LEGEND - FIRE SPRINKLER

SYMBOL	ORF.	TEMP.	RESPONSE	K-FAC	FINISH	MODEL	REMARKS	ESCUTCHEON	MFG.	IMAGE
●	1/2"	155°F	QUICK	5.6	WHITE	VK302	RECESSED	WHITE	VIKING	
◎	1/2"	155°F	QUICK	5.6	BRASS	VK462	CONCEALED	WHITE OR PER ARCH.	VIKING	
○	1/2"	155°F	QUICK	5.6	BRASS	VK300	UPRIGHT	----	VIKING	
▷	1/2"	155°F	QUICK	5.6	WHITE	VK305	HOR. SIDEWALL	WHITE	VIKING	
⊠	1/2"	155°F	QUICK	5.6	BRASS	VK-300-D1	UPRIGHT	----	VIKING	
◎	1/2"	155°F	QUICK	5.6	CHROME	VK176	DRY PENDANT	CHROME	VIKING	

NOTES:

1. SPRINKLERS SHALL BE ORDINARY TEMPERATURE UNLESS OTHERWISE NOTED.
2. SPRINKLER GUARDS SHALL BE PROVIDED ON ALL SPRINKLERS INSTALLED LOWER THAN 7'-6" ABOVE FINISH FLOOR AND / OR ARE SUBJECT TO DAMAGE.
3. PROVIDE RECESSED, CONCEALED AND SIDEWALL SPRINKLERS WITH ESCUTCHEON IN EXPOSED AREAS.
4. COORDINATE COLOR SELECTIONS WITH ARCHITECT.

RESPONSIBILITY OF DELEGATED ENGINEER OF RECORD IN ASSUMING THE DESIGN RESPONSIBILITY FOR THE FIRE PROTECTION SYSTEM FROM THE ENGINEER OF RECORD

A. THIS NOTE SETS FORTH CLARIFICATION OF THE REQUIREMENT THAT THE DELEGATED ENGINEER OF RECORD FOR THE FIRE PROTECTION SYSTEM SHALL CONSIDERED THAT ANY CHANGES, DEVIATIONS IN ANY FORM FROM THE INTENT OF THE ENGINEER OF RECORD'S FIRE PROTECTION SYSTEM ENGINEERING.

B. FIRE PROTECTION SYSTEM ENGINEERING DOCUMENTS ARE INTENDED TO DESCRIBE THE SCOPE AND INTENT OF THE FIRE PROTECTION SYSTEM BASED ON INFORMATION THE FIRE PROTECTION SYSTEM ENGINEER OF RECORD (FPS EOR) HAS AT THE TIME OF THE DESIGN. SINCE AT THE TIME OF THE DESIGN OF THE FIRE PROTECTION SYSTEM ENGINEERING DOCUMENTS NOT ALL INFORMATION MAY BE AVAILABLE IN THE EXACT FORM OR VALUE NEEDED. THE FPS EOR MAY PROVIDE INFORMATION ON THE FIRE PROTECTION SYSTEM ENGINEERING DOCUMENTS THAT ARE BASED ON BEST AVAILABLE DATA. ACCORDINGLY, THE DELEGATED ENGINEER OF RECORD SHOULD EVALUATE AND, IF NECESSARY, MAKE CHANGES/ADJUSTMENTS TO THE ROUTING, SIZING, CAPACITIES, AND LOCATIONS OF ALL FIRE PROTECTION EQUIPMENT, PIPE, SPRINKLERS, RISERS, VALVES, ETC. WITHIN REASONABLE LIMITS FROM THAT INFORMATION SHOWN IN THE DESIGN CRITERIA ON THE FPS EOR'S FIRE PROTECTION SYSTEM ENGINEERING DOCUMENTS (FPS EDS) PROVIDED THE ASSOCIATED ARCHITECTURAL, STRUCTURAL, ELECTRICAL AND CIVIL DOCUMENTS THAT RELATE TO THE FIRE PROTECTION SYSTEMS FOR THE PROJECT ARE COORDINATED WITH SUCH CHANGES/ADJUSTMENTS.

C. ANY SUCH ADJUSTMENTS AND/OR CHANGES WHICH THE DELEGATED EOR FOR THE FIRE PROTECTION SYSTEM PROPOSES IN ASSUMING RESPONSIBILITY FROM THE FPS EOR'S DESIGN ARE ACCEPTABLE AND MAY BE DONE PROVIDED THE DELEGATED EOR'S SYSTEM MEETS THE FIRE PROTECTION OBJECTIVES CONTAINED IN THE FIRE PROTECTION SYSTEM ENGINEERING DOCUMENTS AND THAT ANY SUCH CHANGES ARE NOT AN ADDED COST TO THE CONTRACT.

D. TO THIS END, THE INFORMATION CONTAINED IN THE FIRE PROTECTION SYSTEM EORS ENGINEERING DOCUMENTS RELATED TO SYSTEM COMPONENTS AND ROUTING SHOULD BE VERIFIED BY THE FIRE PROTECTION SYSTEM DELEGATED ENGINEER OF RECORD FOR THE FIRE PROTECTION SYSTEM LAYOUT DOCUMENTS IN REGARD TO CAPACITIES, OPERATION, FUNCTION, AND MAINTAINABILITY AND ANY PROVIDED SYSTEMS, EQUIPMENT, RISER LAYOUT, SPRINKLER LAYOUT AND OTHER SYSTEM COMPONENTS WHICH ARE PART OF THE FIRE PROTECTION SYSTEM. THIS VERIFICATION OF THE FIRE PROTECTION SYSTEM ENGINEERING DOCUMENTS BY THE DELEGATED EOR SHOULD INCLUDE ANY MODIFICATIONS WHICH MAY BE NEEDED BY THE FIRE PROTECTION SYSTEM LAYOUT DOCUMENTS IN ORDER TO MEET THE SYSTEM FIRE PROTECTION OBJECTIVES; SUCH MODIFICATIONS ARE TO BE PERFORMED AT NO ADDITIONAL COST TO THE CONTRACT.

E. CAPACITIES AND LIMITS (BOTH MAXIMUMS AND MINIMUMS) OF REQUIREMENTS FOR FLOW, PRESSURE, PHYSICAL SIZE AND POWER OF EQUIPMENT AND COMPONENTS WHICH ARE OBTAINED, IMPLIED OR CONCLUDED FROM THE EOR'S ENGINEERING DOCUMENTS ARE TO BE UNDERSTOOD AS CLOSELY APPROXIMATE PERFORMANCE CONDITIONS WHICH SHOULD BE CONFIRMED BY THE DELEGATED EOR BEFORE PROCUREMENT AND/OR INSTALLATION OF THE AFFECTED PORTIONS OF THE FIRE PROTECTION SYSTEM.

F. THESE CAPACITIES AND LIMITS SCHEDULED OR SHOWN ON THE EOR'S ENGINEERING DOCUMENTS SHOULD, IF NECESSARY, BE ADJUSTED UP OR DOWN AT NO COST IF WARRANTED TO PROVIDE THE FINAL INSTALLED FIRE PROTECTION SYSTEM IN ACCORD WITH CODE REQUIREMENTS. ACTUAL PRESSURES AND FLOW ENCOUNTERED THROUGHOUT THE FIRE PROTECTION SYSTEM SHOULD BE VERIFIED BY THE RESULT OF HYDRAULIC CALCULATIONS PERFORMED BY THE DELEGATED EOR AND ANY PRESSURE REDUCING VALVES OR OTHER SUCH DEVICES OR PIPING SYSTEM CONFIGURATION CHANGES SHOULD BE PROVIDED IN APPROPRIATE LOCATIONS IN THE FIRE PROTECTION SYSTEM IF NEEDED TO MEET CODE OR OPERATIONAL PERFORMANCE LIMITS.

FAC 61G15 COMPLIANCE NOTES

APPLICABLE CODES AND STANDARDS:

FLORIDA BUILDING CODE 2020 7th EDITION
FLORIDA FIRE PREVENTION CODE 2020 7th EDITION
FLORIDA ADMINISTRATIVE RULE 69A-60.005
NFPA-13, 2016 EDITION
NFPA-24, 2016 EDITION
NFPA-25, 2017 EDITION

(A) POINT OF SERVICE:

THE POINT OF SERVICE IS A NEW FIRE PROTECTION BACKFLOW.

(B) APPLICABLE NFPA STANDARDS TO BE APPLIED:

SHALL COMPLY WITH NFPA 13 ACCEPTANCE SECTION 25 CHAPTERS
25.1 APPROVAL OF SPRINKLER SYSTEM
25.2 ACCEPTANCE REQUIREMENTS
25.3 CIRCULATING CLOSED LOOP SYSTEM
25.4 INSTRUCTIONS
25.5 HYDRAULIC DESIGN INFORMATION SIGN
25.6 GENERAL INFORMATION SIGN

(C) CLASSIFICATION OF HAZARD OCCUPANCY FOR EACH ROOM OR AREA:

LIGHT HAZARD: OFFICE AND SUPPORT SPACES
ORDINARY HAZARD GROUP I: FREEZER / COOLER
ORDINARY HAZARD GROUP II: KITCHEN AND FOOD PREP AREAS

(D) DESIGN APPROACH:

LIGHT HAZARD

SYSTEM TYPE: WET PIPED AUTOMATIC SPRINKLER SYSTEM, USING STEEL SUPPLY PIPING TO NEW STANDARD SPRAY PENDANT, QUICK RESPONSE, AUTOMATIC FIRE SPRINKLER LOCATIONS.

DENSITY: 0.10 GPM / SQ. FT.
AREA OF OPERATION: 1,500 SQ. FT. MAX.
SPRINKLER TEMPERATURE RATING: 155°F
MAX. COVERAGE PER SPRINKLER: 225 SQ. FT.

A HOSE DEMAND OF 100 GPM WILL BE ADDED FOR LIGHT HAZARD CALCULATIONS.

ORDINARY HAZARD GROUP I

SYSTEM TYPE: WET PIPED AUTOMATIC SPRINKLER SYSTEM, USING STEEL SUPPLY PIPING TO NEW STANDARD SPRAY PENDANT, QUICK RESPONSE, AUTOMATIC FIRE SPRINKLER LOCATIONS.

DENSITY: 0.15 GPM / SQ. FT.
AREA OF OPERATION: 1,500 SQ. FT. MAX.
SPRINKLER TEMPERATURE RATING: 155°F
MAX. COVERAGE PER SPRINKLER: 130 SQ. FT.

A HOSE DEMAND OF 250 GPM WILL BE ADDED FOR ORDINARY HAZARD CALCULATIONS.

ORDINARY HAZARD GROUP II

SYSTEM TYPE: WET PIPED AUTOMATIC SPRINKLER SYSTEM, USING STEEL SUPPLY PIPING TO NEW STANDARD SPRAY PENDANT, QUICK RESPONSE, AUTOMATIC FIRE SPRINKLER LOCATIONS.

DENSITY: 0.20 GPM / SQ. FT.
AREA OF OPERATION: 1,500 SQ. FT. MAX.
SPRINKLER TEMPERATURE RATING: 155°F
MAX. COVERAGE PER SPRINKLER: 130 SQ. FT.

A HOSE DEMAND OF 250 GPM WILL BE ADDED FOR ORDINARY HAZARD CALCULATIONS.

(E) CHARACTERISTICS OF THE WATER SUPPLY TO BE USED:

THE WATER SUPPLY IS PROVIDED FROM AN EXISTING PUBLIC WATER PURVEY CIRCULATING MAIN.

(F) FLOW TEST DATA:

REFER TO WATER FLOW TEST DATA SCHEDULE ON THIS SHEET. IF TEST DATA IS NOT WITHIN 6 MONTHS AT TIME OF REVIEW, PROVIDE NEW FLOW TEST DATA.

(G) VALVING AND ALARM REQUIREMENTS TO MINIMIZE POTENTIAL FOR IMPAIRMENTS AND UNRECOGNIZED FLOW OF WATER:

THE FIRE SPRINKLER RISER(S) FOR THIS BUILDING ARE EQUIPPED WITH A WATER FLOW SWITCH WITH A LOCAL ALARM AND OFF-SITE MONITORING. BACKFLOW PREVENTION DEVICE SHALL BE PROVIDED FOR ENTIRE ON SITE SUPPLY LOOP.

(H) MICROBIAL INDUCED CORROSION (MIC):

AS OF THIS DATE, NO SIGNS OF MIC HAVE BEEN OBSERVED OR DETERMINED TO BE AN ISSUE. THIS FINDING IS ACCEPTABLE TO THE EOR.

(I) BACKFLOW PREVENTION AND METERING SPECIFICATIONS:

REFER TO CIVIL UTILITY PLAN FOR BACKFLOW AND METERING DETAILS.

(J) QUALITY AND PERFORMANCE SPECIFICATIONS OF ALL YARD AND INTERIOR FIRE PROTECTION COMPONENTS:

ALL NEW YARD AND INTERIOR FIRE PROTECTION EQUIPMENT SHALL BE UL LISTED FOR FIRE PROTECTION SERVICE AND FM APPROVED.

SCOPE OF WORK:

PROVIDE A NEW FULLY AUTOMATIC WET SPRINKLER SYSTEM WITH FIRE VALVE CABINETS IN ACCORDANCE WITH NFPA 13 AND NFPA 14 APPLICABLE EDITION. CONTRACTOR SHALL SUBMIT PIPING SHOP DRAWINGS FOR PERMIT TO THE FIRE MARSHAL. DRAWINGS SHALL BE 1/8" SCALE PIPING SHOP DRAWINGS AS PRESCRIBED IN SPECIFICATIONS AND AS REQUIRED BY LOCAL CODES. SHOP DRAWINGS SHALL INCLUDE SPRINKLER PIPING CUT LENGTHS, OFFSETS, FITTINGS AND DEVICES, ELEVATIONS, HANGER LOCATIONS, SPRINKLER HEAD COUNT BY TYPE, ELEVATION SECTIONS, HYDRAULIC CALCULATIONS AND OTHER INSTALLATION INFORMATION. THIS SHOP DRAWING MUST BE SIGNED AND SEALED BY THE DELEGATED ENGINEER.

SYMBOL LEGEND - FIRE PROTECTION

SYMBOL	DESCRIPTION
	NEW SPRINKLER PIPING
	EXISTING PIPING TO REMAIN
	EXISTING PIPING TO BE REMOVED
E	EXISTING RECESSED SPRINKLER TO REMAIN
E	EXISTING UPRIGHT SPRINKLER TO REMAIN
	ELBOW, TURNED DOWN
	ELBOW, TURNED UP
	TEE, TURNED UP
	TEE, TURNED DOWN
	CAP
FC	FLUSHING CONNECTION
	ZONE CONTROL VALVE / FLOW SWITCH / DRAIN RISER
OR	CONTROL VALVE WITH TAMPER SWITCH
	CHECK VALVE
	FLOW SWITCH
TYCO	BACKFLOW PREVENTOR WITH TAMPER SWITCHES
FDV	STANDPIPE WITH FIRE DEPARTMENT VALVE
	ROOF MANIFOLD
FDC	FIRE DEPARTMENT CONNECTION
PIV	POST INDICATOR VALVE WITH TAMPER SWITCH
FVC	FIRE VALVE CABINET
	CONNECT TO EXISTING
	DEMOLISH TO POINT INDICATED
	KEYNOTE
	REVISION REFERENCE

CODE COMPLIANCE

1. TO THE BEST OF MY KNOWLEDGE, THESE PLANS AND SPECIFICATIONS ARE COMPLETE AND COMPLY WITH THE 2023 FLORIDA BUILDING CODE - 8th EDITION, 2023 FLORIDA FIRE PREVENTION CODE - 8th EDITION, LOCAL MUNICIPALITY AMENDMENTS AND THE CODES REFERENCED WITHIN.

GENERAL NOTES

A. FIRE PROTECTION SYSTEM SHALL COMPLY WITH THE CURRENTLY ADOPTED VERSION OF NFPA, FLORIDA BUILDING CODE AND STATE FIRE PREVENTION CODE.

B. FINAL INSPECTION AND APPROVAL SHALL BE BY LOCAL FIRE MARSHAL AND ARCHITECT / ENGINEER.

C. SUBMIT SIGNED AND SEALED SPRINKLER SHOP DRAWINGS AND MATERIAL SUBMITTALS TO THE ARCHITECT / ENGINEER AND FIRE MARSHAL PRIOR TO ANY INSTALLATION.

D. PIPE ROUTING SHOWN IS SCHEMATIC ONLY. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO PROVIDE ANY ADDITIONAL OFFSETS, PIPING, SPRINKLERS AND OTHER COMPONENTS REQUIRED FOR PROPER INSTALLATION AND COORDINATION WITH OTHER TRADES.

E. INSTALL PIPING IN AREAS WITH EXPOSED STRUCTURE AS HIGH AS POSSIBLE TO ALLOW THE OWNER MAXIMUM USE OF SPACE. PREP, PRIME AND PAINT ALL EXPOSED PIPING TO COLOR AS REQUIRED BY THE ARCHITECT. DO NOT PAINT SPRINKLERS.

F. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR CEILING DESCRIPTIONS AND HEIGHTS.

G. COORDINATE SPRINKLERS WITH ALL DIFFUSERS, SPEAKERS, LIGHTING FIXTURES AND CEILING SYSTEMS. SPACE SPRINKLERS IN ACCORDANCE WITH NFPA 13 AND LISTING OF THE SPRINKLER.

H. CENTER SPRINKLER LOCATIONS IN THE TILE AS INDICATED ON THE DRAWINGS OR IN HARD CEILING AREAS CENTERED BETWEEN LIGHTS. PROVIDE ARMOVERS OR SWING JOINTS AS REQUIRED.

I. SPRINKLERS IN AREAS WITH EXPOSED STRUCTURE (OBSTRUCTED CONSTRUCTION) SHALL BE INSTALLED WITH DEFLECTOR 1" BELOW THE BOTTOM OF THE BEAM (MAXIMUM 22" BELOW ROOF DECK). EXPOSED BAR JOISTS THAT HAVE SPRAY ON FIRE-PROOFING THAT MAKES THE JOIST SOLID SHALL BE TREATED LIKE A BEAM WITH THE SPRINKLERS 1" BELOW THE BOTTOM OF THE FIRE-PROOFING.

J. SLEEVE ALL PIPING PENETRATIONS THROUGH WALLS, CEILING AND FLOORS. SLEEVE AND / OR FIRE STOP ALL PENETRATIONS THROUGH RATED WALLS, CEILINGS AND FLOORS WITH U/L LISTED ASSEMBLIES. FIRE STOP ASSEMBLIES SHALL BE EQUAL OR EXCEED THE RATING OF THE WALL, CEILING OR FLOOR. SEE ARCHITECTURAL DRAWINGS FOR FINAL FINISHES.

K. PROVIDE ACCESS PANELS TO ALL VALVES ABOVE NON-ACCESSIBLE CEILINGS AND CHASES.

L. PROVIDE A PERMANENTLY ATTACHED NAME TAG ATTACHED TO THE RISER STATING THE REQUIRED DESIGN CRITERIA FOR EACH HYDRAULICALLY DESIGNED SYSTEM.

M. PROVIDE SPRINKLERS UNDER ALL EXPOSED DUCTWORK / OBSTRUCTIONS OVER 48" WIDE AND SPACE SPRINKLERS AROUND ALL OBSTRUCTIONS IN ACCORDANCE WITH NFPA 13. SPRINKLERS UNDER DUCTS ARE NOT INDICATED ON DRAWINGS BUT ARE REQUIRED AND SHALL BE PROVIDED IN ACCORDANCE WITH NFPA.

N. PROVIDE SPRINKLER GUARDS IN MECHANICAL ROOMS, ELECTRIC ROOMS, TELEPHONE ROOMS, ELEVATOR ROOMS, ELEVATOR SHAFTS AND ON ANY SPRINKLERS LESS THAN 7'-6" ABOVE THE FLOOR.

O. IF SYSTEM PRESSURE EXCEEDS 100 PSI, ALL HANGERS ON END SPRINKLERS IN PENDANT POSITION SHALL BE WITHIN 12" OF END OF LINE IN ACCORDANCE WITH NFPA 13.

P. COORDINATE PIPING WITH ALL ELECTRICAL EQUIPMENT (SERVERS, COMM, ELEC. PANELS, TRANSFORMERS, ETC.) PRIOR TO ANY INSTALLATION. DO NOT ROUTE ANY PIPING OVER ANY ELECTRICAL PANELS UNDER ANY CIRCUMSTANCES.

Q. FIRE DEPARTMENT CONNECTIONS TO SPRINKLER SYSTEMS, STANDPIPES, YARD HYDRANTS OR ANY OTHER FIRE HOSE CONNECTION SHALL BE COMPATIBLE WITH THE CONNECTIONS USED BY THE LOCAL FIRE DEPARTMENT.

SHEET INDEX

Carbon design + architecture
FLORIDA LIC No: AR95989

CLIENT DATA

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CITY OF OCALA
501 NE 1st Ave.
Ocala, FL 34470

PROJECT DATA

Project No: 24020
Project Na: OCALA SUNTRAN RESTROOMS & KIOSK

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TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

ISSUE + REVISION DATA

No:	Description:	Date:

ENGINEER SEAL

BRIAN R. ZEMINA LICENSE NO. 78588 STATE OF FLORIDA PROFESSIONAL ENGINEER

05.28.2024

DRAWN BY B.E.

CHECKED BY R.F.W.

FP-000

LEGEND - FIRE PROTECTION

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24X36 SHEET
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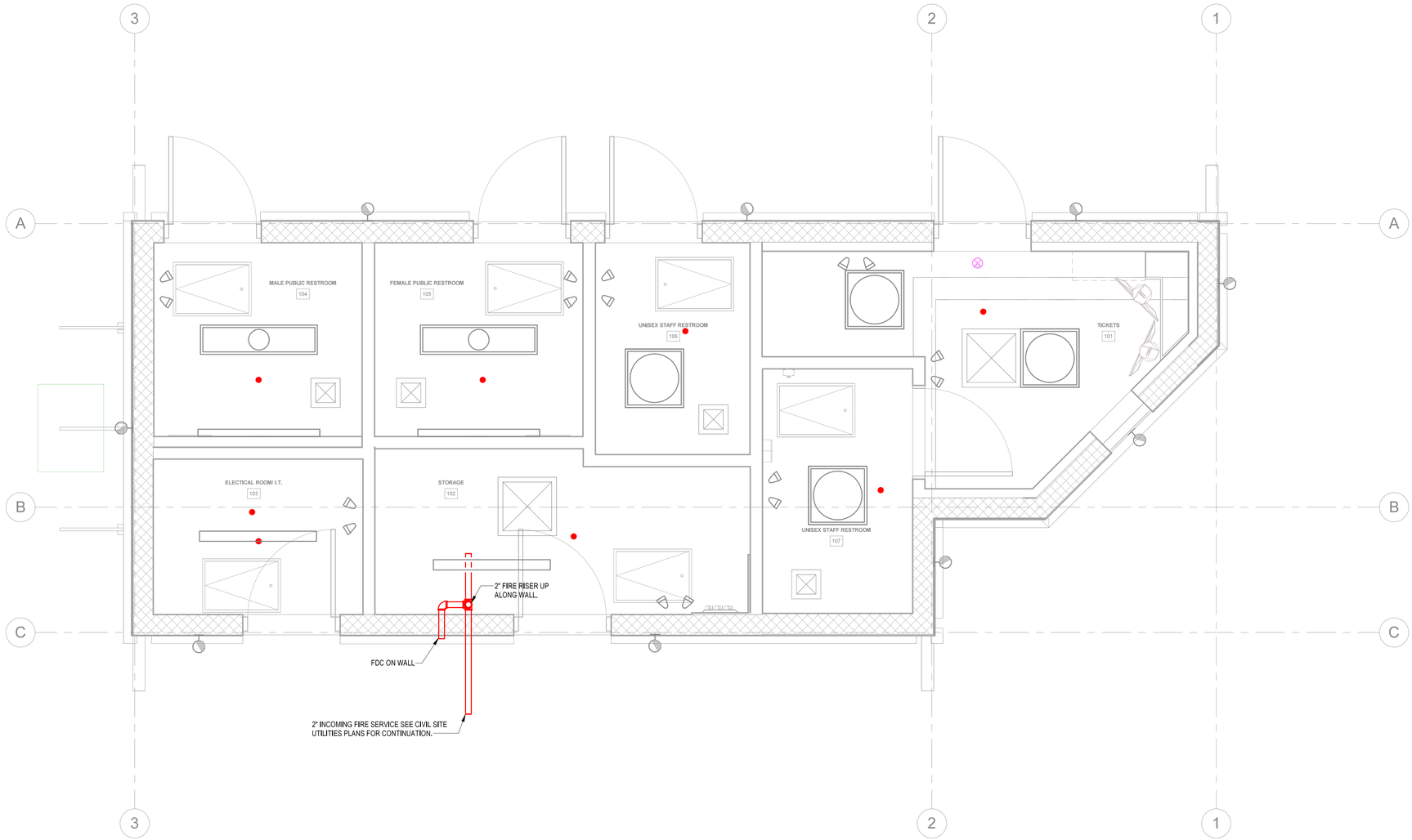

1 FIRST FLOOR PLAN - FIRE PROTECTION
1/2" = 1'-0"

N

0' 1' 2' 4' 8'

SCALE: 1/2" = 1'-0"

GENERAL NOTES

KEY NOTES

NUMBER	NOTES

Carbon design + architecture
FLORIDA LIC No: AR95989

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PROJECT DATA

Project No: 24020
Project Na: OCALA SUNTRAN
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FIRST FLOOR PLAN - FIRE PROTECTION

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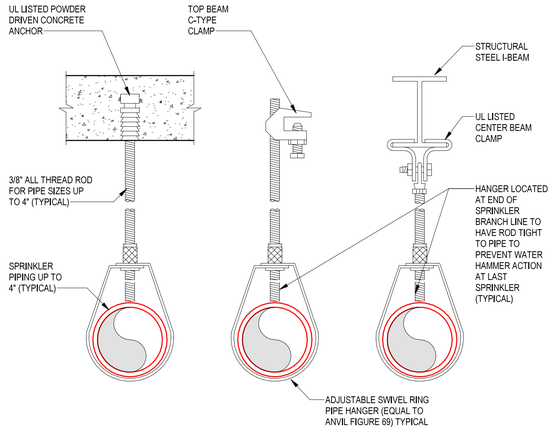
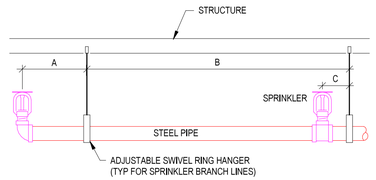


PIPE HANGERS - CONCRETE-STEEL STRUCTURES

NTS 3

HANGER LOCATION DETAIL			
PIPE SIZE	A	B	C
1"	3'-0" MAX.	12'-0" MAX.	3" MIN.
1-1/4"	4'-0" MAX.	12'-0" MAX.	3" MIN.
1-1/2" - 8"	5'-0" MAX.	15'-0" MAX.	3" MIN.

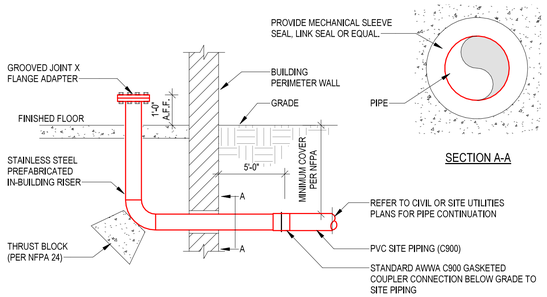
NOTE:
WHERE THE 'A' DISTANCE IS EXCEEDED THE BRANCH PIPING SHALL BE EXTENDED BEYOND THE END SPRINKLER AND SHALL BE SUPPORTED BY AN ADDITIONAL HANGER.



USE 3/8" DIAMETER ROD FOR PIPE DIAMETER SIZE 1" THROUGH 4"
USE 1/2" DIAMETER ROD FOR PIPE DIAMETER SIZE 6" THROUGH 8"

HANGAR SPACING FOR BRANCH LINES - STEEL PIPING

NTS 1

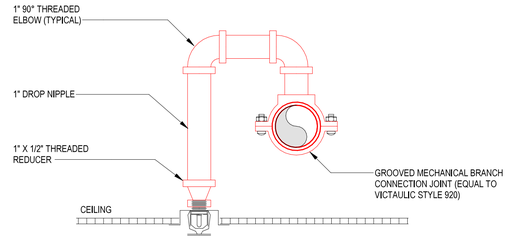


GENERAL NOTES

1. INCOMING UNDERGROUND PIPING, PROVIDED BY SITE UTILITIES CONTRACTOR, SHALL TERMINATE 12" ABOVE FINISHED FLOOR WITH BLIND FLANGE AS INDICATED ON DETAIL.
2. PROTECTION OF INCOMING UNDERGROUND PIPING INCLUDING ARCHING OF STRUCTURAL FOUNDATION WALL AND DEPTH OF PIPE BURY SHALL BE PER NFPA-24.
3. PROVIDE TAMPER SWITCHES AT OS&Y STEMS OF BACKFLOW ASSEMBLY OR CHAIN AND LOCKS AROUND OS&Y VALVE HANDLES. COORDINATE REQUIREMENT SUPERVISORY CONTROLS WITH LOCAL AHJ.
4. PROVIDE STAINLESS STEEL IN-BUILDING RISER (EQUAL TO AMES SERIES IBR). PLASTIC PIPE IS NOT PERMITTED BELOW OR WITHIN 5'-0" OF BUILDING.
5. PROVIDE DI-ELECTRIC FLANGE (AS REQUIRED) SET AT TRANSITION TO SYSTEM RISER PIPING MATERIAL.
6. PROVIDE CORROSION PROTECTION PER MANUFACTURER'S RECOMMENDATIONS FOR CORROSIVE SOIL INSTALLATIONS.

INCOMING FIRE RISER W/ IN-BUILDING RISER

NTS 4



RECESSED / SEMI-RECESSED SPRINKLER

GENERAL NOTES

1. WHEN STANDARD PENDANT SPRINKLERS, RATHER THAN DRY PENDANT SPRINKLERS ARE INSTALLED ON PRE-ACTION AND DRY-PIPE SYSTEMS, 'RETURN BENDS' ARE REQUIRED PER NFPA 13.

RETURN BEND PIPING ARRANGEMENT

NTS 2

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ISSUE + REVISION DATA

No:	Description:	Date:

ENGINEER SEAL

BRYAN R. ZEMINA LICENSE NO. 78588 STATE OF FLORIDA PROFESSIONAL ENGINEER

05.28.2024
DRAWN BY B.E.
CHECKED BY R.F.W.

FP-901
DETAILS - FIRE PROTECTION

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SCOPE OF WORK

1. PUBLIC RESTROOMS: PROVIDE CEILING EXHAUST FAN DUCTED TO WALL LOUVER. MAKEUP AIR THRU DOOR LOUVER. NO A/C.
2. STAFF RESTROOM: PROVIDE CEILING EXHAUST GRILLE DUCTED TO ERV. PROVIDE SUPPLY AIR DIFFUSER DUCTED FROM TICKET ROOM A/C UNIT.
3. PROVIDE ONE ERV TO EXHAUST STAFF RESTROOMS AND PRECONDITION OUTSIDE AIR FOR TICKET ROOM A/C UNIT.
4. TICKETS, STORAGE AND ELECTRICAL ROOMS: PROVIDE VRF SYSTEM. ONE INDOOR A/C SERVING EACH ROOM AND ONE COMMON CONDENSER OUTSIDE.

LEGEND - HVAC

SYMBOL	DESCRIPTION
24x12	NEW DUCTWORK TO BE PROVIDED
24x12	EXISTING DUCTWORK TO REMAIN
	NEW PIPING TO BE PROVIDED
	EXISTING PIPING TO REMAIN
	VALVES
	CONTROL VALVE
	ELBOW, TURNED DOWN
	ELBOW, TURNED UP
	TEE, OUTLET DOWN
	TEE, OUTLET UP

CONTROLS

SYMBOL	DESCRIPTION
T	THERMOSTAT / TEMPERATURE SENSOR
H	HUMIDISTAT / HUMIDITY SENSOR
M	MOTORIZED CONTROL DAMPER
CO_2	CO_2 SENSOR

AIR DISTRIBUTION

SYMBOL	DESCRIPTION
	AIR DISTRIBUTION DEVICE: SUPPLY (4-WAY BLOW UNLESS INDICATED BY ARROWS)
	AIR DISTRIBUTION DEVICE: RETURN
	AIR DISTRIBUTION DEVICE: EXHAUST
A (XXX)	AIR DISTRIBUTION TAG: A: TYPE, (XXX): CFM
	AIR TERMINAL DEVICE: SIDEWALL MOUNTED
DG	DOOR GRILLE SEE ARCHITECTURAL DRAWINGS
UC	UNDERCUT DOOR: SEE ARCHITECTURAL DRAWINGS

GENERAL TAGS

SYMBOL	DESCRIPTION
AHU-X	AIR HANDLING UNIT
EF-X	EXHAUST FAN
CU-X	CONDENSING UNIT
EDH-X	ELECTRIC DUCT HEATER
	REVISION REFERENCE
	KEY NOTE
1 / Mx	DETAIL REFERENCE: TOP: DETAIL NO. BOTTOM: DRAWING NO. DETAIL SHOWN ON

LIFE SAFETY

SYMBOL	DESCRIPTION
	FIRE DAMPER WITH ACCESS DOOR PANEL
	SMOKE DAMPER WITH ACCESS DOOR PANEL
	FIRE AND SMOKE DAMPER WITH ACCESS DOOR PANEL
	EXISTING FIRE DAMPER TO REMAIN WITH ACCESS DOOR PANEL, UNLESS OTHERWISE NOTED
	EXISTING SMOKE DAMPER TO REMAIN WITH ACCESS DOOR PANEL, UNLESS OTHERWISE NOTED
	EXISTING FIRE AND SMOKE DAMPER TO REMAIN WITH ACCESS PANEL, UNLESS OTHERWISE NOTED
	DUCT SMOKE DETECTOR

DUCTWORK

SYMBOL	DESCRIPTION
24x12	NEW DUCTWORK, FIRST DIMENSION IS SIDE SHOWN PROVIDE EXTERNALLY INSULATED SHEET-METAL
DN UP	DUCT ELBOW POSITIVE PRESSURE (SUPPLY)
DN UP	DUCT ELBOW NEGATIVE PRESSURE (EXHAUST)
DN UP	DUCT ELBOW NEGATIVE PRESSURE (RETURN)
UP DN	CHANGE OF ELEVATION
	FLEXIBLE DUCT
	TRANSITION, CONCENTRIC
	TRANSITION, ECCENTRIC
10"x8" 8"ø	TRANSITION, SQUARE TO ROUND
	SQUARE THROAT ELBOW WITH TURNING VANES
	RADIUS ELBOW
	RECTANGULAR / ROUND BRANCH TAKE-OFF OR ROUND / ROUND BRANCH TAKE-OFF
24"x12"	RECTANGULAR DUCTWORK
24"/12"	FLAT OVAL DUCTWORK
8"ø	ROUND DUCTWORK

DUCT ACCESSORIES

SYMBOL	DESCRIPTION
M	MOTOR OPERATED CONTROL DAMPER (MOD)
FM	AIR FLOW MEASURING STATION
	MANUAL BALANCING DAMPER
BD	BACKDRAFT DAMPER

GENERAL NOTES

1. SCOPE

WORK SHALL INCLUDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY FOR A COMPLETE AND PROPERLY FUNCTIONING MECHANICAL INSTALLATION IN ACCORDANCE WITH ALL APPLICABLE CODES, AND CONTRACT DRAWINGS AND SPECIFICATIONS. WORK SHALL INCLUDE ALL WORK NORMALLY SPECIFIED IN DIVISION 23.

PAY FOR ALL REQUIRED LICENSES, FEES, INSPECTIONS AND PERMITS.

2. CODES

INSTALL ALL WORK IN ACCORDANCE WITH THE LATEST EDITION OF ALL APPLICABLE REGULATIONS AND GOVERNING CODES, INCLUDING THE REGULATIONS OF THE UTILITY COMPANIES SERVING THE PROJECT. WHERE A CONFLICT IN CODE REQUIREMENTS OCCURS THE MORE STRINGENT REQUIREMENT SHALL GOVERN.

3. STANDARDS

1. ALL EQUIPMENT AND DEVICES SHALL BEAR U.L. LABEL. THE LABEL OF AN INDUSTRY RECOGNIZED APPROVED TESTING AGENCY FOR SAID ITEM OF EQUIPMENT OR DEVICE.
2. ALL ELECTRICAL DEVICES MUST BE U.L. LISTED
3. DUCT CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARD.
4. MAINTAIN CLEARANCE OF A MINIMUM OF 6" BETWEEN DUCTWORK, PIPING, EQUIPMENT, ETC. AND ALL FIRE RATED AND FIRE/SMOKE RATED PARTITIONS TO ALLOW FOR INSPECTIONS OF RATED WALLS.
5. LOCATE ALL OUTSIDE AIR INTAKES A MINIMUM OF 10'-0" CLEAR FROM ALL PLUMBING VENTS AND EXHAUST AIR DISCHARGE LOCATIONS. LOWEST POINT OF EACH OUTSIDE AIR INTAKE ON ROOF SHALL BE A MINIMUM OF 24" ABOVE ROOF.
6. ALL EQUIPMENT, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED AND/OR SPECIFIED. PROVIDE ADDITIONAL SUPPORTS AS REQUIRED TO PROVIDE A VIBRATION-FREE, RIGID INSTALLATION.
7. ALL PRODUCTS USED INDOORS SHALL BE OF THE LOW VOLATILE ORGANIC COMPOUNDS (LOW-VOC) TYPE, INCLUDING BUT NOT LIMITED TO PAINTS, SEALANTS, ADHESIVES AND MASTICS, ETC.
8. PRIOR TO START UP OF AIR HANDLING SYSTEMS AND EXHAUST SYSTEMS, INSTALL AND MAINTAIN TEMPORARY FILTERS OVER ALL RETURN, EXHAUST AND RELIEF GRILLES AND OPENINGS. FILTRATION MEDIUM SHALL HAVE A RATING OF MERV 8 OR BETTER.

4. DRAWINGS

DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT AND EXTENT OF WORK. EXACT LOCATIONS AND ARRANGEMENT OF MATERIALS AND EQUIPMENT SHALL BE DETERMINED, WITH THE ACCEPTANCE OF THE ARCHITECT/ENGINEER, AS CONSTRUCTION PROGRESSES TO CONFORM IN THE BEST POSSIBLE MANNER WITH THE SURROUNDINGS AND WITH THE ADJOINING WORK OF OTHER TRADES. WHERE LOCATIONS OF EQUIPMENT, DEVICES OR FIXTURES ARE CONTROLLED BY ARCHITECTURAL FEATURES, ESTABLISH SUCH LOCATIONS BY REFERRING TO DIMENSIONS ON ARCHITECTURAL DRAWINGS AND NOT BY SCALING DRAWINGS. THE FOLLOWING ITEMS ARE UNDERSTOOD TO BE INCLUDED AS PART OF THE DRAWINGS UNLESS NOTED OTHERWISE:

1. ALL DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
2. ALL DUCTWORK AND PIPING IS SHOWN SCHEMATICALLY. PROVIDE ALL TRANSITIONS, TURNING VANES, ELBOWS, FITTINGS, ETC. TO ALLOW SMOOTH FLOWS. ALL SPLIT DUCT FITTINGS SHALL TRANSITION TO FULL SIZE OF THE SUM OF BOTH BRANCHES UPSTREAM OF SPLIT.
3. PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS IN CHILLED WATER AND HEATING HOT WATER PIPING.
4. REFER TO TYPICAL DETAILS FOR PIPING AND INSTALLATION OF EQUIPMENT.

5. DISCREPANCIES

IN CASE OF DIFFERENCES BETWEEN DRAWINGS AND SPECIFICATIONS, OR WHERE DRAWINGS AND SPECIFICATIONS ARE NOT CLEAR OR DEFINITE, THE SUBJECT SHALL BE REFERRED TO ARCHITECT/ENGINEER FOR CLARIFICATION AND INSTRUCTIONS.

6. ELECTRICAL PROVISIONS

WORK INCLUDES VARIOUS ELECTRICAL REQUIREMENTS (A) WHICH INCORPORATE SPECIFIC ELECTRICAL FEATURES AND COMPONENTS WHICH ARE REQUIRED TO BE PHYSICALLY INTEGRAL WITH MECHANICAL EQUIPMENT, OR (B) WHICH REQUIRE NECESSARY ELECTRICAL INTERCONNECTING COMPONENTS FOR THE MECHANICAL SYSTEMS.

DEFINITIONS:

A. "FURNISH" MEANS TO PROCURE AN ITEM AND TO DELIVER IT TO THE PROJECT FOR INSTALLATION.

B. "INSTALL" MEANS TO DETERMINE (IN COORDINATION WITH OTHERS AS NECESSARY) THE APPROPRIATE INTENDED LOCATION OF AN ITEM AND TO SET AND CONNECT IT IN PLACE.

C. "PROVIDE" MEANS TO BOTH FURNISH AND INSTALL.

D. COORDINATE WITH OTHER ASSOCIATED TRADES FOR DUCT MOUNTED FIRE ALARM DEVICES.

7. AUXILIARIES AND ACCESSORIES

INCLUDE ALL AUXILIARIES AND ACCESSORIES FOR COMPLETE AND PROPERLY OPERATING SYSTEMS.

1. PROVIDE AIR TURNING VANES IN ALL 45 AND 90 DEGREE RECTANGULAR DUCT ELBOWS.
2. PROVIDE MANUAL VOLUME DAMPERS AT ALL BRANCH DUCTS FROM MAIN DUCT TO AIR DEVICES. POSITION DAMPERS IN ACCESSIBLE LOCATION. IF NOT ACCESSIBLE PROVIDE A REMOTELY-OPERATED VOLUME DAMPER AT ACCESSIBLE LOCATION.
3. PROVIDE FLEXIBLE DUCT CONNECTIONS ON ALL DUCTWORK CONNECTING TO EACH FAN, AIR HANDLING UNIT, FAN COIL UNIT, AND ANY EQUIPMENT WITH ROTATING OR POTENTIALLY VIBRATION-CAUSING COMPONENTS.
4. DAMPERS AND INSIDES OF DUCTS VISIBLE THROUGH GRILLES, REGISTERS, AND DIFFUSERS SHALL BE PAINTED FLAT BLACK.
5. UNLESS OTHERWISE NOTED, ALL EQUIPMENT AND VALVE DRAINS SHALL BE INDEPENDENTLY PIPED FULL SIZE TO THE NEAREST PLUMBING DRAIN.
6. PROVIDE CONCRETE HOUSEKEEPING PAD UNDER ALL FLOOR-MOUNTED EQUIPMENT.
7. PROVIDE ALL REQUIRED OPENINGS TO ACCOMPLISH THE WORK. PROVIDE SLEEVES OR OTHER APPROVED METHODS TO ALLOW PASSAGE OF ITEMS INSTALLED. SEAL ALL OPENINGS AFTER INSTALLATION OF PIPE, DUCT, ETC. TO MATCH RATING OF THE PENETRATED SURFACE.

8. COORDINATION

1. PROVIDE ALL REQUIRED COORDINATION AND SUPERVISION WHERE MECHANICAL WORK INTERFACES DIRECTLY OR INDIRECTLY WITH WORK OF ANY TRADES. PROVIDE A COORDINATED SET OF SHOP DRAWINGS THAT INCLUDE ALL OTHER TRADES WITHIN THE BUILDING TO ENSURE THAT THE INSTALLATION OF THE MECHANICAL ITEMS DOES NOT CONFLICT WITH ANY OTHER TRADE.
2. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
3. DIMENSIONS AND CODE/MANUFACTURER REQUIRED CLEARANCES SHALL BE FIELD-VERIFIED AND COORDINATED PRIOR TO PROCUREMENT OR FABRICATION. COORDINATE THE WORK WITH OTHER TRADES INVOLVED. FIELD MODIFICATIONS SUCH AS OFFSETS IN PIPING OR DUCTWORK (INCLUDING DIVIDED DUCTWORK) NEEDED DUE TO OBSTRUCTIONS OR INTERFERENCES SHALL BE PROVIDED AT NO ADDITIONAL COST.
4. DUCT SIZES AND ALL OPENINGS THROUGH BUILDING CONSTRUCTION SHALL SUIT EQUIPMENT FURNISHED.
5. ACCESS PANELS IN DUCTWORK AND CEILINGS SHALL BE PROVIDED WHERE REQUIRED FOR OPERATION, BALANCING, OR MAINTENANCE OF ALL MECHANICAL EQUIPMENT.
6. VERIFY FINISH WITH ARCHITECT PRIOR TO PURCHASING GRILLES, REGISTERS, DIFFUSERS, LOUVERS, AND OTHER AIR DISTRIBUTION DEVICES.
7. COORDINATE DIFFUSER, GRILLE, AND REGISTER LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND EQUIPMENT OF ALL TRADES.
8. LOCATE THERMOSTATS, TEMPERATURE SENSORS, HUMIDISTATS, AND HUMIDITY SENSORS AT 48" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE. COORDINATE LOCATIONS WITH DOOR SWINGS, FURNITURE, AND OTHER EQUIPMENT. DO NOT LOCATE ON EXTERIOR WALL NOWHERE DIRECT SUNLIGHT OR HVAC AIR WILL STRIKE SENSOR.
9. ANY INTERRUPTION OF EXISTING MECHANICAL AND ELECTRICAL SERVICES SHALL BE COORDINATED IN ADVANCE WITH THE OWNER'S REPRESENTATIVE. THIS INCLUDES, BUT IS NOT LIMITED TO, SERVICES PROVIDING CHILLED WATER, ELECTRICITY OR OTHER CRITICAL SYSTEMS AS MAY BE PERTINENT TO THIS PROJECT. SERVICE INTERRUPTION TIMES AND DURATION OF INTERRUPTION OF SERVICES SHALL BE DECIDED BY THE OWNER. PROVIDE APPROPRIATE PROVISIONS (E.G., ISOLATION SHUT-OFF VALVES, DAMPERS, END CAPS AND SIMILAR ITEMS) AS NECESSARY TO ACCOMMODATE THE REQUIRED SERVICE INTERRUPTIONS. IF SHUTDOWNS CANNOT BE ACCOMMODATED, PROVIDE MEANS FOR 'WET' TAPPING OR 'HOT' TAPPING OF PIPING SYSTEMS.

ABBREVIATIONS - HVAC

SYMBOL	DESCRIPTION
AD	AIR DEVICE
AFF	ABOVE FINISHED FLOOR
AFR	ABOVE FINISHED ROOF
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
BD	BACKDRAFT DAMPER
BOD	BASIS OF DESIGN
BOP	BOTTOM OF PIPE
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNIT
CD	CONDENSATE
CFM	CUBIC FEET PER MINUTE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CR	CONDENSATE RETURN
CT	COOLING TOWER
CU	CONDENSING UNIT
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
DDC	DIRECT DIGITAL CONTROLS
DN	DOWN
(E)	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
ESP	EXTERNAL STATIC PRESSURE
ETR	EXISTING TO REMAIN
EWT	ENTERING WATER TEMPERATURE
FCU	FAN COIL UNIT
FF	FINAL FILTERS
FLA	FULL LOAD AMPS
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPM	FEET PER MINUTE
GPM	GALLONS PER MINUTE
HWR	HEATING HOT WATER RETURN
HWS	HEATING HOT WATER SUPPLY
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MBH	THOUSAND BTUs PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MD	MOTORIZED DAMPER
MOCP	MAXIMUM OVER CURRENT PROTECTION
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	PSI GAUGE
PTAC	PACKAGED TERMINAL AIR CONDITIONER
RA	RETURN AIR
RHC	REHEAT COIL
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SP	STATIC PRESSURE
TA	TRANSFER AIR
TEMP	TEMPERATURE
TSP	TOTAL STATIC PRESSURE
UNO	UNLESS NOTED OTHERWISE
V / PH	VOLTS / PHASE
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE

CODE COMPLIANCE

1. TO THE BEST OF MY KNOWLEDGE, THESE PLANS AND SPECIFICATIONS ARE COMPLETE AND COMPLY WITH THE 2023 FLORIDA BUILDING CODE, 2023 FLORIDA MECHANICAL CODE, 2023 FLORIDA FIRE PREVENTION CODE, LOCAL MUNICIPALITY AMENDMENTS AND THE CODES REFERENCED WITHIN.

SHEET INDEX

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EOR: BRYAN R. ZEMINA, P.E. #78588

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY BRYAN R. ZEMINA, P.E. #78588 USING A DIGITAL SIGNATURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

ISSUE + REVISION DATA

No:	Description:	Date:

ENGINEER SEAL

BRYAN R. ZEMINA LICENSE NO. 78588 STATE OF FLORIDA PROFESSIONAL ENGINEER

05.28.2024

DRAWN BY R.M.

CHECKED BY R.F.W.

M-000

LEGEND - HVAC

100% CD's Set

PRINTED: 5/31/2024 7:43:00 AM

SPECIFICATIONS - HVAC

MATERIALS AND METHODS:

1. GENERAL

MATERIALS AND METHODS PROVIDED SHALL BE IN ACCORDANCE WITH THE BELOW DESCRIPTIONS OR SHALL MATCH THE QUALITY AND TYPE OF MATERIALS WHICH ARE PRESENTLY USED ON PROJECT FOR THE SAME FUNCTION.

2. **BASIC MECHANICAL REQUIREMENTS**

COORDINATE SPACE REQUIREMENTS, SUPPORTS AND INSTALLATION OF MECHANICAL WORK WHICH ARE INDICATED DIAGRAMMATICALLY ON DRAWINGS, FOLLOW PIPE ROUTING SHOWN AS CLOSELY AS PRACTICABLE; PLACE RUNS PARALLEL WITH LINES OF BUILDING. UTILIZE SPACES EFFICIENTLY TO MAXIMIZE ACCESSIBILITY FOR OTHER INSTALLATIONS, MAINTENANCE AND REPAIRS.

MATERIALS LISTED ARE THOSE USED AS BASIS OF DESIGN; EQUIVALENT PRODUCTS OF ACCEPTABLE MANUFACTURERS WILL BE ACCEPTED. MATERIALS MUST BE APPROVED AND RECOMMENDED BY THE PRODUCT MANUFACTURER FOR THE PARTICULAR APPLICATION(S).

SUBMIT SHOP DRAWINGS OF ALL MAJOR COMPONENTS FOR ENGINEER REVIEW AND OWNER RECORD. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL AND SHALL BE COMPLETE AND DESCRIPTIVE AND CONTAIN ENGINEERING DATA.

3. **SPECIFIC EQUIPMENT ITEMS**

EQUIPMENT AND MATERIALS WHICH ARE DESCRIBED BY EQUIPMENT SCHEDULES AND OTHERWISE NOTED ON THE DRAWINGS SHALL BE EQUAL TO THE LEVEL OF QUALITY FOR THE PARTICULAR EQUIPMENT ITEM USED AS A DESIGN BASIS. THE EQUIPMENT ITEM SHALL HAVE ALL OF THE MANUFACTURER'S STANDARD FEATURES AND SHALL ALSO BE PROVIDED WITH ALL ADDITIONAL ACCESSORIES, FEATURES AND ENHANCEMENTS AS MAY BE NOTED ON THE SCHEDULE OR OTHERWISE ON THE DRAWINGS.

4. **VRF SYSTEM WITH HEAT RECOVERY**

DESIGN BASIS: REFERENCE SCHEDULE AND ASSOCIATED SCHEDULE NOTES FOR ALL UNIT SPECIFIC REQUIREMENTS, BASIS OF DESIGN, CONTRACTOR REQUIREMENTS, ETC.

ACCEPTABLE ALTERNATIVE MANUFACTURERS: SAMSUNG OR APPROVED EQUAL.

5. REFRIGERANT PIPING SYSTEMS

A. GENERAL: PROVIDE REFRIGERANT PIPING SYSTEMS, COMPLETE IN ALL RESPECTS, BETWEEN THE SYSTEM COMPONENTS AND CONNECTED EQUIPMENT. ARRANGE PIPING GENERALLY AS SHOWN AND SUCH THAT SERVICE ACCESS IS FACILITATED. KEEP REFRIGERANT LINES AS SHORT AND DIRECT AS POSSIBLE WITH A MINIMUM NUMBER OF JOINTS. PROVIDE SLEEVES THROUGH FLOORS, WALLS OR CEILINGS, SIZED TO PERMIT INSTALLATION OF FULL-THICKNESS INSULATION; SEAL AIR TIGHT AFTER INSTALLATION OF PIPING AND INSULATION. COORDINATE ALL ROUTING WITH NOTES AND INDICATORS SHOWN ON PLANS.

B. PIPE AND FITTINGS: REFRIGERANT SYSTEM PIPING SHALL BE COPPER TYPE ACR OR MANUFACTURER RECOMMENDED, DEHYDRATED AND SEALED, SEAMLESS, UNIFORMLY DEAD SOFT TEMPER, FITTINGS SHALL BE REFRIGERANT GRADE, WROUGHT COPPER, LONG RADIUS, SOLDER JOINT TYPE.

C. PIPE SIZES: REFRIGERANT PIPE SIZES WHICH MAY BE SHOWN ON DRAWINGS ARE NOMINAL. PROVIDE SIZES NOT LESS THAN SIZES INDICATED AND IN COMPLIANCE WITH SIZE RECOMMENDED BY THE MANUFACTURER(S) AT THE CONNECTED EQUIPMENT. PROVIDE CHANGE IN SIZES IF SUCH CHANGE IS IN ACCORD WITH MANUFACTURER'S RECOMMENDATION AND WITH ARCHITECT/ENGINEER'S APPROVAL.

D. REFRIGERANT SYSTEM SPECIALTIES: REFRIGERANT VALVES, DRIERS, EXPANSION VALVES, AND SIMILAR ITEMS SHALL BE PROVIDED WITH EACH SYSTEM, WHERE REFRIGERANT ACCESS VALVES ARE NOT FURNISHED BY THE MANUFACTURER, THEY SHALL BE FIELD INSTALLED TO ENABLE CHARGING AND CHECKING THE SYSTEM.

E. JOINTS AND CONNECTIONS: ALL JOINTS AND CONNECTIONS SHALL BE MADE PERMANENTLY REFRIGERANT TIGHT. WHERE THE CONTRACTOR USES REFRIGERANT TUBING SETS, FOLLOW THE MANUFACTURER'S INSTALLATION INSTRUCTIONS EXPLICITLY, INCLUDING THE USE OF SPECIAL TOOLS. WHEN MAKING UP THE JOINTS, WHERE PRECHARGED TUBING AND EQUIPMENT IS PROVIDED, DO NOT CUT INTO THE SYSTEM TO INSTALL ACCESS VALVES.

F. HANGERS AND SUPPORTS: ISOLATE COPPER TUBING FROM CONTACT WITH ANY DISSIMILAR METALS.

G. REFRIGERANT PIPING CONDUIT: INSTALL ANY REFRIGERANT PIPING WHICH IS BELOW SLAB OR GRADE IN SCHEDULE 40 PVC PIPING. SIZE CONDUIT AS NECESSARY TO PROPERLY INSTALL PIPING. PROVIDE LONG BEND SWEEPS. INSTALL SO THAT CONDUIT WILL DRAIN AND NOT TRAP WATER. PROTECT ENDS OF CONDUIT FROM ENTRY BY VERMIN, INSECTS AND WATER.

H. INSULATION: INSULATE SUCTION PIPING WITH NOT LESS THAN 1 INCH THICK OR AS RECOMMENDED BY MANUFACTURER, NITRILE-BASED FIRE-RETARDANT ELASTROMERIC INSULATION SUCH AS ARMAFLEX, RUBATEX OR EQUAL FOR ALL PIPING INSULATION EXPOSED TO THE ELEMENTS, PROVIDE ALUMINUM JACKETING TO PROTECT FROM PHYSICAL AND UV DAMAGE.

6. CONDENSATE DRAIN PIPING FROM AHU TO POINTS OF DISCHARGE

A. PIPE: TYPE L HARD DRAWN COPPER. FITTINGS: WROUGHT COPPER, SOLDER JOINT, PRESSURE TYPE.

B. INSULATION: NOT LESS THAN 3/4" THICK NITRILE-BASE FIRE-RETARDANT ELASTOMERIC INSULATION SUCH AS ARMAFLEX, RUBATEX OR EQUAL FOR ALL PIPING INSULATION EXPOSED TO THE ELEMENTS, PROVIDE ALUMINUM JACKETING TO PROTECT FROM PHYSICAL AND UV DAMAGE.

7. **SUPPORTS AND ANCHORS**

A. GENERAL

PROVIDE ALL ANGLES, BRACKETS, CLAMPS, ANCHORS, INSERTS, RODS, BRACES, FRAMES, HANGERS NUTS AND BOLTS AND OTHER MISCELLANEOUS STEEL AND HARDWARE ITEMS AS MAY BE REQUIRED FOR THE PROPER SUPPORT OF EQUIPMENT AND PIPING SYSTEMS.

INSTALL IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. PIPE HANGERS

GENERAL: HANGERS SHALL BE SPACED TO PREVENT SAG. HANGER SPACING AND PLACEMENT SHALL BE SUCH THAT AFTER THE COVERING (INSULATION AND FINISH) IS APPLIED, THERE WILL BE NOT LESS THAN 1/2-INCH CLEAR SPACE BETWEEN FINISHED COVERING AND OTHER SURFACES, INCLUDING THE FINISHED COVERING OF PARALLEL ADJACENT PIPES. HANGERS FOR INSULATED PIPES SHALL BE SIZED TO ENCOMPASS THE INSULATION, FINISH AND METAL INSULATION SHIELD (A METAL INSULATION SHIELD SHALL BE PROVIDED FOR EACH HANGER OR SUPPORT). HANGERS AND SUPPORTS SHALL NOT BE PLACED AT GREATER THAN THE FOLLOWING INTERVALS:

PIPE 1-1/2-INCH AND SMALLER: SIX FOOT (6 FOOT) CENTERS.

PIPE 2 INCHES THROUGH 3-INCHES: TEN FOOT (10 FOOT) CENTERS.

AT EACH CHANGE IN DIRECTION (OFFSETS, ELBOWS AND TEES), PROVIDE SUPPORT FOR EACH PIPE ENTERING AND EXISTING THE OFFSET, ELBOW OR TEE AT A POINT NOT FURTHER FROM THE OFFSET, ELBOW OR TEE THAN TWO FEET (2').

C. PIPE SUPPORTS, INTERIOR

PIPE SUPPORTS FOR INTERIOR PIPING MAY BE IN ACCORDANCE WITH THE CONTRACTOR'S STANDARD METHOD FOR SUPPORTING PIPING OF THE SIZE, TYPE AND FUNCTION, USED ON THIS PROJECT, HOWEVER, THE METHOD USED BY THE CONTRACTOR SHALL MEET THE FOLLOWING CRITERIA FOR EACH INDIVIDUAL SUPPORT:

SUPPORT SHALL ALLOW FOR SUCH PIPING EXPANSION/CONTRACTION AS MAY BE EXPERIENCED IN THE LOCATION OF EACH INDIVIDUAL SUPPORT.

SUPPORT SHALL ALLOW FOR REASONABLE PIPE MOVEMENT IF NECESSARY.

SUPPORT SHALL NOT DAMAGE OR CRUSH INSULATION SYSTEMS REQUIRED FOR THE PIPING.

8. **VIBRATION ISOLATORS**

A. SUSPENDED MECHANICAL EQUIPMENT - PROVIDE OPEN SPRING HANGERS OR NEOPRENE IN SHEAR HANGERS DEPENDING ON SIZE OF UNIT SUSPENDED.

9. **DUCTWORK**

DUCTWORK, GENERAL

A. PROVIDE COMPLETE DUCT SYSTEMS AS INDICATED. SYSTEMS SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING: OUTSIDE AIR, EXHAUST AIR, AND AIR CONDITIONING SUPPLY AND RETURN AIR DUCT SYSTEMS AS SHOWN ON DRAWINGS. DRAWING SCALES PROHIBIT THE INDICATION OF ALL OFFSETS, FITTINGS, AND LIKE ITEMS; HOWEVER, THESE ITEMS SHALL BE INSTALLED AS REQUIRED.

B. PROVIDE ALL DUCTWORK AND COMPONENTS THEREOF IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ALL DUCTWORK DIMENSIONS INDICATED ARE NOMINAL FREE CLEARANCE INTERNAL DIMENSIONS WHICH DO NOT INCLUDE INSULATION THICKNESS.

C. "SMACNA" MEANS "SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC." MATERIALS SHALL COMPLY WITH CURRENT SMACNA STANDARDS. CONSTRUCT ALL DUCTWORK AND ACCESSORIES IN ACCORDANCE WITH THE LATEST INDICATED EDITIONS OF APPLICABLE SMACNA CONSTRUCTION STANDARDS.

D. PRIOR TO DUCTWORK FABRICATION, VERIFY IF ALL DUCTWORK AS DIMENSIONED AND GENERALLY SHOWN WILL SATISFACTORILY FIT ALLOCATED SPACES INCLUDING ABOVE CEILINGS. TAKE PRECAUTIONS TO AVOID SPACE INTERFERENCES WITH BEAMS, COLUMNS, JOISTS, PIPES, LIGHTS, CONDUIT, OTHER DUCTS, EQUIPMENT, ETC. NOTIFY ARCHITECT/ENGINEER IF ANY SPATIAL CONFLICTS EXIST, AND THEN OBTAIN ARCHITECT/ENGINEER'S APPROVAL OF NECESSARY ROUTING. MAKE ANY SUCH NECESSARY REVISIONS AT NO ADDITIONAL COST.

E. PROVIDE ALL CURVED ELBOWS WITH RADIUS RATIOS OF NOT LESS THAN 1.5 UNLESS OTHERWISE SHOWN OR APPROVED BY ARCHITECT/ENGINEER. PROVIDE ALL MITERED ELBOWS WITH TURNING VANES UNLESS SYSTEM TYPE (GREASE, ETC.) PROHIBITS TURNING VANES.

F. RECTANGULAR BRANCH DUCT TAKE-OFFS FROM LARGER MAIN DUCTS IN LOW PRESSURE SYSTEMS SHALL BE 45 DEGREE ANGULAR ENTRY BRANCH CONNECTIONS WHERE THE LENGTH OF THE PORTION OF THE BRANCH TAKE-OFF WHICH ACCOMMODATES THE 45 DEGREE ANGLE ENTRY MUST BE NOT LESS THAN 25% OF THE WIDTH OF THE BRANCH TAKE-OFF OR A MINIMUM OF 4-INCHES (WHICHEVER IS GREATER). REFER TO SMACNA "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIG. 2-5, "BRANCH CONNECTIONS."

G. DUCT SYSTEM SCHEDULE
a. REFER TO THE 'DUCT SYSTEM SCHEDULE' FOR:
- THE TYPE OF DUCTWORK AND WHERE IT IS TO BE INSTALLED.
- THE PRESSURE / VELOCITY CLASS AT EACH LOCATION.
- DUCTWORK INSULATION.

H. FLEXIBLE DUCT CONNECTIONS
MANUFACTURERS: VENTGLAS, DURODYNE, ELGIN. FABRICATE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS. METAL AND FLEXIBLE AND AS INDICATED. CONNECTOR: FABRIC CRIMPED INTO METAL EDGING STRIP. FABRIC: UL LISTED FIRE RETARDANT NEOPRENE COATED WOVEN GLASS FIBER FABRIC TO NFPA 90A, MINIMUM DENSITY 30 OZ PER SQ. YD. NET FABRIC WIDTH: APPROXIMATELY 6 INCHES WIDE. METAL: 3 INCH WIDE, 24 GAUGE GALVANIZED STEEL.

I. RIGID DUCTWORK - ROUND AND RECTANGULAR
SHEET METAL, SMACNA PRESSURE CLASS OF 4" FOR SUPPLY AIR, 2" FOR RETURN AIR, OUTSIDE AIR AND EXHAUST AIR.

J. FLEXIBLE DUCTWORK TO AIR DISTRIBUTION DEVICES
FACTORY FABRICATED PRE-INSULATED TYPE WITH SEAMLESS VAPOR BARRIER. DUCT SHALL BEAR UL 181 CLASS 1 AIR DUCT LABEL AND SHALL COMPLY WITH NFPA 90A AND 90B. FIBERGLASS INSULATION NOMINAL 1 INCH THICKNESS WITH THERMAL CONDUCTANCE OF 0.23 BTU / HR - FT2 OF MAXIMUM AT 75°F MEAN TEMPERATURE. MAXIMUM 6 FEET.

10. **INSULATION**

INSULATED EXTERNALLY WITH 2-INCH THICK FIBER GLASS DUCT WRAP. DUCT WRAP SHALL BE A FLEXIBLE BLANKET OF GLASS FIBER FACTORY LAMINATED TO A REINFORCED FOIL KRAFT (FRK) VAPOR BARRIER WITH A MINIMUM 2-INCH TAPING AND STAPLING FLANGE ON ONE EDGE AND BE SUITABLE FOR OPERATION AT TEMPERATURES FROM 40 DEG F TO 250 DEG F AND HAVE A THERMAL CONDUCTIVITY OF 0.23 AT 75 DEG F WITH A MINIMUM DENSITY OF THREE-QUARTER (3/4) POUND PER CUBIC FOOT. PROVIDE IN THICKNESS OF TWO (2) INCHES UNLESS OTHERWISE SPECIFIED. ALL JOINTS AND SEAMS SHALL BE SEALED WITH GLASS FABRIC AND MASTIC.

11. **DUCTWORK SUPPORTS**

ALL DUCTWORK SHALL BE SUPPORTED BY EITHER OF THE FOLLOWING TWO METHODS OR AS OTHERWISE APPROVED BY THE AUTHORITY HAVING JURISDICTION:

A. PROVIDE SUITABLE STEEL STRAPS PER SMACNA STANDARDS BUT NOT LESS THAN 1 INCH WIDE, 22 GAUGE SECURELY ATTACHED TO THE STRUCTURE ABOVE AND TO THE DUCT SYSTEM.

B. WHERE REQUIRED, DUCT MAY BE SUPPORTED WITH HORIZONTAL ANGLE IRON SUPPORTS WITH THREADED RODS ATTACHED TO STRUCTURE ABOVE.

12. **TEST, ADJUST AND BALANCE**

CONTRACTUAL RELATIONSHIP

A. PERFORMANCE VERIFICATION SHALL BE PERFORMED AS A SERVICE OF THE T & B AGENCY DIRECTLY TO THE CONSTRUCTION MANAGER OR OWNER WITH NO OTHER SUBCONTRACTORS AS PART OF THE AGREEMENT.

B. TEST, ADJUST AND BALANCE ALL AIR AND WATER SYSTEMS IN ACCORDANCE WITH ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).

C. THE HEATING, VENTILATING AND/OR COOLING SYSTEMS INSTALLED UNDER THIS CONTRACT SHALL BE TESTED TO DEMONSTRATE THAT SPECIFIED CAPACITIES OF THE VARIOUS PARTS OF THE SYSTEM AS SHOWN ON THE DRAWINGS CAN BE MET.

D. A DIRECT READING VELOCITY INSTRUMENT THAT HAS BEEN RECENTLY TESTED (WITHIN 1 YEAR PREVIOUS FROM DATE OF TAB) AND CALIBRATED SHALL BE USED TO TEST THE AIR FLOW IN THE VARIOUS DUCT INLETS AND OUTLETS.

E. REGULATE AND ADJUST ALL SPLITTER, DEFLECTORS AND DAMPERS SO THAT THE INLET OR OUTLET SHALL DELIVER OR REMOVE THE REQUIRED NUMBER OF CUBIC FEET OF AIR PER MINUTE (CFM) AT THE RESPECTIVE OPENINGS. THIS SHALL INCLUDE SETTING UP DAMPER POSITION FOR MINIMUM OUTSIDE AIR DAMPERS AND SHALL BE MARKED AS SAME.

F. ALL TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE CONSTRUCTION SUPERINTENDENT, OR HIS REPRESENTATIVE

G. FLUID FLOW DATA SHALL BE BALANCED TO BE WITHIN +/- 10% OF THE DESIGN VALUES.

H. FURNISH ALL INSTRUMENTS, TESTING EQUIPMENT AND PERSONNEL THAT MAY BE REQUIRED FOR THE TESTS.

I. SUBMIT TO ARCHITECT / ENGINEER ELECTRONIC COPY OF HIS FINAL CERTIFIED TEST READINGS WITH THE FOLLOWING INFORMATION:

a. THE RPM OF EACH FAN OR UNIT
b. THE VOLUME OF AIR HANDLED BY EACH FAN OR UNIT (QUANTITIES OF SUPPLY, RETURN, OUTSIDE AIR)
c. VOLUME OF AIR AT EACH AIR DEVICE
d. SUPPLY TEMPERATURES OF EACH UNIT
e. MOTOR BHP
f. OUTSIDE AIR CONDITIONS AT TIME OF TEST
g. ANY AND ALL WATER FLOW RATES AND ENTERING / LEAVING TEMPERATURES AT EQUIPMENT
h. STATIC PRESSURE PROFILE OF ALL AIR-MOVING EQUIPMENT
i. PERCENT DEVIATION FROM DESIGN VALUES

13. **CONTROLS**

A. PROVIDE 7 DAY PROGRAMMABLE THERMOSTAT.

Carbon design + architecture
FLORIDA LIC No: AR95989

CLIENT DATA
Client:
CITY OF OCALA
501 NE 1st Ave.
Ocala, FL 34470

PROJECT DATA
Project No: 24020
Project Na: OCALA SUNTRAN RESTROOMS & KIOSK

ARCHITECT DATA
Carbon design & architecture
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ENGINEER DATA
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W:: www.voltairinc.com
COA: #27158
Proj: #01.22029

EOR: BRYAN R. ZEMINA, P.E.,#78588

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TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

ISSUE + REVISION DATA

No:	Description:	Date:

ENGINEER SEAL

BRYAN R. ZEMINA LICENSE NO. 78588 STATE OF FLORIDA PROFESSIONAL ENGINEER

05.28.2024

DRAWN BY R.M.

CHECKED BY R.F.W.

M-001

SPECIFICATIONS - HVAC

100% CD's Set

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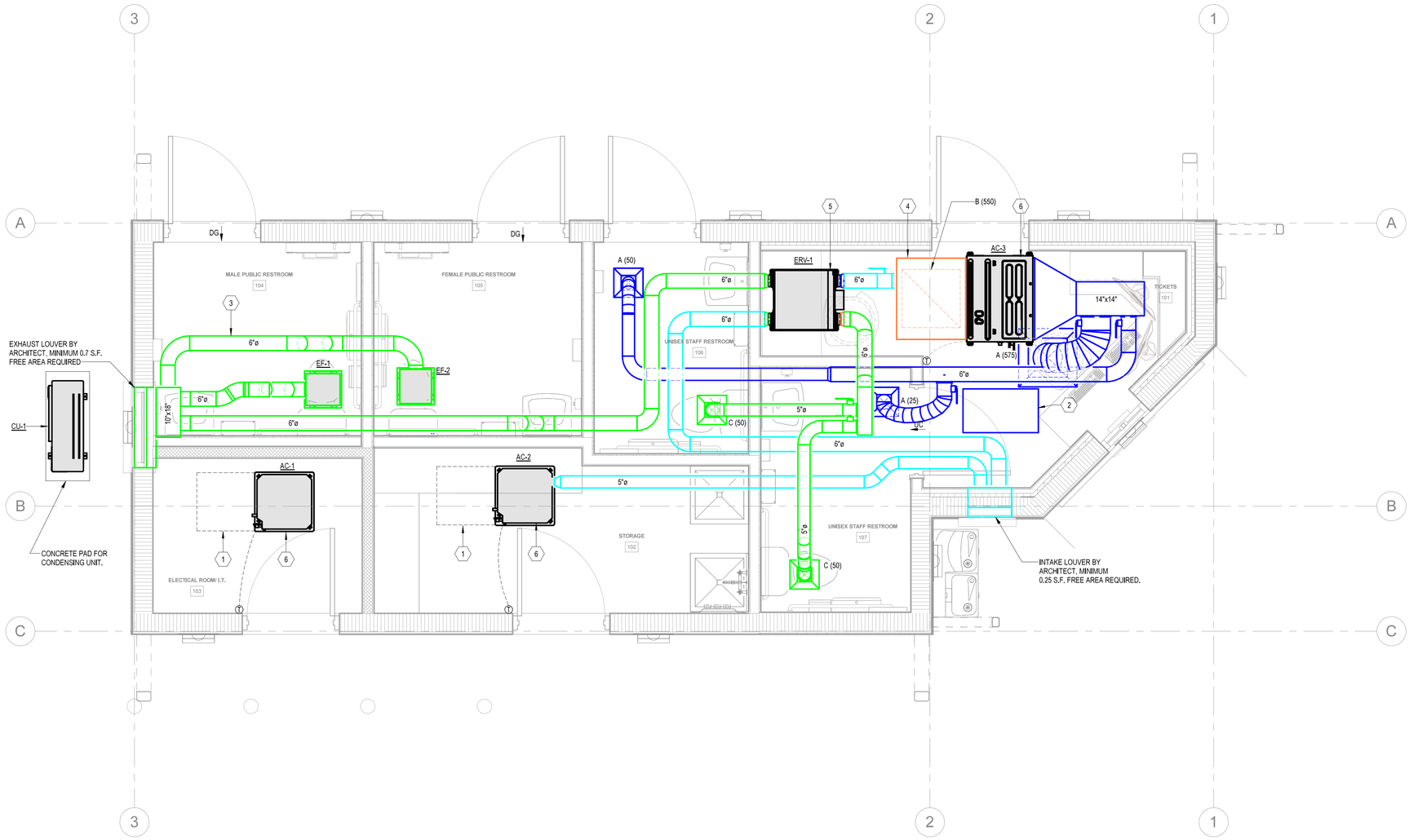

1 FIRST FLOOR PLAN - HVAC
1/2" = 1'-0"

SCALE: 1/2" = 1'-0"

GENERAL NOTES

A. PROVIDE VOLUME DAMPERS AT ALL BRANCH TAKEOFFS SERVING SINGLE DIFFUSER, GRILLE OR REGISTER.

B. PROVIDE TURNING VANES IN ALL RECTANGULAR ELBOWS.

C. MAINTAIN MINIMUM 6" CLEARANCE BETWEEN DUCTWORK AND RATED WALLS.

D. COORDINATE DUCTWORK WITH STRUCTURE. PREPARE COORDINATION DRAWINGS AS SPECIFIED.

E. PROVIDE REMOTELY OPERATED DAMPERS FOR ALL NON ACCESSIBLE DAMPER LOCATIONS ABOVE HARD CEILINGS FOR ACCESS TO MANUAL BALANCING DAMPERS.

F. PROVIDE ALL CODE REQUIRED AND MANUFACTURER RECOMMENDED CLEARANCES FOR ALL EQUIPMENT.

G. A/C CONDENSATE DRAIN LINE ROUTED TO CONDENSATE FLOOR DRAIN LOCATED IN STORAGE ROOM.

KEY NOTES

NUMBER	NOTES
1	PROVIDE CEILING ACCESS PANEL TO SERVICE AC UNIT.
2	HRU PANEL PIPING PANEL ABOVE CEILING. PROVIDE 208V.
3	EXHAUST DUCTS ROUTED HIGH, TYPICAL.
4	PROVIDE FULL SIZED RETURN AIR PLENUM.
5	ALL ACCESS FROM BOTTOM OF UNIT.
6	CONDENSATE DRAIN ROUTED TO NEAREST FLOOR DRAIN.

Carbon design + architecture
FLORIDA LIC No: AR95989

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M-201

FIRST FLOOR PLAN - HVAC

100% CD's Set

PRINTED: 5/31/2024 7:43:03 AM

FAN SCHEDULE

PLAN MARK	PRODUCT MANUFACTURER	MODEL	UNIT LOCATION	TYPE	AIRFLOW (CFM)	ESP (IN. WG)	FAN RPM	MOTOR					SONES	WEIGHT (LBS)	ACCESSORIES	INTERLOCKS
								RPM	WATTS	ECM	ELEC.	DRIVE TYPE				
EF-1	GREENHECK	SP-A90-130-VG	CEILING	CEILING EXHAUST	100	0.25	960	1800	24.2	YES	120/1	DIRECT	0.7	12	1,9,12,14	LIGHT SWITCH
EF-2	GREENHECK	SP-A90-130-VG	CEILING	CEILING EXHAUST	100	0.25	960	1800	24.2	YES	120/1	DIRECT	1.3	12	1,9,12,14	LIGHT SWITCH

GENERAL NOTES

1. PROVIDE THE FOLLOWING ACCESSORIES AS SCHEDULED:

1) BACKDRAFT DAMPER
2) EXTENDED LUBE LINES
3) INLET / OUTLET SCREENS
4) ROOF CURB
5) SOUND CURB
6) BURGLAR BARS
7) INTEGRATED AIRFLOW MEASURING STATION
8) DRAIN CONNECTION
9) DISCONNECT SWITCH
10) CEILING RADIATION DAMPER
11) ACCESS DOOR
12) VIBRATION ISOLATORS
13) MOTOR CONTROL: 0-10 VDC
14) MOTOR CONTROL: DIAL ON MOTOR
15) GREASE COLLECTION TROUGH AND RECEIVER
16) UL 762 - GREASE LADEN EXHAUST
17) WALL MOUNT ADAPTER
18) VARIABLE FREQUENCY DRIVE AND CONTROL
19) MOTOR/DRIVE COVER (BELT GUARD)
20) AMCA-B SPARK PROOF CONSTRUCTION
21) INSULATED HOUSING FOR SOUND CONTROL
22) HINGED FRAMES

2. STATIC PRESSURE EXCLUDES FILTER, BELT, OR OTHER INTERNAL COMPONENT LOSSES.

VRF SYSTEM - CEILING CASSETTE DUCTLESS AND CONDENSING UNIT WITH HEAT RECOVERY SCHEDULE

PLAN MARK	MODEL NUMBER	UNIT TYPE	FAN DATA		COOLING DATA			HEATING DATA		UNIT
			SUPPLY AIR CFM	OUTSIDE AIR CFM	INDOOR ENT. DB	INDOOR ENT. WB	TOTAL MBH	INDOOR ENT. DB	TOTAL MBH	WEIGHT (LBS)
AC-1	ARNU123TRD4	CEILING	305	0	80	67	12.3	68	13.6	32
AC-2	ARNU123TRD4	CEILING	305	25	80	67	12.3	68	13.6	32
AC-3	ARNU243M1A4	DUCTED	650	100	76	64	24.2	68	27.3	59

NOTES:
1. BASIS OF DESIGN: LG. ACCEPTABLE ALTERNATIVE MANUFACTURERS: SAMSUNG OR APPROVED EQUAL.
2. PROVIDE MANUFACTURER'S 7 DAY PROGRAMMABLE CONTROLLER (T-STAT)
3. PROVIDE EACH AC WITH AN INTERNAL CONDENSATE PUMP.
4. PROVIDE COMMUNICATION / POWER WIRING FROM OUTDOOR TO INDOOR UNIT PER MANUFACTURER'S INSTALLATION MANUAL.
5. PROVIDE 2x2 GRILLE WITH 4-WAY BLOW PATTERN AC 1&2.
6. PROVIDE VENTILATION KIT FOR AC 2&3. PROVIDE FILTER RACK AT INLET.
7. AC-3 OUTSIDE AIR FROM ERV-1.

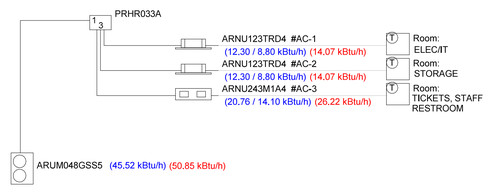
PLAN MARK	MODEL NO.	AMB. OPERATING TEMP. (COOL/HEAT)	REF. TYPE	NO. COMP.	ELECTRICAL DATA			CONNECT TO AC-X	UNIT WEIGHT (LBS)	MIN. EFF. BTU/H/W COOL/HEAT
					MCA	MOP	VOLT/ PHASE			
CU-1	ARUM048GSS5	95	R-410A	1	24	40	208/1	1,2,3	263	13.0/11.7

NOTES:
1. BASIS OF DESIGN: LG.
2. ALL REFRIGERANT PIPING SHALL BE PROVIDED WITH LONG RADIUS ELBOWS.
3. PROVIDE WITH COMPRESSOR CRANKCASE HEATER.
4. PROVIDE ALL UNITS WITH ANTI-SHORT CYCLE TIME DELAY.
5. PROVIDE SERVICE CONNECTIONS TO EQUIPMENT AS SHOWN ON PLANS, ELEVATIONS, SECTIONS, AND AS REQUIRED BY SPECIFICATIONS.
6. PROVIDE WITH 10 YEAR PARTS WARRANTY. LUVATA CORROSION PROTECTION COATING OR EQUAL, AND LOW AMBIENT COOLING DOWN TO 14 DEG.F.
7. ~~PROVIDE WITH HEAT RECOVERY AND CAPABLE OF SIMULTANEOUS HEATING AND COOLING OF INDOOR UNITS.~~ 1
8. CONDENSING UNIT TIE DOWNS, CONNECTIONS AND EQUIPMENT PAD SHALL BE DESIGNED TO MEET THE FLORIDA WIND LOAD REQUIREMENTS BY A LICENSED PROFESSIONAL ENGINEER, RETAINED BY THE MECHANICAL EQUIPMENT SUPPLIER. SIGNED AND SEALED DRAWINGS AND CALCULATIONS ARE TO BE SUBMITTED TO EOR (ENGINEER OF RECORD) FOR REVIEW. THE EQUIPMENT MANUFACTURER SHALL PROVIDE THE ATTACHMENT OF THE CONDENSING UNIT AND EQUIPMENT PAD.

OUTDOOR AIR ENERGY RECOVERY VENTILATOR

PLAN MARK	MODEL NUMBER	UNIT TYPE	FAN DATA						SUMMER PERFORMANCE					WINTER PERFORMANCE					ELECTRICAL DATA			FILTER	UNIT WEIGHT (LBS)
			OUTSIDE AIR (CFM)	EXHAUST AIR (CFM)	EXT. (SP)	DRIVE TYPE	MOTOR (HP)	VOLT/ PHASE	ENT. DB	ENT. WB	LVG. DB	LVG. WB	EFF. %	ENT. DB	ENT. WB	LVG. DB	LVG. WB	EFF. %	MCA	MAX FUSE SIZE	VOLT/ PHASE	TYPE	
ERV-1	ARV0093RA6	FIXED PLATE	100	100	0.2	DIRECT	30 WATTS	208/1	95	80	75	62	58	36	34	68	57	55	0.5	15	208/1	1" - MERV 13	52

NOTES:
1. MODEL NUMBERS AND SELECTION IS BASED ON LG.
2. PROVIDE SINGLE POINT ELECTRICAL CONNECTION FOR BOTH FANS AND CONTROLS.
3. INTERLOCK WITH ASSOCIATED A/C UNIT, AC-3.
4. PROVIDE ERV WITH UNIT MOUNTED DISCONNECT ON FACE OF UNIT.
5. PROVIDE WITH DUCT TRANSITIONS.



GENERAL NOTES

1. REFRIGERATE PIPING SIZED PER MANUFACTURERS RECOMMENDATION.

VRF SYSTEM WITH HEAT RECOVERY - TREE DIAGRAM | A

AIR DISTRIBUTION SCHEDULE

SYMBOL/TAG	CFM	DUCT/NECK SIZE	FACE SIZE LENGTH	DESCRIPTION
A (XXX)	000-110 111-210 211-375 375-620 621-750 751-880	6Ø 8Ø 10Ø 12Ø 14Ø 16Ø	24x24 24x24 24x24 24x24 24x24 24x24	BASIS OF DESIGN: PRICE AMD COLOR: WHITE MATERIAL: ALUMINUM OPPOSED BLADE DAMPERS: NO BACK PAN SIZE: 18x18 SQUARE TO ROUND ADAPTOR
B (XXX) C (XXX) OR	000-110 111-220 221-300 301-430 431-530 531-670 671-840	6x6 8x8 10x10 12x12 14x14 16x16 18x18	24x24 24x24 24x24 24x24 24x24 24x24 24x24	BASIS OF DESIGN: PRICE 630 COLOR: WHITE MATERIAL: ALUMINUM OPPOSED BLADE DAMPERS: NO 2/3" SPACING FIXED LOUVERS 22"X22"X3" BACK CAN FOR DUCT CONNECTION. PAINTED FLAT BLACK.

NOTES:
1. AIR DISTRIBUTION DEVICES LOCATED WITHIN ACOUSTICAL TILE CEILINGS SHALL BE PROVIDED WITH BORDER TYPE FOR LAY-IN MOUNTING. AIR DISTRIBUTION DEVICES LOCATED WITHIN GYPSUM BOARD CEILINGS OR WALLS SHALL BE PROVIDED WITH BORDER TYPE FOR SURFACE MOUNTING. REFER TO ARCHITECTURAL DOCUMENTS FOR CEILING TYPES. PROVIDE TRIM-RING FOR SQUARE CONE DIFFUSERS LOCATED WITHIN GYPSUM BOARD CEILINGS.
2. AIR DISTRIBUTION DEVICES LOCATED IN SMALL ROOMS WHERE FULL 24"x24" GRID ARE NOT AVAILABLE SHALL BE PROVIDED WITH SURFACE MOUNTING BORDERS IN LIEU OF LAY-IN. SECURE EACH DEVICE TO CEILING GRID WITH FIELD-FABRICATED SUPPORTS.

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ISSUE + REVISION DATA

No:	Description:	Date:
1	Building Department Comments	6/24/24

ENGINEER SEAL

BRYAN R ZEMINA LICENSE NO. 78588 STATE OF FLORIDA PROFESSIONAL ENGINEER

05.28.2024
DRAWN BY R.M.
CHECKED BY R.F.W.

M-801
SCHEDULES - HVAC

100% CD's Set
PRINTED: 6/24/2024 10:02:21 AM

FAN SCHEDULE

PLAN MARK	PRODUCT MANUFACTURER	MODEL	UNIT LOCATION	TYPE	AIRFLOW (CFM)	ESP (IN. WG)	FAN RPM	MOTOR					SONES	WEIGHT (LBS)	ACCESSORIES	INTERLOCKS
								RPM	WATTS	ECM	ELEC.	DRIVE TYPE				
EF-1	GREENHECK	SP-A90-130-VG	CEILING	CEILING EXHAUST	100	0.25	960	1800	24.2	YES	120/1	DIRECT	0.7	12	1,9,12,14	LIGHT SWITCH
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VRF SYSTEM - CEILING CASSETTE DUCTLESS AND CONDENSING UNIT WITH HEAT RECOVERY SCHEDULE

PLAN MARK	MODEL NUMBER	UNIT TYPE	FAN DATA		COOLING DATA			HEATING DATA		UNIT
			SUPPLY AIR CFM	OUTSIDE AIR CFM	INDOOR ENT. DB	INDOOR ENT. WB	TOTAL MBH	INDOOR ENT. DB	TOTAL MBH	WEIGHT (LBS)
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NOTES:
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NOTES:
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OUTDOOR AIR ENERGY RECOVERY VENTILATOR

PLAN MARK	MODEL NUMBER	UNIT TYPE	FAN DATA						SUMMER PERFORMANCE					WINTER PERFORMANCE					ELECTRICAL DATA			FILTER	UNIT WEIGHT (LBS)
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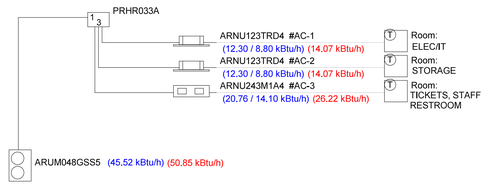

GENERAL NOTES

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VRF SYSTEM WITH HEAT RECOVERY - TREE DIAGRAM | A

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SYMBOL/TAG	CFM	DUCT/NECK SIZE	FACE SIZE LENGTH	DESCRIPTION
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B (XXX) C (XXX) OR	000-110 111-220 221-300 301-430 431-530 531-670 671-840	6x6 8x8 10x10 12x12 14x14 16x16 18x18	24x24 24x24 24x24 24x24 24x24 24x24 24x24	BASIS OF DESIGN: PRICE 630 COLOR: WHITE MATERIAL: ALUMINUM OPPOSED BLADE DAMPERS: NO 2/3" SPACING FIXED LOUVERS 22"x22"x3" BACK CAN FOR DUCT CONNECTION. PAINTED FLAT BLACK.

NOTES:
1. AIR DISTRIBUTION DEVICES LOCATED WITHIN ACOUSTICAL TILE CEILINGS SHALL BE PROVIDED WITH BORDER TYPE FOR LAY-IN MOUNTING. AIR DISTRIBUTION DEVICES LOCATED WITHIN GYPSUM BOARD CEILINGS OR WALLS SHALL BE PROVIDED WITH BORDER TYPE FOR SURFACE MOUNTING. REFER TO ARCHITECTURAL DOCUMENTS FOR CEILING TYPES. PROVIDE TRIM-RING FOR SQUARE CONE DIFFUSERS LOCATED WITHIN GYPSUM BOARD CEILINGS.
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ENGINEER SEAL

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05.28.2024
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SCHEDULES - HVAC

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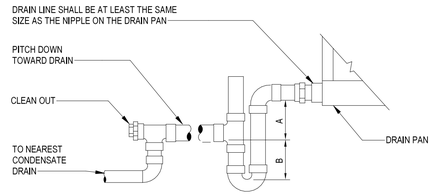


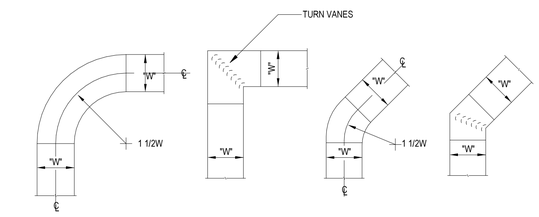
UNIT TYPE	A	B
DRAW THRU	2" (50 MM) PLUS X	X
BLOW THRU	1" (25 MM) PLUS X	2X

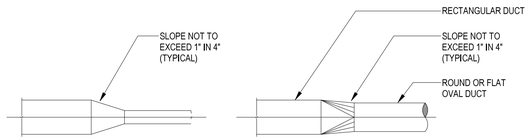
WHERE X = STATIC PRESSURE IN PAN

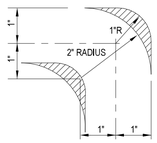
GENERAL NOTES

1. VERIFY SIZING WITH MANUFACTURER. MANUFACTURER'S RECOMMENDED SIZING SHALL SUPERCEDE SIZING TABLE ABOVE.

AIR HANDLING UNIT DRAIN TRAP NTS **6**

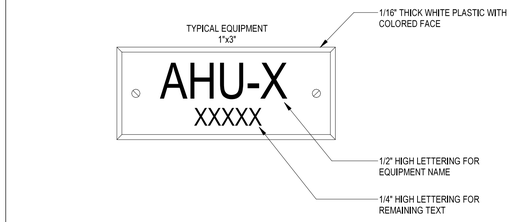






DETAIL OF TURN VANES

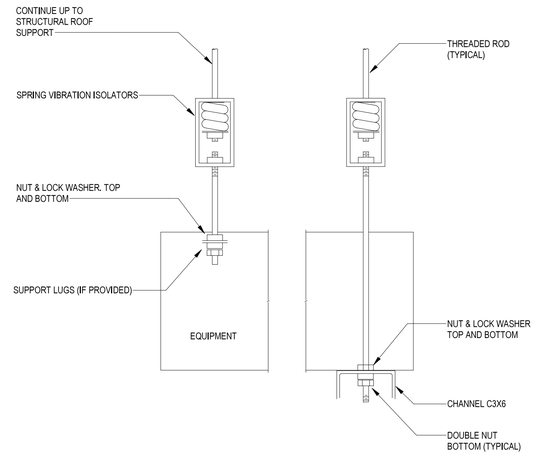
DUCT FITTINGS NTS **4**



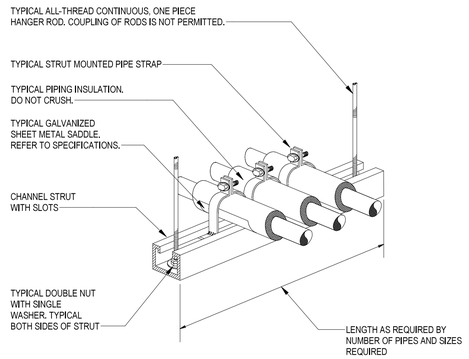
GENERAL NOTES

1. ATTACH NAMEPLATE WITHOUT DAMAGING EQUIPMENT.
2. PROVIDE LABELS OF PROPER SIZE ON MECHANICAL SYSTEM EQUIPMENT INCLUDING BUT NOT LIMITED TO: PUMPS, CHILLERS, TANKS, MAJOR PIPING COMPONENTS SUCH AS AIR SEPARATORS, AIR HANDLING EQUIPMENT, FANS, CONTROL PANELS, TERMINAL UNITS, FLOW STATIONS, REHEAT COILS AND SIMILAR ITEMS.
3. INSTALL SURFACE MOUNTED (UNDERSIDE) LABELS FOR VALVES AND OTHER MECHANICAL DEVICES ON CEILING GRID FOR ABOVE CEILING MOUNTED PIPING AND EQUIPMENT. LABELS TO BE ENGRAVED LAMACOID STRIPS (MATCHING THE WIDTH OF 'T' IN CEILING GRID) COLOR CODED TO MATCH EXISTING ESTABLISHED COLOR SYSTEM AND DEVICE PROTOCOLS
   A. FIRE DAMPER LOCATION PLASTIC ID NUMBER ON CEILING GRID AND ON DAMPER.
   B. VAV BOX LOCATION MARKERS ON CEILING GRID.
   C. MAIN VALVE MARKERS ON CEILING GRID.

EQUIPMENT NAMEPLATE NTS **1**



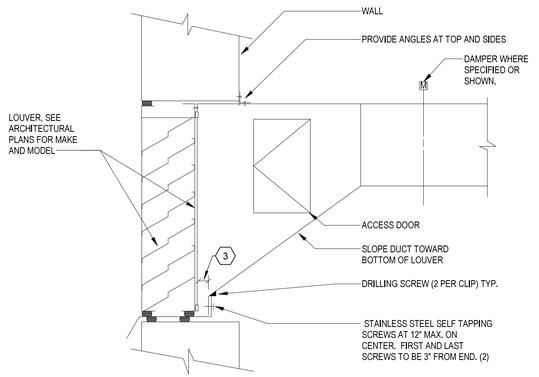
SUSPENDED EQUIPMENT SUPPORT NTS **2**



GENERAL NOTES

1. REFER TO SPECIFICATIONS AND FLOOR PLANS FOR MATERIAL AND SIZES.
2. SPECIFIED HANGER ROD, STRUT, NUTS, WASHER AND PIPE STRAPS BE OF GALVANIZED PLATED MATERIALS.

TRAPEZE HANGER NTS **5**



GENERAL NOTES

1. PLENUM CONNECTION TO LOUVER IS SIMILAR
2. BOTTOM OF DUCT TO BE COMPLETELY OVERLAPPED WITH TURN-UP. DRILL TURN-UP PRIOR TO INSTALLING SELF TAPPING SCREW TO ENSURE DUCT IS DRAWN TIGHT TO TURN-UP.
3. MINIMUM 1" SCREW CONNECTION CLEARANCE.

DUCT CONNECTION TO LOUVER NTS **3**

Carbon design + architecture
FLORIDA LIC No: AR95989

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CITY OF OCALA
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Project Na: OCALA SUNTRAN RESTROOMS & KIOSK

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ISSUE + REVISION DATA

No:	Description:	Date:

ENGINEER SEAL

BRYAN R. ZEMINA LICENSE NO. 78588 STATE OF FLORIDA PROFESSIONAL ENGINEER

05.28.2024

DRAWN BY R.M.
CHECKED BY R.F.W.

M-901
DETAILS - HVAC

100% CD's Set

PRINTED: 5/31/2024 7:43:04 AM

SPECIFICATIONS - PLUMBING

GENERAL CONDITIONS:
THE GENERAL CONDITIONS, SPECIAL CONDITIONS, SUPPLEMENTARY CONDITIONS AND MECHANICAL CONDITIONS OF THE SPECIFICATIONS AND 'GENERAL CONDITIONS OF THE CONTRACT', CURRENT EDITION, ESTABLISHED IN STANDARD FORM BY THE AMERICAN INSTITUTE OF ARCHITECTS SHALL APPLY TO ALL WORK ON THIS PROJECT EXCEPT AS MODIFIED BELOW. THIS CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THESE PROVISIONS AND ADHERE TO THESE REQUIREMENTS. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES PRIOR TO INSTALLATION.

RELATED DOCUMENTS:
THIS CONTRACTOR IS REFERRED TO THE ARCHITECTURAL, MECHANICAL AND ELECTRICAL PLANS AND SPECIFICATIONS. SUCH PLANS AND SPECIFICATIONS ARE A PART OF THE CONTRACT DOCUMENTS. CONTRACTORS SHALL VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITIONS SURROUNDING THE WORK. IF ANY OF THE CONDITIONS REQUIRE A MODIFICATION OF THE SYSTEMS INDICATED BY THESE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL INCLUDE THE COST OF SUCH MODIFICATIONS IN HIS BID. NO EXTRA COMPENSATION WILL BE ALLOWED BECAUSE OF FAILURE TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING BIDS.

MODIFICATIONS TO PLANS AND SPECIFICATIONS:
THROUGHOUT THE COURSES OF THE WORK, MINOR CHANGES AND ADJUSTMENTS TO PLANS AND SPECIFICATIONS MAY BE REQUESTED BY THE ARCHITECT / ENGINEER. THE CONTRACTOR SHALL MAKE SUCH ADJUSTMENTS WITHOUT ADDITIONAL COST TO THE OWNER, WHERE SUCH ADJUSTMENTS ARE NECESSARY FOR THE PROPER INSTALLATION AND OPERATION AND WITHIN THE INTENT OF THE CONTRACT DOCUMENTS.

EQUIPMENT SUBSTITUTION:
IT IS THE INTENT OF THE PLANS AND SPECIFICATIONS TO FORM A GUIDE FOR A COMPLETE INSTALLATION, EVERYTHING NECESSARY FOR THE COMPLETION AND SUCCESSFUL OPERATION OF THE WORK, WHETHER OR NOT HEREIN DEFINITELY SPECIFIED OR INDICATED ON THE DRAWINGS SHALL BE FURNISHED AND INSTALLED AS WELL AND AS FAITHFULLY AS IT IS SPECIFIED OR INDICATED WITHOUT ADDITIONAL COST TO THE OWNER. THE PLUMBING CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND LENGTHS PRIOR TO INSTALLATION.

IF ANY ERRORS, DISCREPANCIES OR OMISSIONS APPEAR IN THE DRAWINGS, SPECIFICATIONS OR OTHER CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT / ENGINEER IN WRITING OF SUCH ERRORS OR OMISSION. IN THE EVENT OF THE CONTRACTOR FAILS TO GIVE SUCH NOTICE BEFORE CONSTRUCTION AND / OR FABRICATION OF THE WORK, HE WILL BE HELD RESPONSIBLE FOR THE RESULTS OF ANY SUCH ERRORS, DISCREPANCIES OR OMISSIONS AND THE COST TO RECTIFYING SAME.

CODE COMPLIANCE:
COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE STATE, LOCAL AND NATIONAL CODES REGULATING THIS WORK.

PERMITS, FEES, LICENSES:
THIS CONTRACTOR SHALL PAY ALL FEES AND RELATED CHARGES REQUIRED FOR PERMITS, LICENSES, ETC. REQUIRED FOR INSTALLATION OF THE PLUMBING SYSTEMS.

EQUIPMENT SUBSTITUTION:
THIS CONTRACTOR SHALL REIMBURSE THE ELECTRICAL CONTRACTOR, WITHOUT ANY CHARGE TO OWNER, ANY COSTS THE ELECTRICAL CONTRACTOR INCURS DUE TO THIS CONTRACTOR'S SUBSTITUTION OF EQUIPMENT HAVING DIFFERENT ELECTRICAL SERVICE REQUIREMENTS THAN THE SPECIFIED EQUIPMENT.

SHOP DRAWINGS:
THIS CONTRACTOR SHALL PROVIDE THE ARCHITECT WITH ELECTRONIC COPY OF ALL SHOP AND EQUIPMENT DRAWINGS FOR APPROVAL. DRAWINGS SHALL BE SUBMITTED BEFORE START AT CONSTRUCTION.

WARRANTY:
THIS CONTRACTOR SHALL WARRANT ALL WORK TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM SUBSTANTIAL COMPLETION INCLUDING BOTH PARTS AND LABOR.

BASIC MATERIALS AND METHODS:
ALL WORKMANSHIP AND MATERIALS SHALL BE OF THE SPECIFIED QUALITY IN EVERY RESPECT. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, OF THE LATEST DESIGN AND FREE OF DEFECTS. ALL MATERIALS AND EQUIPMENT SHALL CONFORM TO THE LATEST AMENDED EDITION OF ALL APPLICABLE STANDARDS, INCLUDING BUT NOT LIMITED TO, ASTM, UL AND NEMA STANDARDS.

INSTALL ALL PIPING TO PRESENT A NEAT AND ORDERLY APPEARANCE. RUN ALL LINES PARALLEL WITH BUILDING WALLS AND CONSTRUCTION. KEEP PIPING FREE FROM CONTACT WITH STRUCTURE OR EQUIPMENT TO PREVENT NOISE TRANSMISSION, ALLOWING CLEARANCES FOR EXPANSION AND CONTRACTION. PROVIDE ACCESS DOORS OR PANELS FOR ALL VALVES, CLEANOUTS, CONTROL DEVICES, ETC...

WATER SUPPLY PIPING:
ALL ABOVE GROUND WATER SUPPLY PIPE SHALL BE TYPE CPVC WATER TUBE COMPLYING WITH ASTM B88. ALL FITTINGS SHALL BE WROUGHT COPPER COMPLYING WITH USASI B16.18 & B16.18A. DIELECTRIC COUPLINGS SHALL BE USED BETWEEN STEEL AND COPPER CONNECTIONS. ALL BELOW GROUND WATER SUPPLY PIPE SHALL BE CPVC. PROVIDE 95-5 LEAD-FREE, SILVER SOLENOID JOINTS.

STORM, SANITARY WASTE AND VENT PIPING:
ALL ABOVE GROUND STORM, SANITARY WASTE AND VENT PIPING SHALL BE SCHEDULE 40 PVC-DWV PIPE AND FITTINGS (ASTM D2665) WITH SOLVENT WELD JOINTS. ALL BELOW GROUND SANITARY SOIL AND WASTE PIPING SHALL BE SCHEDULE 40 PVC-DWV PIPE FITTINGS (AST D2665) WITH SOLVENT WELD JOINTS.

PIPE HANGERS AND SUPPORT:
SUPPORT HORIZONTAL PIPING ADEQUATELY FROM SLABS OR OTHER STRUCTURAL MEMBERS AT INTERVALS SPECIFIED BELOW. USE GRINNELL # 260 HANGERS OR APPROVED EQUAL, HAVING ADJUSTABLE WROUGHT CLEVIS, SOLID RODS AND SOCKETS. PIPING INSTALLED ALONG WALLS SHALL BE SUPPORTED BY GRINNELL #199, OR APPROVED EQUAL, STEEL ANGLE BRACKETS. THE SPACING OF PIPE SUPPORTS FOR STEEL PIPE 3/4" TO 2" SHALL BE 10'-0" AND FOR COPPER PIPE SIZE UP TO 2" SHALL BE 6'-0". HANGERS IN CONTACT WITH COPPER SHALL BE PLASTIC PLATED AND SHALL BE EQUAL TO GRINNELL FIGURE CT-65. HANGER RODS SHALL BE 3/8" DIAMETER FOR PIPES UP TO 2" IN SIZE.

PIPE SLEEVES AND OPENINGS:
THE CONTRACTOR SHALL CUT ALL OPENINGS IN FLOORS AND WALLS REQUIRED FOR PENETRATION OF PIPING. PATCH ALL OPENINGS FOR SOUND DEADENING AND FIRE SEPARATION. GENERAL CONTRACTOR SHALL PERFORM ALL FINISH PATCHING AS REQUIRED BY ARCHITECTURAL SPECIFICATIONS. ALL HORIZONTAL PIPING WHICH PENETRATES WALLS SHALL BE FITTED WITH PIPE SLEEVES MADE UP OF SIMILAR MATERIALS AS PIPE, 1" GREATER IN DIAMETER THAN OUTSIDE DIAMETER OF PIPE AND PIPE INSULATION. THE VOID BETWEEN PIPE AND SLEEVE SHALL BE SEALED AS DETAILED FOR THE APPROPRIATE PENETRATION TYPE. SLEEVES SHALL BE SUCH LENGTH THAT THEY END FLUSH WITH WALL FINISH ON BOTH SIDES OF WALL. PROVIDE RATED PENETRATIONS OF ALL WALLS AND FLOORS AS REQUIRED TO MAINTAIN THE RATING OF THE WALL OR FLOOR PENETRATED.

WHERE UNCOVERED EXPOSED PIPES PASS THRU WALLS, THEY SHALL BE FITTED WITH STAINLESS STEEL WALL ESCUTCHEON PLATES. SLEEVES THROUGH WATER PROOF FLOORS SHALL EXTEND 2" ABOVE FINISHED FLOOR.

VALVES:
THE CONTRACTOR SHALL FURNISH AND INSTALL VALVES WHERE INDICATED ON PLAN AND NECESSARY FOR PROPER SYSTEM OPERATION AND COMPONENT ISOLATION. PROVIDE VALVES RATED FOR 125 PSI OR GREATER WORKING PRESSURE IN WATER PIPING.

CHECK VALVE UP TO 3"	APOLLO 61-109 61-500 OR NIBCO T-413-13
GLOBE VALVE UP TO 3"	CRANE NO. 1240, 1241 OR EQUAL
GATE VALVE UP TO 3"	CRANE NO. 42B, 1334 OR EQUAL
BALL VALVE UP TO 3"	APOLLO SERIES 82-100 OR 82-200 FULLPORT
TEMP. & PRESS. RELIEF VALVE 3/4" F	WATTS 10L MOD. M4, OR EQUAL, 3/4" M x
WATER HAMMER ARRESTOR	WADE #10 (HOT), WADE #5 (COLD)
BACKFLOW PREVENTER	WATTS NO. 9D OR EQUAL
VACUUM RELIEF VALVE	WATTS NO. 36A - 3/4" OR EQUAL
PRESSURE REDUCING VALVE	WATTS NO. U5
TRAP PRIMER VALVE	JR SMITH

INSULATION:
INSULATION SHALL BE REQUIRED ON ALL HOT OR COLD SURFACES TO RETARD UNDESIRABLE HEAT TRANSFER AND PREVENT CONDENSATION. INSULATION SHALL BE APPLIED TO PIPE LINES AND EQUIPMENT ONLY AFTER THEY HAVE BEEN TESTED, INSPECTED AND ALL SURFACES THOROUGHLY CLEANED OF ALL MOISTURE, FOREIGN MATERIAL, GREASE AND RUST. INSULATION SHALL BE CONTINUOUS THROUGH WALLS, FLOORS, PARTITIONS, SLEEVES, ETC, EXCEPT WHERE OTHERWISE INDICATED OR SPECIFIED. ALL INSULATION ADHESIVES, SEALERS AND COATINGS SHALL HAVE A FIRE HAZARD RATING NOT TO EXCEED 25/50/50 FLAME SPREAD, FUEL CONTRIBUTED AND SMOKE DEVELOPED IN ACCORDANCE WITH UL 723 AND ASTM-E84. PROVIDE INSULATION FOR HOT WATER AND CONDENSATE PIPING.

PIPE INSULATION SHALL BE 1" THICK RIGID FIBERGLASS WITH SELF-SEALING LAP AND ALL SERVICE JACKET FOR HOT WATER. PIPE INSULATION SHALL BE 1-1/2" THICK CLOSED CELL FOAM FOR CONDENSATE PIPING.

INSULATION SHALL BE REQUIRED AT ALL ADA ACCESSIBLE LAVATORIES TO PROTECT AGAINST CONTACT OF WATER AND DRAIN PIPES. INSULATE TRAP AND BOTH SUPPLIES WITH A HIGH IMPACT STAIN RESISTANT, PREMOLDED VINYL COVERING AS MANUFACTURED BY TRUEBRO 'HANDY-LAVGUARD' OR EQUAL.

ABBREVIATIONS - PLUMBING

AC	ABOVE CEILING
AAV	AIR ADMITTANCE VALVE
AFF	ABOVE FINISH FLOOR
AW	ACID WASTE
AV	ACID VENT "
BG	BELOW GRADE
CA	COMPRESSED AIR
CD	CONDENSATE DRAIN
CFH	CUBIC FEET PER HOUR
CO	CLEAN OUT
CONT	CONTINUATION
CW	COLD WATER
DI	DEIONIZED WATER
DN	DOWN
DS	DOWNSPOUT
DWG	DRAWING
ESH	EMERGENCY SHOWER / EYEWASH
ETR	EXISTING TO REMAIN
EWH	ELECTRIC WATER HEATER
EWC	ELECTRIC WATER COOLER
EX	EXISTING
°F	DEGREE FAHRENHEIT
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FOS	FUEL OIL SUPPLY
FOR	FUEL OIL RETURN
FS	FLOOR SINK
G	GAS
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	KITCHEN WASTE (GREASE)
HB	HOSE BIBB
HD	HUB DRAIN
HW	HOT WATER
HWR	HOT WATER RECIRCULATING
IE	INVERT ELEVATION
IW	INDIRECT WASTE
KW	KILOWATT
LBS	POUNDS
MH	MANHOLE
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RD	ROOF DRAIN
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
S	SANITARY
ST	STORM
SF	SQUARE FEET
SS	SERVICE SINK
STO	OVERFLOW STORM
V	VENT
VAC	VACUUM
VTR	VENT THRU ROOF
WCO	WALL CLEAN OUT
WM	WASHING MACHINE SUPPLY AND DRAIN BOX

CODE COMPLIANCE

1. TO THE BEST OF MY KNOWLEDGE, THESE PLANS AND SPECIFICATIONS ARE COMPLETE AND COMPLY WITH THE 2023 FLORIDA BUILDING CODE - 8th EDITION, 2023 FLORIDA FIRE PREVENTION CODE - 8th EDITION, LOCAL MUNICIPALITY AMENDMENTS AND THE CODES REFERENCED WITHIN.

PIPING SCHEDULE - PLUMBING

TYPE / LOCATION	COLD WATER	HOT WATER	DRAIN, WASTE & VENT	STORM DRAIN	CONDENSATE WASTE	
ABOVE GROUND	CPVC	CPVC	PVC	PVC	PER DIV. 23	
BELOW GROUND	CPVC	CPVC	PVC	PVC	PER DIV. 23	
EXPOSED (PUBLIC)	TYPE 'L' COPPER	TYPE 'L' COPPER	TYPE 'L' COPPER	CAST IRON	PER DIV. 23	
AREA UNDERGROUND SUBJECT TO STRESS (THRU FOOTING)	STEEL	STEEL	DUCTILE IRON	DUCTILE IRON	PER DIV. 23	

NOTES:
1. INSULATE THE FOLLOWING PIPING SYSTEMS WITH INSULATION.
   - **A.** HOT WATER PIPING (1" FIBERGLASS WITH ASJ)
   - **B.** CONDENSATE WASTE PIPING (1-1/2" CLOSED CELL FOAM, PAINTED WITH UV RESISTANT PAINT IF LOCATED ON THE EXTERIOR.
   - **C.** STORM DRAIN PIPING (INCLUDING ROOF DRAIN SUMP) (1" FIBERGLASS WITH ASJ)

FIXTURE CONNECTION SCHEDULE

FIXTURE MARK	DESCRIPTION	WASTE	VENT	CW	HW
WC-1	WATER CLOSET (PRIVATE)	4"	2"	1"	
L-1	LAVATORY (ACCESSIBLE)	0"	0"	0"	0"
EWC-1	BI-LEVEL ELECTRIC WATER COOLER - BOTTLE FILLER	0"	0"	0"	
WH-1	WALL HYDRANT			0"	
MS-1	MOP SINK	3"	2"	1/2"	1/2"
FD-1	FLOOR DRAIN	0"	0"		
FD-2	FLOOR DRAIN	0"	0"		

NOTES:
1. MAKE FINAL PIPE CONNECTIONS FROM BRANCH OR MAIN TO EACH FIXTURE OR DEVICE USING PIPE SIZE(S) AS PER THIS CHART. IF PIPE SIZE IS NOT SHOWN ON PIPING DRAWINGS.

SYMBOL LEGEND - PLUMBING

SYMBOL	DESCRIPTION
(CW)	COLD WATER PIPING
(HW)	HOT WATER PIPING
(HWR)	HOT WATER RECIRCULATING PIPING
(NG)	GAS PIPING
(GR)	KITCHEN WASTE (GREASE) PIPING
(S)	SANITARY PIPING
(V)	SANITARY VENT PIPING
(ST)	STORM DRAIN PIPING
(STO)	OVERFLOW STORM DRAIN PIPING
(CD)	CONDENSATE DRAIN PIPING
(CA)	COMPRESSED AIR PIPING
	WATER METER
	HOSE BIBB OR WALL HYDRANT WITH VALVE IN RISER
	HOSE BIBB OR WALL HYDRANT WITH VALVE
	CLEAN OUT PLUG
	WALL CLEAN OUT
	FLOOR CLEAN OUT
(FD)	FLOOR DRAIN
(RD)	ROOF DRAIN
(FS)	FLOOR SINK
	SHUT-OFF VALVE IN VALVE BOX
	SHUT-OFF VALVE
101	BALL VALVE
	CALIBRATED BALANCING VALVE
	CHECK VALVE (SWING)
	PRESSURE REDUCING VALVE
	SOLENOID OPERATED VALVE
	REDUCED PRESSURE BACKFLOW PREVENTER
	RELIEF OR SAFETY VALVE
	GAS COCK
	GAS PRESSURE REGULATOR
	CONNECTION, TOP
	CONNECTION, BOTTOM
	ELBOW, TURNED DOWN
	ELBOW, TURNED UP
	TEE, TURNED UP
	TEE, TURNED DOWN
	CAP
	DIRECTION OF FLOW
	COMPRESSED AIR PRESSURE REGULATOR
TP (FD)	1/2" LINE TO PRIMER
	KEYNOTE
	REVISION REFERENCE
1 Px	DETAIL REFERENCE: TOP: DETAIL NO. BOTTOM: DRAWING NO. DETAIL SHOWN ON
	CONNECT TO EXISTING
	DEMOLISH TO POINT INDICATED
	NEW PIPING TO BE PROVIDED
	EXISTING PIPING TO REMAIN
	EXISTING PIPING TO BE REMOVED

GENERAL NOTES

A. REFERENCE THE SPECIFICATIONS FOR MATERIAL AND EQUIPMENT INSTALLATION STANDARDS.

B. TO THE BEST OF MY KNOWLEDGE, THESE PLANS AND SPECIFICATIONS ARE COMPLETE AND COMPLY WITH THE 2023 FLORIDA BUILDING CODE - 8th EDITION, 2023 FLORIDA FIRE PREVENTION CODE - 8th EDITION, LOCAL MUNICIPALITY AMENDMENTS AND THE CODES REFERENCED WITHIN. 1

C. PLANS ARE NOT COMPLETELY TO SCALE. PIPE ROUTING SHOWN IS SCHEMATIC AND IS NOT INTENDED TO INDICATE EXACT ROUTING. CONTRACTOR SHALL PROVIDE ANY ADDITIONAL OFFSETS AND FITTINGS REQUIRED FOR PROPER INSTALLATION AND TO MAINTAIN CLEARANCES. VERIFY STRUCTURAL, MECHANICAL AND ELECTRICAL INSTALLATIONS AND OTHER POTENTIAL OBSTRUCTIONS AND ROUTE PIPING TO AVOID INTERFERENCES.

D. PROVIDE ALL OFFSETS AND FITTINGS AND MAKE CONNECTION TO SITE UTILITIES.

E. CONCEAL PIPING WITHIN CEILINGS, WALLS OR CHASES EXCEPT IN MECHANICAL ROOMS OR AS SPECIFICALLY NOTED.

F. PROVIDE ACCESS DOOR / PANEL FOR ALL VALVES CONCEALED IN WALLS OR ABOVE NON-ACCESSIBLE CEILINGS.

G. SLEEVE ALL PENETRATIONS THROUGH WALLS, CEILINGS AND FLOORS. SLEEVE AND / OR FIRE STOP ALL PENETRATIONS THROUGH RATED WALLS, CEILINGS AND FLOORS WITH U/L LISTED ASSEMBLIES. FIRE STOP ASSEMBLIES SHALL BE EQUAL OR EXCEED THE RATING OF THE WALL, CEILING OR FLOOR. SEE ARCHITECTURAL DRAWINGS FOR FINAL FINISHES.

H. COORDINATE FLASH AND COUNTER-FLASH ROOF PENETRATIONS.

I. WHEN BEAM SLEEVE PENETRATIONS ARE NECESSARY, COORDINATE PENETRATIONS WITH ALL TRADES, THE ARCHITECT AND THE STRUCTURAL ENGINEER. WRITTEN PERMISSION SHALL BE OBTAINED FROM THE STRUCTURAL ENGINEER BEFORE ANY PENETRATIONS ARE MADE.

J. PROVIDE FOUNDATION PAD PENETRATION SLEEVES. ALLOW 1" MINIMUM CLEARANCE BETWEEN SLEEVE INSIDE SURFACE AND PIPE EXTERIOR.

K. SEE ARCHITECTURAL DRAWINGS FOR FIXTURE LOCATIONS AND MOUNTING HEIGHTS.

L. PROVIDE AUTOMATIC TRAP PRIMERS FOR ALL FLOOR DRAINS, UNLESS OTHERWISE NOTED.

M. PROVIDE AN AIR GAP, WHEN REQUIRED BY CODE, SERVING INDIVIDUAL FIXTURES, DEVICES, APPLIANCES AND APPARATUS.

N. ALL EXPOSED PIPE AND FITTINGS IN FINISHED AREAS SHALL BE CHROME PLATED.

O. MOUNT HOSE BIBBS 24" ABOVE FINISHED GRADE. PROVIDE EACH HOSE BIBB WITH ISOLATION VALVE.

P. PROVIDE CLEANOUTS IN ACCORDANCE WITH ALL STATE AND LOCAL CODES. INSTALL CLEANOUT WITH COVER FLUSH TO FINISH SURFACE.

Q. COORDINATE EXACT FLOOR DRAIN LOCATIONS WITH ARCHITECTURAL DRAWINGS. SET FLOOR DRAINS BELOW FINISHED FLOOR TO ALLOW FOR FLOOR SLOPING TO THE DRAIN.

R. COORDINATE PIPING WITH ALL ELECTRICAL EQUIPMENT (PANELS, TRANSFORMERS, ETC.) PRIOR TO ANY INSTALLATION. DO NOT ROUTE ANY PIPING OVER ANY ELECTRICAL PANELS UNDER ANY CIRCUMSTANCES.

S. PROVIDE SANITARY WASTE, VENT, DOMESTIC WATER, ETC. ROUGH-IN AND MAKE FINAL CONNECTIONS (TO INCLUDE PROVIDING ALL NECESSARY RELATED STOPS, VALVES, TRAPS, ETC, AND MAKE READY FOR USE) TO ALL EQUIPMENT, WHETHER FURNISHED BY THIS CONTRACTOR OR FURNISHED BY OTHERS.

T. INSTALL ISOLATION / SHUT-OFF VALVES AT ALL MAIN RISERS, MAIN BRANCH TAKEOFFS AND AS INDICATED ON PLANS TO PERMIT ISOLATION OF PIPING SECTIONS OR ENTIRE SYSTEM.

U. PROVIDE RIGID SUPPORT SWAY BRACING AT ALL CHANGES IN DIRECTION GREATER THAN 45 DEGREE ON PIPING 4" AND LARGER.

V. PROVIDE WATER HAMMER ARRESTOR ON ALL COLD AND HOT WATER LINES SERVING FIXTURES USING FLUSH VALVES, SOLENOID VALVES OR QUICK CLOSING DEVICES. ARRESTORS SHALL BE SIZED IN ACCORDANCE WITH P.D.I. STANDARDS FOR THE TOTAL NUMBER OF FIXTURES SERVED.

W. ALL PIPING SHALL BE PROTECTED FROM THE INTRUSION OF WATER, DUST, DIRT, DEBRIS, ETC. WHILE STORED ON SITE AND DURING CONSTRUCTION.

X. ALL EXTERIOR HARDWARE SHALL BE HOT DIPPED GALVANIZED OR STAINLESS STEEL.

SHEET INDEX

Carbon design + architecture
FLORIDA LIC No: AR95989

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Project Na: OCALA SUNTRAN RESTROOMS & KIOSK

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EOR: BRYAN R. ZEMINA, P.E. #78588

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TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES

ISSUE + REVISION DATA

No:	Description:	Date:
1	Building Department Comments	6/24/24

ENGINEER SEAL

BRYAN R ZEMINA LICENSE NO. 78588 STATE OF FLORIDA PROFESSIONAL ENGINEER

05.28.2024

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P-000

LEGEND - PLUMBING

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24X36 SHEET
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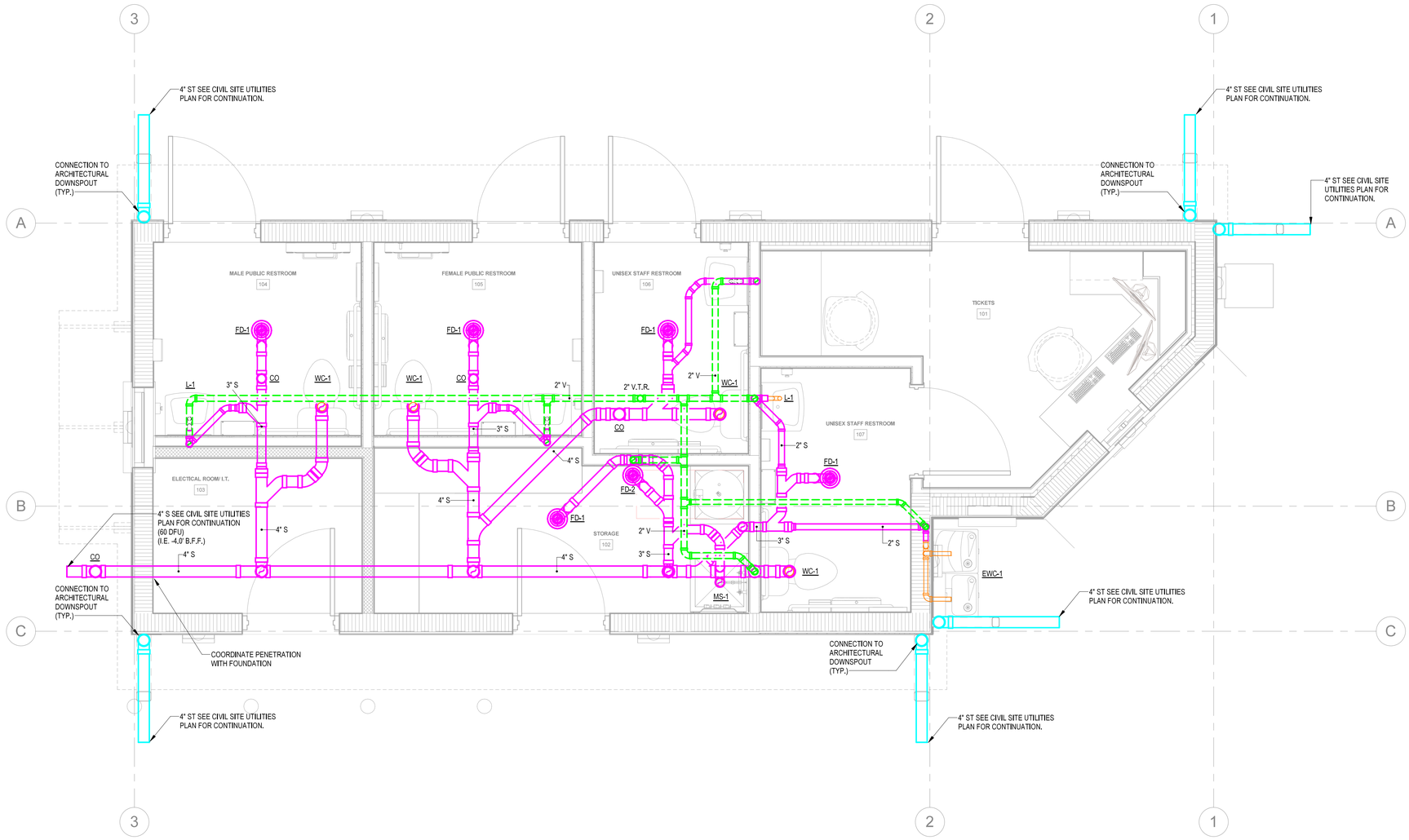

1 FIRST FLOOR PLAN - GRAVITY
1/2" = 1'-0"

GENERAL NOTES

A. PROVIDE CLEAN-OUTS AT BASE OF RISER.

B. PIPING IS ABOVE GRADE WITHIN CEILING SPACE OR WITHIN WALL CAVITIES UNLESS OTHERWISE INDICATED.

C. PIPING 3" AND LARGER TO BE SLOPED AT MINIMUM 1/8" PER FOOT.

D. PIPING 2-1/2" AND SMALLER TO BE SLOPED AT MINIMUM 1/4" PER FOOT.

E. COORDINATE PIPING WITH STRUCTURAL FOOTERS.

KEY NOTES

NUMBER	NOTES

N

0' 1' 2' 4' 8'

SCALE: 1/2" = 1'-0"

Carbon design + architecture
FLORIDA LIC No: AR95989

CLIENT DATA

Client:
CITY OF OCALA
501 NE 1st Ave.
Ocala, FL 34470

PROJECT DATA

Project No: 24020
Project Na: OCALA SUNTRAN
RESTROOMS & KIOSK

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P-201

FIRST FLOOR PLAN - GRAVITY

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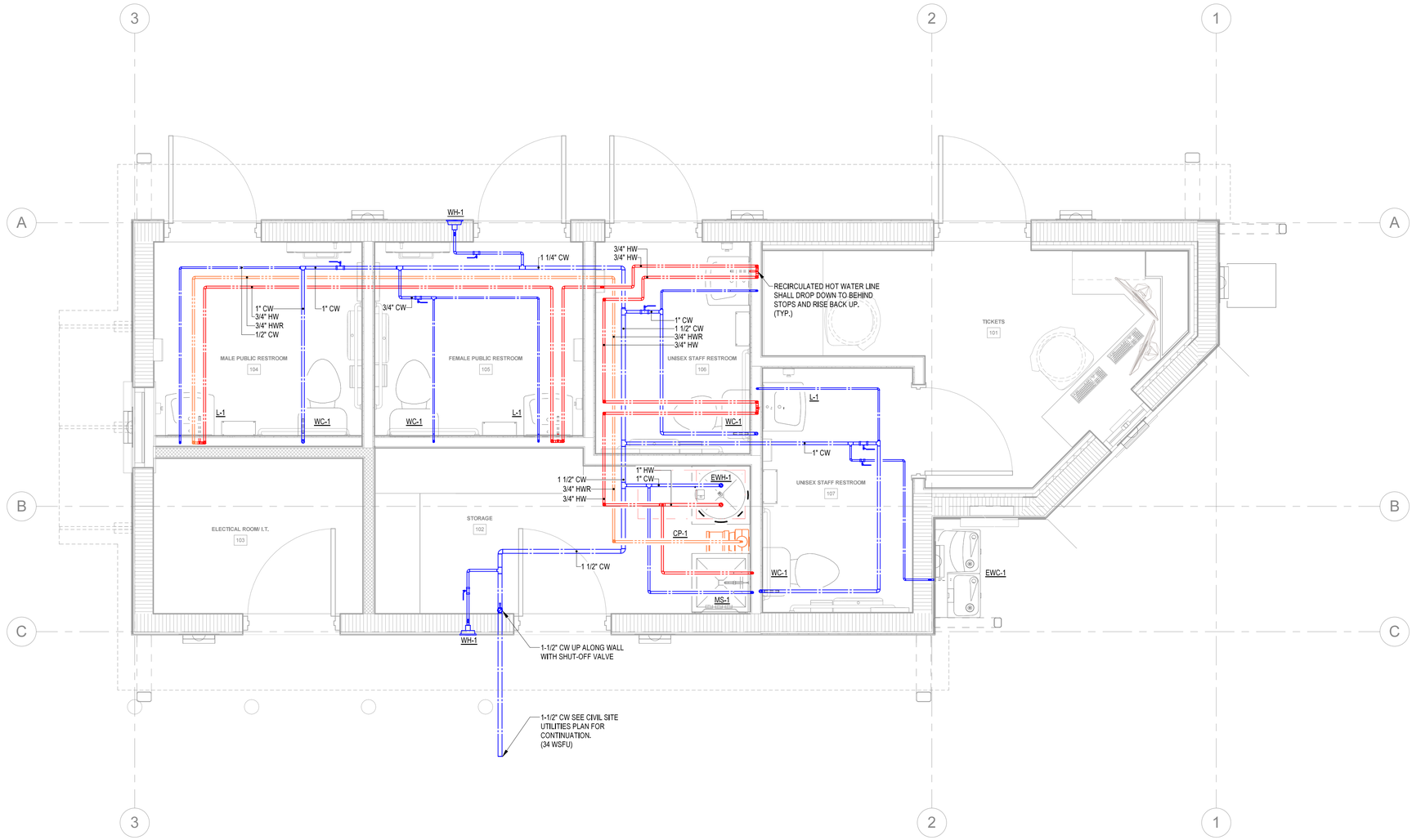

1 FIRST FLOOR PLAN - PRESSURE
1/2" = 1'-0"

N

0' 1' 2' 4' 8'

SCALE: 1/2" = 1'-0"

GENERAL NOTES

A. PROVIDE SHUT-OFF VALVE AT ALL RESTROOMS AND INDIVIDUAL FIXTURES.

KEY NOTES

NUMBER	NOTES

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P-301

FIRST FLOOR PLAN - PRESSURE

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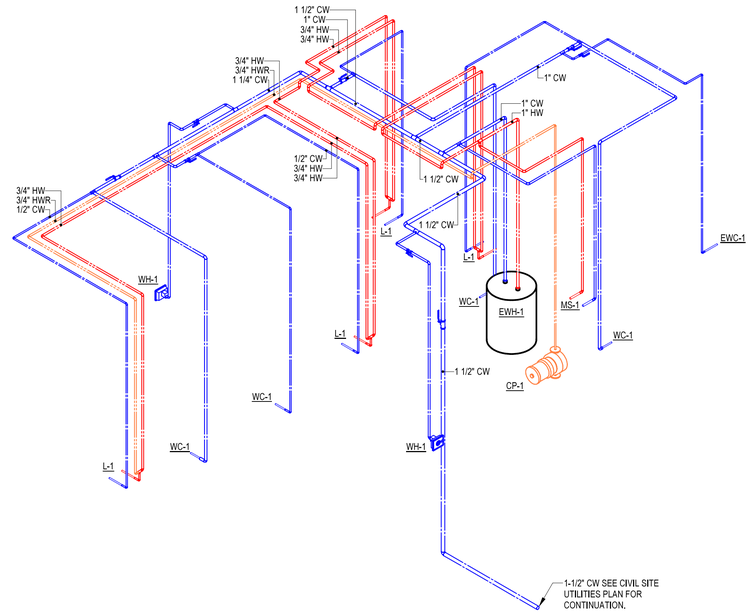
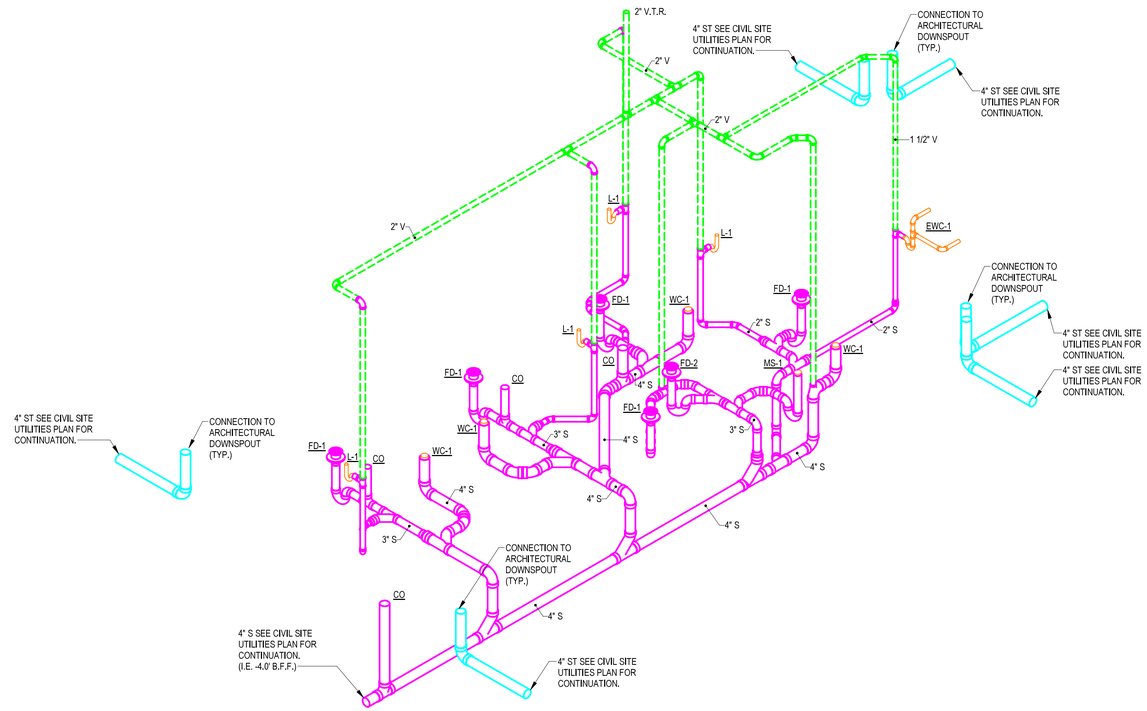


1 RISER DIAGRAM - PRESSURE



2 RISER DIAGRAM - GRAVITY

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Ocala, FL 34470

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RISER DIAGRAMS - PLUMBING

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PLUMBING FIXTURE SCHEDULE

FIXTURE IMAGE	MARK	DESCRIPTION	FIXTURE		TRIM		FLUSH / FLOW (GPM)	FIXTURE COMMENTS
			MANUFACTURER	MODEL	MANUFACTURER	MODEL		
	WC-1	WATER CLOSET (PRIVATE)	AMERICAN STANDARD	3043.001	AMERICAN STANDARD	6047.121	1.28 GPF	FLOOR MOUNTED, 16.5" HIGH, VITREOUS CHINA, 1.28 GPF, MANUAL FLUSH VALVE.
	L-1	LAVATORY (ACCESSIBLE)	AMERICAN STANDARD	356.421	AMERICAN STANDARD	6055.205	0.5 GPM	WALL HUNG VITREOUS CHINA SINGLE HOLE LAVATORY FOR CONCEALED ARMS SUPPORT. ELECTRONIC FAUCET WITH 0.5 GPM LAMINAR FLOW CONTROL. PROVIDE WITH BATTERY PACK. CONCEALED ARM HANGER TO BE WATTS WCA-411. PROVIDE ASSE 1070 MIXING VALVE SET TO 110° F. WATTS LFUSG-B. MIXING VALVE SHALL BE HARD PIPED TO STOPS. FLEXIBLE CONNECTIONS MAY BE USED FROM MIXING VALVE TO FAUCET. PROVIDE PRE-CUT TRUBRO LAV SHIELD TO COVER STOPS, P-TRAP, CONTROLS, RECEPTACLE, AND MIXING VALVE.
	EWC-1	BI-LEVEL ELECTRIC WATER COOLER - BOTTLE FILLER	ELKAY	EZSTL8WSLK	N/A	N/A	8.0 GPH	WALL MOUNTED, PUSH BARS ON THE FRONT AND BOTH SIDES, STAINLESS STEEL BASINS, 120V. BOTTLE FILLING STATION & VERSATILE BI-LEVEL ADA COOLER. NON-FILTERED. CHILLING CAPACITY OF 8.0 GPH. FEATURES SHALL INCLUDE HANDS FREE. GREEN TICKER. LAMINAR FLOW. ANTIMICROBIAL. REAL DRAIN. FURNISHED WITH FLEXI-GUARD SAFETY BUBBLER. ELECTRONIC BOTTLE FILLER SENSOR. MOUNT PER MANUFACTURE TO MEET ADA CODE REQUIREMENTS. PROVIDE FLOOR CARRIER STOP, SUPPLY TRAP, ETC., TO MAKE COMPLETE INSTALLATION.
	WH-1	WALL HYDRANT	WOODFORD	B65	N/A	N/A		FREEZE PROOF ENCLOSED WALL ANTI-SIPHON WALL HYDRANT COMPLETE WITH BRONZE CASING, VACUUM BREAKER, ALL BRONZE INTERIOR PARTS AND NON TURNING OPERATING ROD WITH FREE FLOATING COMPRESSION CLOSURE VALVE, WATER BOX DOOR SHALL BE BRASS CASTING WITH CHROME FINISH AND OPERATING KEY.
	MS-1	MOP SINK	FIAT	TSBC1610	FIAT	830-AA	2.5 GPM	FLOOR MOUNTED PRECAST TERRAZO WITH STAINLESS STEEL CAP. 24"x24"x12". DRAIN BODY SHALL BE STAINLESS STEEL CAST INTEGRAL, AND SHALL PROVIDE FOR A CAULKED LEAD CONNECTION AND NOT LESS THAN 1" DEEP TO A 3" PIPE. PROVIDE WITH HOSE AND HOSE HOOK AND MOP BRACKET, 1/2" CW, 1/2" HW, 3" SAN.
	FD-1	FLOOR DRAIN	ZURN	Z415B-P				EPOXY COATED CAST IRON BODY WITH ANCHOR FLANGE, WEEPHOLES, ADJUSTABLE LIGHT DUTY POLISHED NICKEL BRONZE ROUND STRAINER, NO-HUB OUTLET AND TRAP PRIMER CONNECTION.
	FD-2	FLOOR DRAIN	ZURN	Z415I-P				EPOXY COATED CAST IRON BODY WITH ANCHOR FLANGE, WEEPHOLES, ADJUSTABLE LIGHT DUTY POLISHED NICKEL BRONZE ROUND STRAINER, NO-HUB OUTLET AND TRAP PRIMER CONNECTION.

ELECTRIC WATER HEATER SCHEDULE

MARK	KW	RECOVERY	STORAGE TANK (GAL)	STORAGE TEMPERATURE	ELECTRICAL			MANUFACTURER	MODEL
					VOLTS	PHASE	HERTZ		
EWH-1	3	20	30	140	208	1	60	LOCHINVAR	LDS30TG

RECIRCULATING PUMP SCHEDULE

MARK	LOCATION	MANUFACTURE	MODEL	GPM	RPM	HEAD (FT)	VOLTS	PHASE
CP-1		TACO	0013-SF3	4		20	115	1

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BRYAN R. ZEMINA LICENSE NO. 78588 STATE OF FLORIDA PROFESSIONAL ENGINEER

05.28.2024

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P-601

SCHEDULES - PLUMBING

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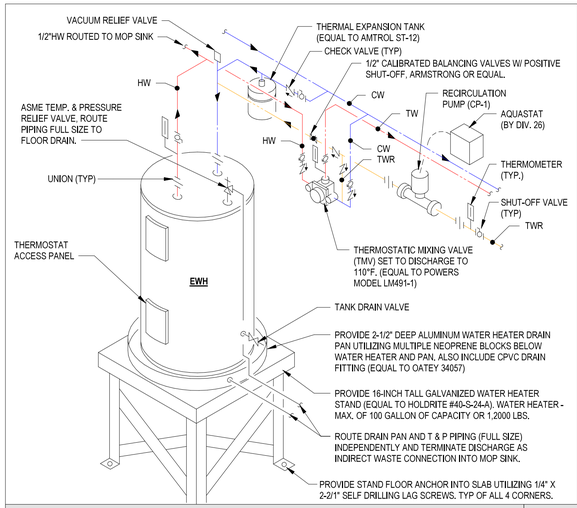
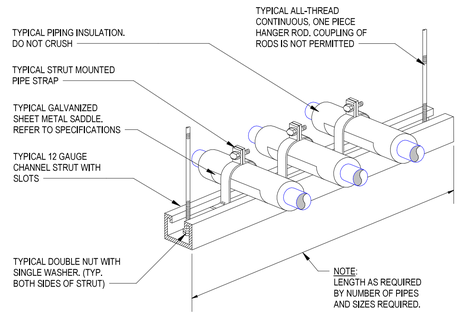


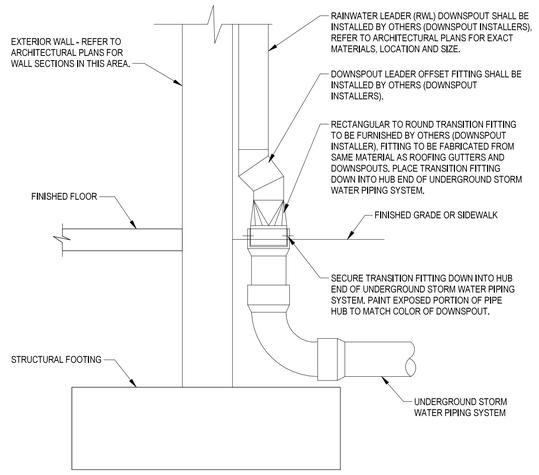
ELECTRIC WATER HEATER — NTS — 3



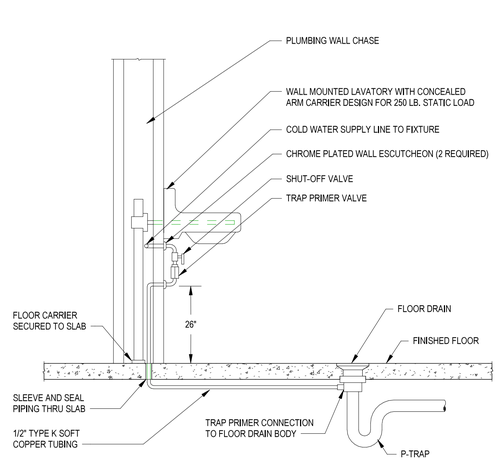
NOTE:

1. REFER TO SPECIFICATION SECTION 220529 AND FLOOR PLANS
2. SPECIFIED HANGER ROD, STRUIT, NUTS, WASHERS AND PIPE STRAPS SHALL BE OG GALVANIZED PLATED MATERIALS.

TRAPEZE HANGER — NTS — 1



DOWNSPOUT CONNECTION DETAIL — NTS — 4



TRAP PRIMER — NTS — 2

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DETAILS - PLUMBING

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