PLUMBING ABBREVIATIONS

A/E	ARCHITECT / ENGINEER
AD	AREA DRAIN
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AG	AIR GAP
AP	ACCESS PANEL
AS	AUTOMATIC SPRINKLER
ASD	ADJUSTABLE SPEED DRIVES
ASD	AUTOMATIC SPRINKLER DRAIN
ASHRAE	AMERICAN SOCIETY HEATING, REFRIGERATION, AIR CONDITIONING ENGINEERS
ASME	AMERICAN SOCIETY MECHANICAL ENGINEERS
ASPE	AMERICAN SOCIETY PLUMBING ENGINEERS
ASR	AUTOMATIC SPRINKLER RISER
AV	ACID VENT
AW	ACID WASTE
BFP	REDUCED PRESSURE BACKFLOW PREVENTER
BHP	BREAK HORSEPOWER
BSP	BLACK STEEL PIPE
BT	BATHTUB
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
C	CELSIUS
CGA	COMPRESSED GAS ASSOCIATION
CI	CAST IRON
CO	CLEANOUT
CS	CLINICAL SINK
CV	CONTROL VALVE
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RETURN
DWR	DOMESTIC WATER RETURN
DWS	DOMESTIC HOT WATER SUPPLY
DI	DEIONIZED WATER
DN	DOWN
DOE	DEPARTMENT OF ENERGY
DS	DOWNSPOUT
DW	DISHWASHER
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DWR	DRINKING WATER RETURN
DWS	DRINKING WATER SUPPLY
DWV	DRAIN WASTE VENT
EL	ELEVATION
EMCS	ENERGY MONOSERRAT AND CENTRAL SYSTEM
EPA	ENVIROMENTAL PROTECTION AGENCY
EPACT	ENERGY POLICY ACT
ESC	ESCUTCHEON
ESH	EMERGENCY SHOWER
ET	EXPANSION TANK
EWC	ELECTRIC WATER COOLER
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EWS	EYE WASH STATION
EX	EXISTING
F	FAHRENHEIT
FCO	FLOOR CLEANOUT
FCW	FILTERED COLD WATER
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT (HOSE) CONNECTION
FM	FLOW METER
FOP	FUEL OIL PUMP
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOV	FUEL OIL VENT
FS	FLOOR SINK
FS	FLOW SWITCH
FU	FIXTURE UNITS
GAL	GALLON
GCO	GRADE CLEANOUTS
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GPR	GAS PRESSURE REGULATOR
GRS	GAS REGULATOR STATION
GT	GREASE TRAP
GVTR	GAS VENT THROUGH ROOF
GWH	GAS FIRED WATER HEATER
H&CW	HOT AND COLD WATER
HB	HOSE BIBB
HD	HUB DRAIN
HEX	HEAT EXCHANGER
HP	HORSEPOWER
HS	HAND SINK
HST	HOT WATER STORAGE TANK (DOMESTIC)
HWB	HOT WATER BOILER
HWCP	HOT WATER CIRCULATING PUMP
HWP	HOT WATER PUMP
HYD	HYDRANT
ICW	INDUSTRIAL COLD WATER
INV	INVERT
IPC	INTERNATIONAL PLUMBING CODE
IRW	IRRIGATION WATER
IW	INDIRECT WASTE
IWH	INSTANTANEOUS WATER HEATER
IWR	INDUSTRIAL WATER RETURN
IWS	INDUSTRIAL WATER SUPPLY
KW	KILOWATT
KWHR	KILOWATT—HOUR
L/S	LITER PER SECOND
LA	LABORATORY AIR
LAV	LAVATORY
LBS/HR	POUNDS PER HOUR
LCW	LABORATORY COLD WATER
LHW	LABORATORY HOT WATER
LNG	LIQUID NATURAL GAS
LOX	LIQUID OXYGEN
LV	LABORATORY VACUUM
LW	LOW WATER
M	METER
MA	MEDICAL AIR
MAV	MANUAL AIR VENT
MBH	1000 BTUH
MED	MEDICAL
MER	MECHANICAL EQUIPMENT ROOM
MH	MANHOLE
MOU	MEMORANDUM OF UNDERSTADING
MSB	MOP SERVICE BASIN
MV	MEDICAL VACUUM
N2	NITROGEN
N2O	NITROUS OXIDE
NC	NORMALLY CLOSED
NG	NATURAL GAS
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOM	NOMINAL
NPW	NON POTABLE WATER
NTC	NOT TO SCALE
O2	OXYGEN
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFD	OVERFLOW DRAIN
OR	OPERATING ROOM
OVFL	OVERFLOW
PA	PASCAL
PD	PRESSURE DROP OR DIFFERENCE
PDI	PLUMBING AND DRAINAGE INSTITUTE
PG	PRESSURE GAGE
PP	PLUMBING PUMP
PPM	PARTS PER MILLION
PRS	PRESSURE REDUCING STATION
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ATMOSPHERE
PSIG	POUNDS PER SQUARE INCH GAUGE
PTRV	PRESSURE TEMPERATURE RELIEF VALVE
PW	POTABLE WATER
RD	ROOF DRAIN
RDL	ROOF DRAIN LEADER
RL	ROOF LEADER
RO	REVERSE OSMOSIS WATER
RWL	RAIN WATER LEADER
SAN	SANITARY SEWER
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SCFM	STANDARD CUBIC FOOT/MINUTE
SCW	SOFTENED COLD WATER
SDMH	STORM DRAIN MANHOLE
SP	SUMP PUMP
SPR	SPRINKLER LINE
SQFT	SQUARE FEET
SS	STAINLESS STEEL
ST	STORAGE TANK
SW	STORM WATER
TCV	TEMPERATURE CONTROL VALVE
TD	TEMPERATURE DIFFERENCE
TD	TRENCH DRAIN
TDH	TOTAL DYNAMIC HEAD
TEMP	TEMPERATURE
TMV	THERMOSTATIC MIXING VALVE
TP	TRAP PRIMER
TSTAT	THERMOSTAT
TWR	TEMPERED WATER RETURN
TWS	TEMPERED WATER SUPPLY
TYP	TYPICAL
V	VENT
VAC	VACUUM
VB	VACUUM BREAKER
VCO	VACUUM CLEANER OUTLET
VP	VACUUM PUMP
VS	VENT STACK
VTR	VENT THROUGH ROOF
W	WASTE
WC	WATER CLOSET
WCO	WALL CLEANOUT
WG	WATER GAGE
WH	WALL HYDRANT
WH	WATER HEATER
WHA	WATER HAMMER ARRESTER
WL	WATER LINE
WM	WATER METER
WPD	WATER PRESSURE DROP
WS	WASTE STACK
YCO	YARD CLEANOUT
YH	YARD HYDRANT

GENERAL PLUMBING SYMBOLS

- DIRECTION OF PIPE PITCH (DOWN)
- DIRECTION OF FLOW
- ANCHOR
- REDUCER OR INCREASER
- ECCENTRIC REDUCER
- TOP CONNECTION, 45° OR 90°
- BOTTOM CONNECTION, 45° OR 90°
- SIDE CONNECTION
- CAPPED OUTLET
- RISE OR DROP IN PIPE
- UNION
- PIPE UP
- PIPE DOWN
- POINT OF CONNECTION BETWEEN NEW AND EXISTING WORK
- LIMIT OF DEMOLITION
- INVERTED BUCKET TRAP SET INCLUDING PIPING ACCESSORIES
- FLOAT & THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES
- STRAINER
- THERMOMETER
- PRESSURE GAGE
- FLOW ELEMENT
- CLEAN OUT
- HOSE BIB

PLUMBING PIPING SYMBOLS

- DOMESTIC COLD WATER, COLD WATER
- DOMESTIC HOT WATER, HOT WATER
- DOMESTIC HOW WATER RETURN, HOT WATER RETURN
- MEDICAL AIR
- MEDICAL VACUUM
- LABORATORY AIR
- LABORATORY VACUUM
- ORAL EVACUATION
- INDUSTRIAL AIR
- DRAIN
- SANITARY SEWER
- SANITARY SEWER (OPTIONAL)
- SANITARY SEWER, BELOW GRADE
- STORM WATER
- STORM WATER, BELOW GRADE
- SOFTEN COLD WATER
- FILTERED COLD WATER
- DRINKING WATER SUPPLY
- DRINKING WATER RETURN
- TEMPERED WATER SUPPLY
- TEMPERED WATER RETURN
- NITROUS OXIDE
- OXYGEN
- NITROGEN
- NATURAL GAS
- NATURAL GAS, BELOW GRADE
- FUEL OIL DISCHARGE
- FUEL OIL SUPPLY
- FUEL OIL VENT
- FUEL OIL RETURN

PLUMBING VALVE SYMBOLS

- GATE VALVE
- GLOBE VALVE
- GATE VALVE WITH 3/4 " HOSE ADAPTER
- CHECK VALVE
- ANGLE GLOBE VALVE
- BUTTERFLY VALVE
- BALL VALVE
- MODULATING CONTROL VALVE
- TWO POSITION CONTROL VALVE
- THREE-WAY MODULATING CONTROL VALVE
- THREE-WAY TWO POSITION CONTROL VALVE
- PRESSURE REGULATING VALVE
- AUTOMATIC FLOW CONTROL VALVE
- PRESSURE RELIEF VALVE
- MANUAL AIR VENT
- TEST PLUG (PRESSURE/TEMPERATURE)
- AUTOMATIC AIR VENT

DRAWING SYMBOLS

- 2 / PL105 — DETAIL NUMBER / DRAWING NUMBER WHERE DRAWN
- A / PL105 — SECTION LETTER / DRAWING NUMBER WHERE SHOWN
- 26-P 3 — BUILDING NO. WHERE EQUIPMENT IS LOCATED / EQUIPMENT ABBREVIATION (PUMP) / PUMP NO.3 IN BUILDING NO.26 / TYPICAL UNIT NO.

NOTE: NOT ALL SYMBOLS MAY APPEAR ON DRAWINGS.

15.4 PLUMBING SPECIFICATIONS

A. Shop drawings required:
1. pipes and fittings
2. valves
3. water hammer control units
4. access panels
5. cleanouts
6. drains
7. sewage pumps
8. pumps
9. pressure tank
10. plumbing fixtures
11. water heaters
12. insulation
13. pipe hangers and supports

B. Materials
1. soil, waste, drain and vent piping (including rain water): underground soil, waste and drain pipe and vent fittings Sch 80 P V C with approval of building dept. or extra heavy weight hub-type cast iron; Above ground soil, waste and drain pipe and fittings, including interior downspouts ——Sch 40 with approval of building dept. or extra heavy weight hubless or hub-type cast pattern type. Branch soil, waste and drain pipes from riser stacks and vent piping — extra heavy weight cast iron, galv. steel, or Sch. 40 PVC. Fittings: dry vents — regular — pattern type, and extra heavy cast iron with cast iron pipe, threaded galv. malleable or cast iron with galv. steel pipe, or Sch. 40 solvent joint PVC with plastic pipe.

2. Water lines: hot water supply and return lines —— Type Sch 80 cpvc tubing.
cold water and non-potable (gray) water lines —— Sch 80 pvc above.

3. Air conditioning drain and indirect waste lines: Exposed drain lines in equipment rooms wrapped with high temperature tape for fire protection or DWV copper tubing with solder-joint drainage -pattern type copper fittings insulated to prevent condensation. When below grade or slabs-on-fill, lines to be schedule 80 pvc.

4. Cleanouts: same nominal size as pipe into which installed up to 6", and 6" min. for larger size pipes; threaded brass plugs in tapped tee branches or calking ferrules.cleanouts.

5. Escutcheons: stainless steel or chromium plated brass, with set screws, non-corrosive springs or other devices to secure in place; to cover ends of pipe insulation, sleeves, etc.

6. Hangers and supports:
a. standard —— Federal Specification W W-H-171
b. type:
split ring and turnbuckle adjuster, type II adjustable wrought clevis, type riser clamp, type B steel brackets, type 32 and 33 (to suit load conditions) U-bolt anchor, type 24 extension split pipe hanger, type 25 wrought strap, type 26
c. all hangers, rods and nuts cadmium plated; trapeze hangers if first approved.

7. Unions: 150 lb bronze or brass for copper tubing, galv. flanged for steel piping, threaded with 0 ring seals for P V C piping

8. Trench drains; for all drains and cont. drain requirements to be "Channel Slope" by A.C.O. Drain Inc., Cleveland Ohio; local representative — Carlson Precast Inc., Coral Springs, FL. tel. 305/752-5671 or approved equal:
a. this is a polyester concrete drain channel with built in slope complete with all accessories and cast iron grates.

C. Valves
1. Use: non-rising stem valves only where limited space prevents use of rising stem valves; valves 2" and smaller —— bronze, with screwed ends and screwed to solder adapters; valves 2-1/2" and larger —— flanged, I B B M

2. Approved manufacturers for water service valves: (note: X = screwed valves may be used with I P S to sweat copper adapters; * = approved manufacturers for Non-Slam check valves —— Mueller Steam Specialty Co. Inc., Muessco No. 101-AP for check valves smaller than 2" and Muessco No. 105-AP for check valves 2" or larger)
a. type —— gate, bonnet —— union, ends —— screw, stem —— RS: Hammond IB-617; Crane 428UB; Jenkins 47U; Powell 2700; Stockham B105; Walworth 2; Fairbanks U-0252; Nibco/Scott T-124
b. type —— gate, bonnet —— union, ends —— screw, stem —— N R S: Hammond IB-638; Crane 438; Jenkins 370; Powell 2707; Stockham B115; Walworth 4; Fairbanks U-0250; Nibco/Scott T-126
c. type —— gate, bonnet —— union, ends —— sweat, stem —— RS: Hammond IB-648; Crane X; Jenkins X; Powell X; Stockham X; Walworth X Fairbanks —— ; Nibco/Scott S-124
d. type —— gate, bonnet —— union, ends —— sweat, stem —— N R S: Hammond IB-660; Crane X; Jenkins X; Powell X; Stockham X; Walworth X; Fairbanks —-; Nibco/Scott S-126
e. type —— globe, bonnet —— union, ends —— screw, stem —— RS: Hammond IB-41i; Crane 70; Jenkins 750; Powell 110; Stockham B37; Walworth 160; Fairbanks 029; Nibco/Scott T255B
f. type —— angle, bonnet —— union, ends —— screw, stem —— RS: Hammond IB-465; Crane 17; Jenkins 108A; Powell 151; Stockham B222; Walworth 96; Fairbanks U-03; Nibco/Scott T355B
g. type —— check *, bonnet —— screw, ends —— screw, stem —— ——-Hammond IB-940; Crane 34; Jenkins 92A; Powell 578; Stockham B319; Walworth 406; Fairbanks 0600; Nibco/Scott T-413
h. type —— check * bonnet —— bolted, ends —— flange, stem —— ——-Hammond IR-1124; Crane 373; Jenkins 624; Powell 559; Stockham G-931; Walworth 928F; Fairbanks 0702; Nibco/Scott T-918
i. type —— gate, bonnet —— bolted, ends —— flange, stem —— OS&Y: Hammond IR-1140; Crane 465-1/2; Jenkins 651A; Powell 1793; Stockham G-963; Walworth 726A; Fairbanks 0405; Nibco/Scott F-617-O
j. type —— gate, bonnet —— bolted, ends —— flange, stem —— NRS: Hammond IR-1138; Crane 461; Jenkins 326; Powell 1787; Stockham G-612; Walworth 719F; Fairbanks 0403; Nibco/Scott F619
k. type —— globe, bonnet —— bolted, ends —— flange, stem —— RS: Hammond IR-116; Crane 35i; Jenkins 613; Powell 241; Stockham G-512; Walworth 906F; Fairbanks 0131; Nibco/Scott F718B

D. Water hammer control
1. Zurn Shocktrol OR JOSAM; also provide 12" high air chambers at isolated fixtures, install to permit draining without disconnecting fixture supply; min. 12" in length and one pipe size larger than pipe served.

E. Flow control devices
1. Provide at each fixture supply to limit flow, also see Bahamas Building Code.

F. Corrosion control
1. Minimize connections between dissimilar metals, particularly between copper, brass or bronze (nonferrous piping and appurtenances) and ferrous piping and appurtenances; copper, brass or bronze bodied valves to be used with copper tubing and I B B M valves with ferrous piping; Where impractical to avoid connection between non-ferrous and ferrous items, electrically isolate by use of dielectric couplings, unions or flanges

G. Piping installation
1. General: all runs square with surrounding construction; cut accurately to measurements without springing or forcing; do not weaken structural portions of building; 1/2" min. between pipe, valve and fitting or its covering and other work; do not bury in floors unless specifically indicated or approved; make changes in pipe sizes with reducing fittings; bushings not permitted; make changes in direction with fittings; make equipment and fixture connections with unions, flanges or other devices to permit disconnecting equipment or fixture without cutting piping.

2. soil, waste, drain and vent piping:
a. installation —— slope 1/8"/ft. except where noted otherwise; extend main vertical soil and waste stacks full size to roofline and above as vents, except where otherwise indicated; where practicable connect and extend 2 or more vent pipes as one pipe through roof detailed
b. union connections —— slip joints allowed only in trap seals or on inlet side of traps
c. steel pipe joints —— threaded joints — American National taper pipe threads conforming to NBS Handbook H28 with graphite or inert filler and oil, with approved graphite compound, or with polytetrafluoroethylene tape applied to male threads only; pipe ends square with pipe and reamed free of burrs; joints for victaulic couplings to be made in accordance with recommendations of fittings manufacturer
d. PVC pipe joints —— solvent-welded type, using solvent and techniques recommended by manufacturer; joints between PVC and steel or cast iron pipe — PVC to threaded iron-pipe-size adapter fittings
e. copper tube joints —— solder-type fittings tube cut square with burrs removed; clean outside of tube where engaged in fitting and inside of fitting in contact with tube with abrasive material before sweating; prevent annealing of tube and fitting when making connections; use non-corrosive paste flux and solid-string or wire solder; core solder not permitted; solder 95/5 composition unless otherwise approved
f. pipe cleanouts —— installed at foot of soil and waste stacks as shown and as necessary to permit rodding all portions of system with 75' cable; cleanouts on pipe concealed in partitions to be provided with chromium-plated bronze, nickel bronze, nickel brass or stainless steel covers; provide round access covers and secure to cleanout plugs with securing screws; square access covers may be provided with matching frames, anchoring lugs and cover screws; install access covers flush with finished wall; cleanouts installed in finished floors to be provided with chrome-plated cast brass, nickel brass or nickel bronze cover secured to plug or cover frame and set flush with finished floor
g. traps —— provide each fixture and piece of equipment requiring connections to drainage system, except grease interceptors and fixtures with integral traps, with trap; place trap as near fixture as possible, no fixture to be double trapped; traps installed on cast iron soil pipe to be cast iron;fixture traps to be chromium-plated copper tube except where specified otherwise

3. Water pipe and fittings
a. installation —— isolate each riser from distribution system with gate valve and provide drain for riser; pipe drains to consist of 1/2" globe valves with renewable discs and 3/4" hose nipples; allow for expansion and contraction of pipe throughout; provide flexibility on all branch runouts from mains by installing one or more turns in line so piping will spring enough to allow for expansion without straining; water piping systems include potable hot water supply and return, potable cold water, and non-potable supply
b. unions —— provide wherever fixtures or equipment are connected to water system, where needed to facilitate routine maintenance and where indicated
c. copper tube and P V C joints —— as specified under Section 15.4.G.2.d and e above

4. Air-conditioning drain and indirect waste lines —— as specified under Section 15.4 B.3.

5. Pipe hangers and supports
a. spacing —— piping to be adequately supported from building structure to prevent excessive deflection of piping, to minimize stresses at connections to valves and equipment, and to prevent excessive stresses in building structure at points of support;

Pipe Size (nom) (inches)	Hanger Spacing Steel Pipe	Copper Tubing	P V C
1/2	7'	5'	3'
3/4 —— 1	7'	6'	3'
1-1/4 —— 1-1/2	8'	7'	3'
2 —— 4	10'	9'	3'
over 4	14'	12'	3'

b. horizontal piping —— wrought steel clamp or clevis type, place outside insulation, or isolate from uninsulated pipe by ribbed synthetic rubber isolation pads
c. vertical piping —— support at bottom and top of riser with intermediate supports at each floor slab and 15' o.c. max.; wrought steel extension riser clamps, secure to pipe and isolate from building structure by ribed synthetic rubber isolation pads

6. Escutcheons —— provide at all surfaces where exposed piping, bare or insulated, passes through floors, walls, or ceilings; fasten securely to pipe or pipe covering.

H. Sterilization
1. Sterilize entire hot and cold potable water systems after piping completed and tested and before piping connected to existing systems; minimum —— thoroughly flush, fill with calcium or sodium hypochloride solution containing 50 parts/million of chlorine; open and close all valves several times while solution is in system; retain solution 24 hrs., test for residual chlorine at ends of lines; if residual concentration is less than 10 parts/million of chlorine, repeat sterilization process and retest until residual chlorine is at least 10 parts/million; flush system of all traces of chemical used; recognized laboratory to perform test and submit report to Architect; do not sterilize non-potable water system

I. Valve boxes
1. Concrete or fiber glass for all underground valves; sized to provide adequate clearance over valve wheel , removable covers marked "Water" flush with final grade

J. Hose bibs
1. Compression type with loose key handle, solid flange, 3/4" female connection with 3/4" threaded hose end, rough brass finish; equipped with Wates No. 8 backflow preventer with tamperproof screw

K. Drains
1. General: size of drains determined by branch sizes indicated or as noted; equip drains installed in waterproofed floors or shower pans with bolted type clamping devices.

2. Floor and shower drains: heavy cast iron or PVC bodies, integral seepage pans, and chromium plated bronze, nickel bronze, nickel brass or PVC adjustable perforated or slotted strainer, Josam Series 30OA or PVC OSR 4750, with grate and threaded collar; double drainage pattern for embedded floor construction; provide clamping device for attaching flashing or waterproofing membrane to seepage pan when required.

3. Heavy-duty cast iron drains: as specified above, except modified to incorporate min. 2" top, heavy-duty, deep-flange, cast iron grate.

4. Roof drains: heavy-pattern cast iron or P V C with integral flange, dome strainer, gravel stop and device for clamping or securing roofing and flashing to provide water-tight connection; strainer openings — combined area equal to twice area of drain outlet; roof drains — adjustable extension sleeves to permit min. 2" adjustment in position of membrane clamp and gravel stop after drain body fixed to roof; Josam Series 2100 or P V C GSR 3500.

L. Insulation
1. General: apply over clean, dry surfaces with all joints firmly butted; install in accordance with manufacturer's recommendations; apply after piping system tested.

2. Air conditioning and drinking fountain drains: all aboveground waste lines from drinking fountains to stacks and all aboveground air conditioning

M. Testwastes installed above finished ceilings, including indirect waste systems, to be insulated with 3 lb density glass fiber insulation finished with factory applied white pre-sized glass cloth vapor barrier, permanently fire smoke safe; 3/4" thick insulation. Insulate all fittings and flanges with glass fiber blanket, 1 lb/cu. ft. min. density, wrapped firmly under compression to thickness equal to adjoining pipe insulation. Finish blanket insulation with smoothing coat of insulating and finishing cement; vapor seal with layer of glass fabric embedded between two 1/16" thick coats of Benjamin Foster 30-35.

3. Hot water supply and returnas specified under "air conditioning and drinking fountain drains" above; except that insulation thickness to be 1" and insulation jacket pre-sized glass cloth, not vapor barrier. Not required for runouts of 5' or less from mains or risers.

4. Provide insulating saddles for glass fiber insulated lines at each pipe support; high density precompressed glass fiber of same thickness as insulation with corrosion resistant steel saddle (and vapor barrier where required to maintain continuity) and jacketed.

5. General: conduct all tests in presence of Architect/Engineer or Owner's representative; test pressures required for entire piping system inspection is 4 hrs. min.

6. Soil, waste, drain and vent piping
a. general: test with water or air before fixtures installed
b. water test: test system in sections with all openings tightly closed, except highest opening, and filled with water to head of 10' min; next preceding section as min.included so every joint or pipe, except uppermost 10', subjected to 10' head of water min.; water to be in test portion 15 minutes min. before inspection starts, and system tight at all joints
c. air test: min. pressure of 5 psig applied with forced pump and maintained 15 minutes min. without leakage; use mercury-column gauge
d. rainwater lines: water test (see above) .

7. water systems —— when rough-in completed and before fixtures set, test entire hot and cold water and non-potable systems at 150 psig, and prove tight 30 mins. min. to permit inspection of all joints; where portion of water piping system to be concealed before completion, test separately as specified for entire system; test pressure of 150 psig applies to pressure at lowest part of system

N. Cleaning and Adjusting
1. Clean all equipment, pipe, valves fittings and fixtures of foreign material and repair any stoppage, discoloration, or other damage to finish, furnishings, or parts of building due to failure to clean piping system properly; adjust hot water system for uniform circulation; adjust flush valves and automatic control devices for proper operation

O. Plumbing Fixtures
1. General: provide complete with all trimmings and fittings as indicated in schedules; generally, all fixtures except water closets and urinals to have water supply above rim; equip fixtures with supply discharge below with backflow preventers; furnish and install angle stops; straight stops, stops integral with faucets, or concealed type of lock-shield, loose-key pattern stops for supplies with fixtures; exposed supply connections from copper tubing to fixture to be chrome plated brass pipe or chrome plated copper tubings; steel nipples not permitted; exposed fixture traps and other trim to be chromium-plated, chromium-nickel-plated, or nickel-plated brass with polished, bright surfaces.

2. Fixture connections: make connections between earthenware fixtures and flanges on soil pipe absolutely gas and water tight with closet-setting compound or with neoprene gasket and seal; use of natural rubber gaskets.

3. Naval flush valves: non-hold-open type and securely anchored to prevent movement.

The drawings are diagrammatic and indicate general layout of equipment and approximate dimensions, unless a dimensional detail is included. The drawings do not show all architectural and structural details. Refer to the contract set of building drawings and check for any variations from the plans. Take any information requiring accurate dimensions from the building drawings or at the building.

GENERAL PLUMBING NOTES:

1. ALL PLUMBING PIPING SHALL BE SET PLUMB AND TRUE TO BUILDING LINES.
2. DRAINAGE PIPING BELOW THE SLAB SHALL BE SLOPED IN THE DIRECTION OF FLOW AND NOT LESS THEN 1/4" PER FOOT (OR PER CODE REQMTS).
3. DRAINAGE PIPING ABOVE GRADE SHALL BE SLOPED A MINIMUM OF 1/4" PER FOOT (OR PER CODE REQUIREMENTS).
4. HORIZONTAL VENT PIPING IN THE BUILDING SHALL BE SLOPED A MINIMUM OF 1/2%.
5. VENTS THRU ROOF SHALL TERMINATE A MINIMUM OF 12" ABOVE ROOF.
6. THE PLUMBING CONTRACTOR SHALL COORDINATE THE PLUMBING PIPE INSTALLATIONS WITH THE HVAC DUCTWORK, HVAC EQUIPMENT, ELECTRICAL CONDUITS AND FIXTURES, FIRE SPRINKLER PIPING AND BUILDING STRUCTURAL MEMBERS TO INSURE ADEQUATE CLEARANCES AND PROPER INSTALLATION OF THE ITEMS OF HIS CONTRACT.
7. THE PLUMBING CONTRACTOR SHALL PROVIDE AND INSTALL ALL BACKFLOW DEVICES REQUIRED BY CODE AND NOT FURNISHED BY OTHER EQUIPMENT SUPPLIERS.
8. THE PLUMBING CONTRACTOR SHALL ARRANGE FOR AND PAY ALL COSTS FOR ANY PERMITS AND FEES REQUIRED BY HIS WORK.
9. REFER TO THE MECHANICAL SPECIFICATIONS FOR OTHER REQUIREMENTS RELATED TO THESE PLANS.
10. SHOULD ANY CHANGES OCCUR DUE TO COORDINATION WITH OTHER BUILDING TRADES AND CONFLICTS WITH THE PLANS, THE CONTRACTOR SHALL SUBMIT FOR THE ARCHITECTS APPROVAL AN ALTERNATE METHOD OF COMPLETING HIS WORK ACCORDING TO THE INTENT OF THE PLUMBING DOCUMENTS.
11. DRAIN AND VENT SYSTEM SHOWN IS A STACK VENTED SYSTEM. AT CONTRACTOR'S OPTION AND WHERE ALLOWED BY LOCAL AUTHORITY A CIRCUIT OR LOOP VENTED SYSTEM MAY BE INSTALLED FOR BATTERY FIXTURES.
12. FOR WALL MOUNTED FIXTURES CONTRACTOR MAY RUN BATTERY DRAINAGE ABOVE FLOOR THRU APPROVED CARRIERS.
13. CAREFUL COORDINATION OF PLUMBING LINES WITH COLUMN FOOTINGS AND GRADE BEAMS IS REQUIRED. REFER TO STRUCT DRAWINGS.
14. CONTRACTOR SHALL PROVIDE AS-BUILT SHOP DRAWINGS FOR ALL PLUMBING SYSTEM CHANGES AND DEVIATIONS TO THESE PLANS.
15. ALL FLOOR DRAINS AND FLOOR SINKS NOT SERVED BY AN AUTOMATIC TRAP PRIMER SHALL HAVE DEEP SEAL TRAPS.
16. PROVIDE ACCESS PANELS FOR ALL PIPING VALVES LOCATED IN WALLS OR ABOVE GYP BOARD CEILINGS.
17. REFER TO FOOD SERVICE DRAWING FOR ADDITIONAL PLUMBING INFORMATION.
18. ALL EXPOSED PIPES ON WATER SUPPLY & WASTE LINES SHALL BE INSULATED W/TRUEBRO WRAP OR EQUAL. REFER ALSO TO ARCHITECTURAL SHEETS FOR LOCATIONS & FIXTURE DIMENSIONAL INFORMATION.

NOTES & SPECIFICATIONS:

1.) ALL WORKS ARE TO BE PERFORMED IN ACCORDANCE WITH LOCAL AND APPROVED BUILDING CODES.

2.) CONSULT ARCHITECT'S DRAWINGS FOR ALL DIMENSIONS

3.) CONSULT ARCHITECT'S DRAWINGS FOR STRUCTURE DETAILS.

4.) SHOCK ABSORBERS SHALL BE JOSAM SERIES #75003 OR EQUAL.

5.) C.O. — FLOOR CLEAN OUTS TO BE FITTED w/ JOSAM SERIES #56050 LEVELEZE KLEENATRON w/ BRONZE TOP.
C.O. — WALL CLEAN-OUTS TO BE FITTED w/ JOSAM ACCESS COVER # 58650-VP-C04/C06 & JOSAM #58914/6-19 CLEANOUT.

6.) WASTE LATERAL IN FOUNDATION @ 1/8":1'-0"
WASTE LATERAL EXTERIOR TO FOUNDATION @ 1/16":1'-0"
STORM LATERAL EXTERIOR TO FOUNDATION @ 0":1'-0"

7.) INV 0'-0" INVERT LEVELS
LEVELS TO BE CONFIRMED w/ SITE CONDITIONS.
RECORD FOR INSPECTION BY ENGINEER.

8.) 000 dfu DRAINAGE FIXTURE UNITS.
CONFIRM, UPDATE & RECORD FOR "AS BUILT" DOCUMENTATION.

9.) MAIN PLUMBING LINE JOINT NAME & NUMBER.
CONFIRM, UPDATE & RECORD FOR "AS BUILT" DOCUMENTATION.

10.) ALL FLOOR DRAINS TO BE CONNECTED TO TRAP PRIMERS
ALL FLOOR DRAINS WITHIN 10'-0" OF P-TRAPS TO BE FITTED w/ JAY R. SMITH #2698BS-CAN TRAP PRIMER.
ALL OTHER FLOOR DRAINS TO BE SERVED & FITTED w/ PRECISION PLUMBING PRODUCTS #PR-500 TRAP PRIMER VALVE BRASS PLATED; PRESSURE DROP ACTIVATED.
SEE DETAIL SHEET.
FLOOR DRAINS TO BE:
FD-1: JOSAM MODEL #30003-5A-VP

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PROJECT
PROPOSED RENOVATIONS FOR UTILITIES REGULATION & COMPETITION AUTHORITY — FREDERICK HOUSE

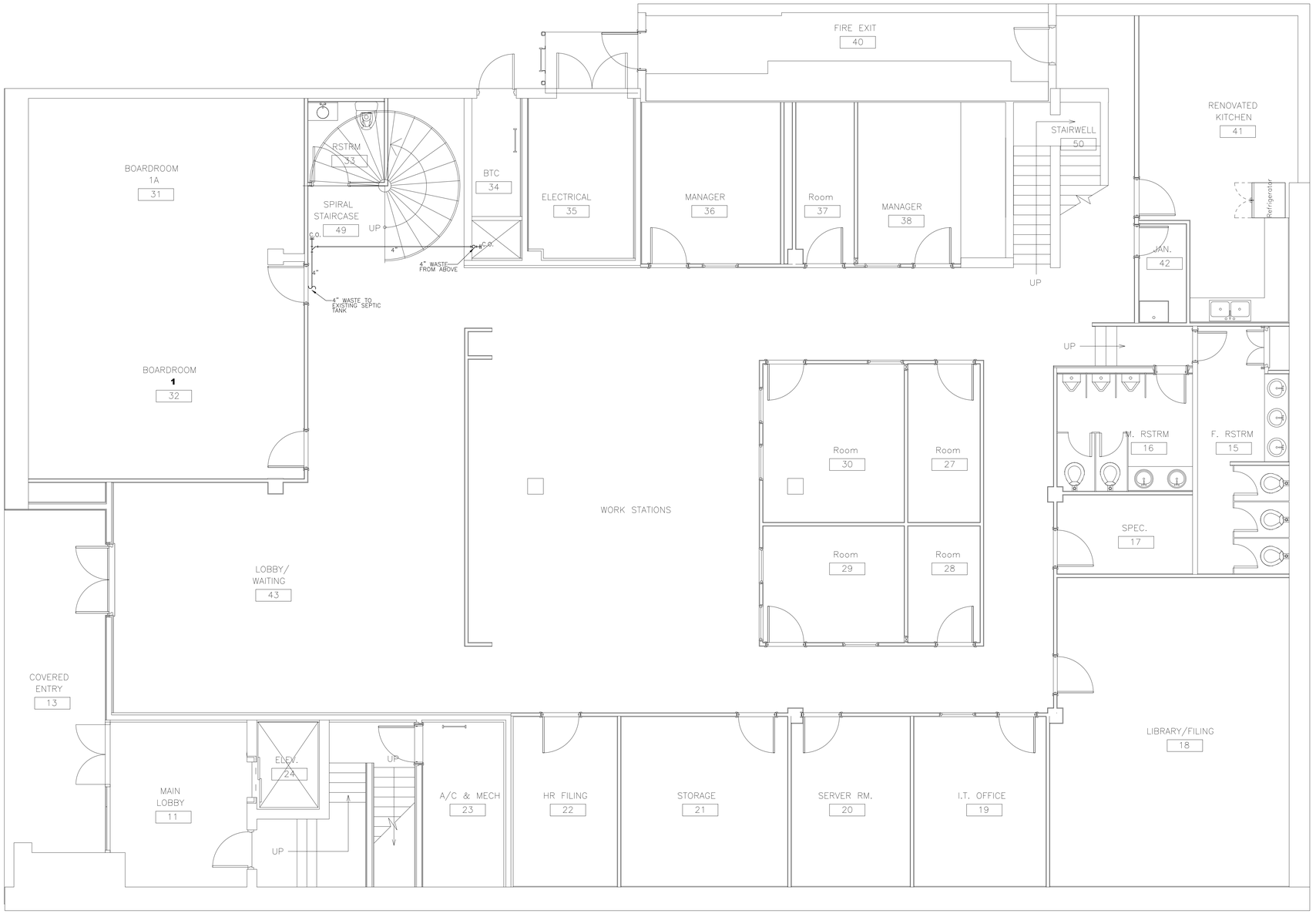
LOCATION
FREDERICK STREET, NASSAU, BAHAMAS.

TITLES PLUMBING NOTES & LEGEND

SCALE N.T.S.

CLIENT URCA

PROJECT ARCHITECT	NUMBER PROJECT	DRAWING NO.
TDG		P-1
DRAWN BY B&A		
DATE OCT.'12		REF: \URCA



GROUND FLOOR PLUMBING DWV PLAN

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

The drawings are diagrammatic and indicate general layout of equipment and approximate dimensions, unless a dimensional detail is included. The drawings do not show all architectural and structural details. Refer to the contract set of building drawings and check for any variations from the plans. Take any information requiring accurate dimensions from the building drawings or at the building.

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PROJECT
PROPOSED RENOVATIONS FOR
UTILITIES REGULATION & COMPETITION
AUTHORITY – FREDERICK HOUSE

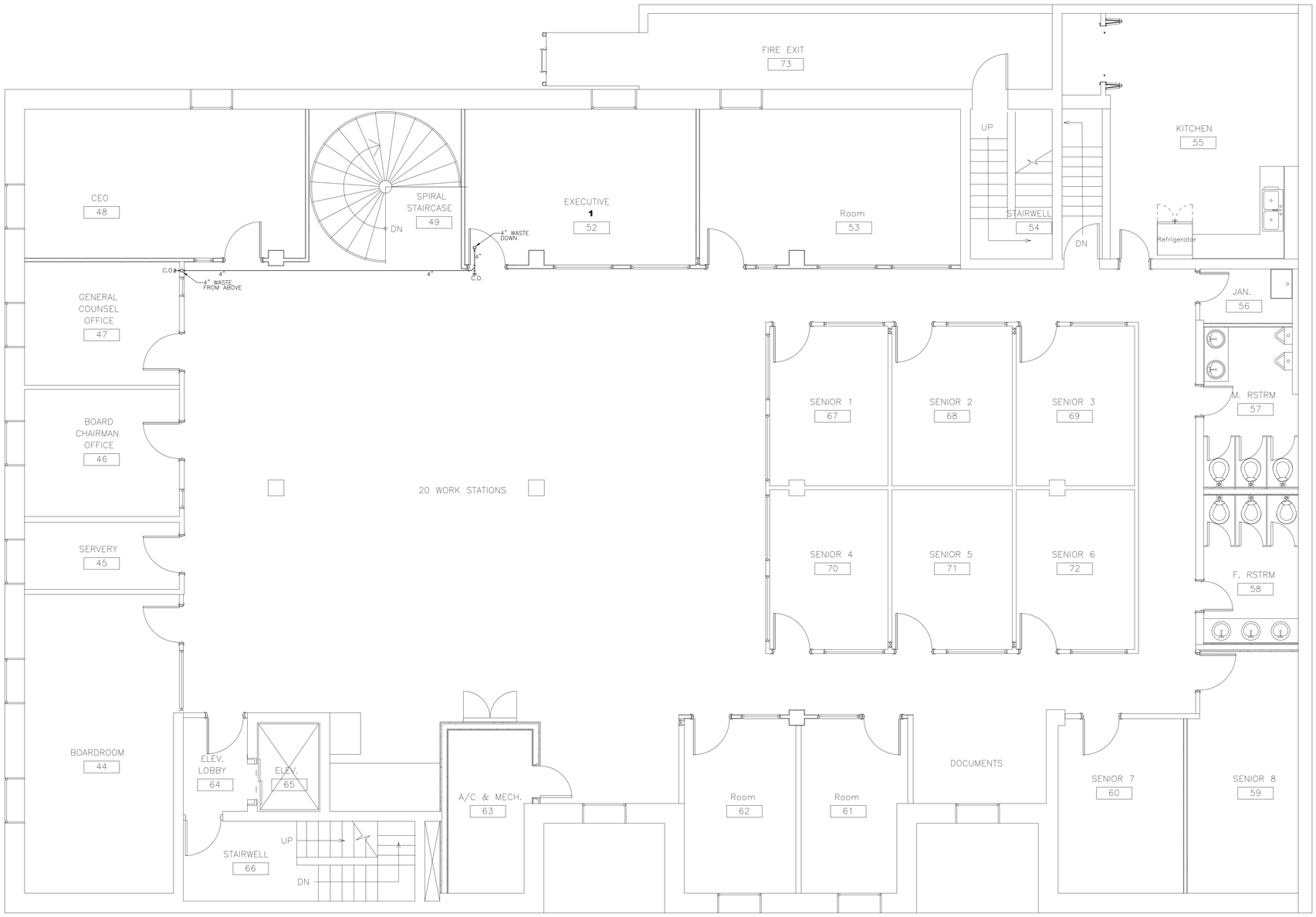
LOCATION
FREDERICK STREET, NASSAU, BAHAMAS.

TITLES GROUND FLOOR PLUMBING – DWV

SCALE 1/4" = 1'-0"

CLIENT URCA

PROJECT ARCHITECT	NUMBER PROJECT	DRAWING NO.
TDG		P-2
DRAWN BY B&A		
DATE OCT.'12		REF. \URCA



FIRST FLOOR PLUMBING DWV PLAN

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

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PROJECT
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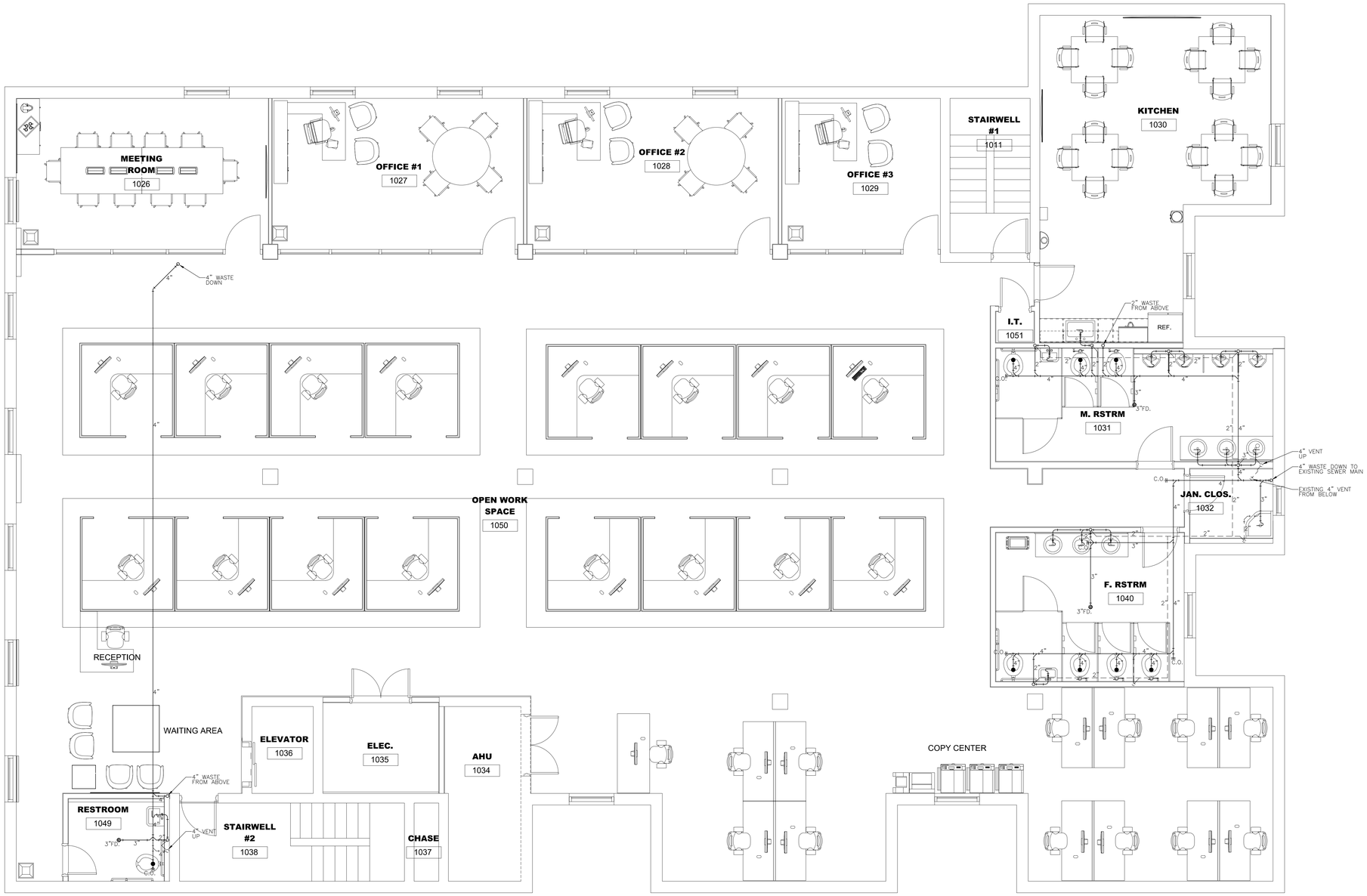
LOCATION
FREDERICK STREET, NASSAU, BAHAMAS.

TITLES FIRST FLOOR PLUMBING – DWV

SCALE 1/4" = 1'-0"

CLIENT URCA

PROJECT ARCHITECT	NUMBER PROJECT	DRAWING NO.
TDG		P-3
DRAWN BY B&A		REF. \URCA
DATE OCT.'12		



SECOND FLOOR PLUMBING DWV PLAN

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

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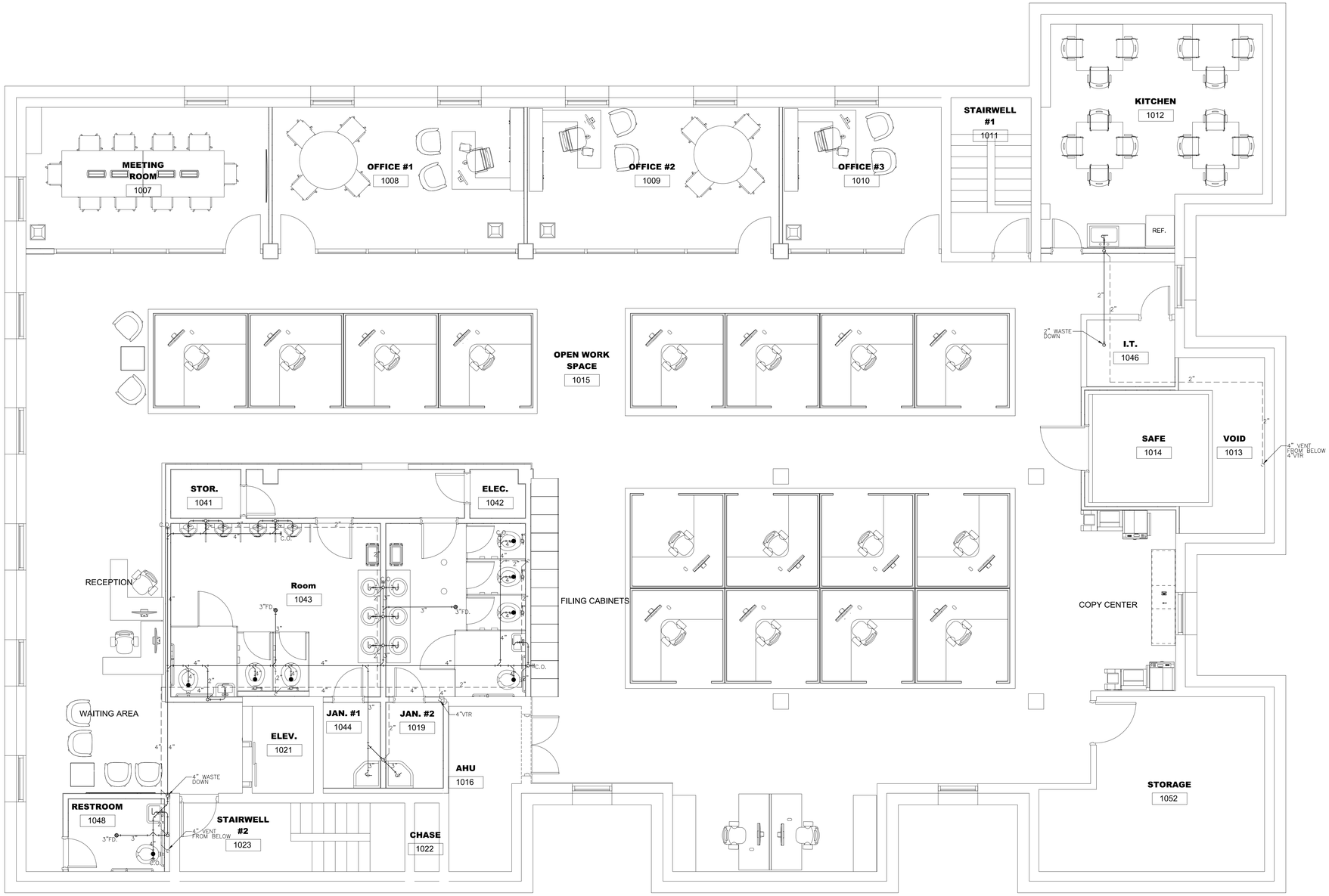
LOCATION FREDERICK STREET, NASSAU, BAHAMAS.

TITLES SECOND FLOOR PLUMBING – DWV

SCALE 1/4" = 1'-0"

CLIENT URCA

PROJECT ARCHITECT	NUMBER PROJECT	DRAWING NO.
TDG		P-4
DRAWN BY B&A		REF. \URCA
DATE OCT.'12		



THIRD FLOOR PLUMBING DWV PLAN

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

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PROJECT
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LOCATION
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TITLES THIRD FLOOR PLUMBING – DWV

SCALE 1/4" = 1'-0"

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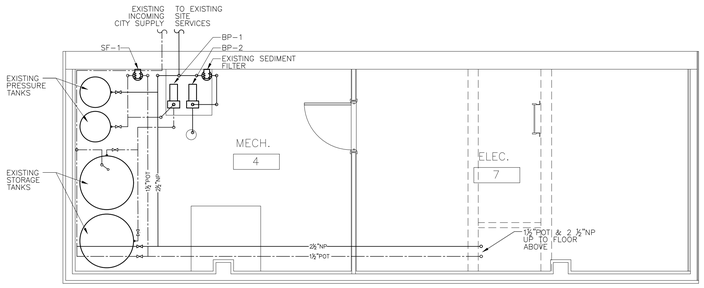
PROJECT ARCHITECT	NUMBER PROJECT	DRAWING NO.
TDG		P-5
DRAWN BY B&A		REF. \URCA
DATE OCT.'12		



BASEMENT PLUMBING WATER SUPPLY PLAN

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

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LOCATION
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TITLES BASEMENT PLUMBING – WATER

SCALE 1/4" = 1'-0"

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PROJECT ARCHITECT	NUMBER PROJECT	DRAWING NO.
TDG		P-6
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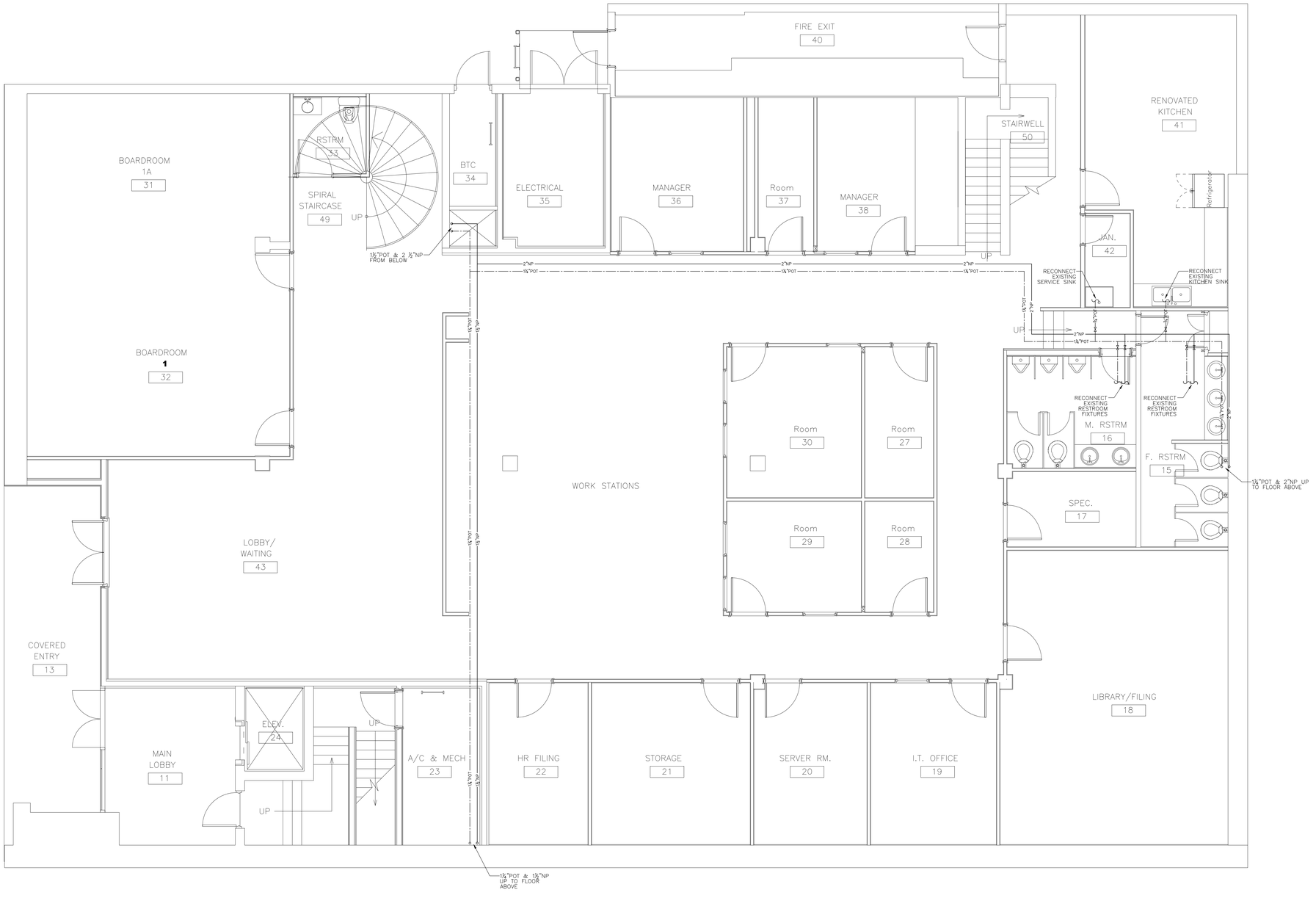
DATE OCT.'12		REF. \URCA



GROUND FLOOR PLUMBING WATER SUPPLY PLAN

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

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TITLES GROUND FLOOR PLUMBING – WATER

SCALE 1/4" = 1'-0"

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PROJECT ARCHITECT	NUMBER PROJECT	DRAWING NO.
TDG		P-7
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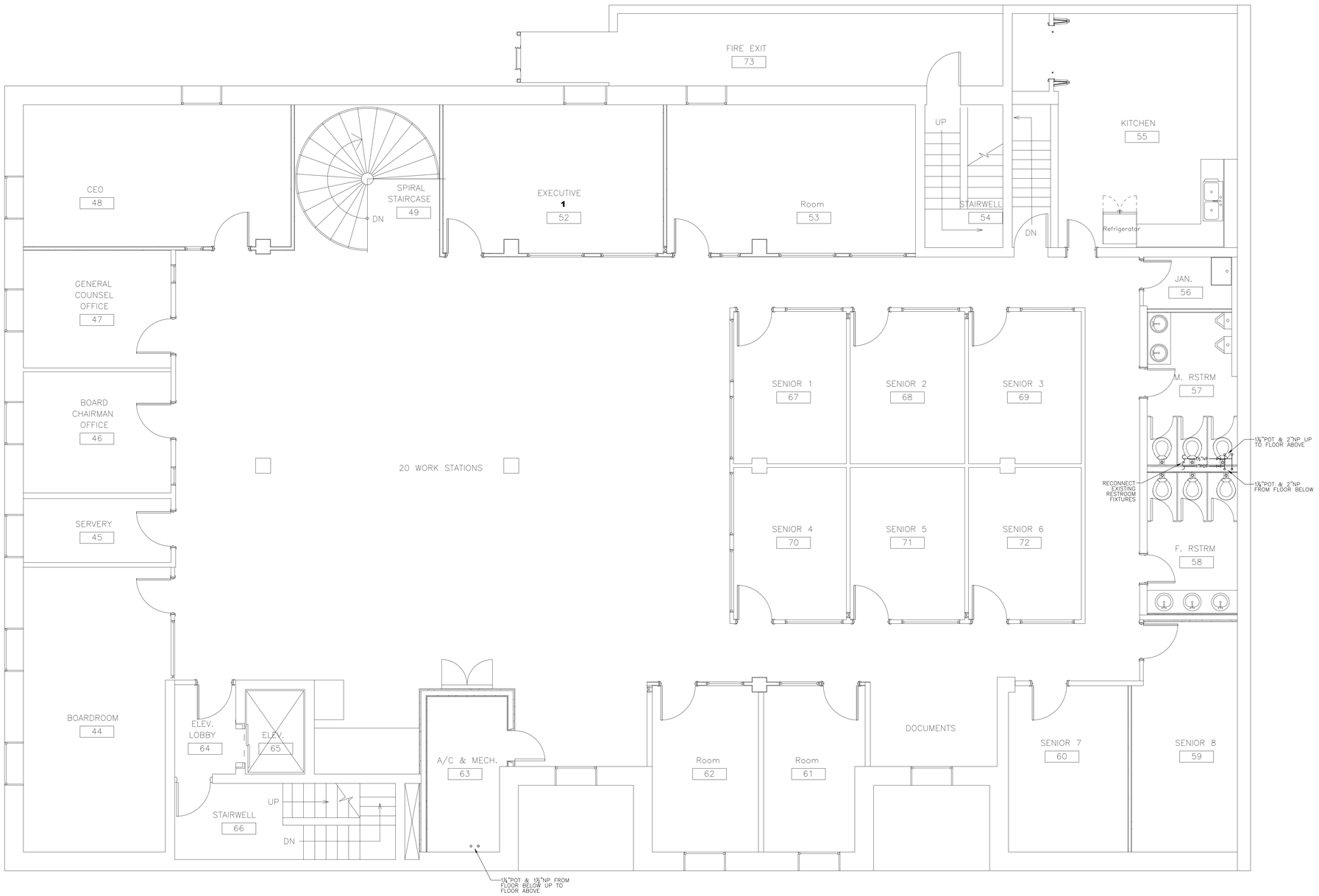
DATE OCT.'12		REF. \URCA



FIRST FLOOR PLUMBING WATER SUPPLY PLAN

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

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LOCATION
FREDERICK STREET, NASSAU, BAHAMAS.

TITLES FIRST FLOOR PLUMBING – WATER

SCALE 1/4" = 1'-0"

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PROJECT ARCHITECT	NUMBER PROJECT	DRAWING NO.
TDG		P-8
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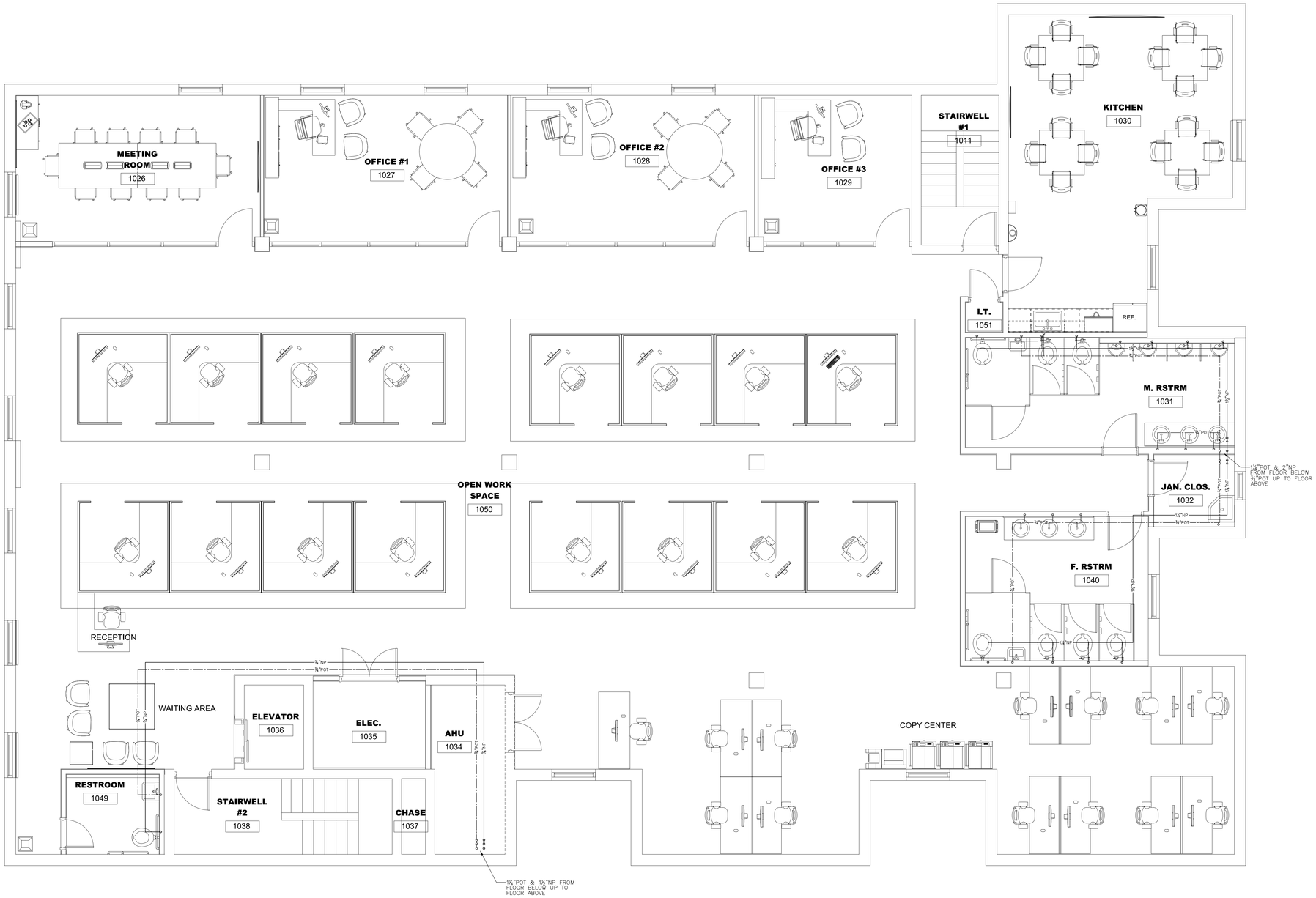
DATE OCT.'12		



SECOND FLOOR PLUMBING WATER SUPPLY PLAN

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

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TITLES SECOND FLOOR PLUMBING – WATER

SCALE 1/4" = 1'-0"

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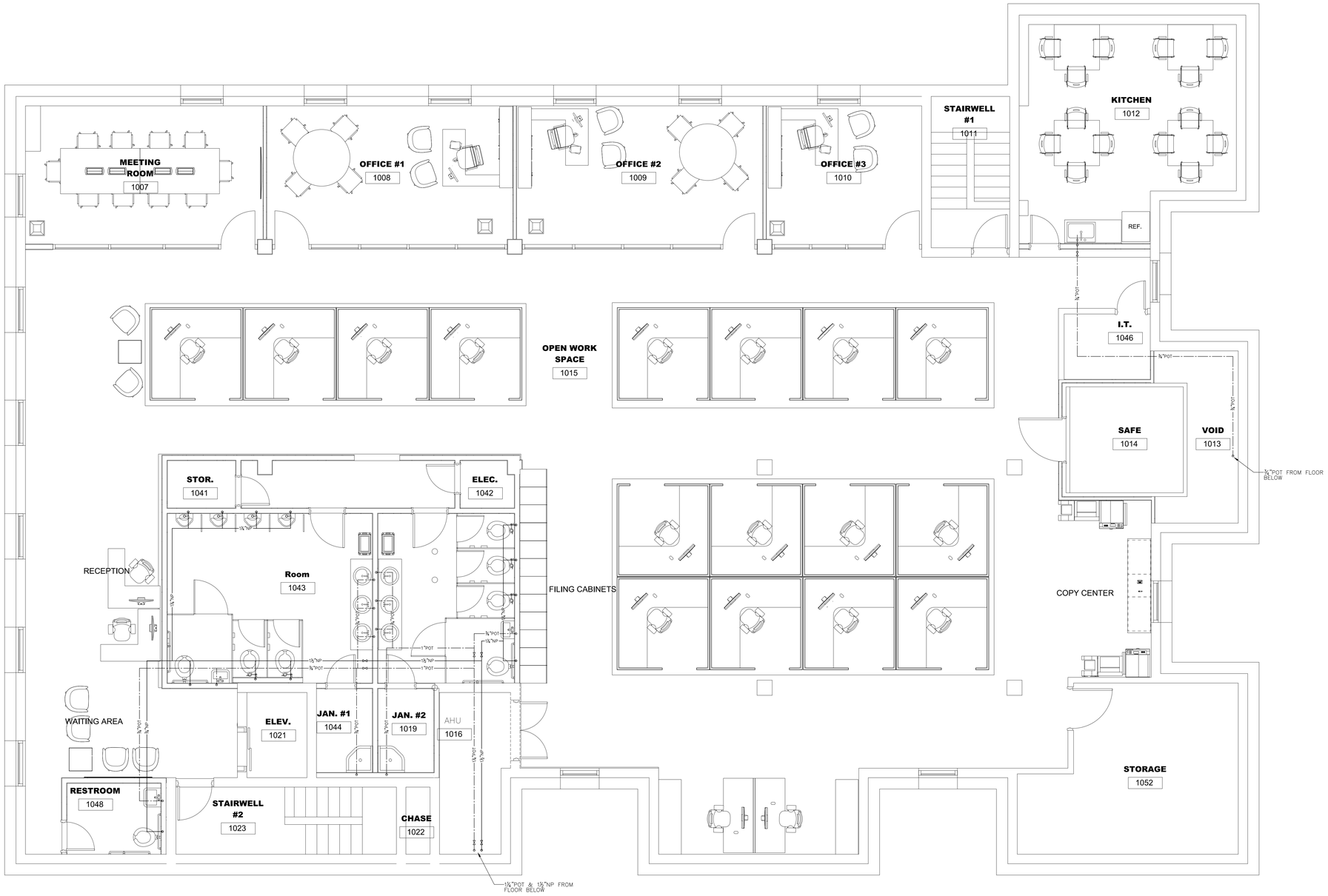
PROJECT ARCHITECT	NUMBER PROJECT	DRAWING NO.
TDG		P-9
DRAWN BY B&A		
DATE OCT.'12		REF. \URCA



THIRD FLOOR PLUMBING WATER SUPPLY PLAN

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

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TITLES THIRD FLOOR PLUMBING – WATER

SCALE 1/4" = 1'-0"

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PROJECT ARCHITECT	NUMBER PROJECT	DRAWING NO.
TDG		P-10
DRAWN BY B&A		REF. \URCA
DATE OCT.'12		