

CITY OF PLANTATION , FL

located at

6814 NW 15th Street
Plantation, FL 33313



HVAC WORKS

MECHANICAL GENERAL NOTES

- A. DRAWINGS ARE DIAGNOSTIC IN NATURE AND DO NOT NECESSARILY SHOW ALL OFFSETS REQUIRED FOR COMPLETE SYSTEM.
- B. UNLESS NOTED/SHOWN OTHERWISE, ALL DUCTWORK SHALL BE RUN AS HIGH AS POSSIBLE, TIGHT TO STRUCTURE WHERE FEASIBLE. RUN DUCTS UP IN JOIST SPACE WHERE INDICATED AND AS REQUIRED. COORDINATE WITH ELECTRICAL AND PLUMBING CONTRACTORS PRIOR TO INSTALLATION. VALVES AND OTHER MAINTENANCE ITEMS SHALL NOT BE INSTALLED HIGHER THAN 2 FEET ABOVE CEILINGS.
- C. LOCATE EQUIPMENT TO ALLOW ACCESS FOR ADJUSTMENT AND SERVICING. REFER TO INSTALLATION MANUALS UNLESS OTHERWISE SPECIFICALLY SHOWN ON THESE DRAWINGS. LOCATE HANGING EQUIPMENT WITHIN THE SPACE SO THAT MAINTENANCE ACCESS IS PROVIDED FROM BELOW, AND MAINTENANCE AREA AROUND AND ACCESS AREA BELOW IS FREE OF OBSTRUCTIONS INCLUDING PIPING, DUCTWORK, CONDUIT OR OTHER BUILDING ELEMENTS.
- D. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SEALING PENETRATIONS THROUGH FIRE RATED AND/OR SMOKE RATED SEPARATIONS. SEE SPECIFICATIONS FOR FIRE AND SMOKE RATED SEALANTS. COORDINATE WITH ARCHITECTURAL PLANS FOR RATED SEPARATION LOCATIONS.
- E. COORDINATE UNDERGROUND PIPING WITH STRUCTURAL FOOTINGS, SITE UTILITIES SERVICES, AND BUILDING SERVICES. FIELD VERIFY LOCATION OF ALL UTILITIES AND EXACT DIMENSIONS DURING BIDDING PORTION OF PROJECT. NOTIFY ANY DISCREPANCY OR INTERFERENCE TO ENGINEER.
- F. ALL DUCT FITTINGS WHERE TURN IS GREATER THAN 30-DEGREES SHALL BE PROVIDED WITH TURNING VANES UNLESS NOTED OTHERWISE.
- G. DAMPER SHALL BE FITTED WITH QUADRANT CONTROL WITH STANDOFF TO EXTEND THRU INSULATION. DAMPERS SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS.
- H. NEW THERMOSTATS AND SENSORS SHALL BE LOCATED ON WALL NEAR LOCATION SHOWN. LOCATE ON WALL WITH CENTER AT 3'-8" ABOVE FINISH FLOOR, MATCHING LIGHT FIXTURE SWITCH HEIGHT, UNLESS NOTED OTHERWISE.
- I. ALL DUCT SEAMS SHALL BE SEALED.
- J. KEEP ALL DUCT OPENINGS AND AIR DEVICES COVERED AIR-TIGHT UNTIL ALL DUST CREATING ACTIVITY HAS BEEN FINISHED AND EQUIPMENT IS READY FOR START-UP.
- K. DUCTWORK TO REGISTER/GRILLE SHALL MATCH REGISTER NECK SIZE UNLESS NOTED OTHERWISE.

MECHANICAL SYMBOLS AND ABBREVIATIONS

MECHANICAL SYMBOLS	
AIR CONDITIONING & VENTILATION, PIPING	
	TOP ENTRY DIFFUSER C/W INSULATION
	RETURN DIFFUSER/GRILLE
	FLEXIBLE CONNECTION STRAIGHT
	FLEXIBLE CONNECTION 90° BEND
	FLEXIBLE CONNECTION 45° BEND
	FLEXIBLE CONNECTION
	ACCESS PANEL
	ACCESS PANEL
	ATTENUATOR
	AIR TRANSFER GRILLE
	ACOUSTIC DUCT INSULATION – INTERNAL
	FIRE DAMPER
	MOTORIZED FIRE DAMPER
	OPPOSED BLADE DAMPER
	VOLUME CONTROL DAMPER
	BUTTERFLY DAMPER
	NON RETURN DAMPER
	FRESH AIR INTAKE LOUVER WITH WIRE MESH
	AIR FILTER
	TURNING VANES
	AIR EXTRACTOR
	SPLITTER DAMPER
	ELBOW
	REDUCER
	IN-LINE/AXIAL FAN
	FAN COIL UNIT
	EQUIPMENT IDENTIFICATION
(NO)	AIR DEVICE IDENTIFICATION

MECHANICAL SYMBOLS	
AIR CONDITIONING & VENTILATION	
	ACCESS DOOR BOTTOM OR SIDE
	RECTANGULAR CEILING DIFFUSER DIRECTION OF FLOW INDICATED BY ARROWS
	ROUND CEILING DIFFUSER
	RETURN AIR CEILING DIFFUSER
	SUPPLY LINEAR SLOT DIFFUSER
	RETURN LINEAR SLOT DIFFUSER
	RETURN AIR GRILLE
	DISC VALVE
	SUPPLY AIR DUCT F/A AND/OR T/B
	RETURN AIR DUCT F/A AND/OR T/B
	RECTANGULAR AIR DUCT (24" WIDE X 12" DEEP)
	DUCT FLEXIBLE CONNECTOR
	MOTOR CONTROL CENTRE
	CARBON MONOXIDE (CO) SENSORS
DP	DIFFERENTIAL PRESSURE
	PRESSURE DIFFERENTIAL SENSOR
	THERMOSTAT
	MOTORIZED DAMPER
	TEMPERATURE SENSOR
	PRESSURE SENSOR & TRANSMITTER
CHWS	CHILLED WATER SUPPLY PIPE
CHWR	CHILLED WATER RETURN PIPE
HWS	HOT WATER SUPPLY PIPE
HWR	HOT WATER RETURN PIPE
CH/HWS	CHILLED/HOT WATER SUPPLY PIPE
CH/HWR	CHILLED/HOT WATER RETURN PIPE
M	MAKE UP WATER
D	OVER FLOW & DRAIN PIPE

ABBREVIATION	
SA	SUPPLY AIR
RA	RETURN AIR
OA	OUTSIDE AIR
FA	FRESH AIR
EA	EXHAUST AIR
CHWS/R	CHILLED WATER SUPPLY & RETURN
SD	SPLITTER DAMPER
CFM	CUBIC FEET PER MINUTE
GPM	GALLON PER MINUTE
EAR	EXHAUST AIR REGISTER
EAG	EXHAUST AIR GRILLE
SAG	SUPPLY AIR GRILLE
SAR	SUPPLY AIR REGISTER
VD	VOLUME CONTROL DAMPER
Ø	DIAMETER
HP	HORSE POWER
IN	INCHES
SCD	SUPPLY CEILING DIFFUSER
D/L	DOOR LOUVER
D/UC	DOOR UNDER CUT
KW	KILOWATT
RPM	REVOLUTION PER MINUTE

MECHANICAL SYMBOLS	
ABBREVIATION	
SF	SUPPLY FAN
EF	EXHAUST FAN
CH	CHILLER
CT	COOLING TOWER
AS	AIR SEPARATOR
AHU	AIR HANDLING UNIT
FCU	FAN COIL UNIT
HWH	HOT WATER HEATER
CHP	CHILLED/HOT WATER PUMP
CWP	CONDENSER WATER PUMP
GV	GATE VALVE
DV	DRAIN VALVE
BV	BALANCING VALVE
MV	MOTORIZED VALVE
CV	CHECK VALVE
PG	PRESSURE GAUGE
N.V.	NATURAL VENTILATION
M.V.	MECHANICAL VENTILATION
PU	PRESSURISATION UNIT WITH EXPANSION TANK
SPF	STAIRCASE PRESSURIZATION FAN
SEF	SMOKE EXHAUST FAN
FAHU	FRESH AIR HANDLING UNIT
VFD	VARIABLE FREQUENCY DRIVE
KEF	KITCHEN EXHAUST FAN
VAV	VARIABLE AIR VOLUME
CAV	CONSTANT AIR VOLUME

VALVES, FITTINGS AND SPECIALTIES	
	GATE VALVE
	GLOBE VALVE
	CHECK VALVE
	PLUG VALVE
	BUTTERFLY VALVE
	BALL VALVE
	NON RETURN VALVE
	Y STRAINER
	Y STRAINER WITH DRAIN VALVE
	BALANCING VALVE
	CONTROL VALVE
	FLOW DIRECTION
	PRESSURE GAUGE
	PUMP SCHEMATIC
	THERMOMETER
	AUTOMATIC AIR VENT
	THREE WAY CONTROL VALVE (MOTORIZED)
	PRESSURE SAFETY VALVE
	FLEXIBLE COUPLING
	FLOW SWITCH
	FLOAT VALVE
	SIGHT GLASS

REV.	DATE	DESCRIPTION	SIGN.
AMENDMENTS			
PROJECT _____ 			
TITLE _____			
HVAC GENERAL NOTES AND LEGENDS			
STATUS _____			
SCALE N.T.S. 2004-06-23	DATE	JOB NO.	REVISION
DRAWN GILUSIAN	CHECKED GILUSIAN	DWG. NO.	M-01 R-00
DESIGNED	APPROVED		

LEGENDS:	
	ROOM THERMOSTAT SENSOR
	ZONE CONTROL DAMPER
	AIR HANDLING UNIT(GAS FURNACE UP FLOW UNIT)
	SUPPLY AIR REGISTERS
	RETURN AIR GRILL
	CONDENSING UNIT
	CONDENSING UNIT
	EXHAUST AIR FAN WITH SIDE/ROOF VENT
	REFERENCE PIPES
	SUPPLY AIR ROUND R8 DUCT
	RETURN AIR ROUND R8 DUCT
	FRESH AIR ROUND R8 DUCT
	EXHAUST AIR DUCT R8 DUCT
	SUPPLY AIR
	RETURN AIR

[illegible]

REV.	DATE	DESCRIPTION	SIGN

PROJECT	
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TITLE

STATUS

SCALE N.T.S	DATE 2024-05-23	JOB NO.	REVISION
DRAWN GAUSSAIN	CHECKED GAUSSAIN	DWG NO. M-04	R-00
DESIGNED	APPROVED		

EQUIPMENT SCHEDULE

ITME NO	INDOOR UNIT TAG	QTY	HEATING/COOLING CAPACITY		OUTDOOR UNIT TAG	REMARKS
			TR	BTU/H		
1	AHU(01)	1	5.0	60,000	CU(01)	HEATING WITH GAS FURNACE

EXHAUST AIR FAN SCHEDULE

ITME NO	INDOOR UNIT TAG	QTY	AREA SERVED	AIR FLOW CFM	E.S.P IN.WG	ELECTRICAL			POWER KW	REMARKS
						VOLTS	PH	HZ		
1	EF-01	8	BATHS,WIC,PANTARY	50	0.20	230	1	50	–	WITH ROOF VENT AND BACK DRAFT DAMPER

REV.	DATE	DESCRIPTION	SIGN
AMENDMENTS			
PROJECT			
TITLE			
HVAC EQUIPMENT SCHEDULES			
STATUS			
SCALE	DATE	JOB NO.	REVISION
N.T.S	2024-05-23		
DRAWN	CHECKED	DWG NO.	
GAUSSAN	GAUSSAN		
DESIGNED	APPROVED	M-05	R-00

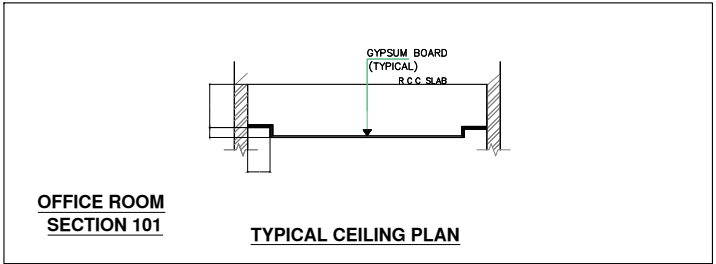
ELECTRICAL GENERAL NOTES

1. Panelboards for 480/277, 208/120, or 240/120 volt lighting and receptacle service shall be dead front type, conforming to NEMA standard PB-1-1-71 and UL 67, and consisting of three phase, three or four wire solid neutral, main lugs or main overcurrent device as indicated, branch overcurrent devices as noted and equipment ground bar, all in a surface or flush mounted code gauge galvanized sheet steel cabinet as indicated. Enclosure to be NEMA 1 unless noted otherwise with primer and finish paint of the manufacturer's standard.
2. Standard enclosure shall be NEMA 1, unless noted otherwise, with primer and finish paint of the manufacturer's standard.Cabinets shall be oversized where necessary to accommodate the entrance of several large conduits and/or when necessary to avoid overcrowding except cabinets for panels mounted flush shall be not more than 22 inches wide and 5-3/4 inches deep unless otherwise approved by architect/engineer. Trims shall contain hinged doors and shall be equipped with flush chrome plated combination key locks and catches.
3. Column-type enclosures shall be similar to standard enclosure except panel shall be approximately 8-1/2 inches wide formounting between building column webs as indicated, and provided with extension trough and pullbox with neutral bar when shown on the drawings. Where spaces are noted on the drawing, provide the panelboard with bus and all necessary hardware for future circuit breaker installation.
4. Metal frame and plastic covered typewritten card shall be mounted inside each panel door. Information entered onto the Cards shall correspond to the circuit numbers as installed in field.
5. General use circuit breakers for panelboards shall be bolt-on molded plastic case type, 1, 2, or 3 pole, quick-make, quick-break, with trip-free operating handle, position indicating and thermal-magnetic trip device. Furnish 2 and 3 pole breakers with common operating handle and common trip mechanism. All circuit breakers used for switching applications shall be U.L. listed type "SWD" for that application. All circuit breakers used for protection of motors, refrigeration equipment, or HVAC equipment shall be U.L. listed type "HACR" for that application.
6. Circuit breakers furnished with panelboards shall conform to the following interrupting ratings (symmetrical) in amperes unless otherwise noted in the panel schedules or on the drawings.
7. Ground fault circuit interrupters shall be similar to general use circuit breakers specified; 15-20 ampere, 1 or 2 pole with 5ma sensitivity.

8. Contractor shall refer to architectural drawings for ceiling type, construction and details of mounting. Adjust fixture trim ring as required for correct mounting in ceiling fixture is to be installed. All fixtures shall be supported per NEC Article 410.
9. Suspended ceiling systems shall be supported for fixture installation as noted above, and as a minimum condition, as noted in ANSI/ASTM C636-76, par. 2-7, CEILING FIXTURES.
10. Install fixtures in accordance with the Architectural Reflected Ceiling Plans. Where substantial differences may occur Between the Reflected Ceiling Plans and the Electrical Plans, inform the Architect/Engineer for resolution of the discrepancy. Contractor shall also review local seismic requirements and provide additional work as necessary.
11. The Contractor shall coordinate fixture construction details with ceiling system in which they are installed, i.e.: support system dimensions, flanges where required, acoustical tile or pan pattern, etc.
12. Rows of fixtures shall be installed accurately as to line and level. Fixtures shall be securely mounted so that they will not be distorted by handling incidental to normal maintenance.
13. Surface type fluorescent lighting fixtures mounted on acoustical ceiling must be coordinated with the Architectural Drawings in order that a main "T" runner will be placed in the center of each fixture and/or each row of fixtures. Main "T" runner shall be of at least the same length as the lighting fixture and shall be supported to carry at least twice the weight of the lighting fixture.
14. All fixtures shall be securely supported with approved hangers. Where fixtures will be installed in suspended ceilings, any Code-required additional ceiling supports as approved by the Architect, shall be provided by this Contractor.
15. Metal frame and plastic covered typewritten card shall be mounted inside each panel door. Information entered onto the Cards shall correspond to the circuit numbers as installed in field.

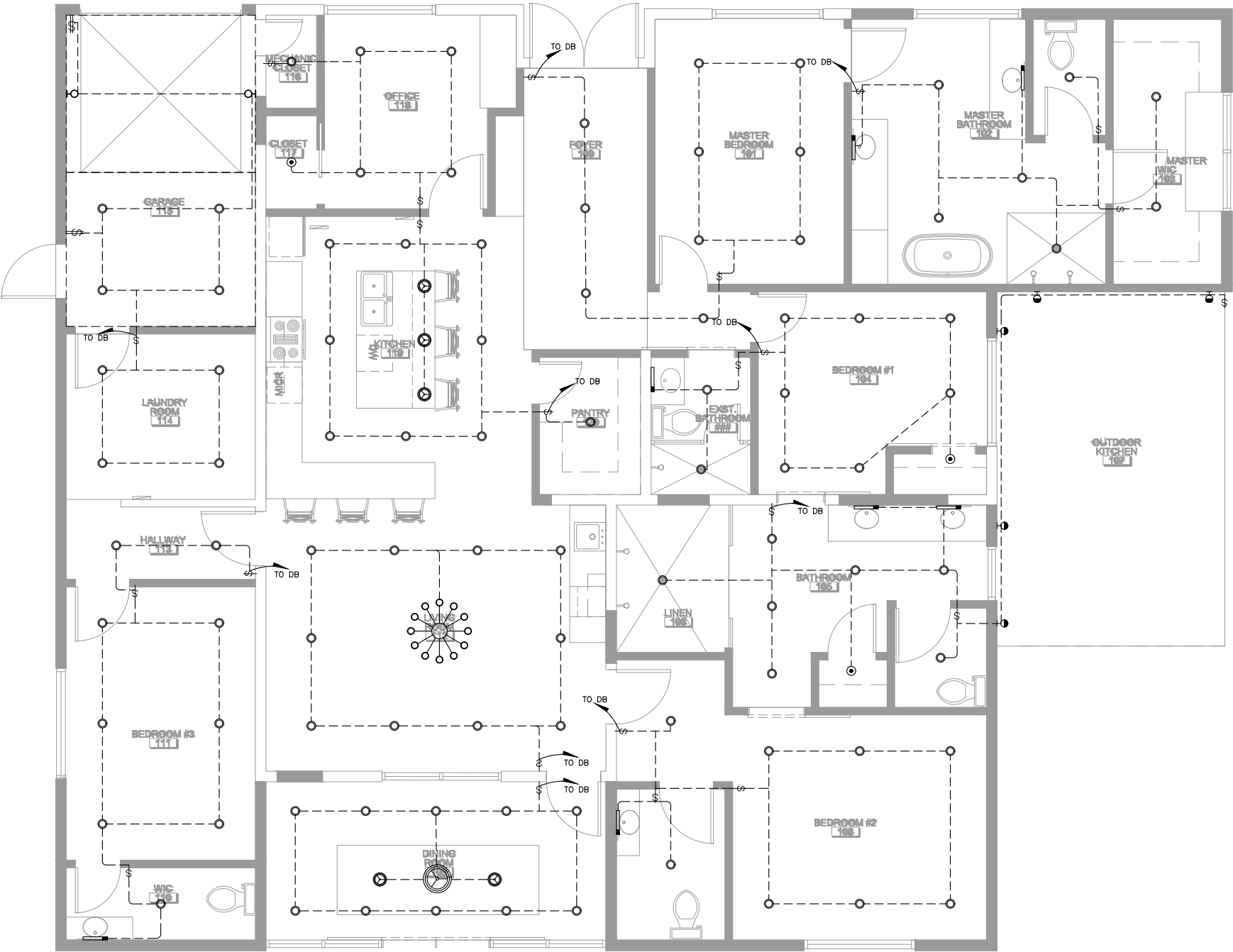
16. Panelboards for 480/277, 208/120, or 240/120 volt lighting and receptacle service shall be dead front type, conforming to NEMA standard PB-1-1-71 and UL 67, and consisting of three phase, three or four wire solid neutral, main lugs or main overcurrent device as indicated, branch overcurrent devices as noted and equipment ground bar, all in a surface or flush mounted code gauge galvanized sheet steel cabinet as indicated. Enclosure to be NEMA 1 unless noted otherwise with primer and finish paint of the manufacturer's standard.
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18. Column-type enclosures shall be similar to standard enclosure except panel shall be approximately 8-1/2 inches wide formounting between building column webs as indicated, and provided with extension trough and pullbox with neutral bar when shown on the drawings. Where spaces are noted on the drawing, provide the panelboard with bus and all necessary hardware for future circuit breaker installation.

REV.	DATE	DESCRIPTION	SIGN
AMENDMENTS			
PROJECT			
TITLE			
ELECTRICAL GENERAL NOTES			
STATUS			
SCALE	DATE	JOB NO.	REVISION
AS SHOWN	2024-09-23		
DRAWN	CHECKED	DWG NO.	
M.A.	M.A.		
DESIGNED	APPROVED		
-	-		



CEILING PLAN

REV.	DATE	DESCRIPTION	SIGN
AMENDMENTS			
PROJECT			
TITLE			
CEILING PLAN			
STATUS			
SCALE	DATE	JOB NO.	REVISION
AS SHOWN	2024-05-23		
DRAWN	CHECKED	DWG NO.	
M.A.	M.A.		
DESIGNED	APPROVED		
-	-		



LEGENDS	
SYMBOLS	DESCRIPTION
\$	LIGHT CONTROL SWITCH
\$	2WAY SWITCH
⊙	3 INCH DOWN LIGHT RECESSED
○	6 INCH DOWN LIGHT RECESSED
—	BATHROOM VANITY MIRROR LIGHT
☼	CHANDELIER
⦿	PENDANT LIGHT
⦿	OUTDOOR WALL MOUNTED LIGHT
⦿	INDOOR WALL MOUNTED LIGHT
CKT	CIRCUIT NO
⦿	DUPLEX RECEPTACLE (110V)
⦿ GFI	DUPLEX RECEPTACLE GROUND FAULT CIRCUIT INTERRUPTER (110V)
⦿ 220	DUPLEX RECEPTACLE (220V)
■	DISTRIBUTION BOARD (DB)
□	ISOLATOR

LIGHTING PLAN

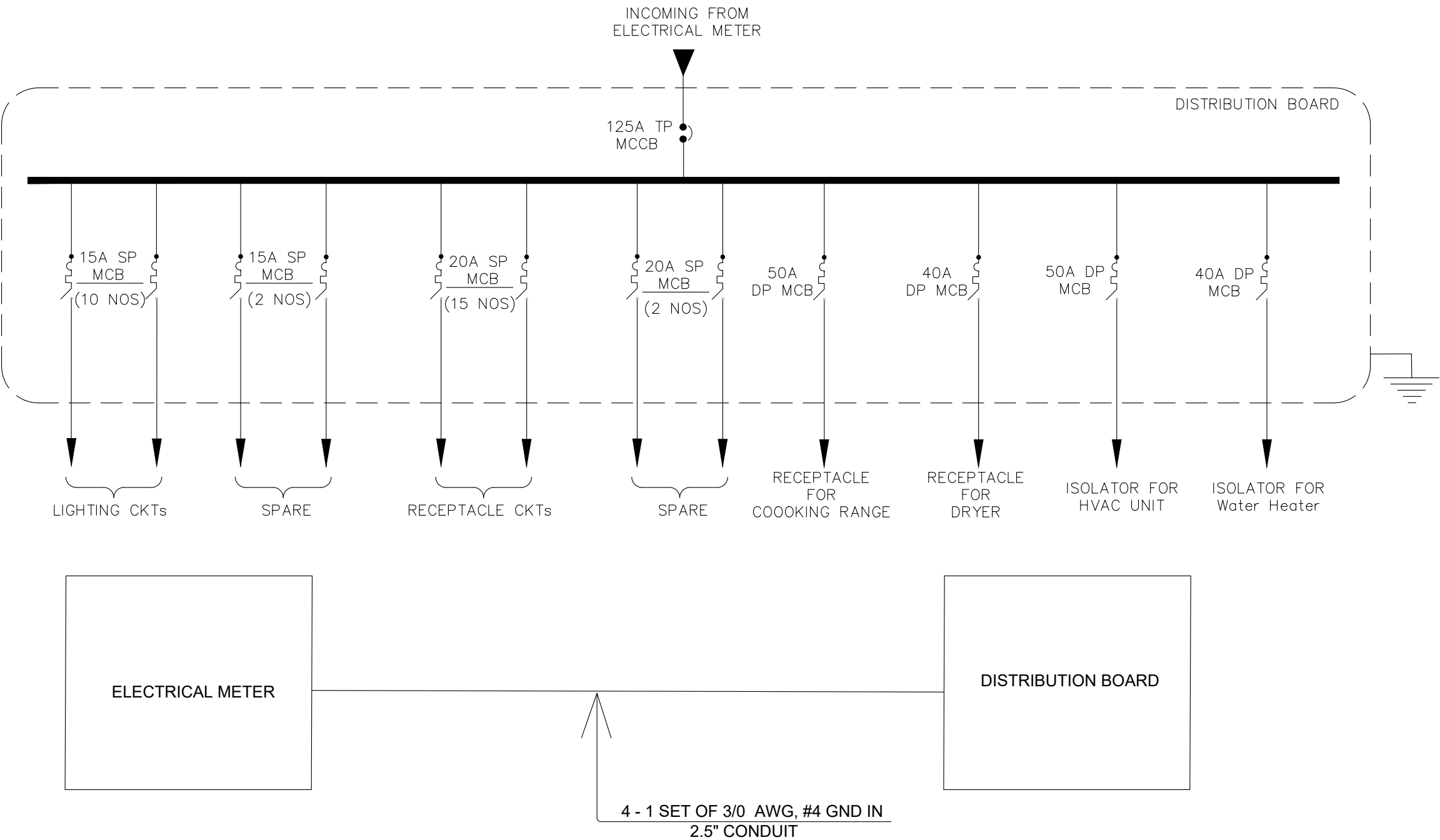
REV.	DATE	DESCRIPTION	SIGN
AMENDMENTS			
PROJECT			
TITLE			
LIGHTING PLAN			
STATUS			
SCALE	DATE	JOB NO.	REVISION
AS SHOWN	2024-05-23		
DRAWN	CHECKED	DWG NO.	
M.A.	M.A.		
DESIGNED	APPROVED		



LEGENDS	
SYMBOLS	DESCRIPTION
⌚	LIGHT CONTROL SWITCH
⌚	2WAY SWITCH
⦿	3 INCH DOWN LIGHT RECESSED
⦿	6 INCH DOWN LIGHT RECESSED
⌚	BATHROOM VANITY MIRROR LIGHT
⦿	CHANDELIER
⦿	PENDANT LIGHT
⦿	OUTDOOR WALL MOUNTED LIGHT
⦿	INDOOR WALL MOUNTED LIGHT
CKT	CIRCUIT NO
⦿	DUPLEX RECEPTACLE (110V)
⦿	DUPLEX RECEPTACLE GROUND FAULT CIRCUIT INTERRUPTER (110V)
⦿	DUPLEX RECEPTACLE (220V)
■	DISTRIBUTION BOARD (DB)
⌚	ISOLATOR

POWER PLAN

REV.	DATE	DESCRIPTION	SIGN
AMENDMENTS			
PROJECT			
TITLE			
POWER PLAN			
STATUS			
SCALE	DATE	JOB NO.	REVISION
AS SHOWN	2024-05-23		
DRAWN	CHECKED	DWG NO.	
M.A	M.A		
DESIGNED	APPROVED		



- NOTE:
- ALL PANELS AND CABLES ARE EXISTING TO REMAINS
 - CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS BEFORE EXECUTION.

GROUND FLOOR

RISER DIAGRAM

REV	DATE	DESCRIPTION	SIGN
AMENDMENTS			
PROJECT			
TITLE			
RISER DIAGRAM			
STATUS			
SCALE	AS SHOWN	DATE	2024-05-23
DRAWN	M.A	CHECKED	M.A
DESIGNED		APPROVED	
JOB NO.		REVISION	
DWG NO.			

Fixture and Load Schedule							
Sr. No.	Description	VA	Qty	Unit	Connected Load (VA)	Demand Factor	Demand Load (VA)
Lighting Load							
1	6" Down Light Recessed, Color Temperature (Kelvin)3000, CRI 90, Brightness (Lumens) : 850, Life (Hours) : 50000, Voltage: 120V	12	92	No.	1104	1	1104
2	4" Down Light Recessed, 700lm, CCT Color Temperature Selectable 3000K, CRI 80, Life (Hours) : 50000,Voltage: 120V	9	3	No.	27	1	27
3	10 Inch LED Outdoor Wall Mounted Light, CCT Color Temperature Selectable 3000K, Life (Hours) : 25000, Voltage: 120V	15	5	No.	75	1	75
4	LED Indoor Wall Sconce, CCT Color Temperature 2700K Soft White, Life (Hours) : 25000, Voltage: 120V	15	2	No.	30	1	30
5	16 inch LED Bathroom Vanity Mirror Light, Daylight 6000K, IP 44, Lumen: 600lm, average lifespan of up to 25,000 hours,Voltage: 120V	9	7	No.	63	1	63
6	Pendant Light, 660 Lux, Dome shape, Corded Electric, Ceiling Mount, Voltage: 120V	60	6	No.	360	1	360
7	Stainless Steel LED Light Chandelier, Ceiling Mount, AC:110-260V, E26 bulb base, Voltage: 120V	60	1	No.	60	1	60
Power Load							
1	20A Duplex Receptacle (110 V)	400	52	No.	20800	0.5	10400
2	20A Duplex Receptacle (110 V) For Dish Washer	1800	1	No.	1800	0.75	1350
3	20A Duplex Receptacle For Washing	2000	1	No.	2000	0.75	1500
4	20A Duplex Receptacle For Dryer (220 V)	3000	1	No.	3000	0.75	2250
5	20A Duplex Receptacle For Cooking Range(220 V)	3000	1	No.	3000	0.75	2250
6	Isolator for Outdoor Unit	6000	1	No.	6000	1	6000
7	Isolator for Water Heater	3600	1	No.	3600	0.75	2700
	Connected & Demand Load in KVA				41.92		28.17
	Ampere Rating				145.04		97.46
	Ampere Rating with 25 % Spare				181.30		121.83
	Main Breaker Size (Amp)						125
Wire Size				1 SET OF 3/0 (95 mm ²) AWG			

REV.	DATE	DESCRIPTION	SIGN
AMENDMENTS			
PROJECT			
TITLE			
FIXTURE AND LOAD SCHEDULE			
STATUS			
SCALE	DATE	JOB NO.	REVISION
AS SHOWN	2024-05-23		
DRAWN	CHECKED	DWG NO.	
M.A	M.A		
DESIGNED	APPROVED		

CITY OF PLANTATION , FL

located at

6814 NW 15th Street
Plantation,FL 33313



PLUMBING WORKS

PLUMBING SPECIFICATIONS:

PLUMBING PIPING:

- 1.01 Description
A. Furnish and install plumbing piping where shown on drawings and as specified.
B. Waste, vent, domestic water.

2.01 Piping Materials

- A. Options
• Cast iron soil pipe and fittings, service weight: ASTM A74.
• Cast iron soil pipe and fittings, extra heavy weight: ASTM A74.
• Steel pipe: ASTM A53.
• Malleable iron fittings, 150 lb.: ASTM A197.
• Pipe threads: ANSI B2.1.
• Nipples, pipe (threaded): Fed Spec. WW-N-351.
• Copper water tube: ASTM B88.
• Copper drainage tube DWV: ASTM B306.
• Wrought copper and bronze solder-joint pressure fittings: ANSI B16.29.
• Wrought copper and wrought copper alloy solder-joint drainage fittings: ANSI B16.29.
• Caulking lead: Fed. Spec. QQ-C-40 (2).
• Sheet lead: Fed. Spec. QQ-L-201.
• Sheet copper: ASTM B152.

2.02 Joints and Connections

- A. Options
• Between lead and brass: femules or soldering nipples with wiped joints 3/8" thick and 3/4" each side of joints.
• Screwed joints: American National Standard with pipe free from cutting and burrs. Three threads exposed maximum.
• Soldered joints: 95-5 tin-antimony solder. Slip joints: Use for plumbing trap seals on inlet side only.
• Between copper and ferrous materials: insulating dielectric union.

2.03 Pipe Sleeves

- A. Schedule 40 black steel, galvanized 26 gauge steel, provide for all pipes through walls and floors.

2.04 Escutcheons

- A. Provide for all piping through walls, floors and ceiling were piping is exposed to view in finished area. Escutcheons shall be chromium plated, two piece, hinged with set screws.

2.05 Unions

- A. Provide ground joint brass unions or flanges on each piping connection to equipment.
B. Provide dielectric unions between copper and steel piping connection to equipment.

2.06 Vacuum Breakers

- A. Shall conform to the requirements of the referenced plumbing code and shall be provided for hose bibs, flushometers and any fixture or equipment water supply having a threaded outlet.

2.07 Flashing

- A. Vent flashing shall comply with roofing manufacturer's written specifications.

2.08 Clean Outs

- A. Clean outs on cast iron hub and spigot piping, shall be cadmium plated.
B. Approved manufacturers: Zurn, Josam or JoneSpec.
C. Provide clean-outs in waste and soil line for each change in direction greater than 45 degrees and at top of each stack.

3.01 Installation

- A. Before installing pipe in any part of the system, the pipe shall be cleaned inside and made free of oil, dirt, and foreign matter.
B. Properly align and install in neat arrangement, true to the lines of the building. Pitch line at a constant slope for proper drainage.
C. Except as noted otherwise on drawings, piping shall be held as high as possible, between structures and through joist webbing, with due regard to conflicts with other systems and their requirements for space.
D. Apply lubricant to screw joint male threads.
E. Metal to be soldered shall be cleaned and fluxed as suitable for the solder used.
F. Notching of copper tubing or plastic piping for connections will not be permitted.
G. No sewer or water pipe shall be allowed under the garage slab.

3.02 Installation

- A. Pipe sleeves:
• Extend sleeve 1/4 inch beyond finished surface.
• Provide clearance between sleeve and pipe or between sleeve and insulation to allow for pipe movement due to expansion and contraction.
• Insulation shall pass continuous through the sleeve.
• Caulk between sleeve and pipe or sleeve and insulation.
• Escutcheons: fit around insulation where present.
• Water hammer arresters: install as required.
• Clean outs: install as required 50'-0" max. Provide additional clean outs where required by local codes and for convenience of testing and erection at contractor's option.
• Frames and covers shall be flush with adjoining architectural finish.

PLUMBING HANGERS AND SUPPORTS:

1.01 Description

- A. Provide hangers for all piping not indicated below grade. Use hangers capable of adjustment.

2.01 hangers and supports

- A. Hangers for black or galvanized steel pipe shall be Grinnell, model no. 65 or approved equal.
B. Hangers for cast iron pipe shall be Grinnell, model no. 260 or approved equal.
C. Hangers for copper tubing shall be Grinnell, model no. 97c or approved equal.
D. Trapeze hangers of a type approved by the owner's representative may be used where pipes are designed to run parallel at the same elevation.
E. Provide isolation hanger with protective shield, Grinnell, model no. 300 103 or approved equal, for all insulated piping. At hanger points, provide 6 inch long section of 1/2 inch thick calcium silicate sectional pipe insulation with factory longitudinal lap. Seal butt joints with insulating cement.
F. Strap hangers: not permitted.
G. Inserts: in concrete, Grinnell model no. 285 or approved equal, having adjustment from 3/4 inch through 1-1/4 inch. In metal decks Readhead SDI or approved equal.
H. Side beam clamps: provide when supporting from structural steel members, Grinnell, model 225 or approved equal.
I. Other supports: obtain Owner's representative approval for other methods of support.

3.01 Spacing of Hangers

- A. Provide hanger at each change of direction.
B. Space hangers and supports to prevent sagging and reduce strain on valves and specialties with spacing no greater and rod no smaller than shown on the following table. Hangers shall allow for expansion and contraction.
C. Ferrous piping and copper tubing:
Diameter of Pipe Maximum Spacing Rod Size
1/2" through 1-1/2" 6 ft. 3/8"
2" through 3" 10 ft. 1/2"
4" through 5" 12 ft. 5/8"
6" and larger 16 ft. 3/4"
- D. Cast iron piping:
Diameter of Pipe Maximum Spacing Rod Size
2" and 3" each joint 3/8"
4" and 5" each joint 1/2"
6" and 8" each joint 3/4"
10" through 15" each joint(2 hangers) 3/4"

PLUMBING, FIXTURES, TRIM AND DRAINS:

1.01 Manufacturer

- A. Manufacturer shall be as specified herein or approved equal.

2.01 Piping

- A. Piping to serve fixtures and equipment and exposed to view in finished areas shall be brass, chromium plated.

2.02 Supports

- A. Provide all brackets, plates, carriers, anchors and fastening devices required for anchoring the fixtures rigidly in place.

2.03 Fixtures

- A. Provide plumbing fixtures as scheduled on the architectural drawings or specifications, American Standard, Kohler, Eljer or approved equal.
B. Water closets 3 1/2 gallon per flush maximum, showers, lavatories and sinks 3 gallon per minute flow control.

2.04 Plumbing Drains

- A. Furnish with seepage flange where installed with pans or flashing, furnish clamping.
B. All drains shall be of the same manufacturer.
C. Provide floor drains with 4 inch deep seal traps.
D. Provide all drains as shown on drawings or as required.
E. Provide gray box with sill faucets and one standpipe for clothes washer and 2" drain.

3.01 Installation

- A. Drain shall be installed where shown on the drawings; accessible and located to suit equipment approved for installation. Where flush valves are specified with fixtures, the supply to the valve in each room shall be at the same height for the type of fixture and the valve shall be set in place so that the center line of the valve discharge is directly above the center line of fixture stud. Bending of nipple between the valve and the stud to achieve connection will not be permitted.
B. Chrome plated piping requiring the use of wrench shall be protected from damage.

GAS PIPING:

1.01 Piping

- A. Shall comply with the requirements of NFPA No. 54 and the local gas company.
B. Pipe shall be schedule 40 black steel pipe with malleable fittings

2.01 Installation

- A. Piping shall comply with the requirements of NFPA No. 54 and the local gas company.
B. Install gas shutoff and gas manifolds as indicated or required.
C. Plumbing contractor shall furnish and install gas piping to all appliances, heating apparatus, hot water heaters fireplaces.

DOMESTIC HOT AND COLD WATER:

1.01 Description

- A. The work includes furnishing and installing hot and cold water piping as shown on the drawings and specified herein or as required.

2.01 Piping

- A. Hot and cold water piping shall be copper water tube hard temper, type "T" with wrought solder fittings above floor and soft temper type "K" with wrought solder fittings below grade.

2.02 Gate Valves

- A. Specified in section, plumbing valves.
B. Provide freeze-proof hose bibs where indicated on drawings with vacuum breakers.
C. Provide chrome plated fixture supplies and stops for every fixture connection.

3.01 Installation

- A. Notching of pipe for connection not permitted.
B. Where possibility of backflow from the drain to the supply fitting exists, install vacuum breakers.
C. Not more than one lavatory, sink, or similar fixture shall be supplied by a 1/2 inch branch. Linear dimensions not to exceed 5 feet.
D. Make connection to equipment and fixtures indicated on the drawings or specified herein.
E. Hot water branch connections to distribution mains shall be top take-off, swing joint type.
F. All piping installed below ground shall receive two coats of Koppers No. 50 or approved equal.
G. Provide a 12" air chamber at every fixture and a 24" air chamber at top of risers.
H. Water meter size shall be 1" min. With 14" spread opening.

PLUMBING INSULATION:

1.01 Description

- A. Insulation shall not be installed until testing procedures have been complied with and all surfaces have been cleaned and free of dirt, grease and completely dried.
B. Materials shall comply with UL 723, flame spread rating, hot surface test performance, and smoke developed rating.

2.01 Insulation

- A. Insulation for hot and cold water piping, horizontal rain leaders & roof drain assemblies shall be sectional glass fiber as manufactured by Owens Corning Fiberglass type ASJ/SSUI or approved equal, with factory applied, all purpose, fire retardant jacket.
B. Insulation for exposed hot and cold water piping shall be sectional glass fiber as manufactured by Owens Corning Fiberglass type ASJ/SSUI or approved equal, with factory applied, 016 embossed aluminum jacket.
C. Adhesive shall be Benjamin Foster 30-36, or approved equal, white insulation lagging adhesive.

2.02 Vapor Barrier Mastic

- A. Shall be Benjamin Foster No. 82-07, white, or approved equal.

3.01 Installation

- A. Hot and cold water piping: shall be insulated with 1 inch thick glass fiber insulation having a factory applied, all purpose, fire retardant jacket with a minimum R-4.0 per inch. Concealed and exposed piping shall have the insulation applied with side and end joints buttied tightly. Seal jacket legs and butt joint strips with adhesive.

DOMESTIC WATER HEATER:

1.01 Description

- A. Provide gas fired water heating equipment as shown on drawings and specified.

2.01 Water Heater

- A. As per contract.
B. Provide pressure temperature relief valve.
C. 100 degrees F temperature rise.
D. Mixing valve assembly 140 degrees F and 120 degrees F leaving water temperature.

2.02 Discharge Pipe

- A. Relief valve discharge shall be copper water tube, Type M.

3.01 Installation

- A. Water heater shall be installed where shown on the drawings.
B. Discharge pipe shall have terminating end cut at 45 degree angle.
C. Terminate relief valve drain 2" above floor drain.
D. Provide "Safepan" if water heater is on first or second floor or as required by local codes.

PLUMBING FIXTURE SCHEDULE:

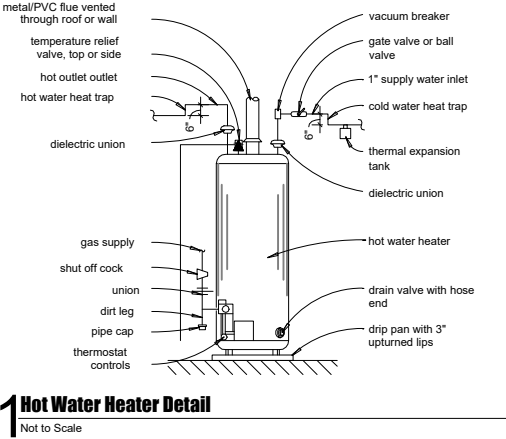
Type Mark	Description	Manufacturer	Model	Count	Fixture Units				Total Units		Comments
					CSFU	HSFU	TSFU	DFU	Supply Units	Drainage Units	
BD-1	Bidets	KOHLER Co.	K-4886-0	1	0.75	0.75	1	2	1	2	
DW	Food Service - Appliances & Equipment			1		-1	1	2	1	2	
GB	Other Plumbing Fixtures			2	1.5	1.5	2	3	4	6	
KDS	Sinks - Kitchen			1	1.5	1.5	2	2	2	2	
KSS	Sinks - Kitchen			2	1.5	1.5	2	2	2	4	
LAV-1	Sinks			6	0.75	0.75	1	2	6	12	
SH-1	Showers	Best Bath Systems, Inc.		1	1	1	2	3	2	3	
SH-2	Showers	Best Bath Systems, Inc.		1	1	1	2	3	2	3	
SH-3	Showers	Best Bath Systems, Inc.		1	1	1	2	3	2	3	
TUB-1	Bathtubs		K-8333-0	1	1.5	1.5	2	2	2	2	
TUB-2	Bathtubs			1	1.5	1.5	2	2	2	2	
WC-1	Water Closets	KOHLER Co.	NA	4	3	0	3	4	12	16	
WC-2	Water Closets - Single			1	3	0	3	4	3	4	
Grand total									43	61	

PLUMBING SCHEDULE NOTES:

Abbreviations:
CSFU -Cold Water Supply Fixture Units
HSFU -Hot Water Supply Fixture Units
TSFU -Total Supply Fixture Units
DFU -Drainage Fixture Units

WATER SUPPLY FIXTURE UNITS

WATER SUPPLY FIXTURE UNITS (W.S.F.U.)	DEMAND (GPM)	PIPE SIZE (INCHES)	PRESSURE LOSS (PSI/100' OF PIPE)	VELOCITY (FT./SEC.)	METER SIZE (INCHES)
12	9.2	3/4"	11.5	6.1 ft/s	3/4"
14	10.4	3/4"	15	6.9 ft/s	3/4"
16	11.6	3/4"	18	7.7 ft/s	3/4"
20	14	1"	7.2	5.6 ft/s	3/4"
25	17	1"	10	6.6 ft/s	3/4"
30	20	1"	13.6	5.7 ft/s	1"
35	22.5	1 1/4"	5.8	5.7 ft/s	1"
40	25	1 1/4"	6.9	6.4 ft/s	1"
50	29	1 1/4"	9.5	7.4 ft/s	1 1/2"
60	32	1 1/2"	4.2	5.8 ft/s	1 1/2"
70	35	1 1/2"	6	6.4 ft/s	1 1/2"
80	38	1 1/2"	7	7.2 ft/s	1 1/2"



PLUMBING GENERAL NOTES:

- All plumbing work to be done in accordance to the current plumbing code adopted by the local governmental authority.
- All interior above grade water supply piping to schedule 'L' copper as allowed by local code. All below grade water supply piping to be schedule 'K' copper.
- Interior above ground waste drain and vent piping to be schedule 'M' copper, cast iron, or Schedule 40 C.P.V.C. as allowed by local code.
- All underground waste, drain, and vent to be cast iron or other material as allowed by local code.

SUPPLY NOTES:

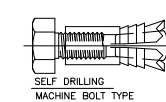
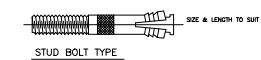
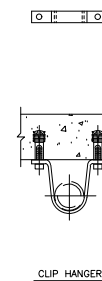
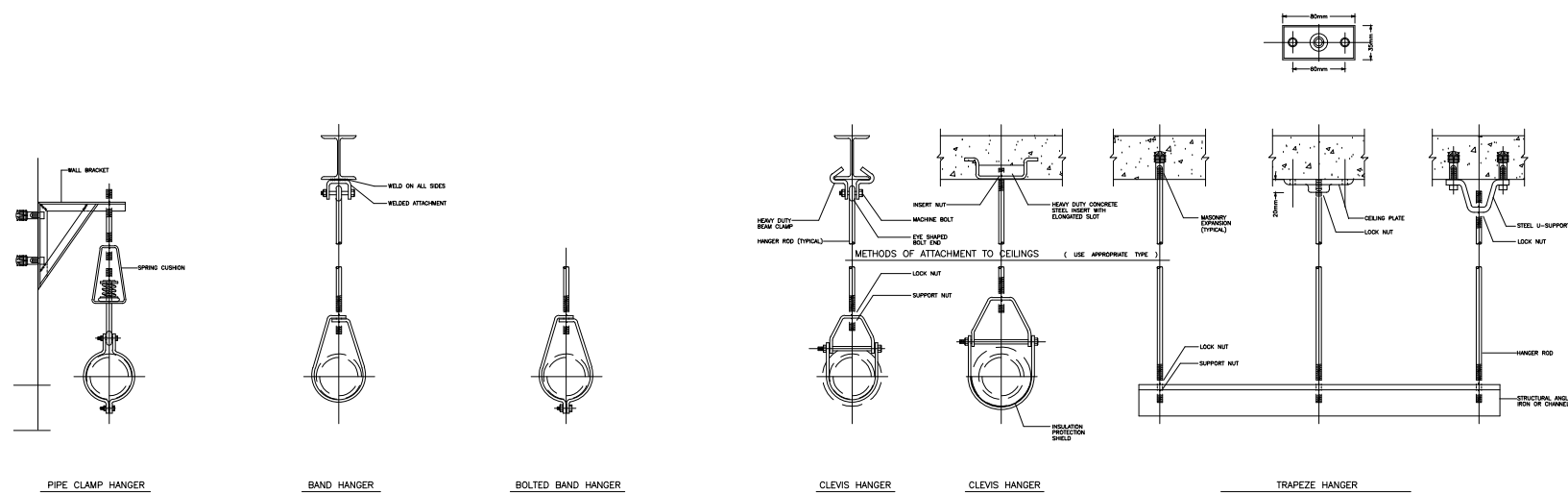
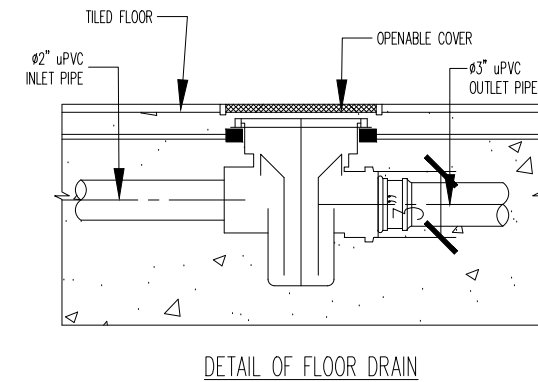
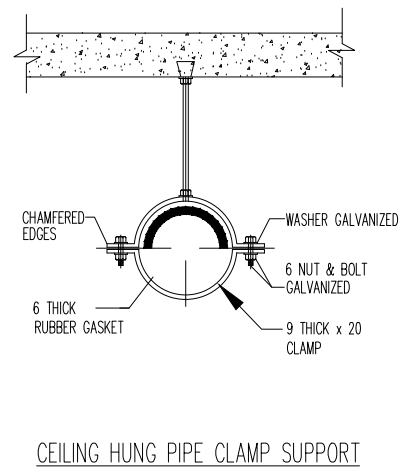
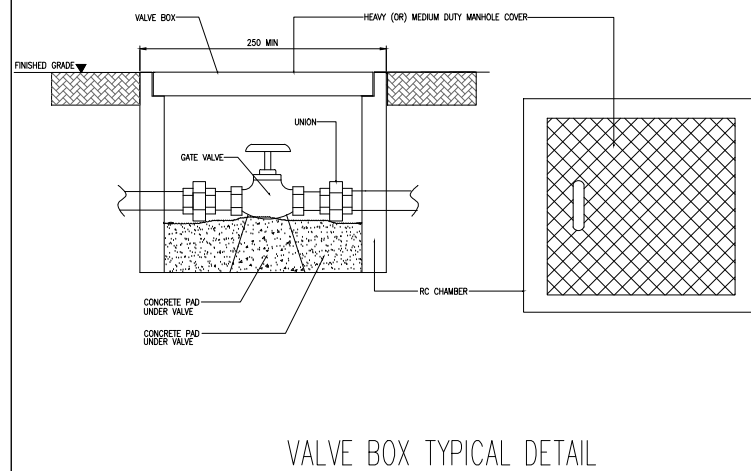
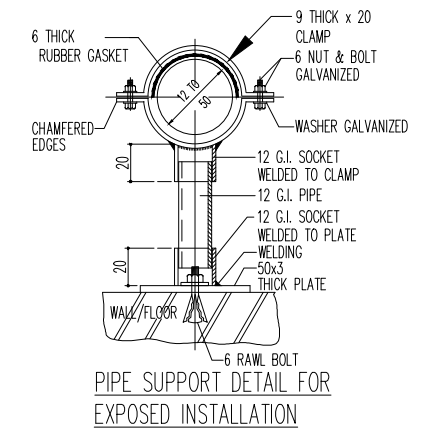
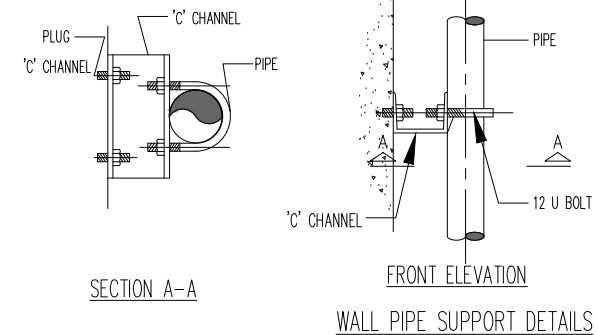
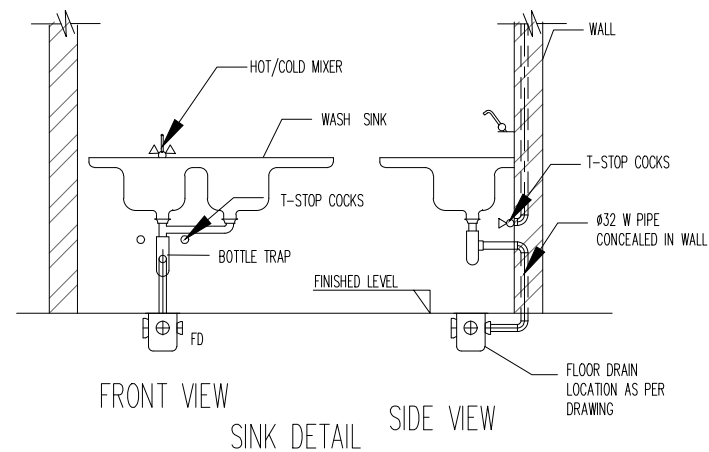
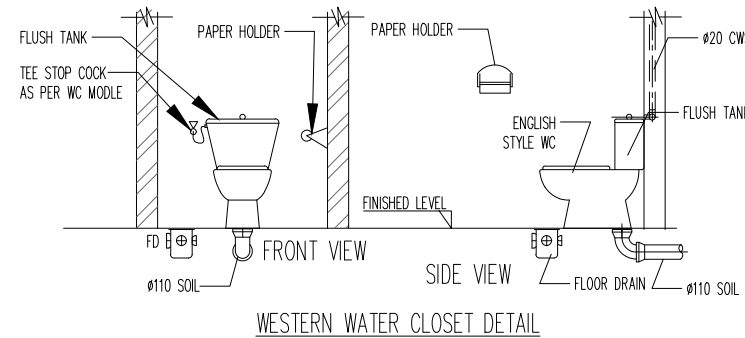
- All toilets to have flange secured with corrosion resistant fixtures.
- Toilet closet ring to vent maximum length is 12 ft.

WASTE AND VENT NOTES:

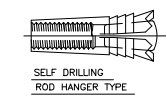
- Minimum one vent to exterior. Vent to extend minimum 6" above roof. Sidewall vents minimum 10'-0" above grade.
 - No flat venting.
 - Vent pipe below flood level rim must be drainage pattern, no horizontal sanitary tees.
 - Horizontal vent 6" above fixture flood rim, except island sinks or where structurally impossible.
- FIXTURE NOTES:**
- Toilets to be low flow, white vitreous china, water closets. Flush handle to be mounted on the wide side of the room.
 - All lavatory faucets for public use to have an automatic safety water-mixing device and ashall comply with ANSI/ASSE 1016-1996 or 1017-1998. The safety-mixing device shall be adjusted to a maximum setting of 110 degrees Fahrenheit at the time of installation.
 - All lavatories shall not have exposed water or waste pipes or abrasive surfaces and shall be covered with protective guards.
 - New water heaters to have heat trap installed on the inlet and discharge if no recirculation pump is present.
 - The plumbing inspector shall field verify the proper installation of each existing water heater, including each safety device, valve location, and discharge piping of any safety device. If thermal expansion must be accommodating, install a properly sized thermal expansion tank in the cold water supply to the heater with no valves or other devices located between the expansion tank and the heater. Verify the specifics of the discharge piping for each temperature and pressure relief valve and the proximity of the required floor drain or approved receptor for each shall be installed.

L E G E N D		
S. NO	SYMBOLS	DESCRIPTION
1	—	COLD WATER SUPPLY
2	—	HOT WATER SUPPLY
3	—	HOT WATER RETURN
4	—	GATE VALVE
5	—	BALANCING VALVE
6	— VP	VENT PIPE
7	----- SP	SOIL PIPE
8	----- WP	WASTE PIPE
9	⊞	FLOOR DRAIN
10	— CO	CLEAN OUT PLOUGH IN CEILING
11	⊞ FCO	FLOOR CLEAN OUT PLOUGH

REV.	DATE	DESCRIPTION	SIGN
AMENDMENTS			
PROJECT			
TITLE			
PLUMBING GENERAL NOTES AND LEGENDS			
STATUS			
SCALE	DATE	JOB NO.	REVISION
N.T.S.	2024-05-23		
DRAWN	CHECKED	DWG NO.	
GAUSSAN	GAUSSAN		
DESIGNED	APPROVED	P-01	R-00



BOLT SIZE	THREAD DEPTH	DEPTH IN CONCRETE
6 mm	9 mm	28 mm
8 mm	12 mm	33 mm
10 mm	14 mm	39 mm
12 mm	20 mm	62 mm
16 mm	24 mm	83 mm
20 mm	31 mm	83 mm



THREADED ROD SIZE	THREAD DEPTH
5 mm	22 mm
8 mm	24 mm
12 mm	32 mm
15 mm	40 mm
20 mm	50 mm

MASONRY EXPANSION BOLTS
(SIMILAR TO PHILIPS DRILL CO.)

REV.	DATE	DESCRIPTION	SIGN

AMENDMENTS
PROJECT

TITLE
PLUMBING INSTALLATION DETAILS SHEET-1

STATUS

SCALE N.T.S	DATE 2024-05-23	JOB NO.	REVISION
DRAWN GAUSSAIN	CHECKED GAUSSAIN	DWG NO. P-02	R-00
DESIGNED	APPROVED		



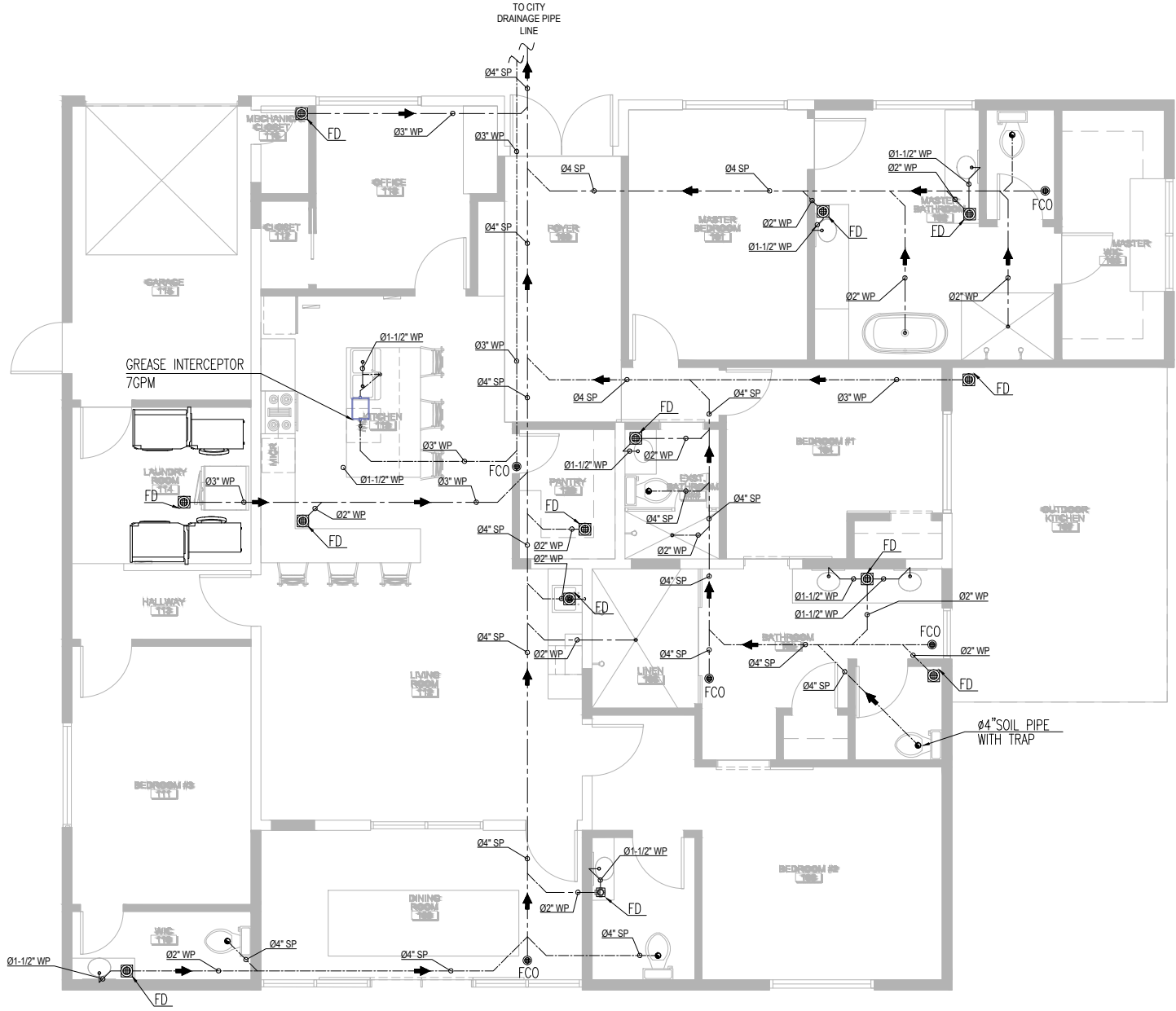
REV.	DATE	DESCRIPTION	SIGN.	
AMENDMENTS				
PROJECT				
PLUMBING INSTALLATION DETAILS SHEET-2				
TITLE				
STATUS				
SCALE	DATE	JOB NO.	REVISION	
N.T.S	2004-09-23			
DRAWN	CHECKED	DWG NO.		
GAUSAIN	GAUSAIN			
DESIGNED	APPROVED	P-03	R-00	

[illegible]

LEGEND		
S. NO	SYMBOLS	DESCRIPTION
1		VP VENT PIPE
2		SP SOIL PIPE
3		FLOOR DRAIN
4		FLOOR CLEAN OUT

NOTES
CONTRACTOR SHALL VERIFY DESIGN
& FIELD CONDITIONS AS PER ALL APPLICABLE CODES
& ORDINANCES AND SHALL BE RESPONSIBLE FOR FINAL

FIXTURE	PIPE DIAMETER			
	SEWER	VENT	COLD WATER	HOT WATER
HAND SINK	2"	2"	1/2"	1/2"
WATER CLOSET	4"	2"	3/4"	N/A
FLOOR DRAIN	3"	2"	N/A	N/A
WATER HEATER	N/A	N/A	3/4"	3/4"
WASHER/DRYER	2"	N/A	3/4"	3/4"
HOSE	N/A	N/A	1/2"	1/2"
SINK	2"	2"	1/2"	1/2"
NOTE: 1. SIZES SHOWN ARE MINIMUM UNIFORM PLUMBING CODE REQUIREMENTS FOR TRAPS, TRAP ARM & ROUGH-IN CONNECTION. 2. IF CAST IRON NO-HUB PIPE IS USED, WASTE AND VENT PIPE SHALL BE 2" MINIMUM. 3. ALL FIXTURES TO HAVE VENTILATION PIPE TO CEILING EVEN IF NOT SHOWED ON PLANS.				



REV.	DATE	DESCRIPTION	SIGN
AMENDMENTS			
PROJECT			
TITLE			
WASTE WATER PLAN			
STATUS			
SCALE	DATE	JOB NO.	REVISION
N.T.S.	2024-05-23		
DRAWN	CHECKED	DWG NO.	
GAUSSAN	GAUSSAN		
DESIGNED	APPROVED	P-05	R-00

SCALE	DATE	JOB NO.	REVISION
N.T.S	2024-05-23		
DRAWN	CHECKED	DWG NO.	R-00
GAUSSAIN	GAUSSAIN	P-06	
DESIGNED	APPROVED		