



Interior Lighting Compliance Certificate

Project Information

Energy Code: 2018 IECC
 Project Title: Kung Fu Tea - City Base
 Project Type: New Construction

Construction Site: Owner/Agent: Designer/Contractor:
 Christopher Segura
 IDG
 210-840-2664

Additional Efficiency Package(s)

Reduced interior lighting power. Requirements are implicitly enforced within interior lighting allowance calculations.

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-Common Space Types:Dining Area - Family Restaurant	1200	0.64	768
Total Allowed Watts =			768

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
1-Common Space Types:Dining Area - Family Restaurant				
LED 1: A: Other:	1	8	34	272
LED 1 copy 1: AE: Other:	1	8	34	272
LED 1 copy 1: D: Other:	1	3	24	72
LED 1 copy 1: DE: Other:	1	1	24	24
LED 1 copy 2: T: Other:	1	6	15	90
Total Proposed Watts =				730

Interior Lighting PASSES: Design 5% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Christopher Segura

Name - Title

Signature

2019-11-12

Date



Mechanical Compliance Certificate

Project Information

Energy Code: 2018 IECC
 Project Title: Kung Fu Tea - City Base
 Location: Boerne, Texas
 Climate Zone: 3a
 Project Type: New Construction

Construction Site: _____ Owner/Agent: _____ Designer/Contractor: Christopher Segura
 IDG
 210-840-2664

Additional Efficiency Package(s)

Reduced interior lighting power. Requirements are implicitly enforced within interior lighting allowance calculations.

Mechanical Systems List

Quantity System Type & Description

- 1 RTU-1 (Single Zone):
 Heating: 1 each - Other, Gas, Capacity = 120 kBtu/h
 No minimum efficiency requirement applies
 Cooling: 1 each - Single Package DX Unit, Capacity = 87 kBtu/h, Air-Cooled Condenser, Air Economizer
 Proposed Efficiency = 12.60 EER, Required Efficiency: 11.00 EER + 12.6 IEER
 Fan System: RTU-1 -- Compliance (Motor nameplate HP method) : Passes

 Fans:
 FAN 1 Supply, Constant Volume, 3000 CFM, 4.0 motor nameplate hp, 86.0 fan efficiency grade
- 0 EWH-1:
 Electric Storage Water Heater, Capacity: 40 gallons w/ Circulation Pump
 Proposed Efficiency: 96.00 SL, %/h (if > 12 kW), Required Efficiency: 0.98 SL, %/h (if > 12 kW)

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Christopher Segura _____ 2019-11-12
 Name - Title Signature Date



Inspection Checklist

Energy Code: 2018 IECC

Requirements: 0.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C103.2 [PR3] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C103.2 [PR4] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C406 [PR9] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C403.12.2 , C403.12.3 [FO9] ³	Snow/ice melting system and freeze protection systems have sensors and controls configured to limit service for pavement temperature and outdoor temperature. future connection to controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.1, C404.6.2 [PL3] ¹	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41] ³	Thermally ineffective panel surfaces of sensible heating panels have insulation \geq R-3.5.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.8.4 [ME142] ²	Motors for fans that are not less than 1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.8.5 [ME143] ²	Each DX cooling system $>$ 65 kBtu and chiller water/evaporative cooling system with fans $>$ 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.12.1 [ME71] ²	Systems that heat outside the building envelope are radiant heat systems controlled by an occupancy sensing device or timer switch.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.3 [ME55] ²	HVAC equipment efficiency verified.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values.
C403.5.5 [ME113] ²	Fault detection and diagnostics installed with air-cooled unitary DX units having economizers.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.2 [ME59] ¹	Natural or mechanical ventilation is provided in accordance with International Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.1 [ME59] ¹	Demand control ventilation provided for spaces $>$ 500 ft ² and $>$ 25 people/1000 ft ² occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow $>$ 3,000 cfm.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.2 [ME115] ³	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.6 [ME141] ³	HVAC systems serving guestrooms in Group R-1 buildings with $>$ 50 guestrooms: Each guestroom is provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.7.6.1 and C403.7.6.2).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.4 [ME57] ¹	Exhaust air energy recovery on systems meeting Table C403.7.4(1) and C403.7.4(2).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.7.5 [ME116] ³	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.11.1 , C403.11.2 [ME60] ²	HVAC ducts and plenums insulated in accordance with C403.11.1 and constructed in accordance with C403.11.2, verification may need to occur during Foundation Inspection.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.5, C403.5.1, C403.5.2 [ME62] ¹	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.5.3. 3 [ME124] ¹	Air economizers automatically reduce outdoor air intake to the design minimum outdoor air quantity when outdoor air intake will not reduce cooling energy usage. See Table C403.5.3.3 for applicable device types and climate zones.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.5.3. 4 [ME125] ¹	System capable of relieving excess outdoor air during air economizer operation to prevent overpressurizing the building. The relief air outlet located to avoid recirculation into the building.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.5.3. 5 [ME126] ¹	Return, exhaust/relief and outdoor air dampers used in economizers have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Reference section C403.7.7 for details.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.4.1. 4 [ME63] ²	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.3.3 [ME35] ¹	Hot gas bypass limited to: <=240 kBtu/h - 50% >240 kBtu/h - 25%	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.2. 1 [ME53] ³	Air outlets and zone terminal devices have means for air balancing.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.5, C403.5.1, C403.5.2 [ME123] ³	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2..	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.2.2 [EL22] ¹	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern ≥ 50 percent.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1, C405.2.1.1 [EL18] ¹	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, warehouse storage areas, and other spaces ≤ 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1.2 [EL19] ¹	Occupancy sensors control function in warehouses: In warehouses, the lighting in aiseways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1.3 [EL20] ¹	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces ≥ 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas ≤ 600 sq.ft. within the space, 2) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 3) are configured so that general lighting power in each control zone is reduced by $\geq 80\%$ of the full zone general lighting power within 20 minutes of all occupants leaving that control zone, and 4) are configured such that any daylight responsive control will activate space general lighting or control zone general lighting only when occupancy for the same area is detected.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.2, C405.2.2.1, C405.2.2.2 [EL21] ²	Each area not served by occupancy sensors (per C405.2.1) have time-switch controls and functions detailed in sections C405.2.2.1 and C405.2.2.2.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3, C405.2.3.1, C405.2.3.2 [EL23] ²	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.4 [EL26] ¹	Separate lighting control devices for specific uses installed per approved lighting plans.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.4 [EL27] ¹	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.3 [EL6] ¹	Exit signs do not exceed 5 watts per face.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.6 [EL26] ²	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.7 [EL27] ²	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.8.2, C405.8.2.1 [EL28] ²	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.9 [EL29] ²	Total voltage drop across the combination of feeders and branch circuits \leq 5%.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.2 [FI17] ³	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C303.3, C408.2.5.3 [FI8] ³	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.2 [FI27] ³	HVAC systems and equipment capacity does not exceed calculated loads.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.4.1.2 [FI38] ³	Thermostatic controls have a 5 °F deadband.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.1.3 [FI20] ³	Temperature controls have setpoint overlap restrictions.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.2 [FI39] ³	Each zone equipped with setback controls using automatic time clock or programmable control system.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.2.1, C403.2.4.2.2 [FI40] ³	Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.2.3 [FI41] ³	Systems include optimum start controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.3 [FI11] ³	Heat traps installed on supply and discharge piping of non-circulating systems.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.4 [FI25] ²	All piping insulated in accordance with section details and Table C403.11.3.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.1 [FI12] ³	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank. System return pipe is a dedicated return pipe or a cold water supply pipe.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C405.4.1 [FI18] ¹	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Interior Lighting fixture schedule for values.
C408.1.1 [FI57] ¹	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.1 [FI28] ¹	Commissioning plan developed by registered design professional or approved agency.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.3.1 [FI31] ¹	HVAC equipment has been tested to ensure proper operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.3.2 [FI10] ¹	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.3.3 [FI32] ¹	Economizers have been tested to ensure proper operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.4 [FI29] ¹	Preliminary commissioning report completed and certified by registered design professional or approved agency.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.5.1 [FI7] ³	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.5.1 [FI16] ³	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.5.3 [FI43] ¹	An air and/or hydronic system balancing report is provided for HVAC systems.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.5.4 [FI30] ¹	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.3 [FI33] ¹	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

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 2 Medium Impact (Tier 2)
 3 Low Impact (Tier 3)

Additional Comments/Assumptions:

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Designer/Architect/Engineer's Letter of Energy Review

2019-11-12

Referenced Project: Kung Fu Tea City Base

The project referenced above is being designed under the commercial provisions of the 2018 IECC or ASHRAE 90.1-2013. In accordance to Information Bulletin 221, we have reviewed the design of this project for the following energy related items. It is our opinion that the items checked below, as designed, meets the substantial intent of the 2018 IECC or ASHRAE 90.1-2013. Items not checked will be provided to the City of San Antonio for their review with application submittal for a building permit.

Code Section ^a	Reference ^b	Checked Yes/No	Not Required for Project
Mechanical system design criteria - Calculations for Sizing Equipment	C403.2.2, 6.4.2.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Mechanical and service water heating system and equipment types, sizes and efficiencies	C403.2.3, C404.2,6.4.1.1 7.4.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Calculations for Maximum Hot Water Volume or Length (IECC)	C404.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Efficiency rating of all refrigeration and freezer equipment	C403.2.14, 6.4.1.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Economizer fault detection and diagnosis	C403.2.4.7	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Fan motor horsepower (hp) and controls efficiencies	C403.2.12, 6.5.3.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
HVAC duct and plenum sealing, and insulation details, Hot Water Piping fluid temperatures and insulation	C403.2.9, C404.4, 6.4.4.1.2-3	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Code Section ^a	Reference ^b	Checked Yes/No	Not Required for Project
Lighting fixtures – Calculations for total connected interior and exterior power	C405.4.1, C405.5.1, 9.2.2.3, 9.4.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Calculations for interior lighting power by the building area method or the space by space method	C405.5.1, 9.2.2, 9.5, 9.6	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Notes

a. Some code sections may not be applicable dependent on the chosen compliance path

b. Code References: Cxxx.x refers to an 2018 IECC section; while 5.x.x, 6.x.x etc, refer to a section in ASHRAE 90.1-2013

If you have any questions, please call.

Respectfully,

Christopher Segura
Idea Design Group



2019-11-12

Referenced Project: Kung Fu Tea City Base

MEP Energy Summary Sheet

The project referenced above is being designed under the commercial provisions of the 2018 IECC or ASHRAE 90.1-2013. In accordance to Information Bulletin ZYZ, we have reviewed the design of this project for the following energy related items. It is our opinion that the items checked below, as designed, meets the substantial intent of the 2018 IECC or ASHRAE 90.1-2013. Items not checked will be provided to the City of San Antonio for their review prior to issuance of the building permit.

Code Section	Section of IECC	Section of ASHRAE	Comment
Total BTU/h Cooling and Combined BTU/h for Heating/Hot Water	C403.2.1 Always Required	6.4.2.1 Always Required	Refer to mechanical drawings
Provide description/narrative of HVAC controls:	C403.2.4 Always Required	6.4.3.1 Always Required	Refer to mechanical drawings
Greatest Air Flow Rate of each Fan System and Percent of Outdoor Air, Provide the percent of outdoor Air at full design airflow	C403.2.7 Always Required	6.5.6 Prescriptive Path Only	Refer to mechanical drawings
Design Air Flow of Spaces, Presence of Air Side Economizers, Presence of Automatic Modulating Control of Outdoor Air Dampers	C403.2.6.1 Always Required	6.4.3.8 Always Required	Refer to mechanical drawings
Narrative of Enclosed Parking Garage Ventilation	C403.2.6.2 Always Required	6.4.3.4.5 Always Required	N/A
Provide Kitchen Exhaust System Air Balancing; provide total kitchen hood exhaust flow rate for each hood.	C403.2.8 Always Required	6.5.7.1 Prescriptive Path Only	N/A
Provide a narrative of controls for walk-in coolers, freezers and refrigerated warehouses and refrigerated display cases	C403.2.15 Always Required	6.4.5, 6.4.6 Always Required	N/A
Provide capacity of each cooling unit. Provide total chilled water system capacity minus capacity of cooling units with air economizers if Applicable.	C403.3 Only under the Prescriptive Path	6.5.1 Prescriptive Path Only	Refer to mechanical drawings

Provide narrative of the economizer controls if required. Provide the type of economizer provided; show that an air economizer can supply 100% of design supply air as outdoor air. Show design of water-side - 100% of cooling load as outdoor air not greater than 50 deg F	C403.3.3 Only under the Prescriptive Path	6.5.1 Prescriptive Path Only	N/A
Provide description/narrative of controls for Hydronic and multiple-zone HVAC systems equipment, any heat rejection equipment and fan speed control, and VAV systems; Provide description/narrative of controls for complex mechanical equipment serving multiple zones	C403.4, C403.4.4 Only under the Prescriptive Path	6.5.2, 6.5.3, 6.5.4 Prescriptive Path Only	N/A
Provide the narrative/description of the controls for a hot water recirculation pump or heat trace system	C404.7 Always Required	7.4.4 Always Required	N/A
Provide a narrative of the lighting controls (occupant sensor function, time switch controls, light reduction controls, manual controls, daylight responsive controls in daylight zones).	C405.2 Always Required	9.4.1 Always Required	Lighting controls provided meet all local codes. Occupancy sensors, bi level switching and manual controls were specified.
Provide the total interior lighting power calculated under Equation 4-9 C405.4.1.	C405.4.1 Always Required	9.5 9.6 Always Required	Calculations are provided on IECC reports.
Provide the interior lighting power calculated under C405.4.2 - Building Area Method C405.4.2.1 or the Space by Space Method C405.4.2.2	C405.4.2 Always Required	9.2.2 Prescriptive Path Only	Calculations are provided on IECC reports.
Provide the comparison of the two above calculated interior power - C405.4.1 vs C405.4.2	C405.4.1 and C405.4.2 Always Required	9.2.2.3 Prescriptive Path Only	Refer to Electrical Load Analysis.
Provide summary of the total exterior lighting power	C405.5.1 Tables C405.5.2 (1) and (2) Always Required	9.4.2 Always Required	N/A
Provide details of an Additional Energy Package chosen	C406 Only under the Prescriptive Path	Not applicable	N/A

MECHANICAL, ELECTRICAL, PLUMBING SYMBOLS & ABBREVIATIONS

PIPING SYMBOLS

	VENTURI
	AUTOMATIC AIR VENT
	BACK FLOW PREVENTER
	BALL JOINT
	BASKET STRAINER ASSEMBLY
	STEAM TRAP
	B-INVERTED BUCKET FT-FLOAT & THERMOSTATIC
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	EXPANSION JOINT
	FLEXIBLE CONNECTION (PIPE)
	FLOW DIRECTION
	PRESSURE SWITCH
	GAUGE COCK CONNECTION
	GAUGE COCK & PRESSURE GAUGE
	PIPE ANCHOR
	REFRIGERANT SITE GLASS
	STRAINER (Y TYPE) W/ BLOWDOWN & CAP
	THERMOMETER
	DIAL THERMOMETER
	TEST WELL
	VIBRATION ISOLATOR
	NEW EQUIPMENT
	EXISTING EQUIPMENT
	ORIFICE ASSEMBLY
	NEW PIPING
	EXISTING PIPING
	PIPING TO BE REMOVED
	90 DEGREE ELBOW
	UNION
	BLIND FLANGE
	CAP
	BLIND FLANGE
	PLUMBING FIXTURE & DESIGNATION SEE FIXTURE CONNECTION SCHEDULE
	DOWNSPOUT NOZZLE
	DOWNSPOUT NOZZLE
	PIPE DROP
	PIPE RISER
	TEE FITTING - SIDE BRANCH CONNECTION
	TEE FITTING - BOTTOM BRANCH CONNECTION
	TEE FITTING - TOP BRANCH CONNECTION
	COLD WATER PIPE
	HOT WATER (120°)
	OUTSIDE SCREW & YOKE GATE VALVE
	CHECK VALVE
	GATE VALVE
	BALL VALVE
	TAMPER SWITCH
	FLOW SWITCH
	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	STEAM SUPPLY
	PUMPED CONDENSATE RETURN
	HOT WATER RETURN
	HOT WATER SUPPLY
	CONDENSATE DRAIN
	DRAIN LINE
	THERMOSTATIC TRAP
	FLOAT & THERMOSTATIC TRAP
	EXPANSION VALVE
	FLOAT VALVE
	GLOBE VALVE
	LIQUID SOLENOID VALVE
	MANUAL 3-WAY CONTROL VALVE
	MOTOR OPERATED, STRAIGHT THRU VALVE
	MOTOR OPERATED, 3-WAY CONTROL VALVE
	THERMOSTATIC EXPANSION VALVE
	VALVE W/ HOSE THREAD
	THERMOSTAT SERVING ZONE 3
	HUMIDISTAT SERVING ZONE 3
	KEYED NOTE 2
	SECTION ARROW - SECTION 1, SHEET M02

PLUMBING SYMBOLS

	CLEANOUT
	FLOOR CLEANOUT
	YARD CLEANOUT
	FLOOR DRAIN
	FLOOR DRAIN (SIZE & TYPE NOTED IN SPECIFICATION)
	SANITARY COMBINATION FITTING
	VENT PIPE (PLUMBING)
	EXISTING SANITARY SEWER
	NEW SOIL, WASTE PIPE OR SANITARY SEWER
	EXISTING COLD WATER PIPE
	EXISTING HOT WATER PIPE
	NEW COLD WATER PIPE
	NEW HOT WATER (120°)
	NEW HOT WATER PIPE RECIRC.
	FIRE LINE
	AUTOMATIC FIRE SPRINKLER PIPING
	GAS
	ACID WASTE
	ACID VENT
	GREASE WASTE
	GREASE VENT

DUCTWORK SYMBOLS

	CEILING SUPPLY AIR DIFFUSER (ARROWS DENOTE DIRECTION OF THROW)
	RETURN AIR GRILLE AND/OR EXHAUST AIR
	SINGLE LINE DUCTWORK
	DUCT TRANSITION
	SUPPLY DUCT SECTION, POSITIVE PRESS.
	EXH., RET., O.A. DUCT SECTION NEGATIVE PRESS.
	DUCTWORK, FIRST NO. IS VISIBLE DIM.
	EXISTING DUCTWORK (LIGHT LINES)
	EXISTING DUCTWORK TO BE REMOVED
	ACOUSTICALLY LINED DUCT
	DUCT ACCESS DOOR
	FLEXIBLE CONNECTION (DUCT)
	CHANGE OF ELEVATION IN DIRECTION SHOWN R-RISE D-DROP
	FIRE DAMPER
	SMOKE DAMPER
	FIRE & SMOKE DAMPER
	BRANCH DUCT WITH VOLUME DAMPER
	SIDEWALL REGISTER
	DUCT WITH TURNING VANES
	SPLITTER DAMPER
	DAMPER TYPE INDICATED (OBD, PBD)
	MOTORIZED DAMPER TYPE INDICATED (OBD, PBD)
	VANED ELBOW (SHORT RADIUS)
	STANDARD RADIUS ELBOW

LIGHTING

	HID SITE LIGHTING FIXTURE MOUNTED ON A POLE
	INCANDESCENT, FLUORESCENT OR HID FIXTURE, CEILING MOUNTED
	INCANDESCENT, FLUORESCENT OR HID FIXTURE, WALL MOUNTED
	FLUORESCENT FIXTURE, CEILING OR SURFACE MOUNTED,
	FLUORESCENT STRIP FIXTURE
	SYMBOL IDENTIFYING FIXTURE TYPE, ALL FIXTURES THIS ROOM ARE FIXTURE TYPE INDICATED INSIDE UNLESS INDIVIDUALLY MARKED
	EXIT LIGHT, DIRECTION ARROWS AS INDICATED
	FLUORESCENT FIXTURE, WITH ONE BALLAST CONNECTED TO EMERGENCY SYSTEM
	FLUORESCENT FIXTURE, ENTIRE FIXTURE CONNECTED TO THE EMERGENCY SYSTEM
	TRACK LIGHTING
	SINGLE POLE SWITCH, SUBSCRIPT INDICATES ASSOCIATED CIRCUITRY
	THREE-WAY SWITCH
	MANUAL MOTOR STARTER (T=THERMAL OVERLOAD SIZED FOR MOTOR.
	INCANDESCENT DIMMER SWITCH WATTAGE RATING AS SHOWN IN () 6=600, 10=1000, 15=1500
	INFRARED OCCUPANCY SENSOR, WATT STOPPER CAT PW-100

RECEPTACLES

	240V OR 208V RECEPTACLE AS SPECIFIED
	DUPLEX RECEPTACLE
	QUADRAPLEX RECEPTACLE
	DUPLEX RECEPTACLE GFCI=GROUND FAULT CIRCUIT INTERRUPTING WP=WATHERPROOF IG=ISOLATED GROUND
	SPECIAL PURPOSE OUTLET AS DESIGNATED
	TELEPHONE OUTLET IN WALL (P=PAY PHONE, W=WALL PHONE MOUNT AT 54" AFF
	TELEVISION OUTLET
	DATA OUTLET
	COMBINATION VOICE/DATA OUTLET AS SPECIFIED, REFERENCE TYPICAL DETAIL.
	COMBINATION VOICE/DATA OUTLET IN A FLOOR BOX AS SPECIFIED, REFERENCE TYPICAL DETAIL.

EQUIPMENT

	MOTOR, HP AS INDICATED
	CONTROLLER TO BE FURNISHED UNDER DIVISION 15
	VARIABLE FREQUENCY DRIVE CONTROLLER FURNISHED UNDER DIVISION 15
	DISCONNECT SWITCH
	COMBINATION MOTOR STARTER/DISCONNECT SWITCH
	INTERCOM J BOX WALL MOUNTED AT HEIGHT INDICATED ON DRAWINGS
	JUNCTION BOX, CEILING MOUNTED
	JUNCTION BOX, WALL MOUNTED
	REMOTE CONTROL SWITCH
	CONTACTOR
	SPEAKER, CEILING. MOUNTED LOWER CASE 'E' DENOTES EXISTING
	WALL MTD. SPEAKER, CEILING. MOUNTED LOWER CASE 'E' DENOTES EXISTING
	TIME CLOCK
	WALL MOUNTED CLOCK
	TRANSFORMER AS INDICATED
	EQUIPMENT CONNECTION
	PHOTOCELL ON ROOF
	PANELBOARD (SEE SCHEDULE)
	SWITCHBOARD OR DISTRIBUTION BOARD
	PLYWOOD TELEPHONE BACKBOARD

CIRCUITS

	CONDUIT CONCEALED IN WALL OR CEILING WITH PHASE, NEUTRAL AND GROUND CONDUCTOR UNLESS OTHERWISE NOTED
	SWITCH LEG
	CONDUIT UNDERGROUND / UNDER SLAB
	BRANCH CIRCUIT HOMERUN SUBSCRIPT 'PIA' INDICATES PANEL AND 2,4,6 INDICATES BREAKER POSITION

FIRE ALARM

	FIRE ALARM CONTROL PANEL
	SMOKE DETECTOR, 'D' DENOTES DUCT MOUNTED
	REMOTE SMOKE DUCT DETECTOR KEY OPERATED TEST SWITCH WITH INDICATOR LIGHT
	MANUAL PULL STATION
	AUDIO VISUAL NOTIFICATION APPLIANCE WITH CANDELA RATING
	VISUAL NOTIFICATION APPLIANCE SUBSCRIPT NUMBER DENOTES THE CANDELA RATING
	FAN SHUTDOWN RELAY
	REMOTED FIRE ALARM ANNUNCIATOR ALARM PANEL

ABBREVIATIONS

ABV	ABOVE	NA	NOT APPLICABLE
AC	ABOVE COUNTER	NC	NORMALLY CLOSED
A/C	AIR CONDITIONED	NIC	NOT IN CONTRACT
AD	ACCESS DOOR	NO	NORMALLY OPEN
AFF	ABOVE FINISHED FLOOR	NTS	NOT TO SCALE
AFG	ABOVE FINISHED GRADE	N ₂	NITROGEN
AHU	AIR HANDLING UNIT	O ₂	OXYGEN
AIC	AMPERE INTERRUPTING CAPACITY	OA	OUTSIDE AIR
AMCA	AIR MOVING AND CONDITIONING ASSOCIATION, INC.	OAH	OUTSIDE AIR INTAKE HOOD
AMP	AMPERE(S)	OB	OPPOSED BLADE DAMPER
AND	AND	OC	ON CENTER
AP	ACCESS PANEL	OF	OWNER FURNISHED CONTRACTOR INSTALLED
APPROX	APPROXIMATE	OH	OVERHEAD
ARCH	ARCHITECTURAL	OS&Y	OUTSIDE SCREW & YOKE GATE VALVE
@	AT	P	PUMP
AV	AUTOMATIC AIR VENT ASSEMBLY	P-2	PLBG. FIXTURE DESIGNATION
AUX	AUXILIARY	PCT	PERCENT (%)
BLDG	BUILDING	PLBG	PLUMBING
C	CONDUIT	PNL	PANELBOARD
CA	COMPRESSED AIR	PRESS	PRESSURE
CATV	CABLE TELEVISION	PRV	PRESSURE REDUCING VALVE
CB	CIRCUIT BREAKER	PSIG	POUNDS PER SQUARE INCH GAUGE
CI	CAST IRON	PWR	POWER
CLG	CEILING	RA	RETURN AIR
CKT	CIRCUIT	RE:4P6	REFER TO DETAIL 4 DRAWING P-6
CO	CLEANOUT	REQ'D	REQUIRED
COND	CONDENSATE	RET	RETURN
CONN	CONNECTION	RF	RELIEF FAN
CONT	CONTINUATION	RG	RETURN GRILLE
CU	CONDENSING UNIT	RH	RELATIVE HUMIDITY
CUJ	COPPER	RHD	RELIEF HOOD
CL	CENTER LINE	RPM	REVOLUTIONS PER MINUTE
D	DRAIN	SA	SUPPLY AIR
DB	DRY BULB	SC	SPLIT CIRCUIT
DIA	DIAMETER	SD	SMOKE DAMPER
DIST	DISTRIBUTION	SEC	SECOND
DN	DOWN	SF	SUPPLY FAN
DWGS	DRAWINGS	SMACNA	SHEET METAL AIR CONDITIONING CONTRACTORS NATIONAL ASSOC.
(e)	EXISTING	SP	STATIC PRESSURE
EA	EACH	SPEC	SPECIFICATION
EAT	ENTERING AIR TEMPERATURE	STD	STANDARD
EF	EXHAUST FAN	STL	STEEL
ELEV	ELEVATION	SW	SWITCH
ELEC	ELECTRICAL	SWBD	SWITCHBOARD
EG	EXHAUST GRILLE	T	TELEPHONE
EGC	EQUIPMENT GROUNDING CONDUCTOR	TEMP	TEMPERATURE
ENT	ENTERING EQUIPMENT	TXV	THERMOSTATIC EXPANSION VALVE
ER	EXHAUST REGISTER	TV	TELEVISION
ESP	EXTERNAL STATIC PRESSURE	TYF	TYPICAL
EWT	ENTERING WATER TEMP.	UF	UNDER FLOOR
EXH	EXHAUST	UGS	UNDERGROUND SECONDARY
EXIST	EXISTING	UL	UNDERWRITERS LABORATORIES
F	DEGREES FAHRENHEIT	UP	UNDERGROUND PRIMARY
FD	FIRE DAMPER	V	VACUUM
FLEX	FLEXIBLE	V	VOLT(S)
FLG	FLANGE	VB	VALVE BOX
FLR	FLOOR	VEL	VELOCITY
FPM	FEET PER MINUTE	VENT	VENTILATE
FT	FEET, FOOT	VFD	VARIABLE FREQUENCY DRIVE
GAL	GALLON	VOL	VOLUME
GALV	GALVANIZED	VTR	VENT THRU ROOF
GEC	GROUNDING EQUIPMENT CONDUCTOR	W	WIRE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	W/	WITH
GND	GROUND	W/O	WITHOUT
GPM	GALLONS PER MINUTE	W.A.G.E.	WASTE ANESTHESIA GAS EVACUATION
HP	HORSEPOWER	WB	WET BULB
HZ	HERTZ	WP	WEATHERPROOF
IC	INTERCOM	Y.C.O.	YARD CLEANOUT
IE	INVERT ELEVATION	ZVB	ZONE VALVE BOX
IG	ISOLATED GROUND		
IN	INCHES		
INC	INCANDESCENT		
IN WG	INCHES OF WATER		
INSUL	INSULATION		
JB	JUNCTION BOX	1P	ONE POLE
KVA	KILOVOLT AMPERE	2P	TWO POLE
KW	KILOWATT	3P	THREE POLE
		Ø	PHASE
LAT	LEAVING AIR TEMPERATURE		
LB	POUND		
LPA	LINE PRESSURE ALARM		
LVR	LOUVER		
MA	MEDICAL AIR		
MAX	MAXIMUM		
MD	MANUAL DAMPER		
MECH	MECHANICAL		
MH	MOUNTING HEIGHT		
MIN	MINIMUM		
MLO	MAIN LUGS ONLY		
MTG	MOUNTING		
MV	MEDICAL VACUUM		



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CONSULTANTS SEAL

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CONTRACTOR SEAL

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KUNG FU TEA CITY BASE
TENANT FINISH OUT
SE MILITARY DR. & OLD CORPUS CHRISTI RD.
San Antonio, Texas

Drawn By IDG

Checked By IDG

Revisions:

MEP SYMBOLS & ABBREV.

Date: 11/12/19

Project No.: ON-1903

MEP1

Sheet:

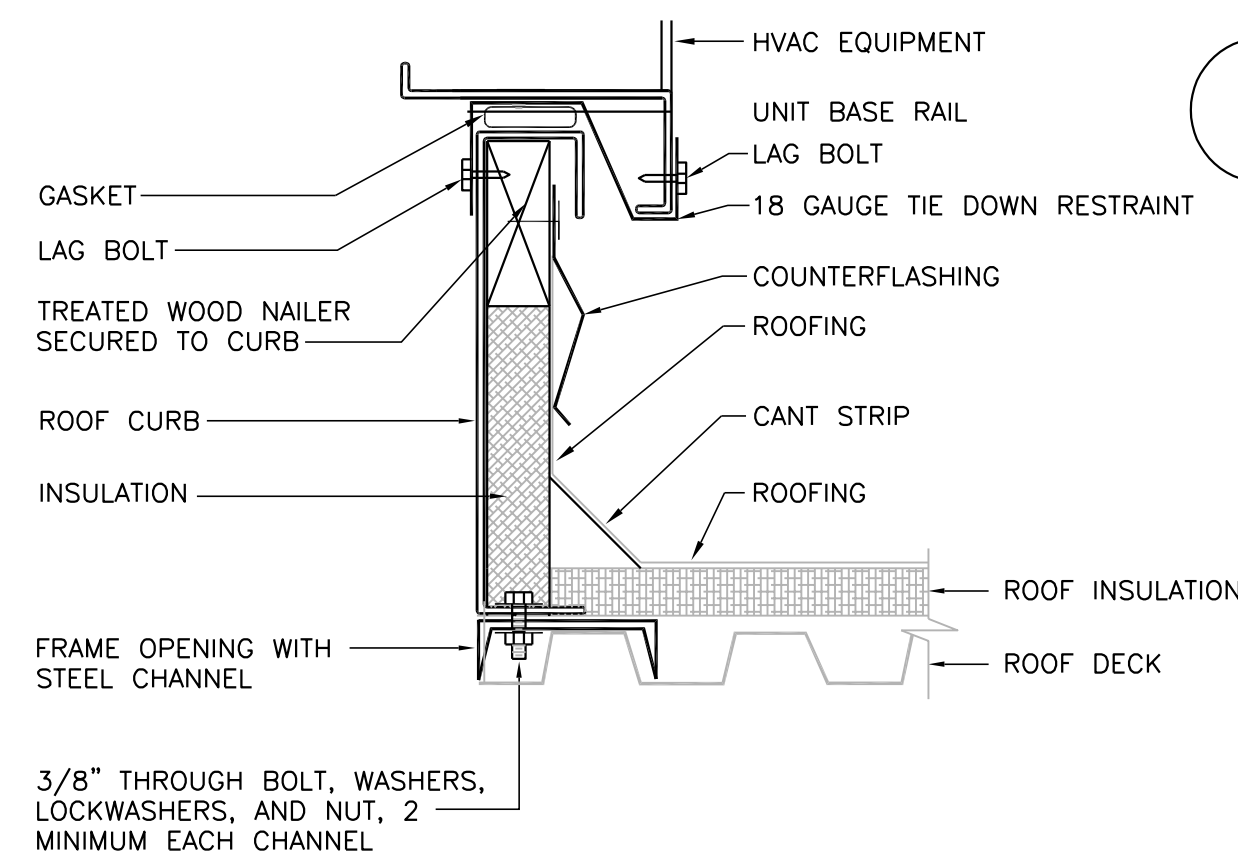
FAN SCHEDULE		
MARK	EF-1	EF-2
SERVES	RESTROOM	RESTROOM
TYPE/DRIVE	CENTR/DIRECT	CENTR/DIRECT
CFM	150	150
E.S.P. IN W.G.	0.15	0.15
MOTOR	155 W	155 W
RPM (MAX.)	862	862
SONES (MAX.)	2.3	2.3
VOLTS/PHASE/HERTZ	115/1/60	115/1/60
MANUFACTURER	GREENHECK	GREENHECK
MODEL NUMBER	SP-B150	SP-B150
APPROX. WEIGHT (LBS)	12	12
NOTES	1,2	1,2

- INTERLOCK WITH LIGHT SWITCH.
- PROVIDE BACKDRAFT DAMPER AND GRILLE WITH FAN.
- INTERLOCK WITH RTU-1.

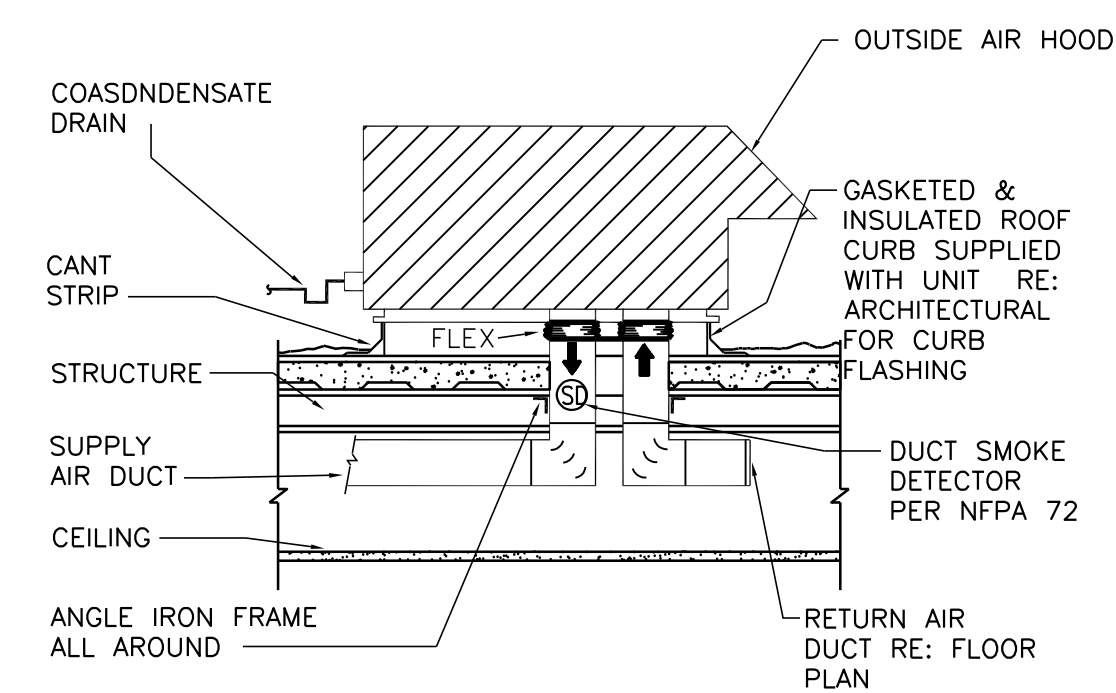
AIR DEVICE SCHEDULE			
MARK	A	B	C
MANUFACTURER	TITUS	TITUS	TITUS
MODEL	TMS-AA	S300FL	300FL
FACE SIZE	24"x24"	16"x16"	24"x24"
TYPE	SUPPLY	SUPPLY	RETURN
NC	18	16	18
REMARKS	1,2	1,2,3	1,2

- NOTES:
- ALUMINUM CONSTRUCTION. NECK SIZE AS NOTED ON PLAN.
 - PROVIDE FRAME FOR MOUNTING AIR DEVICE IN LAY-IN GRID CEILING UNLESS REFLECTED CEILING PLAN INDICATES HARD CEILING. IN AREAS WITH HARD CEILINGS, PROVIDE FRAMES FOR SURFACE MOUNTING. PROVIDE YOUNG REGULATORS AT ALL DAMPERS IN INACCESSIBLE CEILINGS.
 - MOUNT GRILL POINTING DOWN AT 45°.

AIR BALANCE SCHEDULE				
MARK	O.A. CFM	SUPPLY	EXHAUST	TOTAL
RTU-1	500	3200	-	(+) 500
EF-1,2	-	-	150	(-) 300
	(+) 400	(+) 1750	(-) 150	(+) 200



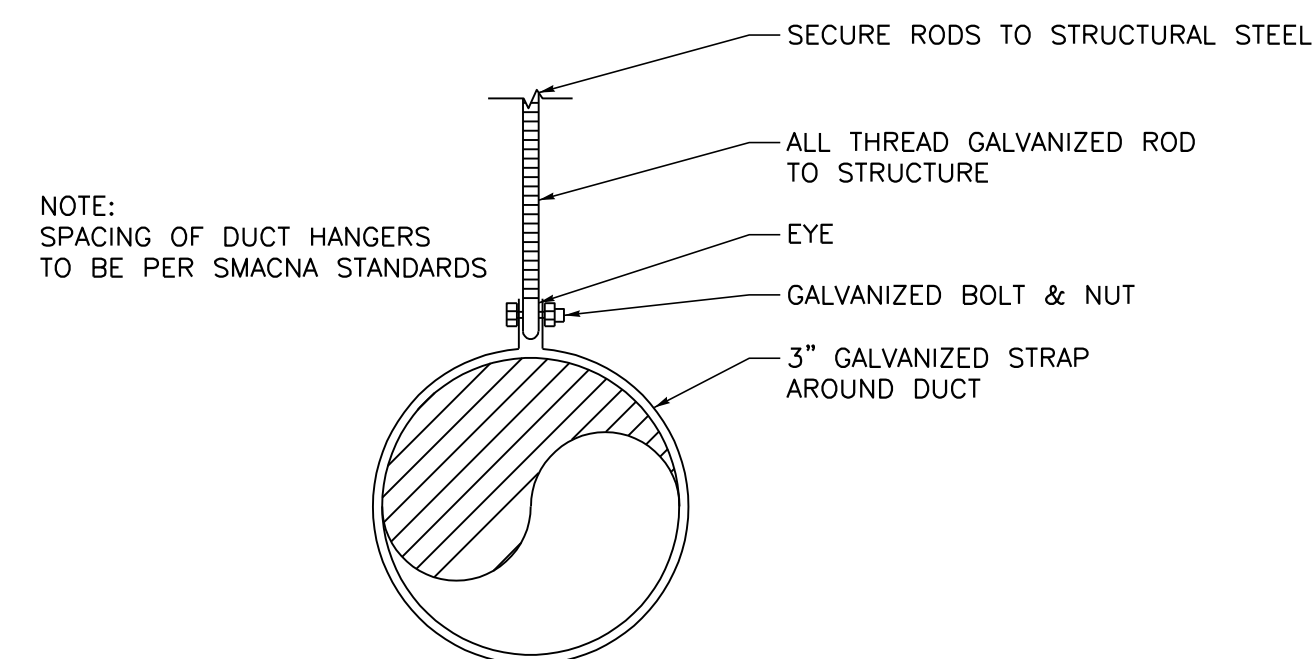
3 ROOF TOP EQUIP. CURB DETAIL
SCALE: NOT TO SCALE



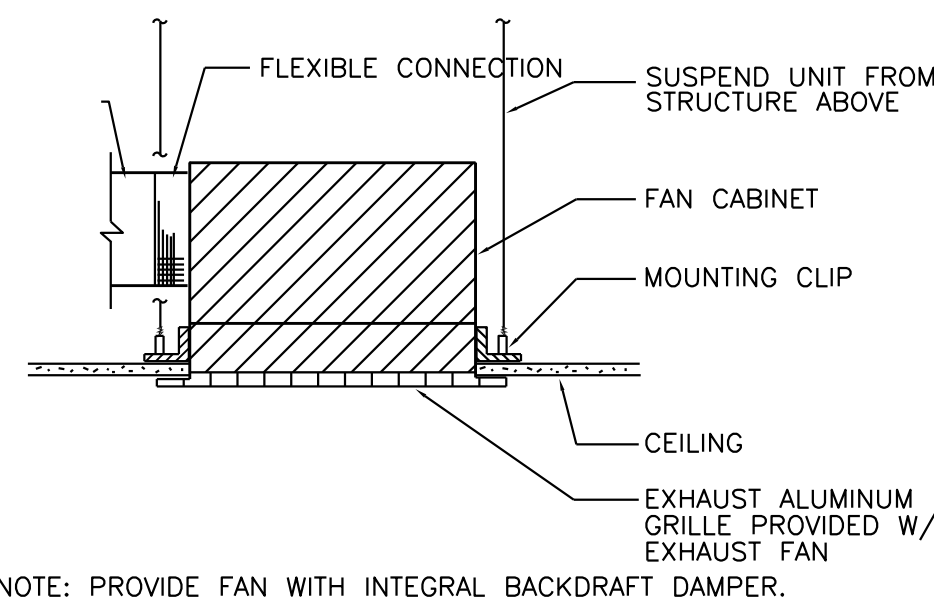
5 ROOF TOP UNIT MOUNTING DETAIL
SCALE: NOT TO SCALE

ROOF TOP UNIT SCHEDULE	
MARK	RTU-1
NOMINAL TONS	7.5
EER	12.6
SERVES	DINNING
SUPPLY AIR (CFM)	3000
OUTSIDE AIR (CFM)	500
E.S.P. (IN W.G.)	.6
FAN MOTOR (HP)	4
TOTAL (MBH)	86.5
SENSIBLE (MBH)	65.3
EAT. (DB/WB) (°F)	80/67
LAT. (DB/WB) (°F)	59.8/57.8
AMB. TEMP (°F)	105
GAS INPUT/OUTPUT (MBH)	120
VOLTS/PHASE/HERTZ	208/3/60
MCA/MOCP (AMPS)	19.9/25
MANUFACTURER	TRANE
MODEL NO.	YHC092
WEIGHT (LBS)	1400
NOTES	1-10

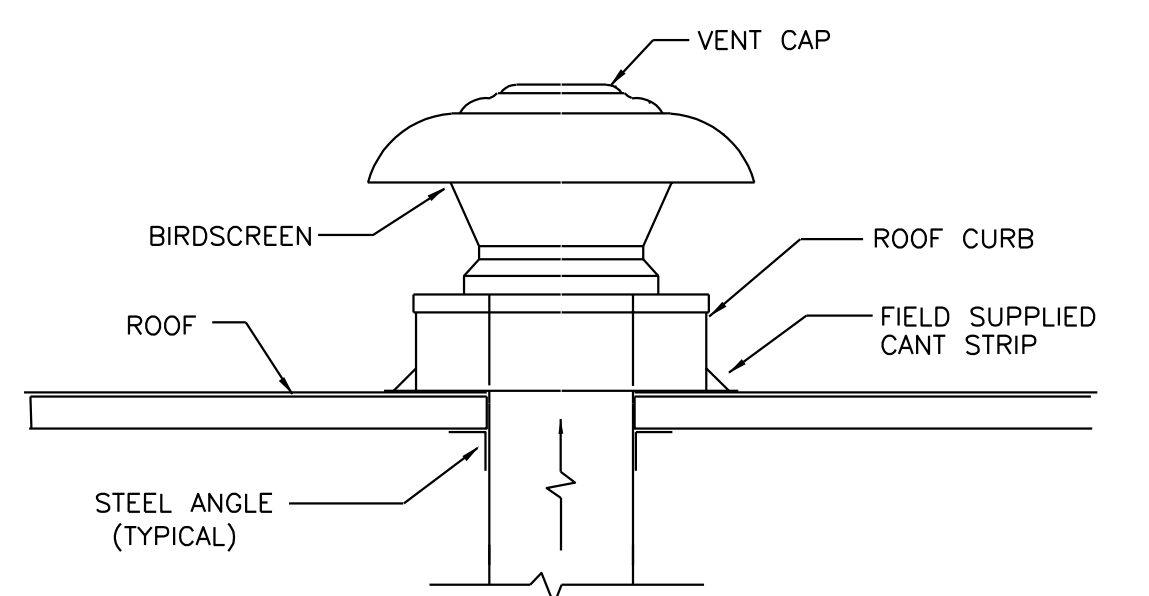
- NOTES:
- PROVIDE SINGLE POINT POWER CONNECTION.
 - PROVIDE ROOF CURBS AND CONDENSER COIL HAIL GUARD.
 - TEMPERATURE SENSOR AND CONTROLS BY CONTROLS CONTRACTOR.
 - MANUFACTURER LISTED OR APPROVED EQUAL.
 - PROVIDE AND INSTALL SMOKE DETECTORS ON SUPPLY.
 - PROVIDE ECONOMIZER DAMPER FOR OUTSIDE AIR INTAKE.
 - PROVIDE A FLOAT SWITCH IN THE PRIMARY DRAIN PAN.
 - PROVIDE WITH HOT GAS RE-HEAT.
 - PROVIDE WITH HUMIDITY SENSORS.
 - PROVIDE WITH CO2 AND DEMAND CONTROL VENTILATION.
 - PROVIDE UNITS WITH FACTORY MOUNTED RECEPTACLES



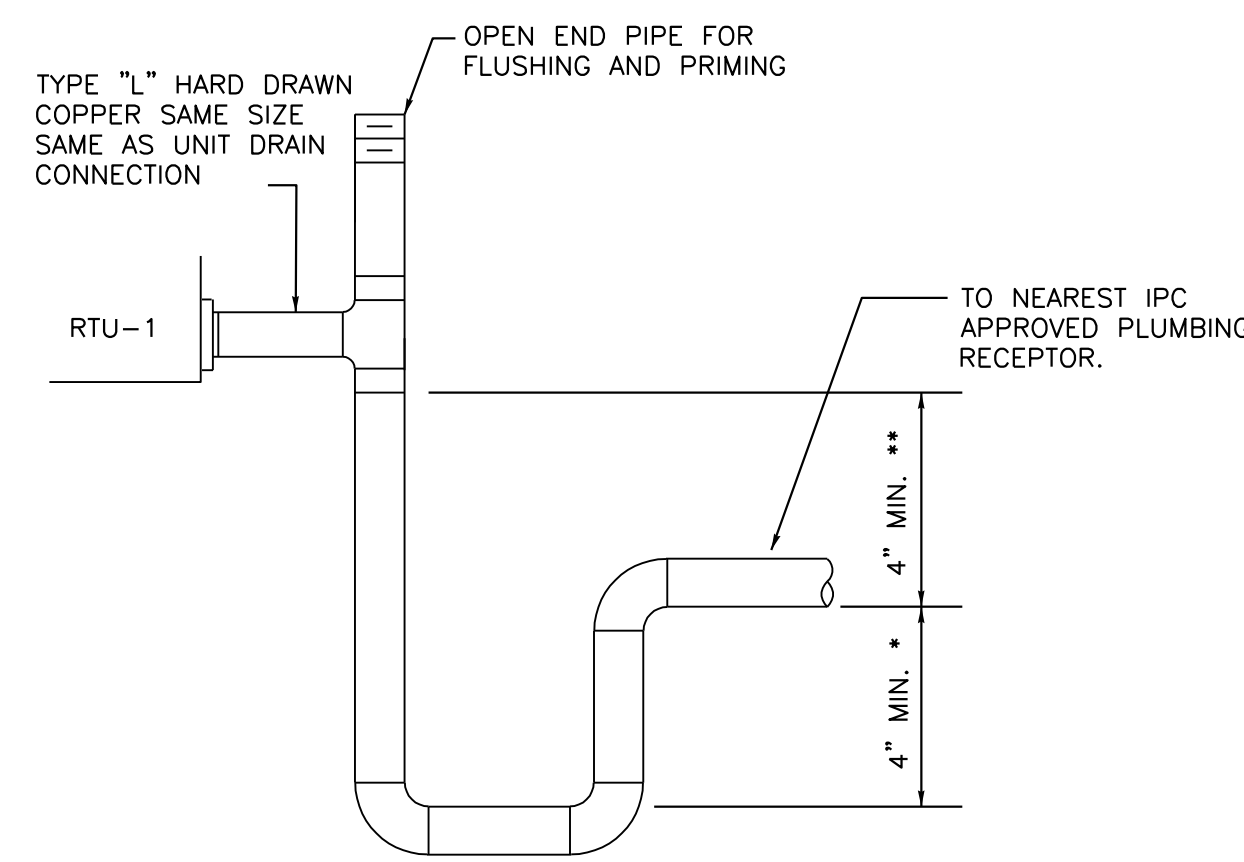
2 ROUND DUCT SUPPORT HANGER DETAIL
SCALE: NOT TO SCALE



4 CEILING EXHAUST DETAIL
SCALE: NOT TO SCALE



6 CVENT CAP DETAIL
SCALE: NOT TO SCALE



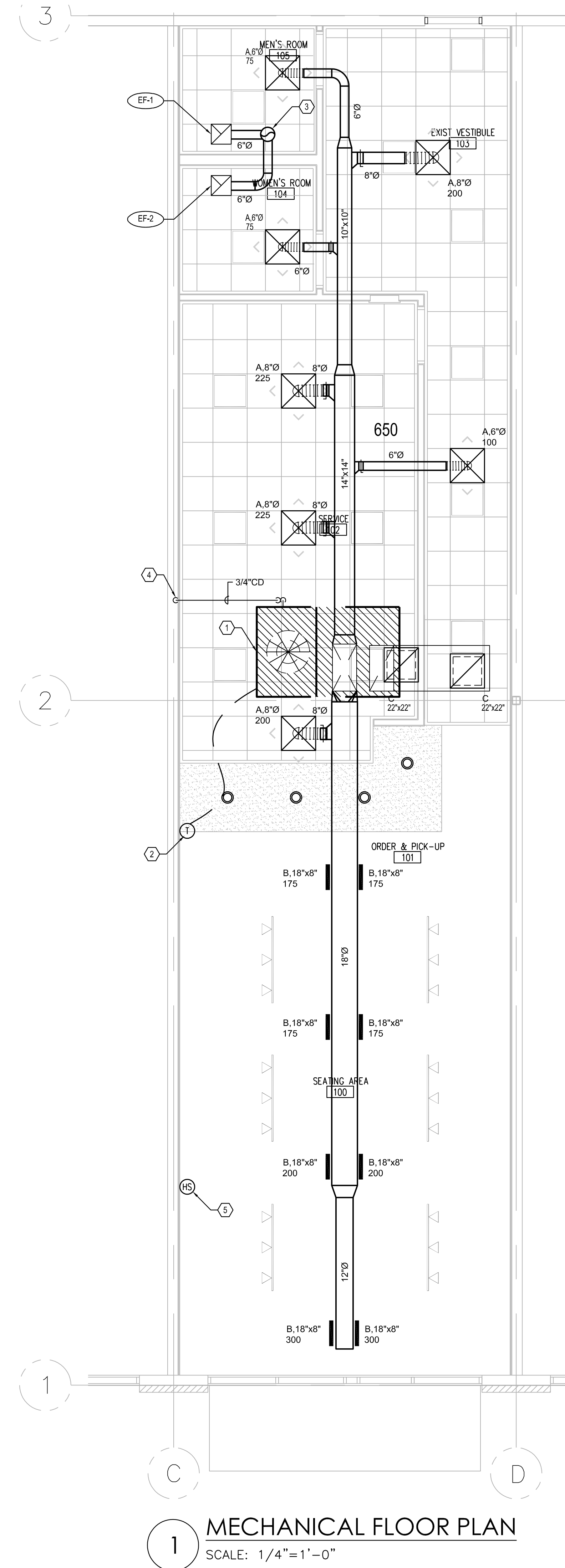
7 CONDENSATE DRAIN TRAP DETAIL
SCALE: NOT TO SCALE

GENERAL NOTES:

- ALL WORK SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, THE INTERNATIONAL MECHANICAL CODE, AND THE OTHER CODES AND ORDINANCES OF THE AUTHORITY HAVING JURISDICTION.
- DUCT DIMENSIONS INDICATED ARE CLEAR INSIDE DIMENSIONS.
- ALL RECTANGULAR SUPPLY AND RETURN DUCTS SHALL HAVE TURNING VANES AT EACH 90 DEGREE ELBOW OR TEE.
- ALL DUCTWORK ABOVE THE CEILING SHALL BE SHEETMETAL AND SHALL BE INSTALLED WITH 2" FOIL FACED FIBERGLASS INSULATION. ALL EXPOSED DUCTWORK SHALL BE SPIRAL.
- ALL DUCTWORK SHALL BE FABRICATED AND INSTALLED AS PER A.S.H.R.A.E. AND S.M.A.C.N.A. STANDARDS.
- HVAC SYSTEM SHALL BE BALANCED AND TESTED AS REQUIRED TO MEET THE PERFORMANCE AS SCHEDULED ON PLANS AND SPECIFICATIONS.
- DIFFUSERS SHALL BE MANUFACTURED BY TITUS OR APPROVED EQUAL WITH NECK MINIMUM SIZES AND RATED CFM, AS SHOWN ON DRAWINGS AND SCHEDULES.
- PROVIDE AND INSTALL A STANDARD EFFICIENCY TAKE-OFF W/ VOLUME CONTROL DAMPER ON EACH ROUND SUPPLY BRANCH DUCT SERVING A SUPPLY DIFFUSER/REGISTER. PROVIDE EXTENDED NECK ON BALANCING DAMPER TO ALLOW ACCESS THRU INSULATION.
- COORDINATE ALL DUCTWORK, GRILLES AND EQUIPMENT WITH ALL TRADES BEFORE INSTALLING.
- TRANSITION SUPPLY AND RETURN DUCT FROM UNIT CONNECTION SIZE TO DUCT SIZE SHOWN.
- PROVIDE AND INSTALL VIBRATION ISOLATORS AS SPECIFIED ON ANY EQUIPMENT WITH MOVING PARTS.
- ALL UNITS MUST BE INSTALLED LEVEL.
- MECHANICAL CONTRACTOR TO PROVIDE TO THE PLUMBING CONTRACTOR THE RECOMMENDED A/C MANUFACTURER'S DATA FOR CONDENSATE TRAP. SEE PLUMBING PLANS.
- PROVIDE CANVAS CONNECTION AT UNIT DUCT CONNECTIONS UNLESS UNIT IS INTERNALLY ISOLATED.
- INSULATE ALL BACKPANS OF SUPPLY AIR DIFFUSERS WITH FOIL-FACED DUCT WRAP AS SPECIFIED. TAPE SECURELY TO AIR DEVICE.
- MECHANICAL EQUIPMENT SHALL BE INSTALLED ON LANDLORD'S MECHANICAL ZONE. COORDINATE WITH EXISTING STRUCTURAL DRAWINGS PRIOR TO ANY CONSTRUCTION.
- ALL REFRIGERANT CIRCUITS SERVICE PORTS LOCATED ON THE EXTERIOR OF THE BUILDING SHALL BE PROVIDED WITH LOCKING ACCESS PORT CAPS.

KEYED NOTES:

- PROVIDE ROOFTOP UNIT AS SCHEDULED. PROVIDE TRANSITIONS AND FLEXIBLE CONNECTIONS AT UNIT. PROVIDE SMOKE DETECTOR INSIDE THE RETURN AIR DUCT. MOUNT UNIT BASED ON MANUFACTURER'S RECOMMENDATIONS. PROVIDE SECONDARY DRAIN PAN WITH FLOAT SWITCH. PROVIDE OUTSIDE AIR MOTORIZED DAMPERS FOR THE AHU PER 2018 IECC.
- PROVIDE A WALL MOUNTED PROGRAMMABLE THERMOSTAT AT APPROXIMATELY THIS LOCATION, 48" A.F.F. WITH LOCKING CAPS.
- 10" EXHAUST AIR DUCT UP THRU ROOF. PROVIDE VENT CAP WITH BIRDSCREEN.
- 3/4" CONDENSATE COLLECTION DOWN IN WALL TO FLOOR SINK BELOW. REFER TO PLUMBING DRAWING FOR EXACT LOCATION. PROVIDE PROPER AIR GAP.
- PROVIDE HUMIDITY SENSORS, CO2 AND DEMAND CONTROL VENTILATION. INTERLOCK WITH RTU-1.



1 MECHANICAL FLOOR PLAN
SCALE: 1/4"=1'-0"



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 SE MILITARY DR. & OLD CORPUS CHRISTI RD.
 San Antonio, Texas

Drawn By IDG
 Checked By IDG
 Revisions:

ELECTRICAL FLOOR PLANS

Date: 11/12/19
 Project No.: ON-1903

E1
 Sheet:

GENERAL LIGHTING NOTES:

- A. ALL CEILING MOUNTED DEVICES LOCATED IN LAY-IN CEILINGS SHALL BE CENTERED IN THE CEILING TILE.
- B. MULTIPLE SWITCHES SHOWN TOGETHER SHALL BE GANGED TOGETHER UNDER A COMMON COVER PLATE.
- C. PROVIDE UNSWITCHED CIRCUIT TO ALL EXIT SIGNS ORIGINATING FROM CIRCUIT NEAREST EMERGENCY CIRCUIT.
- D. CONTRACTOR SHALL INDICATE LIGHTING CIRCUIT CONTROLLED BY EACH SWITCH BY PROVIDING TYPE WRITTEN LABELING LOCATED ON INSIDE FACE OF EACH SWITCH COVER PLATE.
- E. WHEN LOCATING SYSTEMS NEXT TO DOORS, LOCATE 8 INCHES OFF DOOR JAMB TO CENTER OF DEVICE. WHEN MULTIPLE DEVICES ARE TOGETHER, STACK BUT NO MORE THAN 72 INCHES AFF. COORDINATE SWITCH LOCATIONS IN ROOMS WITH ARCHITECT AND OTHER DEVICES (THERMOSTATS, FIRE ALARM, AND CALL BUTTONS).
- F. MINIMUM CIRCUIT SIZE IS 2 #12 AND 1 #12 GROUND IN 3/4" CONDUIT. MAXIMUM FIXTURE WHIP LENGTH FROM ANY J-BOX 6 FEET. LIGHTING CIRCUITS JOINTS SHALL BE MADE UP IN OVERHEAD J-BOXES SECURED TO STRUCTURE WITH LIGHTING WHIPS FROM THE J-BOXES. FIXTURES DESIGNED TO BE QUICK-CLIPPED TOGETHER SHALL BE CONNECTED AS PER MANUFACTURER.
- G. COORDINATE LIGHT LOCATIONS WITH OTHER CEILING ITEMS OR JOIST ITEMS PRIOR TO INSTALLATION. LIGHT LOCATIONS TAKE PRECEDENCE OVER AIR DEVICES.
- H. PROVIDE SECONDARY SUPPORT WIRES FROM ALL FOUR (4) CORNERS OF THE LAY-IN FIXTURES TO THE STRUCTURE ABOVE. DO NOT SUPPORT FIXTURES FROM CEILING GRID WIRE SUPPORTS, PIPING, CONDUIT, SIDE WALLS, OR MECHANICAL EQUIPMENT. CEILING SPECIFICATIONS DO NOT SUPERCEDE THIS REQUIREMENT.
- I. FIXTURES WITH "E" SUFFIX HAVE BATTERY BACK-UPS. FIXTURES SERVED FROM EMERGENCY PANELS (WITH GENERATOR BACKUP) SHALL BE PROVIDED WITH BODINE GTD DEVICE INSTEAD OF BATTERY BACK-UPS.
- J. FIRESTOP ALL CONDUIT PENETRATIONS IN RATED WALLS. SEE ARCHITECTURAL FOR WALL RATINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO SHEET ROCK AND REPAIR. PROVIDE FIRE RATED SLEEVES IN ALL FLOOR PENETRATIONS.

LIGHTING FUNCTIONAL TESTING/COMMISSIONING PLAN:

- A. CONTRACTOR SHALL COMPLETE THE TASKS BELOW TO VERIFY THE LIGHTING CONTROLS ARE OPERATING AS PRESCRIBED BY THE PROJECT DOCUMENTS AND APPLICABLE CODES. WRITTEN DOCUMENTATION SHALL BE PROVIDED TO THE ARCHITECT UPON COMPLETION AND SHALL INCLUDE THE FOLLOWING INFORMATION FOR EACH TASK: DATE PERFORMED, PERSON COMPLETING THE TASK, INITIAL SETTINGS OBSERVED, AND FINAL SETTING UPON COMPLETION.
 - A.A. ENSURE LIGHT FIXTURES ARE INSTALLED AND OPERATIONAL.
 - A.B. PERFORM OPERATIONAL TESTING OF EMERGENCY EXIT AND EGRESS LIGHTING COMPONENTS AS REQUIRED BY NFPA 101 FOR ANNUAL TESTING.
 - A.C. ENSURE WALLBOX OCCUPANCY SENSORS ARE INSTALLED AND OPERATIONAL.
 - A.D. ENSURE WALLBOX TIMER SWITCHES ARE INSTALLED AND OPERATIONAL.
 - A.E. TEST ALL OCCUPANCY SENSOR DEVICES TO ENSURE THAT THEY HAVE BEEN LOCATED AND AIMED PER MANUFACTURER'S INSTRUCTIONS, THAT STATUS INDICATORS ARE FUNCTIONING, THAT THEY OPERATE THE FIXTURES AS INDICATED IN THE DRAWINGS, THAT TIME DELAYS ARE SET APPROPRIATELY, AND THAT MOVEMENT OUTSIDE OF THE SPACE DOES NOT CAUSE THE SENSOR TO OPERATE.
 - A.F. OBSERVE OPERATION ON EXTERIOR LIGHTING ON PHOTOCELL TO ENSURE LIGHTS TURN ON AT DUSK AND ARE OFF DURING DAYLIGHT HOURS, AND TO ENSURE FEEDBACK FROM LIGHTS DOES NOT CAUSE UNNECESSARY CYCLING.
- B. CONTRACTOR SHALL ENSURE THE STEPS ABOVE ARE COMPLETED PRIOR TO SUBSTANTIAL COMPLETION TO AVOID POTENTIAL DELAYS IN OBTAINING CERTIFICATE OF OCCUPANCY.

GENERAL POWER NOTES:

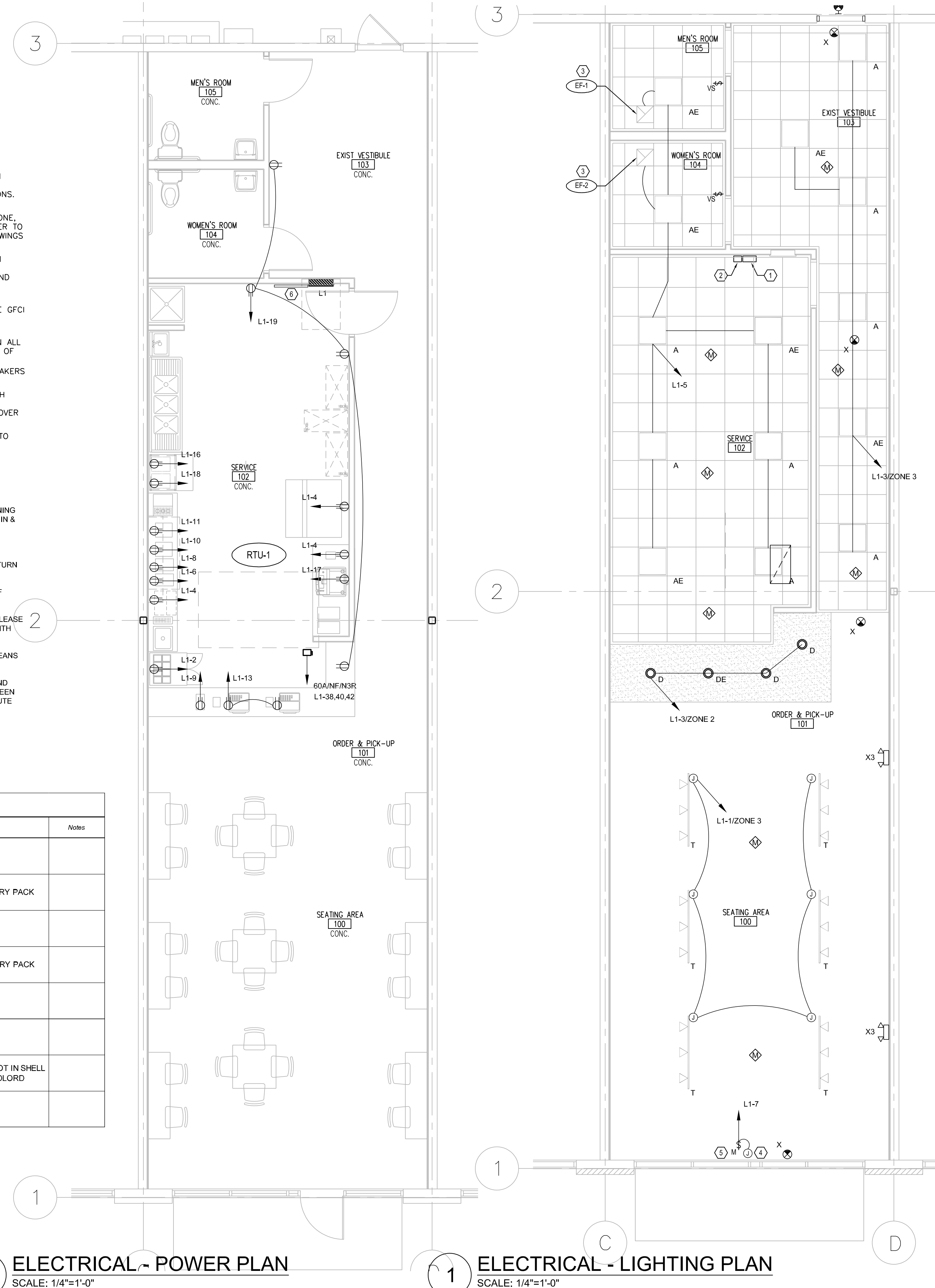
- A. CONTRACTOR SHALL VERIFY DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN. REFER TO ARCHITECTURAL CASEWORK AND MILLWORK ELEVATIONS.
- B. ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT, OUTLET BOXES, JUNCTION BOXES FOR ALL TELEPHONE, DATA, CATV, SECURITY, AND CAMERA OUTLETS. REFER TO DIVISION 26 SPECIFICATIONS AND TECHNOLOGY DRAWINGS FOR ALL WORK REQUIRED.
- C. HVAC AND PLUMBING EQUIPMENT MAY DIFFER FROM LOCATIONS AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE EXACT LOCATIONS WITH MECHANICAL AND PLUMBING CONTRACTOR.
- D. ALL RECEPTACLES MOUNTED ABOVE COUNTERS AND WITHIN 6 FEET OF SINKS OR LAVATORIES SHALL BE GFCI TYPE.
- E. CONTRACTOR SHALL PROVIDE HANDLE TIES MANUFACTURED BY THE SWITCH GEAR SUPPLIER ON ALL MULTI-WIRE CIRCUITS TO MEET THE REQUIREMENTS OF ARTICLE 210.4(B) OF THE 2011 NEC. AT THE CONTRACTOR'S OPTION, TWO AND THREE POLE BREAKERS MAY BE USED.
- F. CONTRACTOR SHALL INDICATE CIRCUIT SERVING EACH RECEPTACLE BY PROVIDING TYPE WRITTEN LABELING LOCATED ON INSIDE FACE OF EACH RECEPTACLE COVER PLATE.
- G. ALL FIRE SMOKE DAMPERS SHALL BE CONNECTED TO NEAREST 120V PANEL WITH AVAILABLE CIRCUIT.

KEYED NOTES:

1. PROVIDE GREENGATE ROOM CONTROLLER, CONFIRM ZONING AND SWITCH LOCATIONS WITH TENANT PRIOR TO ROUGH IN & SUBMITTING BID. PROVIDE EATON GMDS MOMENTARY SWITCHES AS REQUIRED TO MEET IECC 2018.
2. PROVIDE EATON LX4 RELAY PANEL FOR TENANT SIGNAGE CONTROL. COORDINATE ON/OFF SCHEDULING PRIOR TO TURN OVER.
3. FANS SHALL ENERGIZE/DE-ENERGIZE WITH DETECTION OF LOCAL OCCUPANCY SENSOR.
4. PROVIDE JUNCTION BOX AT INSIDE FACE WITHIN TENANT LEASE SPACE FOR TENANT SIGNAGE. COORDINATE LOCATION WITH SIGNAGE PROVIDER.
5. PROVIDE MOTOR RATED SWITCH FOR DISCONNECTING MEANS FOR TENANT SIGNAGE PER NEC REQ.
6. PROVIDE 4' x 8' x 3/4" THICK PLYWOOD BOARD, PAINTED AND TREATED WITH FIRE RETARDANT. PROVIDE #6 G. WITH GREEN INSULATION AND TERMINATE TO A GROUND BUS BAR. ROUTE THE #6 G. IN 3/4" CONDUIT TO MAIN ELECTRICAL SERVICE GROUNDING ELECTRODE SYSTEM.

LIGHT FIXTURE SCHEDULE

Type	Description	Lamp Qty. / Type / Color	Volts	Input Watts	Mounting	Manufacturer / Catalog No.	Notes
A	2X2 LAY IN	LED/3500K	120	38	LAY-IN	COOPER METALUX 22FP4235C	
AE	2X2 LAY IN	LED/3500K	120	38	LAY-IN	SAME AS TYPE A EXCEPT WITH EMERGENCY BATTERY PACK	
D	RECESSED CAN	LED/3500K	120	24	RECESSED	COOPER	
DE	RECESSED CAN	LED/3500K	120	24	RECESSED	SAME AS TYPE D EXCEPT WITH EMERGENCY BATTERY PACK	
T	TRACK	LED/3500K	120	15	SURFACE	WAC LUCIO	
X1	EXIT SIGN	LED	120	5	SURFACE	SURELITES LPX7	
X2	EXTERIOR EXIT SIGN - SHALL ONLY BE PROVIDED IF NOT IN SHELL BUILDING PHASE COORDINATE MODEL WITH LANDLORD	LED	120	5	SURFACE	EXTERIOR EXIT SIGN - SHALL ONLY BE PROVIDED IF NOT IN SHELL BUILDING PHASE COORDINATE MODEL WITH LANDLORD	
X3	EMERGENCY BUG EYES	LED	120	5	SURFACE	SURELITES CU2	



2 ELECTRICAL - POWER PLAN
 SCALE: 1/4"=1'-0"

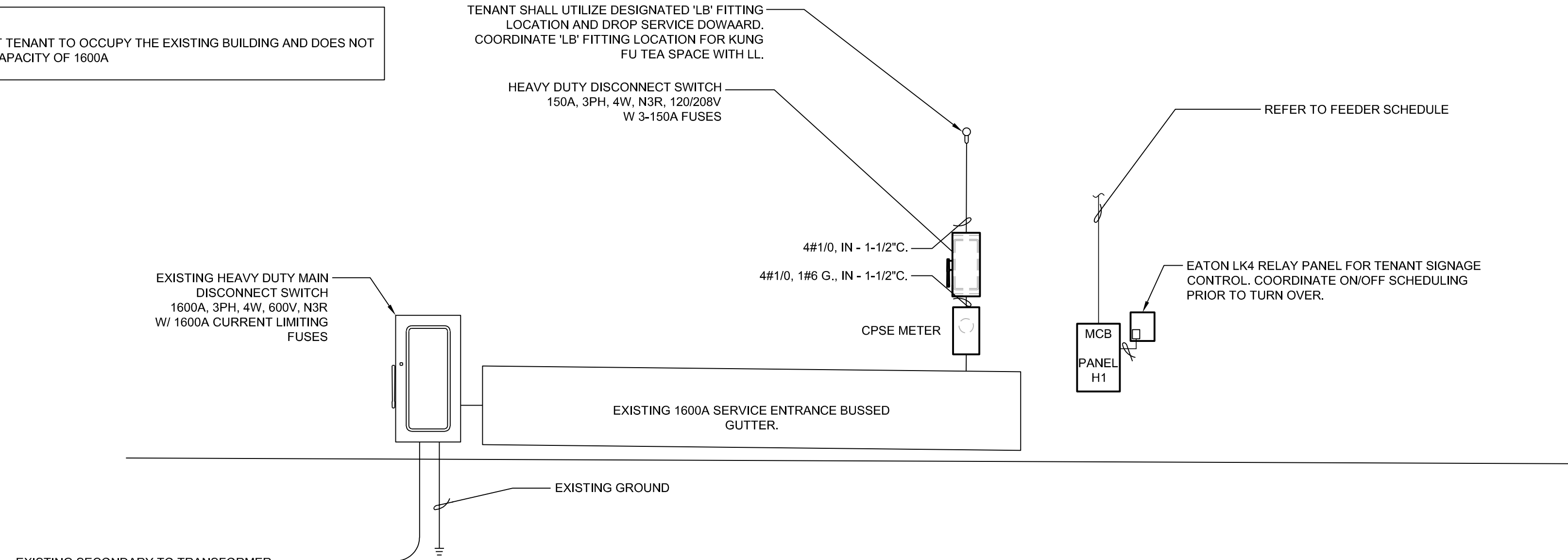
1 ELECTRICAL - LIGHTING PLAN
 SCALE: 1/4"=1'-0"

FEEDER SCHEDULE			
AMPERAGE	SETS	CONDUCTOR SIZE	CONDUIT (INCHES)
30A	1	4#10, 1#10 G.	3/4"
40A	1	4#8, 1#10 G.	1"
50A	1	4#8, 1#10 G.	1"
60A	1	4#6, 1#10 G.	1"
70A	1	4#4, 1#8 G.	1 1/4"
80A	1	4#4, 1#8 G.	1 1/4"
90A	1	4#3, 1#8 G.	1 1/4"
100A	1	4#3, 1#8 G.	1 1/4"
125A	1	4#1, 1#6 G.	1 1/2"
150A	1	4#1/0, 1#6 G.	1 1/2"

- ELECTRICAL CONTRACTOR SHALL PROVIDE THE NUMBER OF LUGS AND PROPER LUG SIZES TO ACCEPT CONDUCTOR SIZES SHOWN.
- GROUND NOT REQUIRED AT SERVICE LATERAL.

ELECTRICAL LOAD ANALYSIS AT NEW PANEL 'L1'				2014 NEC	kVA
120/208V, 3PH, 4W					
NEW LOADS:					
LIGHTING:					
TYPE OF OCCUPANCY	AREA (SF)	VA/SF			
DIVERSIFIED INTERIOR LIGHTING LOAD	1200	2	220.12, 220.42		4.29
DIVERSIFIED EXTERIOR LIGHTING LOAD		0	220.12		
POWER:					
DIVERSIFIED RECEPTACLE LOAD		540	220.44 & TABLE 220.44		1.2
1VAVSFT		1,200	220.14(K)(1) & (2)		
KITCHEN		15,800	220.56		10.27
HVAC:					
COOLING		13,500	220.60		13.5
PLUMBING:					
TANKLESS TYPE WATER HEATERS		4,500			4.5
STORAGE TYPE WATER HEATERS		4,500			
TOTAL					33.8
TOTAL AMPS:					93.8
+25% SPARE					117.2
SERVICE SIZE:					150
SPARE AMPACITY:					32.8

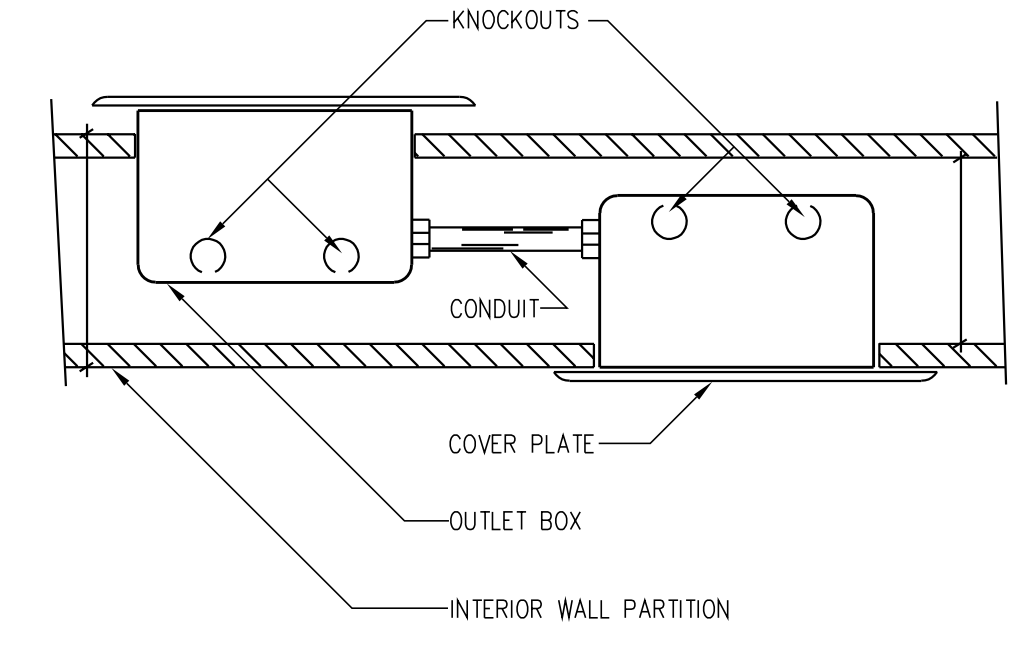
NOTE
 KUNG FU TEA IS THE 1ST TENANT TO OCCUPY THE EXISTING BUILDING AND DOES NOT EXCEED THE SERVICE CAPACITY OF 1600A



1 ELECTRICAL RISER DIAGRAM - BUILDING
 NOT TO SCALE

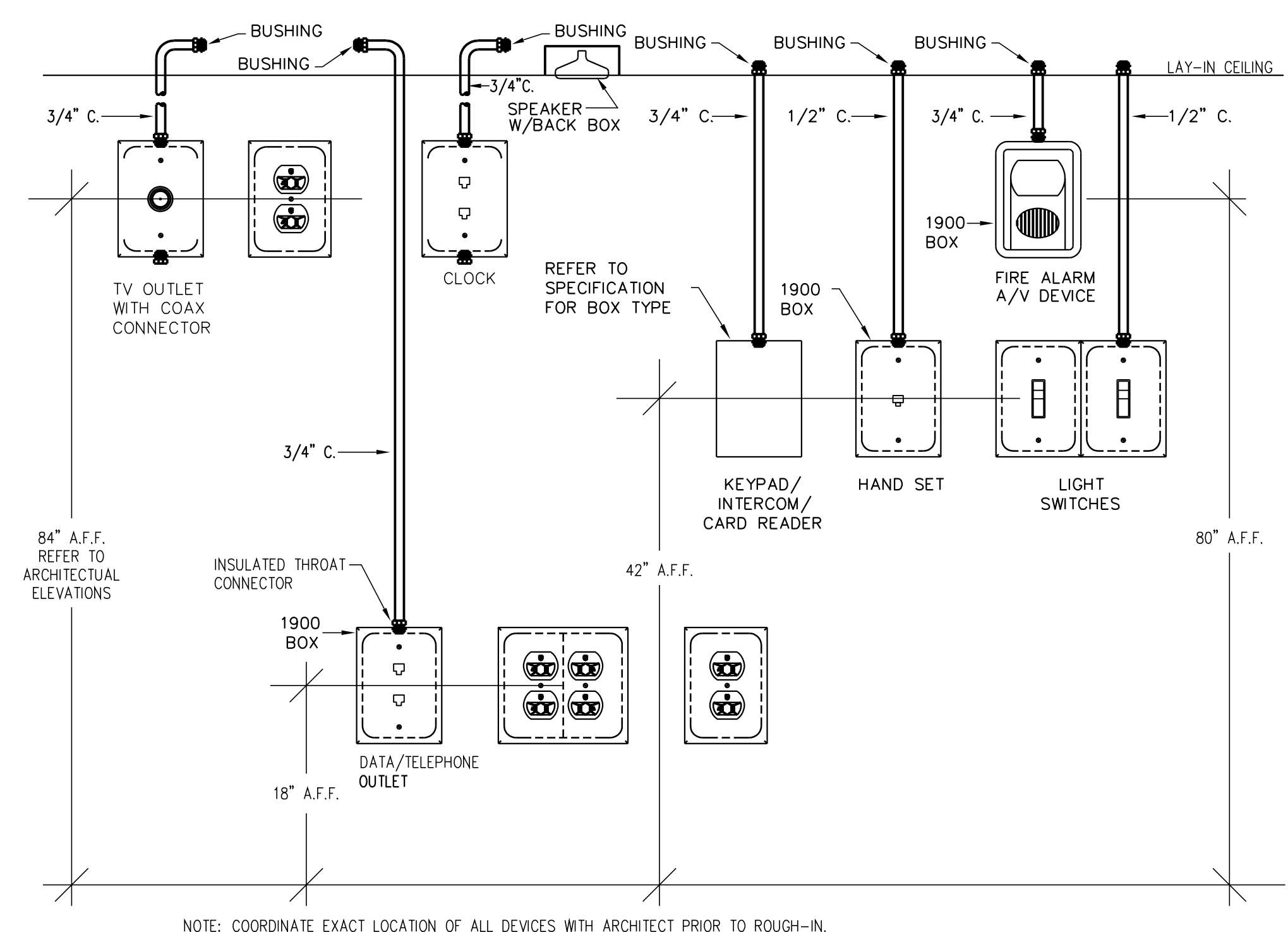
ONE-LINE DIAGRAM GENERAL NOTES:

- METERING EQUIPMENT ENCLOSURE PROVIDED BY POWER CO., INSTALLED BY ELECTRICAL CONTRACTOR PER POWER COMPANY SPECIFICATIONS. METERS INSTALLED BY POWER COMPANY.
- ALL CONDUCTORS SHALL BE COPPER.
- CONTRACTOR SHALL INSTALL FEEDERS BASED ON THE OVERCURRENT DEVICE RATING UNLESS OTHERWISE NOTED. CONTRACTOR SHALL REFER TO THE FEEDER SCHEDULE TO OBTAIN AND INSTALL THE FEEDERS REQUIRED.

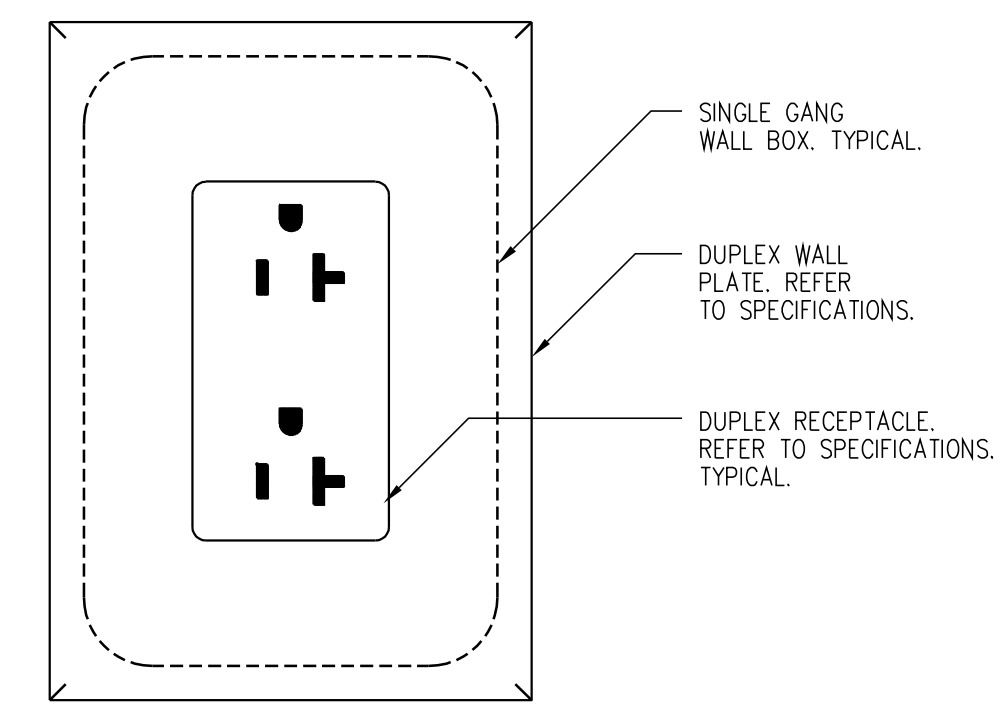


3 BACK TO BACK OUTLETS
 SCALE: N.T.S.

NEW PANEL 'L1'												
PROJECT: KFT			ENCLOSURE: NEMA 1			ACCESSORIES: GROUND BUSS						
PROJECT #: ON-1903			VOLTAGE: 120/208V, 3Ph, 4W			100% NEUTRAL BUSS						
LOCATION:			BUSSING: 150 A., 10 KAIC			BREAKER MTG.: BOLT-ON						
MOUNTING: SURFACE			MAINS: 150 A. (MCB)			DATE: 11/12/2019						
NOTES	CODE	BRKR	DESCRIPTION	CKT	LOAD	PH.	LOAD	CKT	DESCRIPTION	BRKR	CODE	NOTES
L	20/1		LIGHTING	1	750	A	1200	2	SANDWICH	20/1	K	
L	20/1		LIGHTING	3	1200	B	750	4	DISPENSER	20/1	K	
L	20/1		LIGHTING	5	540	C	1600	6	SHAKER	20/1	K	
L	20/1		SIGNAGE	7	1800	A	750	8	BLENDER	20/1	K	
K	20/1		SOUP WARMER	9	1100	B	600	10	SHAKER MAKER	20/1	K	
K	20/1		REF	11	1500	C	600	12	SHAKER MAKER	20/1	K	
K	20/1		POS	13	1100	A	1200	14	ICE MAKER	20/1	K	
K	20/1		JUICER	15	750	B	2100	16	WATER BOILER	30/1	K	
K	20/1		ESPRESSOO	17	1800	C	750	18	COOKTOP	20/1	K	
R	20/1		RECEPTACLES	19	540	A		20		20/1		
	20/1			21		B		22		20/1		
	20/1			23		C		24		20/1		
	20/1			25		A		26		20/1		
	20/1			27		B		28				
	20/1			29		C		30				
	20/1			31		A		32				
	20/1			33		B		34				
	20/1			35		C		36				
VH	20/3		EWH	37	1500	A	4500	38	RTU-1	45/3	CL	
VH	-			39	1500	B	4500	40		-	CL	
VH	-			41	1500	C	4500	42		-	CL	
Ltg	4290	Wtr Htr	4500	CONNECTED:		CONN VA	CONN A	DIVERSIFIED:		PNL VA	PNL A	
Recept	540	Kitchen	15800			13,340	111			12,490	104	
Elev	0	Fans/Misc	0	0	0	12,500	104			10,945	91	
Cooling	13500	Welders	0	0	0	12,790	107			10,738	89	
Heating	0	Lgst Motor	0	0	0	38,630	N/A			34,173	N/A	



2 TYP DEVICE ELEVATION
 SCALE: N.T.S.



4 TYP: RECEPTACLE MOUNTING DETAIL
 SCALE: N.T.S.

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 Checked By IDG
 Revisions:

ELECTRICAL SCHED. & RISER

Date: 11/12/19
 Project No.: ON-1903



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SECTION 15050 - BASIC MECHANICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

- A. THIS SECTION INCLUDES THE FOLLOWING:
1. PIPING INSTALLATION INSTRUCTIONS COMMON TO MOST PIPING SYSTEMS.

PART 2 - EXECUTION

2.1 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE.
B. INSTALL PIPING ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL.
C. INSTALL PIPING AT INDICATED SLOPES.
D. INSTALL PIPING FREE OF SAGS AND BENDS.
E. INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH CONNECTIONS.
F. INSTALL PIPING TO ALLOW APPLICATION OF INSULATION.
G. INSTALL ESCUTCHEONS FOR PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.
H. INSTALL SLEEVES FOR PIPES PASSING THROUGH CONCRETE AND MASONRY WALLS, GYPSUM-BOARD PARTITIONS, AND CONCRETE FLOOR AND ROOF SLABS.

2.2 PIPING CONNECTIONS

- A. MAKE CONNECTIONS ACCORDING TO THE FOLLOWING, UNLESS OTHERWISE INDICATED:
1. INSTALL UNIONS, IN PIPING NPS 2 AND SMALLER, ADJACENT TO EACH VALVE AND AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT.
2. INSTALL FLANGES, IN PIPING NPS 2-1/2 AND LARGER, ADJACENT TO FLANGED VALVES AND AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT.
3. WET PIPING SYSTEMS: INSTALL DIELECTRIC COUPLING AND NIPPLE FITTINGS TO CONNECT PIPING MATERIALS OF DISSIMILAR METALS.

SECTION 15060 - HANGERS AND SUPPORTS

PART 1 - GENERAL

1.1 SUMMARY

- A. THIS SECTION INCLUDES HANGERS AND SUPPORTS FOR MECHANICAL SYSTEM PIPING AND EQUIPMENT.

PART 2 - EXECUTION

2.1 PIPING HANGERS

- A. PIPE HANGERS USED ARE TO BE MANUFACTURED AND INSTALLED ACCORDING TO SPECIFICATIONS SP-58-1975 (PIPE HANGERS AND SUPPORTS - MATERIALS, DESIGN AND MANUFACTURE) AND SP-89-1978 (PIPE HANGERS AND SUPPORTS - FABRICATION AND INSTALLATION PRACTICES) OF THE MANUFACTURERS STANDARDIZATION SOCIETY (MSS).
B. PIPE HANGER SELECTION AND APPLICATION WILL FOLLOW RECOMMENDATIONS OF MSS SP-69-1976 (PIPE HANGERS AND SUPPORTS - SELECTION AND APPLICATION).
C. HANGERS USED DIRECTLY ON COPPER PIPE WILL BE COPPER OR CADMIUM PLATED. ALL OTHER HANGERS AND CHANNELS, ANGLES, AND SUPPORTING STEEL SHALL BE CARBON STEEL WITH A BLACK FINISH. TWO (2) OR MORE PIPES RUNNING PARALLEL MAY BE SUPPORTED ON TRAPEZE HANGERS.
D. HANGERS SHALL BE LOCATED AT WITHIN 2' OF EACH CHANGE OF DIRECTION.
E. WHERE INDIVIDUAL HANGERS ARE USED OUTSIDE OF INSULATION, APPLY A 3/4-INCH LENGTH OF 15 LB. DENSITY URETHANE INSULATION OR FOAMLESS TO PIPE AT POINT OF HANGING. PLACE HANGERS OUTSIDE OF INSULATION WITH AN INSULATION SHIELD OF GALVANIZED METAL EXTENDING NOT LESS THAN 6" ON BOTH SIDES OF THE SUPPORT BEARING AREA, COVERING A MINIMUM OF HALF OF THE PIPE CIRCUMFERENCE. SHIELD TO BE MADE 12" IN LENGTH AND A MINIMUM OF 20 GAUGE OF GALVANIZED METAL. AS AN OPTION, PIPE SHALL BE PROTECTED AT THE POINT OF SUPPORT BY A 360-DEGREE INSERT OF HIGH DENSITY, 100 PSI, WATERPROOFED CALCIUM SILICATE, ENCASED IN 360-DEGREE SHEET METAL SHIELD. INSERT TO BE SAME THICKNESS AS ADJOINING PIPE INSULATION.
F. TRAPEZE HANGERS - SUSPEND PIPING INSTALLED ON TRAPEZE HANGERS FROM CONCRETE INSETS OR APPROVED STRUCTURAL CLIPS. CONSTRUCT TRAPEZE HANGERS OF ANGLE IRON, UNISTRUT CHANNELS OR OTHER STRUCTURAL SHAPES WITH FLAT SURFACES FOR POINT OF SUPPORT.
G. HANGERS IN GENERAL - INSTALL ALL PIPING SO THAT IT WILL BE FREE TO EXPAND AND CONTRACT WITHOUT CREATING UNDUCE STRESSES IN PIPING SYSTEM.

2.2 ADJUSTING

- A. HANGER ADJUSTMENT. ADJUST HANGERS TO DISTRIBUTE LOADS EQUALLY ON ATTACHMENTS AND TO ACHIEVE INDICATED SLOPE OF PIPE.

SECTION 15075 - MECHANICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SUMMARY

- A. THIS SECTION INCLUDES THE FOLLOWING MECHANICAL IDENTIFICATION MATERIALS AND THEIR INSTALLATION:

2.1 PIPING IDENTIFICATION DEVICES

- A. PROVIDE "OPT-CODE" PIPE MARKERS AND BRASS VALVE TAGS AS MANUFACTURED BY SETON NAMEPLATE CORPORATION OR AN APPROVED EQUAL. PIPE MARKERS SHALL BE SPACED 20'-0" ON CENTER AND 10'-0" FROM ALL 90 DEGREE ELBOWS.

SECTION 15083 - PIPE INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. THIS SECTION INCLUDES SEMI-RIGID AND FLEXIBLE PIPING INSULATION, INSULATING CEMENTS, FIELD-APPLIED JACKETS, ACCESSORIES AND ATTACHMENTS, AND SEALING COMPOUNDS.

1.2 QUALITY ASSURANCE

- A. FIRE-TEST-RESPONSE CHARACTERISTICS: PROVIDE PRODUCTS WITH FLAME-SPREAD AND SMOKE-DEVELOPED CAPABILITIES OF 25 AND 50 FOR PVC PIPING IN RETURN AIR PLENUMS, RESPECTIVELY, ACCORDING TO ASTM E 84 BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

PART 2 - PRODUCTS

2.1 PIPE INSULATION MATERIALS

- A. PROVIDE PIPING INSULATION OF MOLDED FIBERGLASS. THE INSULATION WILL BE USED FOR WATER PIPING INCLUDING HOT WATER SUPPLY LINES SUBJECT TO FREEZING OR CONDENSATION, CONDENSATE DRAINS, AND HORIZONTAL PORTIONS OF WASTE LINES ABOVE GRADE WHICH RECEIVE CONDENSATE FROM AIR HANDLING UNITS.

PART 3 - EXECUTION

3.1 PIPES

- A. APPLY INSULATION TO CLEAN, DRY PIPE. BUTT SEGMENTS FIRMLY TOGETHER. WHERE PIPING IS INTERRUPTED BY FITTINGS, FLANGES, VALVES, OR HANGERS, AND AT INTERVALS NOT TO EXCEED 25 FEET ON STRAIGHT RUNS, FORM AN INSULATING SEAL BETWEEN INSULATION AND PIPE BY LIBERAL APPLICATION OF ADHESIVE TO EXPOSED JOINT FACES AND ALONG 4 INCHES OF PIPE. ALL TURNS AND BENDS SHALL BE FITTED WITH PREMOLDED FITTING COVERS. MITERING OF THESE COMPONENTS SHALL NOT BE ACCEPTABLE.

3.2 FLANGES

- A. AT FLANGES, SEAL OFF INSULATION WITH BF 30-35 VAPOR BARRIER MASTIC, APPLY ADDED LAYERS OF INSULATION AT LEAST 2 INCHES WIDE AND OF THE REQUIRED THICKNESS TO MAKE THE OUTSIDE DIAMETER OF THE INSULATION EQUAL TO THE OUTSIDE DIAMETER OF THE FLANGES. VAPOR SEAL EACH LAYER COMPLETELY AND INDEPENDENTLY WITH ADHESIVE. APPLY A FINAL RING OF INSULATION OF FULL THICKNESS AND LONG ENOUGH TO COVER THE BUILT-UP SECTION.

3.3 VALVES AND FITTINGS

- A. SEAL OFF THE PIPE INSULATION AT VALVES AND FITTINGS, WITH BF 30-35 VAPOR BARRIER MASTIC. COVER VALVES AND FITTINGS WITH MOLDED OR MITERED FITTING COVERS AND VAPOR SEAL AS SPECIFIED FOR FLANGES.
B. CARRY THE INSULATION ON THE VALVE BONNET FULL THICKNESS TO THE PACKING NUT OR TO THE STUFFING BOX. MAKE THE TOP OF THE INSULATION BOX PARALLEL TO THE VALVE WHEEL. TO FORM A SQUARE CORNER AT THE INTERSECTION WITH THE BONNET COVERING.
C. OMIT INSULATION AT SCREWED UNIONS AND AT VALVES SMALLER THAN 1".

3.4 PIPE INSULATION APPLICATION SCHEDULE

- A. INSULATING MATERIALS AND METHODS OF APPLICATION ARE BASED ON KNAUF ASJ/SJSL-11 PRODUCTS. OTHERS WILL BE ACCEPTABLE PROVIDED THEY ARE EQUAL IN INSULATING COEFFICIENTS AND HAVE SIMILAR PERMEABILITY OF VAPOR BARRIER JACKETS PROVIDE THICKNESS AS SHOWN IN THE FOLLOWING:

Table with 2 columns: PIPING (CONDENSATE DRAINS, COLD WATER PIPING, HOT WATER PIPING, ALL DROPS INSIDE INTERIOR STUDWALLS, ALL CW DROPS INSIDE EXTERIOR WALLS) and THICKNESS (INCHES) (3/4" ARMAFLEX, 1/2" FIBERGLASS, 1/2" FIBERGLASS, 3/4" FIBERGLASS)

SECTION 15110 - VALVES

PART 1 - GENERAL

1.1 SUMMARY

- A. THIS SECTION INCLUDES GENERAL-DUTY VALVES:

1.2 SUBMITTALS

- A. PRODUCT DATA: FOR EACH TYPE OF VALVE INDICATED, INCLUDE BODY, SEATING, AND TRIM MATERIALS, VALVE DESIGN, PRESSURE AND TEMPERATURE CLASSIFICATIONS, END CONNECTIONS, ARRANGEMENT, DIMENSIONS, AND REQUIRED CLEARANCES. INCLUDE LIST INDICATING VALVE AND ITS APPLICATION. INCLUDE RATED CAPACITIES, FURNISHED SPECIALTIES, AND ACCESSORIES.

PART 2 - EXECUTION

2.1 VALVE APPLICATIONS

- A. WATER PIPING CONTROL AND SERVICE VALVES SHALL BE PROVIDED BY THIS CONTRACTOR WHERE REQUIRED TO ADEQUATELY CONTROL AND ISOLATE THE VARIOUS WATER PIPING SYSTEMS. VALVES SHALL BE AS MANUFACTURED BY NIBCO, CRANE, STOOKHAM, JOMAR, JENKINS, KENNEDY, WALWORTH OR GRINNELL AND EQUAL TO NIBCO NUMBERS AS STATED BELOW:

- 1. THE MAIN SHUT-OFF VALVE, INSIDE THE BUILDING ON THE WATER SUPPLY WILL BE A GATE VALVE. PROVIDE THE VALVE EQUAL TO NIBCO SOLDER JOINT, 125 LB. BRONZE GATE WITH RISING STEM AND DOUBLE-DISC. THIS VALVE SHALL BE SELECTED AT ONE HALF PIPE SIZE LARGER THAN THAT SPECIFIED ON THE PLAN.
2. ALL OTHER VALVES THROUGHOUT THE WATER PIPING SHALL BE EQUAL TO NIBCO 9-585-70 SOLDER JOINT, 125 LB., AND BRASS BALL VALVES WITH FULL PORT OPENINGS.
3. CHECK VALVES SHALL BE EQUAL TO NIBCO, 600 SERIES. SPRING CHECK WITH BRONZE BODY.
4. TEMPERATURE AND PRESSURE RELIEF VALVES SHALL BE ASME RATED WATTS VALVE OR APPROVED EQUAL.

SECTION 15140 - WATER PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. THIS SECTION INCLUDES WATER PIPING INSIDE THE BUILDING.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. WATER PIPING LOCATED BELOW THE BUILDING SLAB, SHALL BE ASTM B 88, TYPE "K" SOFT ANNEALED COPPER WATER PIPE. FITTINGS TO BE ASTM B 16.18, CAST BRONZE. ASTM B 16.22 WROUGHT COPPER ALLOY OR ASTM B 16.26 CAST BRONZE FOR FLARED FITTINGS. FITTINGS TO BE SWEAT SOLDERED OR FLARED. NO JOINTS SHALL BE PERMITTED IN PRESSURE WATER PIPE BELOW SLAB ON GRADE. ALL SUCH PIPING MUST BE BROUGHT UP ABOVE FINISHED FLOOR LINE A MINIMUM OF 12" BEFORE JOINING. EXCEPTION MAY BE TAKEN WHEN PIPE IS FULLY ENCLOSED IN PRESSURE RATED SLEEVE AND PRE-APPROVED BY THE ARCHITECT/ENGINEER.
B. WATER PIPING LOCATED ABOVE THE BUILDING SLAB, SHALL BE ASTM B 88 TYPE "L" HARD DRAWN COMMERCIAL COPPER WATER PIPE. FITTINGS TO BE ASME B 16.18, CAST BRONZE OR ASTM B 16.22 WROUGHT COPPER ALLOY. JOINTS TO BE ASTM B 32 SOLDER.
C. DIELECTRIC INSULATING COUPLINGS SHALL BE PROVIDED BETWEEN FERROUS AND COPPER PIPING SYSTEMS.

PART 3 - EXECUTION

3.1 EXCAVATION

- A. TRENCHES FOR ALL UNDERGROUND PIPING SYSTEMS SHALL BE EXCAVATED TO THE REQUIRED DEPTHS. IN THE CASE OF SEWER LINES, THE BOTTOM OF THE TRENCHES SHALL BE GRADED TO SECURE THE NECESSARY FALL. NEVER ALLOW THE SEWER LINES TO COME IN CONTACT WITH UNDERGROUND REFRIGERANT PIPING. SANITARY SEWER LINES OUTSIDE THE BUILDING SHOULD BE KEPT AS DEEP AS PRACTICABLE WITH A MINIMUM COVER OF 12". PROVIDE CLEAN WASHED SAND FILL 6" BELOW, ON TOP AND BOTH SIDES OF THE LINES, TAMPED TO MAXIMUM COMPACTION INSIDE THE TRENCH LOCATED INSIDE OR OUTSIDE THE BUILDING.
B. ALL TRENCH EXCAVATION REQUIRED ON THIS PROJECT SHALL BE ACCOMPLISHED AS REQUIRED BY THE PROVISIONS AS PART 1926, SUBPART P-EXCAVATIONS, TRENCHING AND SHORING OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATIONS STANDARD AND INTERPRETATIONS.

3.2 JOINT CONSTRUCTION

- A. SOLDERED JOINTS: USE ASTM B 813, WATER-FLUSHABLE, LEAD-FREE FLUX, ASTM B 32, LEAD-FREE-ALLOY SOLDER, AND ASTM B 829 PROCEDURE, UNLESS OTHERWISE INDICATED.

3.3 HANGER AND SUPPORT INSTALLATION

- A. PIPE HANGER AND SUPPORT DEVICES ARE SPECIFIED IN DIVISION 15 SECTION "HANGERS AND SUPPORTS."

3.4 FIELD QUALITY CONTROL

- A. INSPECT WATER PIPING AS FOLLOWS:
1. DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT HAS BEEN INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.
2. REINSPECTION: IF AUTHORITIES HAVING JURISDICTION FIND THAT PIPING WILL NOT PASS TEST OR INSPECTION, MAKE REQUIRED CORRECTIONS AND ARRANGE FOR REINSPECTION.
B. TEST WATER PIPING AS FOLLOWS:
1. LEAVE NEW, ALTERED, EXTENDED, OR REPLACED WATER PIPING UNCOVERED AND UNCONCEALED UNTIL IT HAS BEEN TESTED AND APPROVED. EXPOSE WORK THAT WAS COVERED OR CONCEALED BEFORE IT WAS TESTED.
2. WATER PIPING SYSTEMS: WATER PIPING SYSTEMS SHALL BE PROPERLY TESTED TO A HYDROSTATIC PRESSURE OF ONE HUNDRED AND FIFTY POUNDS (150 PSI) PER SQUARE INCH GAUGE FOR A PERIOD OF NOT LESS THAN EIGHT HOURS. DURING THIS TEST PERIOD, ALL LEAKS IN PIPE, FITTINGS AND ACCESSORIES, IN THE PARTICULAR PIPING SYSTEM, WHICH IS BEING TESTED, SHALL BE STOPPED AND THE HYDROSTATIC TEST SHALL AGAIN BE APPLIED. THIS PROCEDURE SHALL BE REPEATED FOR AN ENTIRE EIGHT-HOUR PERIOD AND NO LEAKS CAN BE FOUND WHILE THE SYSTEM BEING TESTED IS SUBJECT TO THE PRESSURE MENTIONED ABOVE.
3. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED.

3.5 CLEANING

- A. THE ENTIRE WATER PIPING SYSTEM UPON COMPLETION SHALL BE STERILIZED WITH A SOLUTION CONTAINING NOT LESS THAN 50 PARTS PER MILLION OF CHLORINE. THE STERILIZATION SOLUTION SHALL BE ALLOWED TO REMAIN IN THE SYSTEM FOR A PERIOD OF TWENTY-FOUR (24) HOURS, DURING WHICH TIME ALL VALVES AND FAUCETS SHALL BE OPENED AND CLOSED SEVERAL TIMES. AFTER STERILIZATION, THE SOLUTION SHALL BE FLUSHED FROM THE SYSTEM WITH CLEAN WATER UNTIL THE RESIDUAL CHLORINE CONTENT IS NOT GREATER THAN 0.2 PARTS PER MILLION.

SECTION 15150 - SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. THIS SECTION INCLUDES THE FOLLOWING SOIL AND WASTE, SANITARY DRAINAGE AND VENT PIPING:
B. DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT IS INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION, INSIDE THE BUILDING:
1. PIPE, TUBE, AND FITTINGS.
2. SPECIAL PIPE FITTINGS.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. SANITARY WASTE, GREASE WASTE, AND VENT PIPING WITHIN THE BUILDING BELOW GRADE TO BE:
1. CAST IRON, ASTM A24 SERVICE WEIGHT DRAINAGE PATTERN; HUB AND SPIGOT, ASTM C 564 NEOPRENE, COMPRESSION TYPE GASKETS OR LEAD AND OAKUM JOINTS.
2. PVC, ASTM D 1785/D 2729 SCHEDULE 40; INSTALLED PER ASTM D 2321; SOLVENT WELD WITH ASTM D 2564 SOLVENT CEMENT, INSTALLED PER THE REQUIREMENTS OF ASTM D 2855 JOINTS.

- 3. PVC, ASTM D 3034, SDR 35; INSTALLED PER ASTM D 2321; ASTM F 477 OR F 913, ELASTOMETRIC GASKETS OR SOLVENT WELD JOINTS.
B. SANITARY WASTE AND VENT PIPING WITHIN THE BUILDING ABOVE GRADE TO BE:
1. CAST IRON, ASTM A 74 SERVICE WEIGHT DRAINAGE PATTERN PIPE AND FITTINGS; HUB AND SPIGOT ASTM C 564 NEOPRENE, COMPRESSION TYPE GASKETS OR LEAD AND OAKUM.
2. CAST IRON, ASTM A 888, HUBLESS, SERVICE WEIGHT DRAINAGE PATTERN; HUBLESS JOINTS. ASTM C 564 NEOPRENE GASKETS AND STANDARD STAINLESS STEEL CLAMP AND SOLID SHIELD ASSEMBLIES CONSTRUCTED OF TYPE 300 SERIES STAINLESS STEEL, CLAMP ASSEMBLIES SHALL CONFORM TO FM 1680 WHERE REQUIRED BY THE ADMINISTRATIVE AUTHORITY.
3. PVC, ASTM D 1785/D 2865 SCHEDULE 40; PVC FITTINGS ASTM D 3311/D 2865 DRAINAGE PATTERN, WITH BELL AND SPIGOT ENDS TO BE FURNISHED BY THE SAME MANUFACTURER AS PIPE OR APPROVED EQUAL; ASTM D 2855, SOLVENT WELD WITH ASTM D 2564 SOLVENT CEMENT JOINTS.
4. PVC, ASTM D 1785/D 2865 SCHEDULE 40 HUBLESS; HUBLESS, JOINTS, ASTM C 564 NEOPRENE GASKETS AND STANDARD STAINLESS STEEL CLAMP AND SOLID SHIELD ASSEMBLIES CONSTRUCTED OF TYPE 300 SERIES STAINLESS STEEL, CLAMP ASSEMBLIES SHALL CONFORM TO FM 1680 WHERE REQUIRED BY THE ADMINISTRATIVE AUTHORITY.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

- A. DURING INSTALLATION, NOTIFY AUTHORITIES HAVING JURISDICTION AT LEAST 24 HOURS BEFORE INSPECTION MUST BE MADE. PERFORM TESTS SPECIFIED BELOW IN PRESENCE OF AUTHORITIES HAVING JURISDICTION.

3.2 HANGER AND SUPPORT INSTALLATION

- A. PIPE HANGERS AND SUPPORTS ARE SPECIFIED IN DIVISION 15 SECTION "HANGERS AND SUPPORTS."

3.3 FIELD QUALITY CONTROL

- A. HORIZONTAL WASTE AND SOIL PIPE 2 1/2" AND SMALLER SHALL BE GIVEN A GRADE OF 1/4" PER FOOT AND PIPING 3" AND LARGER SHALL BE GRADED AT 1/8" PER FOOT.
B. REINSPECTION: IF AUTHORITIES HAVING JURISDICTION FIND THAT PIPING WILL NOT PASS TEST OR INSPECTION, MAKE REQUIRED CORRECTIONS AND ARRANGE FOR REINSPECTION.
C. SANITARY DRAINS: PIPES SHALL HAVE ALL OUTLETS TEMPORARILY PLUGGED. THE PIPES SHALL BE FILLED WITH WATER TESTING THE SYSTEM IN SUCH MANNER THAT NO SECTION SHALL BE TESTED WITH LESS THAN 10-FOOT (10') HEAD OF WATER. IF AFTER TWENTY-FOUR (24) HOURS, THE LEVEL OF THE WATER HAS BEEN LOWERED BY LEAKAGE, THE LEAKS MUST BE FOUND AND STOPPED BY THIS CONTRACTOR, AND THE WATER LEVEL SHALL AGAIN BE RAISED AND THE TEST REPEATED UNTIL AFTER TWENTY-FOUR HOUR RETENTION PERIOD THERE SHALL BE NO PERCEPTIBLE LOWERING OF THE WATER LEVEL OF THE SYSTEM BEING TESTED.

3.4 CLEANING

- A. CLEAN INTERIOR OF PIPING. REMOVE DIRT AND DEBRIS AS WORK PROGRESSES.
B. PROTECT DRAINS DURING REMAINDER OF CONSTRUCTION PERIOD TO AVOID CLOGGING WITH DIRT AND DEBRIS AND TO PREVENT DAMAGE FROM TRAFFIC AND CONSTRUCTION WORK.

- C. PLACE PLUGS IN ENDS OF UNCOMPLETED PIPING AT END OF DAY AND WHEN WORK STOPS.

SECTION 15411 - NATURAL GAS PIPING SYSTEMS

PART 1 - GENERAL

- A. REFER TO SECTION 15050 BASIC MATERILAS AND METHODS.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. ALL GAS PIPING ABOVE GROUND SHALL BE SCHEDULE 40 STEEL AS MANUFACTURED BY NATIONAL TUBE, REPUBLIC, YOUNGSTOWN OR APPROVED EQUAL.
B. ALL SCREWED FITTINGS SHALL BE CRANE OR APPROVED EQUAL, CLASS 150 MALLEABLE IRON. SCREW JOINTS SHALL BE MADE UP WITH GRAPHITE AND OIL OR TEFLON TAPE. SCREWED THREADS SHALL BE IN ACCORDANCE WITH AMERICAN PIPE THREAD STANDARDS.
C. GAS VALVES SHALL BE U.L. LISTED AS FOLLOWS: BALL VALVES SHALL BE NIBCO T585-70-UJL FOR 1/4" TO 1" AND T580-70-UJL FOR 1-1/4" TO 3". PLUG VALVES SHALL BE DEZURICK SERIES 425 OR 435 ECCENTRIC VALVES WITH RS 49 PLUG SEALS.
D. GAS PRESSURE REGULATORS SHALL BE CAPABLE OF REDUCING 2 PSI PRESSURE GAS TO 11" W.C PRESSURE GAS AT CAPACITIES REQUIRED BY GAS DEMAND. INSTALL PER A.G.A. BULLETIN 90. REGULATORS SHALL BE AS MANUFACTURED BY ROCKWELL, FISHER-GOVERNOR OR APPROVED EQUAL.

PART 3 - EXECUTION

- A. ALL GAS PIPING SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PRINTED INSTALLATION INSTRUCTIONS.
B. PROVIDE LEVER HANDLE GAS VALVE, DRIP LEG AND UNION TO EACH PIECE OF EQUIPMENT AND WHERE INDICATED, INCLUDE ROOF ISOLATION PADS TO BE PLACED UNDER MAPA SUPPORTS. ISOLATION PADS SHALL BE 1/2" 100% RECYCLED BLACK.
C. PIPING LOCATED ON ROOF SHALL HAVE A PIPE SUPPORT BASE THAT SHALL COMBINE UV PROTECTED 33% FIBERGLASS REINFORCED 0/6 NYLON; ADJUSTABLE STAINLESS STEEL THREADED ROD, BASE FOR PIPE SUPPORT SHALL HAVE A FLAT SOLID LOWER SURFACE WITH NEOPRENE ROOF PAD ADHERED TO BOTTOM OF SURFACE. SPACE SUPPORTS FOR EVEN DISTRIBUTION TYPICALLY 6 FEET TO 10 FEET APART. COORDINATE EXACT SUPPORT LOCATIONS WITH OTHER EQUIPMENT ON ROOF. ASSEMBLY SHALL INCLUDE A HARD RUBBER ROLLER ASSEMBLY CAPABLE OF PROVIDING IMPACT RESISTANCE TO PREVENT DAMAGE TO ROOF OR SUPPORT DURING PIPE INSTALLATION. PRODUCT SHALL BE AS FOLLOWS FOR 3" PIPE AND SMALLER: MAPA PRODUCTS MS-4(MAX. LOAD 140 lbs.), TO PROVIDE ADDITIONAL PROTECTION TO THE ROOF, SUPPORT ASSEMBLY SHALL RUBBER DESIGN HEAVY DUTY WALK PADS, SIZED AND PROVIDED BY MAPA PRODUCTS. ADDITIONAL SUPPORTS WILL BE REQUIRED AT EACH CHANGE OF DIRECTION.

PART 4 - TESTING

- A. ALL GAS SYSTEM PIPING SHALL BE SUBJECT TO A PNEUMATIC TEST PRESSURE OF 60 PSIG FOR NOT LESS THAN 24 HOURS UPON COMPLETION OF ALL ROUGH-IN WORK, WHILE THE SYSTEMS ARE SUBJECT TO THIS AIR PRESSURE TEST, ALL JOINTS SHALL HAVE A SOAPY WATER SOLUTION APPLIED AND JOINTS OBSERVED FOR LEAKS.

SECTION 15430 - PLUMBING SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. THIS SECTION INCLUDES PLUMBING SPECIALTIES:

1.2 SUBMITTALS

- A. PRODUCT DATA: INCLUDE RATED CAPACITIES AND INDICATE MATERIALS, FINISHES, DIMENSIONS, REQUIRED CLEARANCES, AND METHODS OF ASSEMBLY OF COMPONENTS, AND PIPING AND WIRING CONNECTIONS FOR THE FOLLOWING:
WATER HAMMER ARRESTERS, AIR VENTS, AND TRAP SEAL PRIMER VALVES AND SYSTEMS.
1. COMPLY WITH NSF 61, "DRINKING WATER SYSTEM COMPONENTS—HEALTH EFFECTS.
2. SECTIONS 1 THROUGH 9," FOR POTABLE WATER PLUMBING SPECIALTIES.

SECTION 15325 - FIRE PROTECTION SPRINKLER SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. THIS SECTION INCLUDES WET PIPE SPRINKLER SYSTEM:
B. SYSTEM DESIGN, INSTALLATION & CERTIFICATION.
C. THE BUILDING IS SERVED BY AN EXISTING WET PIPE SYSTEM.

1.2 SYSTEM DESCRIPTION

- A. MODIFY EXISTING SYSTEM TO PROVIDE COVERAGE FOR THE ENTIRE RENOVATED SPACE.
B. INSTALL SYSTEM PER NFPA 13 LIGHT HAZARD & ORDINARY HAZARD GROUP 1 OCCUPANCY REQUIREMENTS.
C. DETERMINE VOLUME AND INCOMING PRESSURE FROM EXISTING WATER SUPPLY.
D. INTERFACE SYSTEM WITH BUILDING FIRE DETECTION AND ALARM SYSTEM AS REQUIRED.

1.3 SUBMITTALS

- A. PRELIMINARY SHOP DRAWINGS: PRIOR TO DETAILED SUBMISSION, SUBMIT PRELIMINARY LAYOUT OF FINISHED CEILING AREAS INDICATING ONLY HEAD LOCATIONS COORDINATED WITH CEILING INSTALLATION.
B. SHOP DRAWINGS: IF REQUIRED PROVIDE HYDRAULIC CALCULATION, PROVIDE DETAILED PIPE LAYOUT, HANGERS AND SUPPORTS, COMPONENTS & ACCESSORIES, INDICATE SYSTEM CONTROLS.
C. PRODUCT DATA: PROVIDE DATA ON SPRINKLER HEADS, VALVES, AND SPECIALTIES, INCLUDING MANUFACTURES CATALOG INFORMATION, SUBMIT PERFORMANCE RATINGS ROUGH-IN DETAILS, WEIGHTS, SUPPORT REQUIREMENTS AND PIPING CONNECTIONS.
D. SUBMIT REQUIRED DATA TO AUTHORITY HAVING JURISDICTION FOR APPROVAL PRIOR TO SUBMISSION TO ARCHITECT/ENGINEER, SUBMIT PROOF OF APPROVAL TO ARCHITECT/ENGINEER.

1.4 PROJECT RECORD DOCUMENTS

- A. RECORD ACTUAL LOCATIONS OF PIPING, SPRINKLER HEADS AND DEVIATIONS OF PIPING, INDICATE DRAIN AND TEST LOCATIONS.
B. MAINTENANCE DATA: INCLUDE COMPONENTS OF SYSTEM, SERVICING REQUIREMENTS, RECORD DRAWINGS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY, LOCATION AND NUMBERS OF SERVICE AGENCY.
C. INCLUDE EXISTING FIRE PROTECTION VALVES.
D. SUBMIT REQUIRED DATA TO AUTHORITY HAVING JURISDICTION FOR APPROVAL PRIOR TO SUBMISSION TO ARCHITECT/ENGINEER, SUBMIT PROOF OF APPROVAL TO ARCHITECT/ENGINEER.

1.5 QUALITY ASSURANCE

- A. PERFORM WORK IN ACCORDANCE LATEST ADOPTED CODES, NFPA 13, INTERNATIONAL FIRE CODE, FIRE MARSHALS OFFICE AND LOCAL AMENDMENTS.
B. EQUIPMENT AND COMPONENTS SHALL BEAR UL AND FM LABEL OR MARKING. ALL ELECTRICAL SHALL COMPLY WITH DIVISION 16.

1.6 QUALIFICATIONS

- A. INSTALLER SHALL BE A COMPANY LICENSED BY THE STATE OF TEXAS SPECIALIZING IN PERFORMING WORK OF THIS SECTION WITH A MINIMUM OF THREE YEARS EXPERIENCE.

1.7 REGULATORY REQUIREMENTS

- A. DESIGN AND INSTALLATION SHALL BEAR STAMP OF APPROVAL OF THE AUTHORITY HAVING JURISDICTION.

1.8 DELIVERY, STORAGE AND HANDLING

- A. DELIVER, STORE AND PROTECT PRODUCTS AS REQUIRED.

1.9 EXTRA MATERIALS

- A. PROVIDE EXTRA HEADS UNDER PROVISIONS OF NFPA 13.
B. PROVIDE SUITABLE WRENCHES FOR EACH TYPE OF HEAD. IF REQUIRED, PROVIDE METAL STORAGE CABINET FOR SPRINKLER HEADS.

PART 2 - PRODUCTS

2.1 SPRINKLER HEADS

- A. MANUFACTURER
1. CENTRAL
2. GEM.
3. VIKING.
HEAD TYPES
B. 1. SEMI-RECESSED HEADS IN GYPSUM BOARD AND LAY-IN CEILINGS.

PART 3 - EXECUTION

3.1 PREPARATION

- A. COORDINATE WORK WITH ALL DISCIPLINES.

3.2 INSTALLATION

- A. INSTALL HEADS PER MANUFACTURERS INSTURCTIONS.
B. INSTALL PIPING TO MINIMIZE CONFLICTS WITH OTHER WORK.
C. INSTALL HEADS AS CLOSE AS POSSIBLE TO CENTER OF CEILING TILES.

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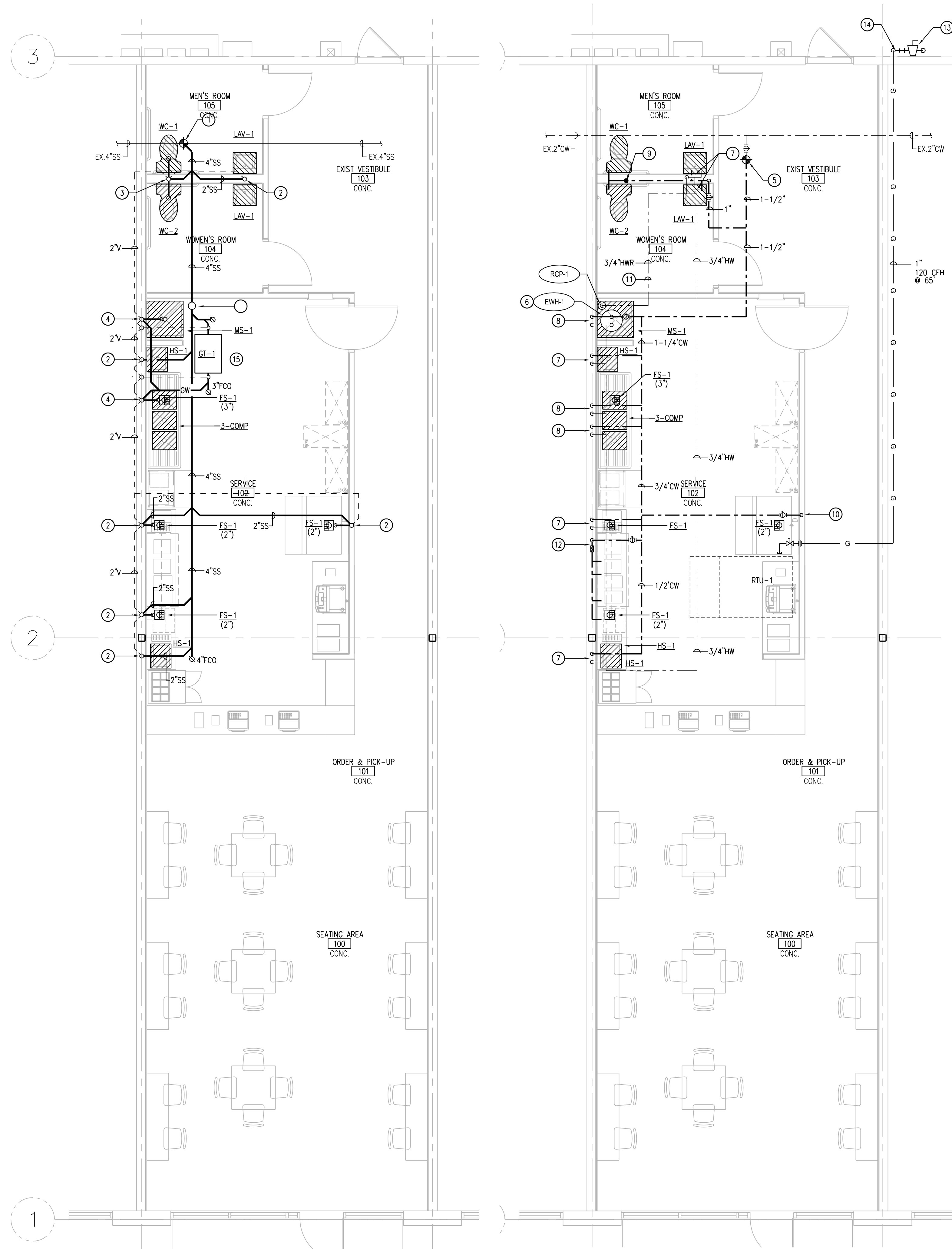
PLUMBING SPECIFICATIONS

Date: 11/12/19

Project No.: ON-1903

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Sheet:



1 WASTE & VENT - PLUMBING PLAN
SCALE: 1/4"=1'-0"

2 DOMESTIC WATER - PLUMBING PLAN
SCALE: 1/4"=1'-0"

**GENERAL NOTES
(APPLIES TO ENTIRE PROJECT):**

- A. SANITARY SEWER PIPING 3" AND SMALLER TO BE INSTALLED AT A 2% SLOPE AND SANITARY SEWER PIPING 4" AND LARGER TO BE INSTALLED AT A 1% SLOPE.
- B. PROVIDE CLEANOUTS IN VENT LINES AS REQUIRED BY CODE.
- C. PROVIDE WALL CLEANOUTS AT ALL LAVATORIES.
- D. CONTRACTOR TO PROVIDE TRAP PRIMERS AT ALL FLOOR DRAINS.
- E. ALL PLUMBING WORK SHALL BE DONE IN STRICT COMPLIANCE WITH ALL GOVERNING CODES.
- F. THE PLUMBING CONTRACTOR SHALL GUARANTEE THE COMPLETE PLUMBING SYSTEM TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF 12 MONTHS FROM DATE OF FINAL ACCEPTANCE BY OWNER.
- G. PROVIDE TEMPERATURE CONTROL MIXING VALVE (MV) AT ALL LAVATORIES.
- G. ICE AND BEVERAGE MACHINE SUPPLY LINES MUST BE PROVIDED WITH BACKFLOW PREVENTION DEVICES. PER NOTE #9 THIS SHEET.

KEYED NOTES:

- 1. CONNECT NEW SANITARY SEWER TO EXISTING SANITARY MAIN. FIELD VERIFY EXACT LOCATION AND FLOW DIRECTION.
 - 2. 2"SS DOWN, 1-1/2" VENT UP TO ABOVE CEILING.
 - 3. 4"SS DOWN, 4" VENT UP TO 4" VTR.
 - 3. 3"GW DOWN, 2" VENT UP TO ABOVE CEILING.
 - 4. CONNECT NEW 1-1/4" DOMESTIC WATER TO EXISTING COLD WATER STUB-OUT. FIELD VERIFY EXACT LOCATION.
 - 6. NEW ELECTRIC WATER HEATER. PROVIDE 3/4" HOT AND 3/4" COLD WATER SUPPLY TO WATER HEATER. REFER TO DETAIL. 1/2" DRAIN FROM WATER HEATER & TRAP DOWN IN WALL TO MOP SINK. TERMINATE WITH PROPER AIR GAP.
 - 7. 1/2" COLD WATER & 1/2" HOT WATER DOWN IN WALL TO PLUMBING FIXTURE. PROVIDE WATTS MMV-M1 SERIES THERMOSTATIC MIXING VALVE. LEAVING WATER TEMPERATURE SHALL BE 110°F. ASSE 1070 COMPLIANT.
 - 8. 1/2" HOT WATER AND 1/2" COLD WATER DOWN TO PLUMBING FIXTURE.
 - 9. PROVIDE TYPE "A" WATER HAMMER ARRESTOR OR APPROVE EQUAL.
 - 10. 1/2" COLD WATER DOWN TO ICE MACHINE BOX TO WATER FILTER ASSEMBLY FOR ICE MACHINE. TRAVIS WATER FILTER MODEL 20-202-DSP. PROVIDE A RPZ-BFP.
 - 11. PROVIDE 1" OF INSULATION FOR AUTOMATIC-CIRCULATING HOT WATER SYSTEM PIPING. REFER TO 504.5 2018.
 - 12. PROVIDE A STAINLESS STEEL BACKFLOW PREVENTER FOR THE WATER SUPPLY LINES FOR DISPENSERS. THE RELIEF VALVE SHALL DRAIN IN-DIRECTLY TO THE FLOOR SINK WITH AN AIR GAP TWICE THE PIPE DIAMETER OR PER LOCAL CODES. CONTRACTOR TO PROVIDE AND INSTALL FILTER PER EQUIPMENT MANUFACTURERS RECOMMENDATIONS.
 - 13. PROVIDE NEW GAS METER AND CONNECT TO EXISTING GAS MANIFOLD. OUTLET PRESSURE AT 7"W.C.
 - 14. 120 CFH, 1" GAS LINE UP TO ROOF.
 - 15. COORDINATE FINAL LOCATION OF GREASE TRAP WITH EXISTING CONDITIONS PRIOR TO INSTALL.
- FIRE SPRINKLER SYSTEM:**
- A. GENERAL FIRE PROTECTION NOTES TO THE SPACE SHALL BE PROTECTED WITH A HYDRAULICALLY DESIGNED, SIZED AND INSTALLED WET PIPE SPRINKLER SYSTEM. THE DESIGN AND INSTALLATION OF THE SYSTEM FOR THE BUILDING SHALL BE IN ACCORDANCE WITH NFPA 13, AND ALL LOCAL CODES. SUBMIT FIRE SPRINKLER SHOP DRAWINGS AND CALCULATIONS AS REQUIRED TO THE CITY OF AUSTIN FOR APPROVAL. NO WORK SHALL BEGIN UNTIL APPROVED BY THE STATE FIRE MARSHALL'S OFFICE.
 - B. AREAS SUBJECT TO FREEZING SHALL BE PROTECTED WITH A HYDRAULICALLY DESIGN, SIZED AND INSTALLED DRY-PIPE SYSTEM IN ACCORDANCE WITH NFPA 13 AND ALL LOCAL CODES. THE USE OF SIDEWALL SPRINKLERS IS PREFERRED.
 - C. THE FIRE SPRINKLER CONTRACTOR MUST BE LICENSED BY THE STATE FIRE MARSHALL'S OFFICE AND PERFORM ALL WORK AND IS RESPONSIBLE TO INSTALL AND MODIFY THE EXISTING FIRE SPRINKLER SYSTEM. THE FIRE SPRINKLER SHOP DRAWINGS SHALL INDICATE THE EXISTING FIRE SPRINKLER SERVICE TO THE BUILDING. PROVIDE ALL VALVES, DEVICES, FITTINGS, APPURTENANCES, ETC. REQUIRED FOR A COMPLETE SYSTEM. ALL SPRINKLER HEADS SHALL BE INDICATED ON APPROVED SHOP DRAWINGS.

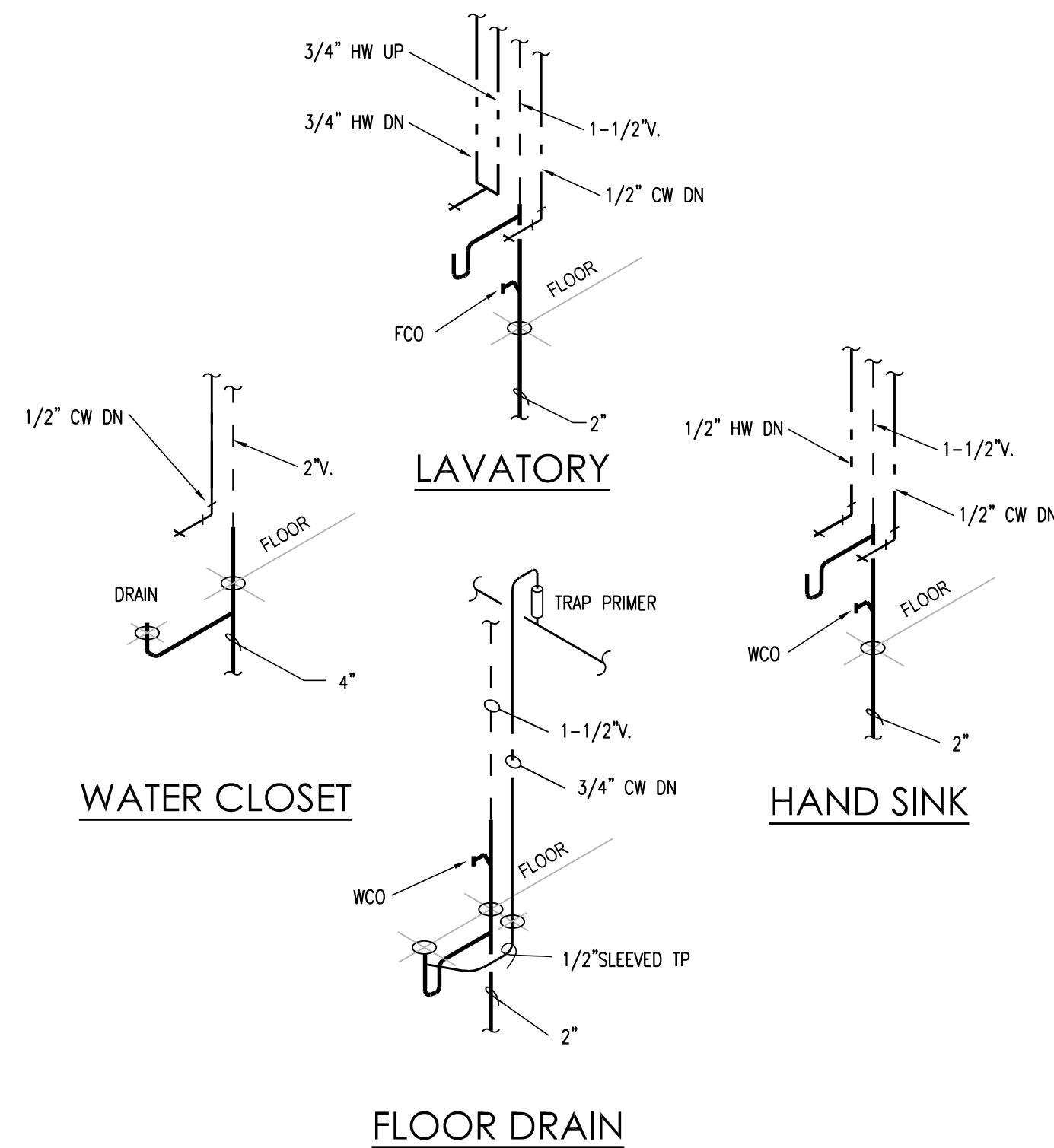
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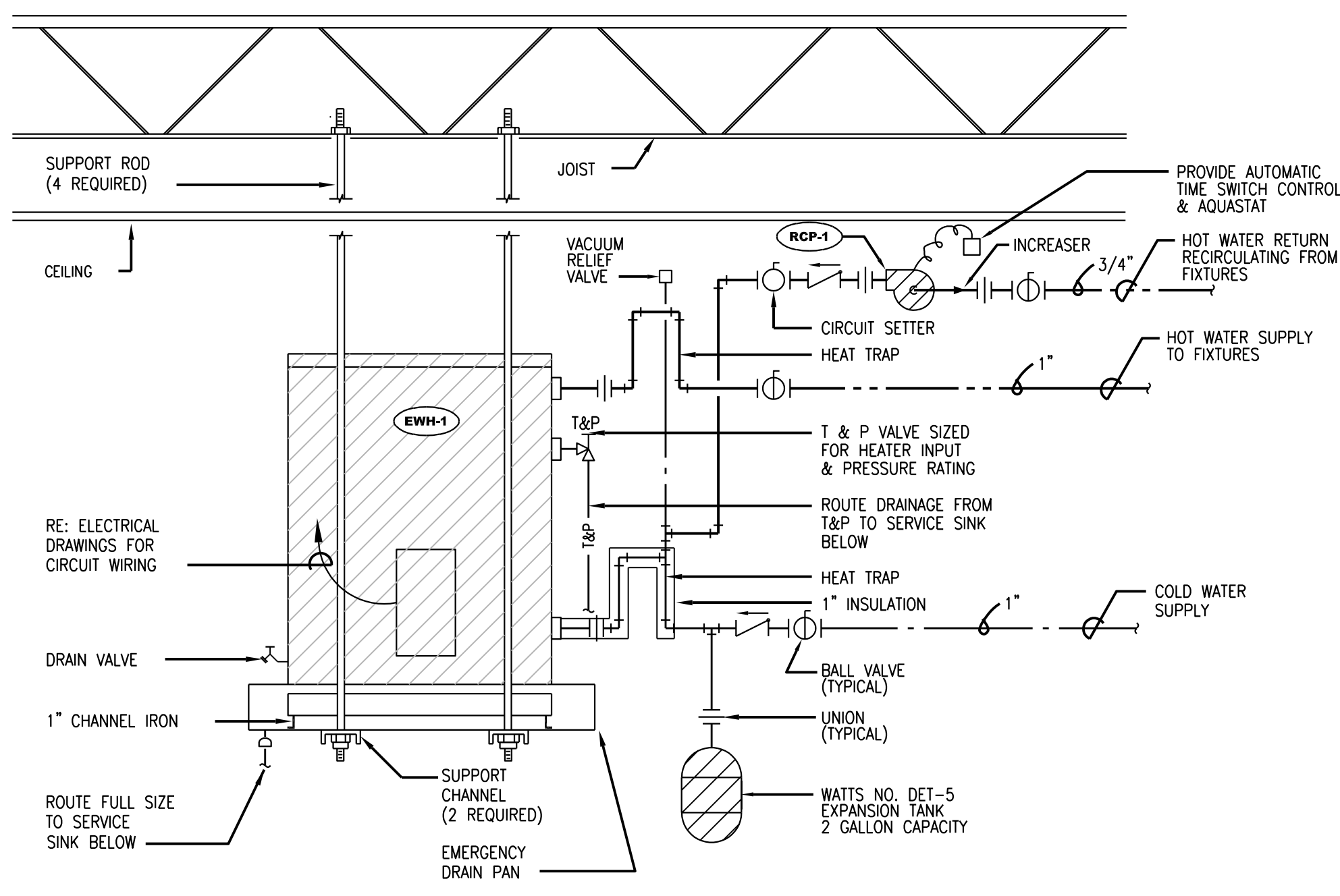
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PLUMBING FLOOR PLANS

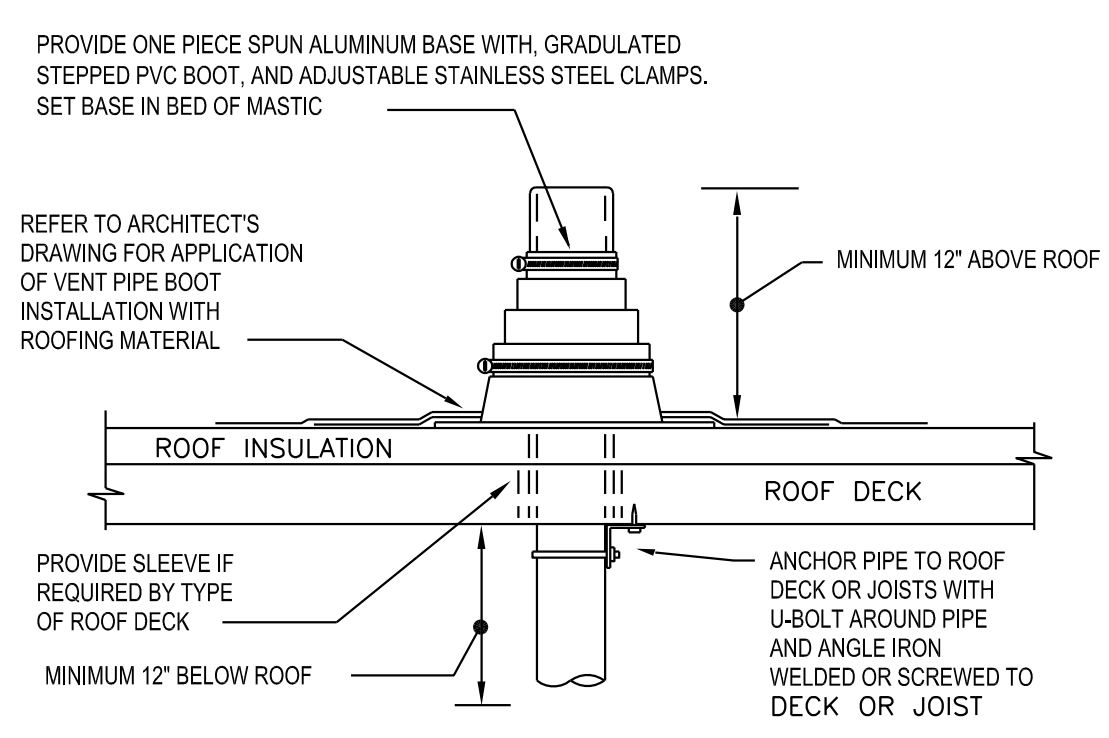
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Project No.: ON-1903



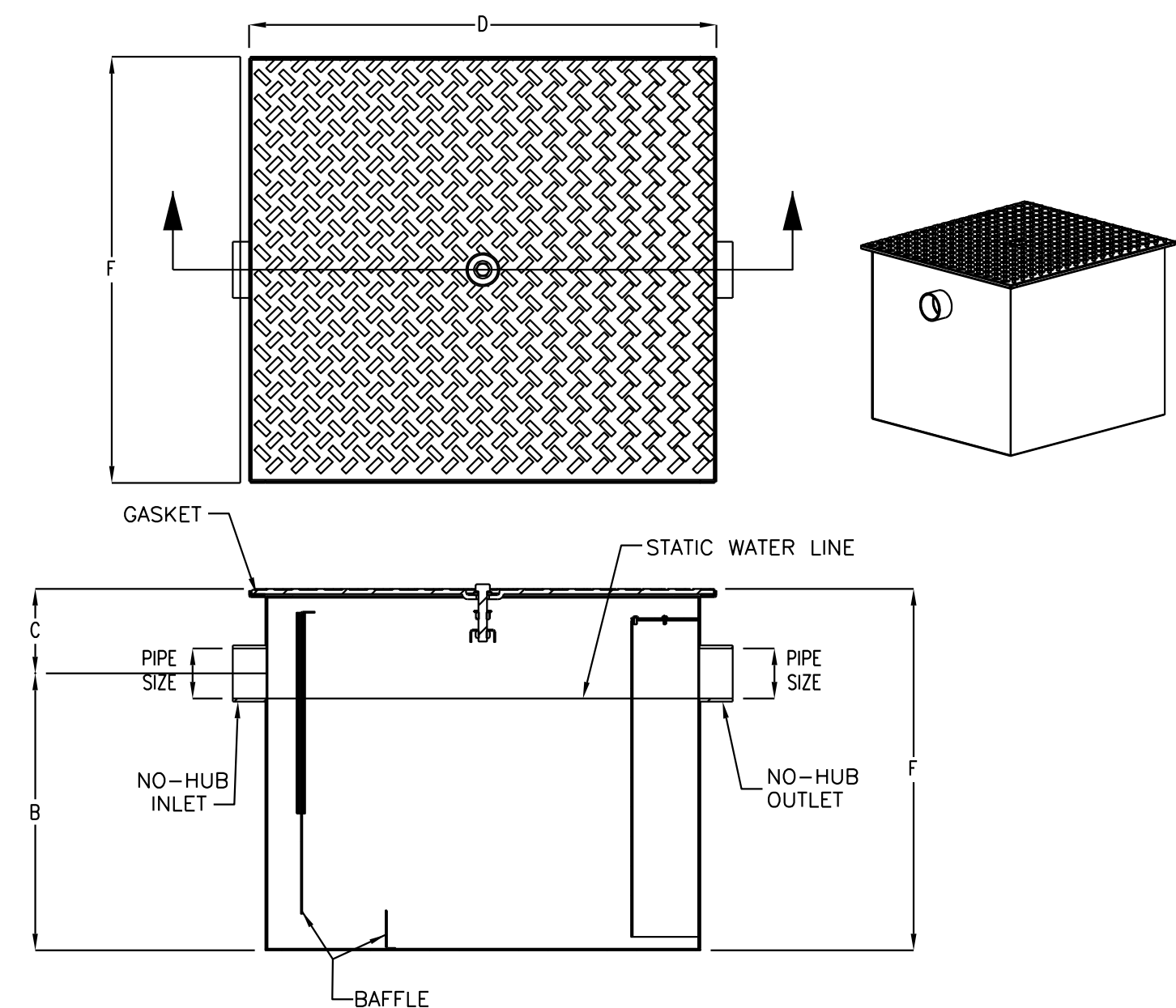
1 PLUMBING ISOMETRICS
SCALE: NOT TO SCALE



2 ELECTRIC WATER HEATER DETAIL
SCALE: NOT TO SCALE



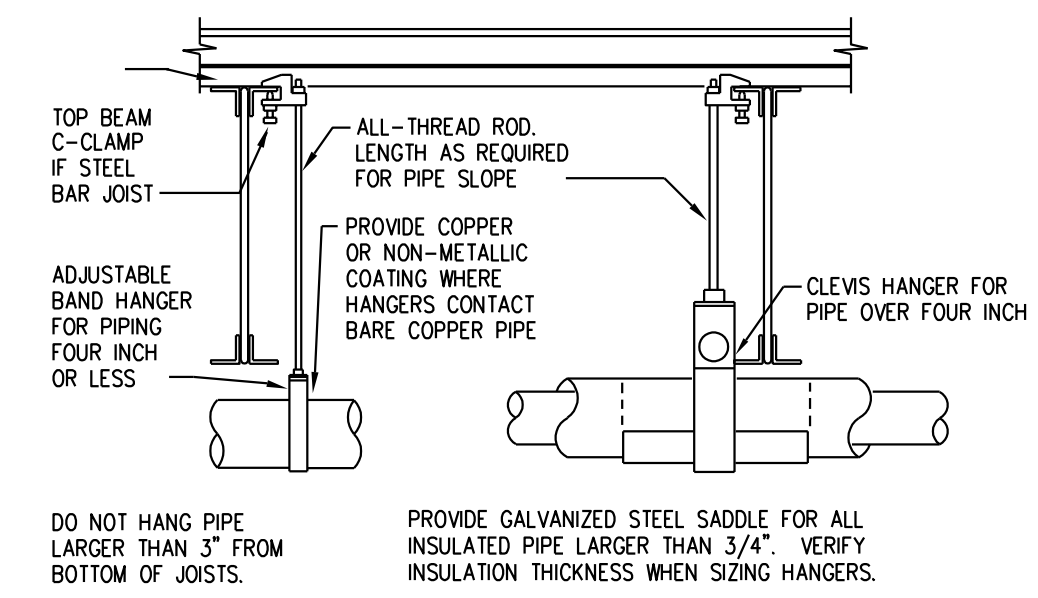
3 VENT THRU ROOF DETAIL
SCALE: NOT TO SCALE



GREASE INTERCEPTOR SCHEDULE								
MFG MODEL	FLOW RATE GPM	GREASE CAP. (LBS)	PIPE SIZE	INLET OUTLET B	TOP TO CENTER C	LENGTH D	WIDTH E	HEIGHT F
WATTS WD-50	50	100	4	16"	5.5"	32"	22"	21.5"

PROVIDE WITH SEDIMENT BUCKET AND THREADED CONNECTIONS.

4 GREASE TRAP DETAIL
SCALE: NOT TO SCALE



DO NOT HANG PIPE LARGER THAN 3" FROM BOTTOM OF JOISTS. PROVIDE GALVANIZED STEEL SADDLE FOR ALL INSULATED PIPE LARGER THAN 3/4". VERIFY INSULATION THICKNESS WHEN SIZING HANGERS.

PROVIDE UPPER ATTACHMENT AS REQUIRED FOR CASES NOT SHOWN HERE. DO NOT INSTALL HANGER INSIDE INSULATION OR OTHERWISE PENETRATE VAPOR BARRIER. DO NOT HANG ONE PIPE FROM ANOTHER EXCEPT IN CHASES. TRAPEZE HANGERS MAY BE USED FOR MULTIPLE PARALLEL PIPES. HANGER SPACING FOR PIPE SIZE: COPPER: 4"=12' 3"=11' 2"-1/2"=10' 2"-9' 1-1/2"=9' 1-1/4"=7' 1"=6' 3/4"=5' 1/2"=5' CAST IRON: 10' AND ONE NEAR ALL JOINTS. STEEL: 4"=14' 3"=12' 2"-1/2"=11' 2"=10' 1-1/2"=9' 1"=7' 3/4"=6' 1/2"=5'. LOCATE HANGERS AS CLOSE AS POSSIBLE TO TURNS AND TEES OF PIPE. PROVIDE SUPPLEMENTARY STEEL STRUTS BETWEEN JOISTS IF REQUIRED. LOCATE HANGERS TO TAKE LOAD OFF OF EQUIPMENT CONNECTIONS. ANCHOR WATER PIPE AGAINST SWAYING DUE TO CHANGES IN WATER VELOCITY. PROVIDE SEISMIC BRACING IF AS REQUIRED BY LOCAL AUTHORITIES. CHAINS OR PERFORATED STRAP IRON OR STEEL IS NOT ACCEPTABLE. REFER TO CODES FOR FURTHER INFORMATION.

5 PIPE HANGERS
SCALE: NOT TO SCALE

PLUMBING FIXTURE CONNECTION SCHEDULE						
MARK	FIXTURE	CW	HW	W	V	REMARKS
WC-1	WATER CLOSET ADA	1/2"	-	4"	2"	AMERICAN STANDARD CADET # 2878.100, 1.1 GPF FLOOR MOUNTED, ELONGATED PRESSURE- ASSISTED TOILET, WHITE VITREOUS CHINA ADA COMPLIANT. LEFT HAND TRIP LEVER. McGUIRE MODEL #2166LK, CHROME PLATED WALL FLANGE, LOOSE KEY STOP, 1/2" I.P.S. WITH 3/4" O.D. 12" LONG FLEXIBLE RISER WITH COLLAR. KHOLER MODEL #K-4650, LUSTRA ELONGATED, OPENFRONT TOILET SEAT WITH NO COVER.
WC-2	WATER CLOSET ADA	1/2"	-	4"	2"	AMERICAN STANDARD CADET # 4142.901, 1.1 GPF FLOOR MOUNTED, ELONGATED PRESSURE- ASSISTED TOILET, WHITE VITREOUS CHINA ADA COMPLIANT. RIGHT HAND TRIP LEVER. McGUIRE MODEL #2166LK, CHROME PLATED WALL FLANGE, LOOSE KEY STOP, 1/2" I.P.S. WITH 3/4" O.D. 12" LONG FLEXIBLE RISER WITH COLLAR. KHOLER MODEL #K-4650, LUSTRA ELONGATED, OPENFRONT TOILET SEAT WITH NO COVER.
LAV-1	LAVATORY	1/2"	1/2"	2"	1-1/2"	AMERICAN STANDARD #0355.012 "LUCERNE" WALL HUNG LAVATORY: VITREOUS CHINA WITH INTEGRAL BACKSPASH WITH 4" O.C. FAUCET HOLES. PROVIDE WITH AMERICAN STANDARD NO. 2275.500 CENTERSET LAVATORY FITTING, ADA APPROVED, 0.5 GPM AERATOR, WITH PIP UP DRAIN & LEVER HANDLES FURNISH W/SUPPLIES & STOPS. ADA COMPLIANT. CHICAGO FAUCET MODEL #802-VE2805-317ABCP, TWO HANDLE CENTERSET LAVATORY FAUCET WITH CHROME PLATED BRASS BODY, CONVENTIONAL SPOUT, 0.5 GPM OR LESS AND 4-INCH CHROME PLATED HANDLES. McGUIRE MODEL #155-WC, CHROME PLATED OFFSET WHEELCHAIR CAST BRASS OPEN GRID STRAINER, 1-1/4" O.D. CHROME PLATED 17-GAUGE OFFSET TAILPIECE. McGUIRE MODEL #2165LK, CHROME PLATED WALL FLANGE, LOOSE KEY ANGLE STOPS, SIZE 1/2" I.P.S. INLET WITH 3/8" O.D. OUTLET, 12" LONG FLEXIBLE COPPER TUBE CHROME PLATED RISERS. McGUIRE MODEL #8902, 1-1/2"x1-1/2"x17-GAUGE CHROME PLATED CAST BRASS ADJUSTABLE SWIVEL P-TRAP WITH CLEANOUT, SLIP JOINT INLET AND TUBULAR WALL BEND WITH SHALLOW STEEL FLANGE.
3-COMP	3-COMPARTMENT SINK	1/2" (2)	1/2" (2)	3"	-	PROVIDED BY OWNER AND INSTALL BY GENERAL CONTRACTOR.
HS-1	HAND SINK	1/2"	1/2"	2"	1-1/2"	PROVIDED BY OWNER AND INSTALL BY GENERAL CONTRACTOR.
MS-1	MOP SINK	1/2"	1/2"	3"	2"	ADVANCE TABCO MODEL #9-0P-20, FLOOR MOUNTED SERVICE SINK, 304 SERIES, STAINLESS STEEL.
TM-1	THERMOSTATIC MIXING VALVE	3/4"	-	-	-	WATTS SERIES MMV HOT WATER TEMPERATURE CONTROL, ASSE 1070 COMPLIANT.
BF-1	BACKFLOW PREVENTER	1/2"	-	-	-	WATTS SERIES 009, REDUCE PRESSURE ZONE ASSEMBLIES.
4"ECO	4" FLOOR CLEANOUT	-	-	4"	-	MIFAB MODEL C1000 STAINLESS STEEL FLOOR CLEANOUT WITH HEAVY DUTY ADJUSTABLE COVER AND PLUG.
FD	FLOOR DRAIN	-	-	3/4"	2"	JR SMITH #2005-A-P050 CI FLOOR DRAIN WITH ADJUSTABLE TOP, 6" NICKEL STRAINER

NOTES

- ACCEPTABLE MANUFACTURERS: AMERICAN STANDARD, DELANY, ZURN, WADE, BEMIS, T&S, POWERS AND JOSAM.
- CONTRACTOR MUST COORDINATE HANDICAPPED PLUMBING FIXTURE TYPE INSTALLATIONS WITH THE ARCHITECTURAL PLANS.
- ALL SINKS AND LAVATORIES SUPPLIED WITH HOT WATER SHALL BE INSTALLED WITH A WATTS OR APPROVED EQUAL MODEL #009 SERIES MIXING VALVE TO PROVIDE A FINAL DELIVERY TEMPERATURE OF 108° HOT WATER. ASSE 1070 APPROVED.

WATER HEATER SCHEDULE									
MARK	RECOVERY		STORAGE	LINING	MAXIMUM INPUT			REMARKS	
	GPH	RISE (F)			FUEL	CFH	VOLTS/ KW		
EW-1	29	60.0	40	GLASS	ELEC.	-	2083	4.5	A.O. SMITH DEL-40

RECIRCULATING PUMP SCHEDULE								
MARK	SERVICE	GPM	TOTAL HEAD FT	MOTOR HP	ELECTRICAL		REMARKS	
					VOLTS	PHASE HERTZ		
RCP-1	DOMESTIC 120F HW RECIRCULATING	2	2	1/12	120	1	60	BELL & GOSSETT SERIES 100

NOTES:
1. APPROVED MANUFACTURERS: BELL & GOSSETT, ARMSTRONG, GRUNDFOS
2. PROVIDE MANUAL CIRCUIT SETTER ON THE PUMP DISCHARGE.
3. PUMP TO ACTIVATED ON TIMECLOCK

CW DEMAND			
	Qty.	F.U.	TOTAL
WC-1	2	5	10
LAV-1	2	2	4
MS-1	1	3	3
HS-1	2	3	6
3-COMP	1	3	3
		TOTAL	26 F.U.

FLUSH TANK TYPE, 26F.U. = 21.8 GPM = 1-1/4" CW

HW DEMAND			
	Qty.	F.U.	TOTAL
LAV-1	2	1.5	3
HS-1	2	1.5	3
MS-1	1	2.25	2.25
3-COMP	1	2.25	2.25
		TOTAL	7.5 F.U.

CALCULATIONS ARE BASED ON 2018 IPC CODE TABLE E103(2&3) TANK TYPE, 7.5 F.U. = 12.2 GPM = 1" HW

CALCULATIONS ARE BASED ON 2018 IPC CODE TABLE E103(2&3)

CONSULTANTS SEAL
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 San Antonio, Texas

Drawn By IDG
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PLUMBING SCHEDULES

Date: 11/12/19
Project No.: ON-1903