVICE ENTRANCE WITH SHUT OFF, WATER METER AND BACK FLOW PREVENTOR
4. CONNECT NEW GAS LINE TO COMMERCIAL DRYER. CONNECTION TO BE PER MFG. REQUIREMENTS
5. CONNECT GAS LINE TO GAS FIRED WATER HEATER. PROVIDE SHUT OFF VALVE AND SEDIMENT TRAP
6. DOMESTIC WATER LINE UNDER EXISTING SLAB. CUT AND REPAIR SLAB. PIPE TO BE TYPE 'K' SEE NOTE.
7. DOMESTIC WATER LINE UP FROM BELOW SLAB
8. NEW SANITARY LINE UNDER EXISTING SLAB. CUT AND REPAIR SLAB AS REQUIRED
9. DOMESTIC WATER LINES DOWN IN WALL TO BELOW SLAB
10. PROVIDE 1-1/4" GAS LINE LOOP
11. NEW 4" SANITARY LINE TO STREET. CONTRACTOR TO VERIY EXACT SIZE AND LOACTION OF EXISTING LINE TO STREET AND MAY CONNECT TO LINE FROM BUILDING TO STREET CONECTION
12. VENT AND AIR INTAKE FROM WATER HEATER. MATERIAL AND TERMINATIONS PER MFG. INSTALLATION MANUAL
13. GAS LINE UP TO ROOFTOP UNIT. CONNECT TO UNIT WITH SEDIMENT TRAP AND SHUT OFF.

PIPE SPECIFICATION

SYSTEM	MATERIAL	JOINTS	NOTES	INSULATION TYPE	INSULATION THICKNESS	NOTES
DOMESTIC WATER ABOVE GRADE	TYPE L COPPER	SOLDERED OR THREADED		RIGID FIBERGLASS	1"	PVC FITTING COVERS. EXPOSED PIPING 24 GAGE SS JACKETED INCLUDING FITTINGS.
WASTE, DRAIN & VENT BELOW GRADE	CAST IRON	HUB & SPIGOT PACKED WITH LEAD & OAKUM				
WASTE & DRAIN ABOVE GRADE 2" AND SMALLER	TYPE DWV COPPER	SOLDERED				
WASTE & DRAIN ABOVE GRADE 2½" AND LARGER	CAST IRON	HUBLESS	HUSKEY 4000-SD COUPLING REQIRED			
DRY VENT PIPE 2 AND SMALLER ABOVE GRADE	TYPE DWV COPPER	SOLDERED				
DRY VENT PIPE 2½" AND LARGER ABOVE GRADE	CAST IRON	HUBLESS	HUSKEY 4000-SD COUPLING REQIRED			

PLUMBING FIXTURE CONNECTION SCHEDULE

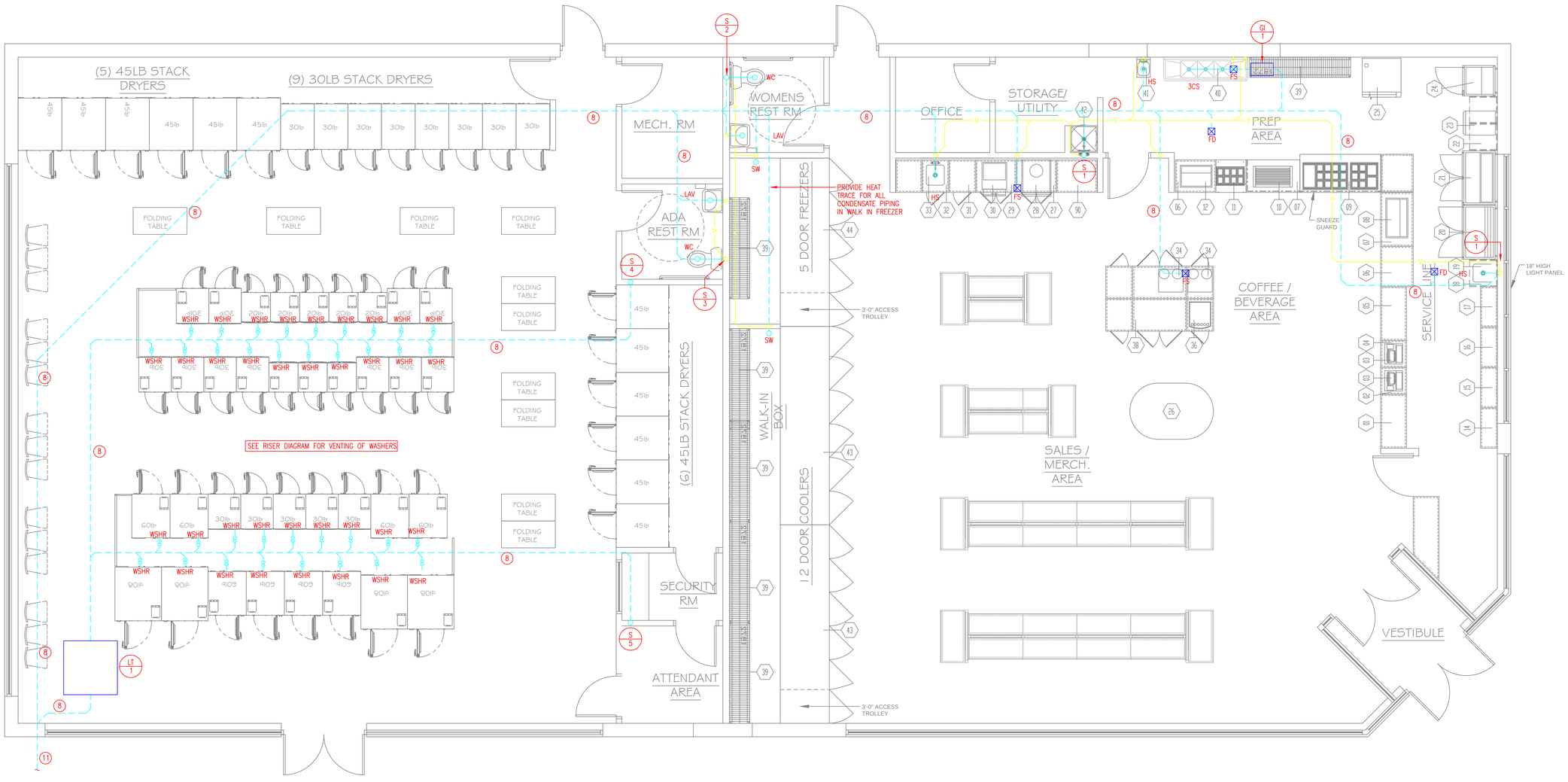
FIXTURE TYPE	ABBREV	FIX. UNIT VALUE	CONNECTION SIZES (TRAP) SAN	VENT	HW	CW	REMARKS
WATER CLOSET	WC	6	4	2	–	1/2	FLUSH VALVE
URINAL	UR	4	3	1-1/2	–	1	
LAVATORY	LAV	1	1-1/2	1-1/4	1/2	1/2	
MOP RECEPTOR	MR	3	3	1-1/2	3/4	3/4	
SINK	SK	2	1-1/2	1-1/2	1/2	1/2	
FLOOR SINK	FS	3	2	1-1/2	–	–	
FLOOR DRAIN	FD	4	4	2	–	–	PROVIDE TRAP PRIMER
WASHER	WSHR	3	2	1-1/2	3/4	3/4	
SAFE WASTE	SW	3	2	1-1/2			

GI (1) JR SMITH GREASE INTERCEPTOR 35 GPM 70 LBS GREASE CAPACITY
JR SMITH MODEL 8135

(2) UNIT TRAP ZURN Z1185

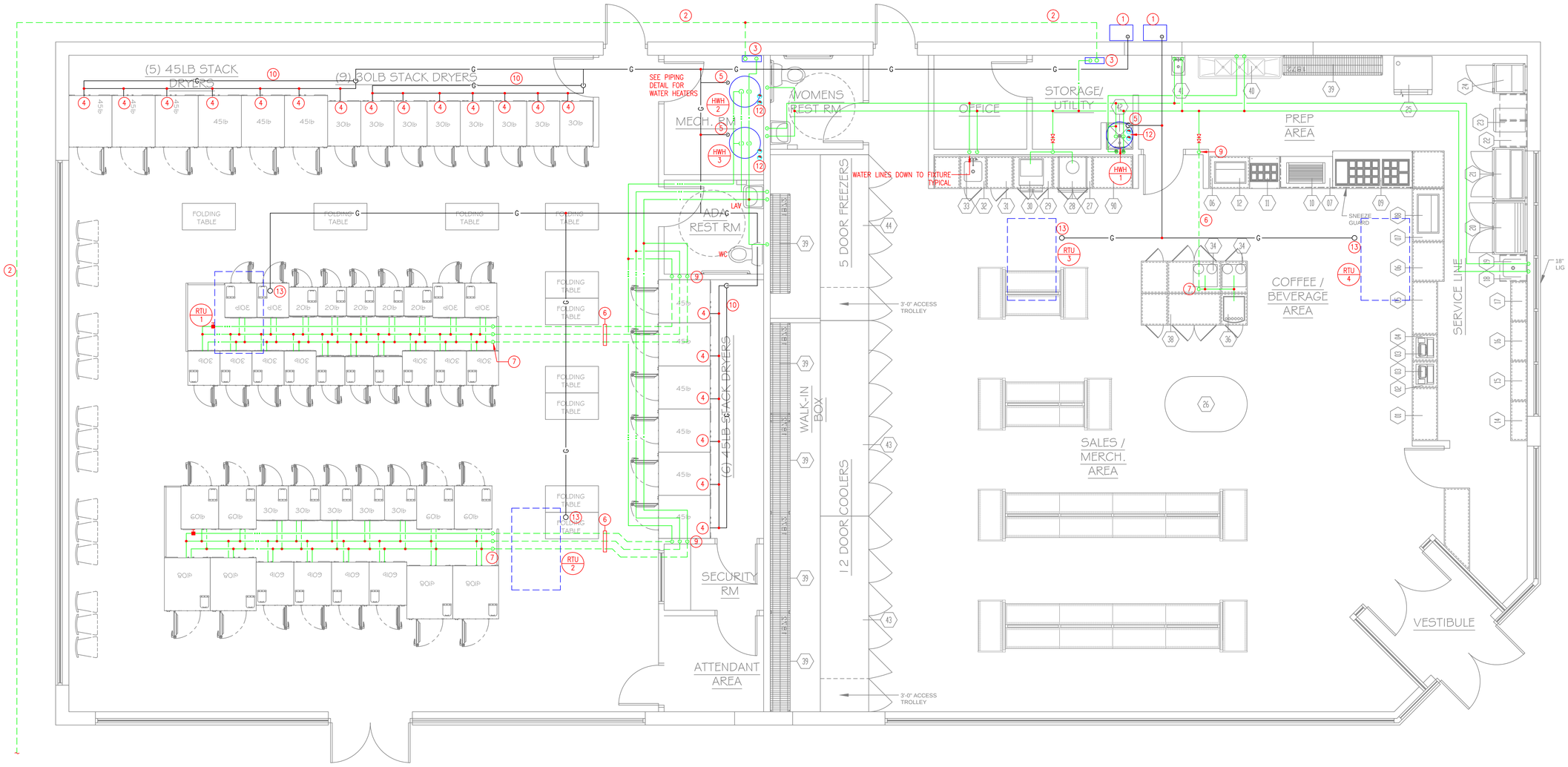
PLUMBING COVER SHEET

PC



FIRST FLOOR PLUMBING PLAN – SANITARY AND VENT
1/4"=1'-0"

PLUMBING FLOOR PLAN

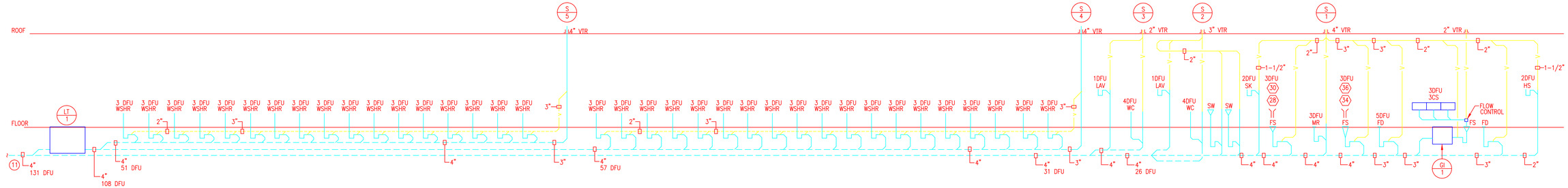


FIRST FLOOR PLUMBING PLAN – DOMESTIC WATER & GAS

1/4"=1'-0"

(X) EQUIPMENT SCHEDULE

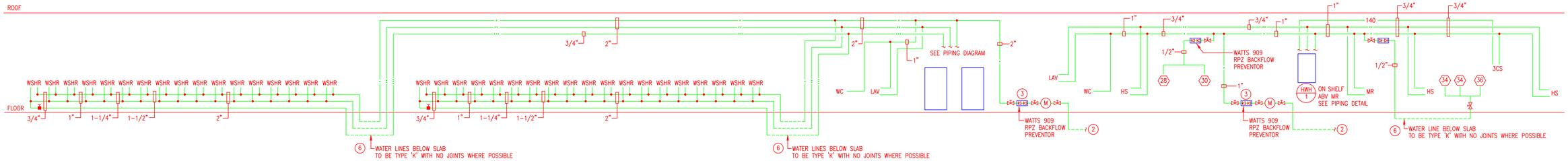
QTY	NO.	DESCRIPTION	DIMENSIONS	MANUF.	MODEL #	FINISH/NOTES
1	01	CABINET: BASIC, NO DOOR	48W X 23D X 34H	———	CS-48-23-34-ND-CB-B-NOT	CLOSED BACK, NO TOP
1	02	CABINET: BASIC, NO DOOR	24W X 23D X 34H	———	CS-24-23-34-ND-CB-B-NOT	CLOSED BACK, NO TOP
2	03	POINT OF SALE	———	———	———	———
1	04	CABINET: BASIC-SAFE	24W X 23D X 34H	———	CS-24-23-34-SF-CB-B-NOT	CLOSED BACK, NO TOP
1	05	CABINET: BASIC, NO DOOR	48W X 23D X 34H	———	CS-48-23-34-ND-CB-L4-B-NOT	CLOSED BACK, NO TOP, LAMINATE LEFT
2	06	CABINET: BASIC, NO DOOR	36W X 29D X 34H	———	CS-36-29-34-ND-CB-L3-LS-B-SF-36-30	LAMINATE BACK, LAMINATE RIGHT
2	07	CABINET: BASIC, NO DOOR	48W X 29D X 34H	———	CS-48-29-34-ND-CB-B-SF48-30	STAINLESS STEEL, NO STD PENETRATIONS
1	08	HOT FOOD DISPLAY CASE	35.3W X 19.7D X 27.6H	VENDO (SANDEN)	HFDXXXXXX	HFD & COMBO SERVE (HFD FOR INDOOR USE ONLY)
1	09	PREP TABLE – MEG TOP	73W X 37.875D X 37.625H	BEVERAGE – AIR	SPE 72 -30M – STL	W/ SEE THRU GLASS LID
1	10	FLAT SURFACE ROLLER GRILL	34.75W X 18.625D X 8.5H	APW WYOH	HR (S) – 31	———
1	11	PREP TABLE, W/SNEEZE GUARD	27W X 29D X 53.125H	BEVERAGE – AIR	SPE 27 -SN2	———
1	12	SPOT ON	29W X 28.13D X 32.71H	HATCO	HZMS-300	———
1	14	CABINET: BASIC, W/ DOOR	36W X 15D X 34H	———	CS-36-15-34-FD2-OB-L1-B-SBP36-24	BACKSPLASH, STAINLESS STEEL
2	15	CABINET: BASIC, W/ DOOR	36W X 15D X 57H	———	CS-36-15-57-C1-FD2L-CB-L1-6PAP-B3-SPB36-24	BACKSPLASH, STAINLESS STEEL
1	17	CABINET: BASIC, W/ DOOR	36W X 15D X 57H	———	CS-36-15-57-C3-FD2L-CB-L1-SAS-B3-COPE36-15	FLUSH DOOR W/ LOCK
1	18	BASE CABINET	24W X 24D X 36H	———	———	———
1	19	SINK	———	———	———	———
1	20	WORK TOP FREEZER	48W X 30.75D X 35.5H	BEVERAGE – AIR	WTF 27	———
1	21	STANDARD WORK TOP REFRIGERATOR	48W X 29.25D X 39.5H	BEVERAGE – AIR	WTR 48 A	———
1	22	BASE CABINET	48W X 30D X 36H	———	———	———
1	23	TURBO CHEF	21.4W X 26.6D X 19H	ENCORE	ENC-9500-1	———
1	24	WORK TOP FREEZER	27W X 29D X 39.5H	BEVERAGE – AIR	WTF 27	———
1	24	WORK TOP FREEZER				
1	25	TURBO FAN	34.625W X 34.625D X 78.75H	MOFFAT	E35/2	———
1	26	SELF-SERVICE MERCHANDISER	74.5W X 49.875D X 67.5H	HUSSMANN	TY4-4	———
1	27	BEVERAGE DISPENSER BASE	26W X 32.38D X 34H	THE ICEE COMPANY	FBD 5641D	CABINET BASE W/ WHEELS
1	28	BEVERAGE DISPENSER	26W X 32.38D X 41.4H	THE ICEE COMPANY	FBD 5641D	———
1	29	CABINET: BEVERAGE	36W X 29D X 34H	———	CS-36-29-34-FD2-DB-L1-LH-OX6-5C-WOC-B-NOT	———
1	30	SODA DISPENSER	26W X 32.38D X 41.4H	———	———	TO BE DETERMINED
1	31	CONDIMENTS COUNTER	24W X 29D X 34H	———	CS-24-29-34-SW-LFD-CB-L1-LS-B-NOT	OWNER TO CHOOSE
1	32	SINK BASE	24W X 29D X 34H	———	———	———
1	33	SINK	———	———	———	———
2	34	COFFEE BREWER	20.1W X 22.6D X 26.2H	BUNN	ICB-TWIN	———
1	36	CAPPUCINO W/5 HOPPERS	19.3W X 24D X 32.8H	BUNN	IM1X	———
1	38	HOT BEVERAGE STATION	———	———	———	OWNER TO CHOOSE
8	39	WIRE SHELVING	72W X 18D	ADVANCE TABCO	———	———
1	40	3 COMPARTMENT SINK	75W X 21D X 37H	ADVANCE TABCO	FC-3-1515-15RC	———
1	41	HAND SINK – WALL MOUNTED	18W X 12D X 14.25H	EAGLE MANUFACTURER	HSAN-10-F	———
1	42	JANITOR SINK	———	———	———	———
1	43	12 DOOR REFRIGERATOR	———	———	———	———
1	44	5 DOOR FREEZER	———	———	———	———



SANITARY RISER DIAGRAM

NTS

PIPING TO BE SLOPED AT 1/8" PER FT



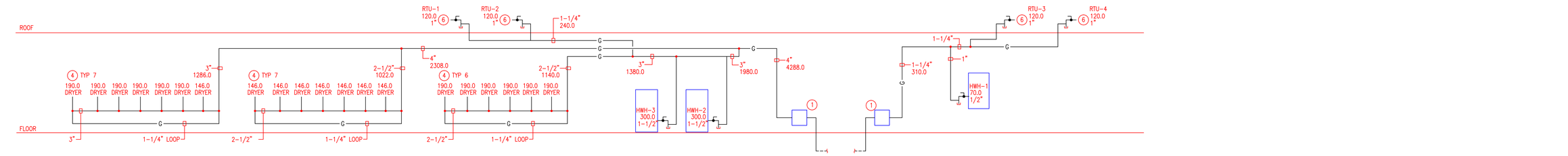
DOMESTIC WATER PIPING DIAGRAM – LAUNDRY

NTS

DOMESTIC WATER PIPING DIAGRAM – DELI

NTS

Copper water piping installed under concrete floor slabs within a building or structure shall be copper tube Type 'K' and shall be installed without joints where possible. Where joints are permitted, they shall be brazed and fitting shall be wrought copper. Such copper tubing shall be placed in a sand bed a minimum of three inches (3") in depth, and properly protected penetrates concrete and similar materials



GAS RISER DIAGRAM – LAUNDRY

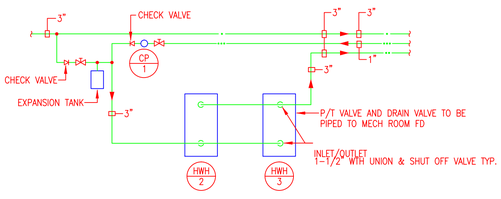
NTS

GAS PIPING SIZE BASED ON IFGC 2009 TABLE 402.4(2)
125' DEVELOPED LENGTH

GAS RISER DIAGRAM – DELI

NTS

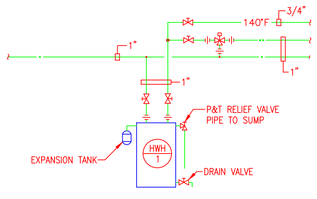
GAS PIPING SIZE BASED ON IFGC 2009 TABLE 402.4(2)
60' DEVELOPED LENGTH



WATER HEATER PIPING DIAGRAM

NTS

HWH 2,3 — ULTRA HIGH EFF. GAS FIRED HOT WATER HEATER
BRADFORD WHITE EF-100T-300E
100 GALLON STORAGE 300,000 BTH/HR HEATING CAPACITY
WITH P&T VALVE, DRAIN VALVE AND EXPANSION TANK

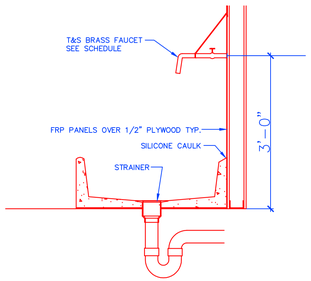


DOMESTIC HOT WATER HEATER PIPING DETAIL

NTS

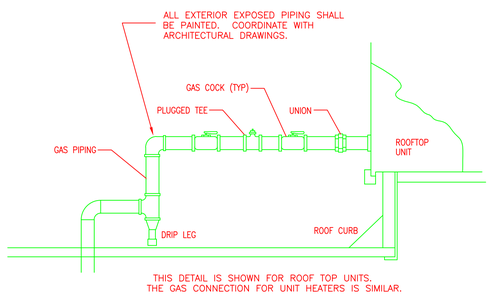
HWH 1 — ULTRA HIGH EFF. GAS FIRED HOT WATER HEATER
~~BRADFORD WHITE EF-100T-300E~~ RATED 199,900 BTH/HR INPUT AND 239 GALLON RECOVERY RATE AT 100% RISE
100 GALLON STORAGE 199,900 BTH/HR HEATING CAPACITY

WITH P&T VALVE, DRAIN VALVE AND EXPANSION TANK



FLOOR MOP SINK DETAIL

NO SCALE



THIS DETAIL IS SHOWN FOR ROOF TOP UNITS.
THE GAS CONNECTION FOR UNIT HEATERS IS SIMILAR.

GAS PIPING CONNECTION DETAIL

NO SCALE

PLUMBING FLOOR PLAN