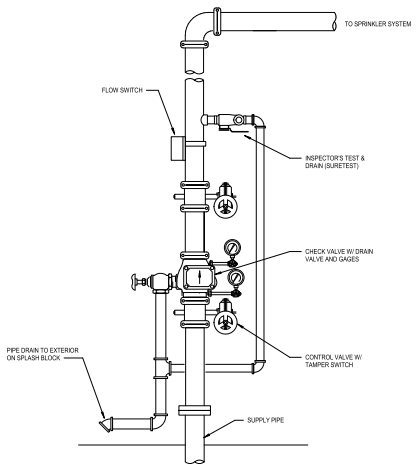
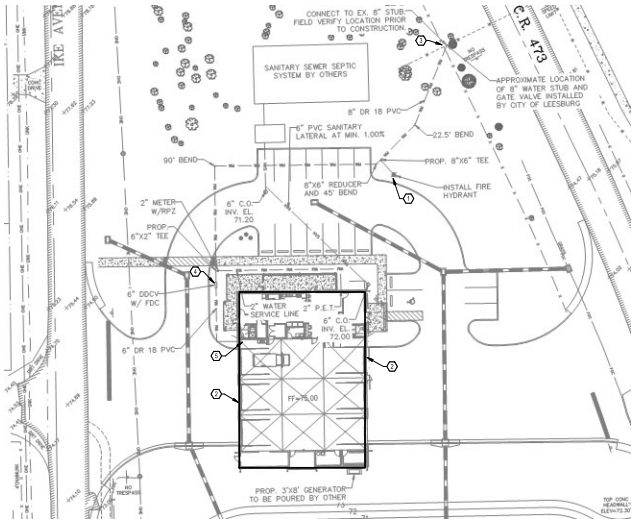


1 FP0.1 SPRINKLER RISER - WET PIPE SYSTEM
N.T.S.



PLAN NOTES:
1. LOCATION OF HYDRANT.
2. LOCATION OF BUILDING.
3. LOCATION OF WATER MAIN CONNECTION.
4. LOCATION OF FIRE SERVICE BACKFLOW, POINT OF SERVICE WITH FDC.
5. 6" FIRE SERVICE BELOW GRADE TO 4" SERVICE RISER AT BUILDING.

2 FP0.1 SITE PLAN - FIRE PROTECTION
N.T.S.

FIRE PROTECTION LEGEND

SYMBOL	DESCRIPTION
OR	- CONTROL VALVE W/ TAMPER SWITCH
	- CHECK VALVE
	- FLOW SWITCH
	- FIRE DEPARTMENT CONNECTION (WALL MOUNTED)
	- FIRE DEPARTMENT CONNECTION (SIDEWALK SIAMESE)
	- FIRE VALVE CABINET
	- STANDPIPE WITH FIRE DEPARTMENT VALVE
	- SPRINKLER DRAIN RISER
	- COMBINATION RISER
	- DRAIN VALVE
	- BACKFLOW PREVENTOR
	- BACKFLOW PREVENTOR W/ FDC
1	- REVISION REFERENCE
DETAIL No. / FP0.0 SHEET SHOWN ON	- DETAIL REFERENCE CALLOUT

DESIGN CRITERIA

ENTIRE SPACE (EXCEPT AS NOTED):

OCCUPANCY CLASSIFICATION:	LIGHT HAZARD
SYSTEM TYPE:	WET PIPE
DESIGN DENSITY:	.10 GPM/SQ.FT.
HYDRAULIC REMOTE AREA:	1,500 SQ. FT.
SPRINKLER ORIFICE SIZE:	1/2"
DURATION OF SUPPLY:	60 - 90 MIN.
MAX. COVERAGE/SPRINKLER HEAD:	225 SQ. FT. OR SPRINKLER LISTING
HOSE STREAM ALLOWANCE:	100 GPM

STORAGE, MECH ELEC, ROOMS:

OCCUPANCY CLASSIFICATION:	ORDINARY HAZARD GROUP I
SYSTEM TYPE:	WET PIPE
DESIGN DENSITY:	.15 GPM/SQ.FT.
HYDRAULIC REMOTE AREA:	1,500 SQ. FT.
SPRINKLER ORIFICE SIZE:	1/2"
DURATION OF SUPPLY:	60 - 90 MIN.
MAX. COVERAGE/SPRINKLER HEAD:	130 SQ. FT. OR SPRINKLER LISTING
HOSE STREAM ALLOWANCE:	250 GPM

APARATUS BAY:

OCCUPANCY CLASSIFICATION:	ORDINARY HAZARD GROUP 2
SYSTEM TYPE:	WET PIPE
DESIGN DENSITY:	.20 GPM/SQ.FT.
HYDRAULIC REMOTE AREA:	1,500 SQ. FT.
SPRINKLER ORIFICE SIZE:	1/2"
DURATION OF SUPPLY:	60 - 90 MIN.
MAX. COVERAGE/SPRINKLER HEAD:	130 SQ. FT. OR SPRINKLER LISTING
HOSE STREAM ALLOWANCE:	250 GPM

STANDPIPE:

SYSTEM DESCRIPTION: AUTOMATIC WET

REFERENCE PUBLICATIONS:

THE FOLLOWING PUBLICATIONS SHALL BE USED AS A REFERENCE FOR DESIGN OF THE FIRE SUPPRESSION SYSTEM ON THIS PROJECT:

1. FLORIDA FIRE PREVENTION CODE, SIXTH EDITION
2. NFPA 13, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS, 2013 EDITION
3. NFPA 14, STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS, 2013 EDITION
4. NFPA 20, STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION, 2013 EDITION
5. NFPA 24, STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES, 2013 EDITION
6. NFPA 25, STANDARD FOR THE INSPECTION, TESTING, AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS, 2014 EDITION

SPRINKLER TYPE CRITERIA:

SPRINKLERS IN GYPSUM BOARD CEILINGS, RECEPTIONS, SPECIALTY CEILINGS TO BE CONCEALED (WHITE COVERPLATE), AND SHALL BE RATED AT 165°F WITH A 5.6 K-FACTOR.

ALL SPRINKLERS IN AREAS WITH NO CEILINGS TO HAVE BRASS UPRIGHT SPRINKLERS, AND SHALL BE RATED AT 165° F WITH A 5.6 K-FACTOR. PROVIDE SPRINKLER HEAD WITH GUARDS IN MECHANICAL/ELECTRICAL ROOMS.

FLORIDA ADMINISTRATIVE CODE CHAPTER 61G15-32 NOTES:

1. THE FIRE PROTECTION SYSTEM SCOPE OF WORK SHALL INCLUDE THE PREPARATION OF THE FIRE PROTECTION SYSTEM LAYOUT DOCUMENTS (WORKING PLANS). PROVIDE ALL EQUIPMENT, MATERIALS, COMPONENTS, ASSEMBLIES AND SUPPORT SYSTEMS REQUIRED, AS DESCRIBED, IN NFPA 13. THE FIRE PROTECTION CONTRACTOR SHALL CONDUCT A HYDRANT FLOW TEST AND PERFORM HYDRAULIC CALCULATIONS FOR PREPARATION OF THE FIRE PROTECTION SYSTEM LAYOUT DOCUMENTS (WORKING PLANS).
2. THE FIRE PROTECTION DESIGN, CALCULATIONS, INSTALLATION AND THE ACCEPTANCE TESTING OF THE FIRE PROTECTION SYSTEM SHALL BE IN ACCORDANCE WITH NFPA 13, 2007 EDITION; NFPA 24, 2007 EDITION; THE FLORIDA BUILDING CODE 2010 AND THE FLORIDA FIRE PREVENTION CODE 2010 EDITION AND ALL LOCAL CODES REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
3. AREA OCCUPANCIES AND HAZARD CLASSIFICATIONS ARE LISTED IN THE DESIGN CRITERIA NOTE LOCATED ON THE CONTRACT DOCUMENTS.
4. THE STRUCTURAL SUPPORTS AND OPENINGS FOR THE FIRE PROTECTION SYSTEM HAVE BEEN COORDINATED WITH THE STRUCTURAL ENGINEER.
5. ALL SYSTEM CONTROL VALVES SHALL BE PROVIDED WITH TAMPER SWITCHES AND INTERFACE WITH THE FACP ON THE SUPERVISORY CIRCUIT, ALL FLOW SWITCHES SHALL INTERFACE WITH THE FACP ON THE ALARM CIRCUIT.
6. THE FIRE PROTECTION CONTRACTOR SHALL PREPARE AND PROVIDE FIRE PROTECTION SYSTEM LAYOUT DOCUMENTS WITH HYDRAULIC CALCULATIONS. FIRE PROTECTION SYSTEM LAYOUT DOCUMENTS WITH HYDRAULIC CALCULATIONS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER AND THE LOCAL AHJ FOR ACCEPTANCE PRIOR TO PERMITTING.
7. ALL FIRE PROTECTION EQUIPMENT AND COMPONENTS SHALL BE LISTED AND TESTED FOR FIRE PROTECTION USE. ALL FIRE PROTECTION EQUIPMENT AND COMPONENTS SHALL BE THE UL LISTED AND FM APPROVED.
8. THE WATER SUPPLY FOR THE FIRE PROTECTION SYSTEM HAS NOT SHOWN ANY EVIDENCE OF MICROBIAL INDUCED CORROSION (MIC). THE FIRE PROTECTION CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY EVIDENCE OF MIC AND PROVIDE NECESSARY WATER TREATMENT AS NEED TO REDUCE OR ELIMINATE MIC.

1 A CURRENT FLOW TEST IS NOT AVAILABLE FROM THE DELEGATED ENGINEER AND TO BE PROVIDED BY THE FIRE PROTECTION CONTRACTOR IT HAS BEEN CONFIRMED THAT SERVICE AT SITE WILL BE AVAILABLE PRIOR TO START OF CONSTRUCTION

FIRE PROTECTION GENERAL NOTES

1 1. FIRE PROTECTION DESIGN SHALL COMPLY WITH NFPA 13 2016 EDITION, NFPA 14 2016 EDITION, NFPA 20 2016 EDITION, NFPA 24 2016 EDITION, NFPA 25 2017 EDITION, THE FLORIDA FIRE PREVENTION CODE 7th EDITION AND ALL APPLICABLE LOCAL CODES. REFER TO DESIGN CRITERIA REFERENCE PUBLICATIONS SECTION ON THIS SHEET.

2. TO ENSURE MINIMUM DESIGN QUALITY IN FIRE PROTECTION SYSTEM ENGINEERING DOCUMENTS, SAID DOCUMENTS SHALL INCLUDE AS A MINIMUM THE FOLLOWING INFORMATION WHEN APPLICABLE:
(A) THE POINT OF SERVICE FOR THE FIRE PROTECTION WATER SUPPLY AS DEFINED BY SECTION 633.102(24), F.S.
(B) APPLICABLE NFPA STANDARD TO BE APPLIED, OR IN THE CASE WHERE NO SUCH STANDARD EXISTS, THE ENGINEERING STUDY, JUDGMENTS, AND/OR PERFORMANCE BASED ANALYSIS AND CONCLUSIONS.
(C) CLASSIFICATION OF HAZARD OCCUPANCY FOR EACH ROOM OR AREA.
(D) DESIGN APPROACH, WHICH INCLUDES SYSTEM TYPE, DENSITIES, DEVICE TEMPERATURE RATING, AND SPACING FOR EACH SEPARATE HAZARD OCCUPANCY.
(E) CHARACTERISTICS OF WATER SUPPLY TO BE USED, SUCH AS MAIN SIZE AND LOCATION, WHETHER IT IS DEAD-END OR CIRCULATING, AND IF DEAD-END, THE DISTANCE TO THE NEAREST CIRCULATING MAIN, AS WELL AS ITS MINIMUM DURATION AND RELIABILITY FOR THE MOST HYDRAULICALLY DEMANDING DESIGN AREA.
(F) WHEN PRIVATE OR PUBLIC WATER SUPPLIES ARE USED, THE FLOW TEST DATA, INCLUDING DATE AND TIME OF TEST, WHO CONDUCTED TEST OR SUPPLIED INFORMATION, TEST ELEVATION, STATIC GAUGE PRESSURE AT NO FLOW, FLOW RATE WITH RESIDUAL GAUGE PRESSURE, HYDRANT BUTT COEFFICIENT, AND LOCATION OF TEST IN RELATION TO THE HYDRAULIC POINT OF SERVICE.
(G) VALVING AND ALARM REQUIREMENTS TO MINIMIZE POTENTIAL FOR IMPAIRMENTS AND UNRECOGNIZED FLOW OF WATER.
(H) MICROBIAL INDUCED CORROSION (MIC). THE ENGINEER OF RECORD SHALL MAKE REASONABLE EFFORTS TO IDENTIFY WATER SUPPLIES THAT COULD LEAD TO MICROBIAL INDUCED CORROSION (MIC). SUCH EFFORTS MAY CONSIST OF DISCUSSIONS WITH THE LOCAL WATER PURVEYOR AND/OR FIRE OFFICIAL FAMILIARITY WITH CONDITIONS IN THE LOCAL AREA, OR LABORATORY TESTING OF WATER SUPPLIES. WHEN CONDITIONS ARE FOUND THAT MAY RESULT IN MIC CONTAMINATION OF THE FIRE PROTECTION PIPING, THE ENGINEER SHALL DESIGN CORRECTIVE MEASURES.
(I) BACKFLOW PREVENTION AND METERING SPECIFICATIONS AND DETAILS TO MEET LOCAL WATER PURVEYOR REQUIREMENTS INCLUDING MAXIMUM ALLOWABLE PRESSURE DROP.
(J) QUALITY AND PERFORMANCE SPECIFICATIONS OF ALL YARD AND INTERIOR FIRE PROTECTION COMPONENTS.
(K) FOR HIGH HAZARD OCCUPANCY CLASSIFICATIONS, STORAGE OCCUPANCIES, AND FACTORY OCCUPANCIES, AS DEFINED IN SECTIONS 307, 311, AND 306, RESPECTIVELY, OF THE FLORIDA BUILDING CODE, BUILDING, AND HIGH-RISE BUILDINGS, AS DEFINED IN SECTION 202 OF THE FLORIDA BUILDING CODE, BUILDING, A DETERMINATION OF WHETHER A FIRE PUMP IS REQUIRED AND IF SO, THE SPECIFIC VOLUMETRIC FLOW AND PRESSURE RATING OF THE FIRE PUMP. THE FLORIDA BUILDING CODE IS INCORPORATED BY REFERENCE IN SUBSECTION 61G15-18.011(6), F.A.C.
(L) A VERIFICATION OF WHETHER A FIREWATER STORAGE TANK IS REQUIRED ON SITE AND IF SO, A DETERMINATION OF THE SIZE AND CAPACITY REQUIRED.
(M) OWNER'S CERTIFICATE. IN STORAGE OCCUPANCIES, THE OWNER'S INFORMATION CERTIFICATE IS REQUIRED FROM THE PROPERTY OWNER AS IT CLEARLY DEFINES THE STORAGE CONFIGURATION OF THE SPACE FOR THE CURRENT AND FUTURE USE OF THE PROPERTY, AS REQUIRED BY THE CODES AND STANDARDS SET FORTH IN SUBSECTION 61G15-32.002(7), F.A.C.

3. FINAL INSPECTION AND APPROVAL BY LOCAL FIRE MARSHAL AND ARCHITECT/ENGINEER.

4. THE FIRE PROTECTION SYSTEMS SHOWN REPRESENT THE DESIGN INTENT OF THE ENGINEER, IN ACCORDANCE WITH STATE REGULATION 61G15-32. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE INSTALLATION WITH ALL OTHER TRADES. SUBMIT COMPLETE SPRINKLER SYSTEM LAYOUT DRAWINGS WITH ANY ADDITIONAL OFFSETS, SPRINKLERS OR SYSTEM COMPONENTS AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM AND TO AVOID CONFLICTS WITH OTHER TRADES.

5. SPRINKLER SHOP DRAWINGS AND MATERIAL CUT SHEETS SHALL BE SUBMITTED TO THE ARCHITECT AND LOCAL FIRE MARSHAL FOR APPROVAL PRIOR TO ANY INSTALLATION.

6. PIPE ROUTING SHOWN IS SCHEMATIC ONLY. PROVIDE ALL ADDITIONAL OFFSETS REQUIRED FOR PROPER INSTALLATION AND COORDINATION WITH OTHER TRADES.

7. INSTALL PIPING IN AREAS WITH EXPOSED STRUCTURE AS HIGH AS POSSIBLE TO ALLOW THE OWNER MAXIMUM USE OF THE SPACE.

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

9. COORDINATE SPRINKLERS WITH ALL DIFFUSERS, SPEAKERS, LIGHTING FIXTURES AND LISTING OF THE SPRINKLER.

10. CENTER SPRINKLERS IN THE CENTER OF CEILING TILE. PROVIDE ARMOVER OR SWING JOINT AS REQUIRED.

11. 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.

12. SLEEVE AND/OR FIRESTOP ALL PENETRATIONS THROUGH RATED WALLS, CEILINGS, AND FLOORS WITH UL LISTED ASSEMBLIES. PROVIDE FIRESTOP ASSEMBLIES EQUAL TO OR EXCEEDING THE RATING OF THE WALL, CEILING OR FLOOR. SEE ARCHITECTURAL DRAWINGS FOR RATINGS.

13. FURNISH ACCESS PANELS TO ALL VALVES ABOVE NON-ACCESSIBLE CEILINGS AND CHASES, FOR INSTALLATION BY GENERAL CONTRACTOR.

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

15. PROVIDE SPRINKLERS UNDERNEATH ALL EXPOSED DUCTWORK WHICH IS OVER 48" WIDE AND SPACE HEADS AROUND ANY OBSTRUCTIONS IN ACCORDANCE WITH NFPA 13. HEADS UNDER DUCTS ARE NOT INDICATED ON THE DRAWINGS BUT ARE REQUIRED. PROVIDE IN ACCORDANCE WITH NFPA 13. COORDINATE SPRINKLER LOCATIONS UNDER DUCTWORK AND AROUND OBSTRUCTIONS WITH FINAL INSTALLED LOCATIONS.

16. PROVIDE SPRINKLERS AT THE TOP AND BOTTOM OF ALL STAIRWELLS.

17. PROVIDE SPRINKLER GUARDS ON ALL HEADS IN ELECTRIC ROOMS, TELEPHONE ROOMS, ELEVATOR ROOMS, ELEVATOR SHAFTS, STORAGE ROOMS, UTILITY ROOMS AND ON ANY HEADS LESS THAN 7'-0" ABOVE THE FLOOR.

18. PROVIDE HANGERS ON END HEADS IN PENDANT POSITION WITHIN 12" OF END OF LINE, IN ACCORDANCE WITH NFPA 13, WHEN SYSTEM PRESSURE EXCEEDS 100 PSI.

19. 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. REROUTE ANY PIPING RUN OVER ELECTRICAL EQUIPMENT.

20. PROVIDE 20-GAUGE STEEL SPRINKLER CANOPY SHIELD AT SPRINKLERS IN TRASH CHUTE PER NFPA #13.

21. PROVIDE INTERMEDIATE TEMPERATURE (200°F) SPRINKLERS IN ELEVATOR SHAFTS AND EQUIPMENT ROOMS PER NFPA 13.

22. INSULATE AND PROVIDE ALUMINUM JACKETING ON ALL WET BULK SUPPLY MAINS AND HOSE SUPPLY MAINS EXPOSED TO THE WEATHER.

23. ALL DRAIN AND DRY PIPE SYSTEM PIPING AND FITTINGS SHALL BE GALVANIZED BOTH INSIDE AND OUTSIDE.

24. PROVIDE TAMPER SWITCHES ON ALL CONTROL VALVES.

25. SLOPE ALL PIPING TO THE SYSTEM MAIN DRAIN AS REQUIRED TO INSURE PROPER DRAINAGE. INSTALL ADDITIONAL DRAINS AND PLUGS WHERE REQUIRED TO COMPLY WITH THE ABOVE REFERENCED CODES.

26. PROVIDE ROLL GROOVED OR CUT GROOVED COUPLINGS AND FITTINGS FROM A SINGLE MANUFACTURER.

27. THIS BUILDINGS STRUCTURAL SYSTEM HAS BEEN DESIGNED TO SUPPORT THE ADDITIONAL WEIGHT ASSOCIATED WITH THE SPRINKLER SYSTEM.

28. PAINT ALL SPRINKLER PIPING INSTALLED BELOW THE CEILINGS AND IN EXPOSED LOCATIONS. CLEAN, PRIME AND PAINT ALL EXPOSED PIPING RED, UNLESS OTHERWISE NOTED. COORDINATE ALL COLORS WITH THE ARCHITECT.

29. COORDINATE HANGER LOCATIONS WITH THE BUILDING STRUCTURE. SUPPORT PIPING IN ACCORDANCE WITH NFPA 13. PROVIDE ALL MISCELLANEOUS STEEL FRAMING AS REQUIRED TO SUPPORT PIPING. PROVIDE GALVANIZED OR COATED HANGERS AND RODS.

30. PROVIDE A TEMPORARY STANDPIPE SYSTEM WITH FIRE DEPARTMENT CONNECTIONS DURING CONSTRUCTION.

FIRE PROTECTION DRAWING INDEX

NO.	DESCRIPTION	DATE
2	PERMIT COMMENT RESPONSE	8-24-22

James C. Mullen, P.E.
PE License #60195
12/16/2022 9:53:17 AM

John P. Adams, AIA
Jerome Bankowski, Jr., AIA, LEED
Jennifer Zaffuto, AIA, LEED, NCARB
KTH ARCHITECTS
1741 HYMANS TRAIL • DUBOIS, PA • 814-371-1541 • F 814-371-8801 • KTHarch.com
800 NORTH HIGHLAND AVE. • ORLANDO, FL • 407.205.8700 • F 407.406.0650

100% CD Submittal - Bid Set

LAKE COUNTY
FIRE STATION NO.71
FIRE PROTECTION SYMBOLS, LEGEND, NOTES AND INDEX
33661 CR 473, LEESBURG, FL 34788

20073A

NOVEMBER 10, 2021

FP0.1

TLC ENGINEERING SOLUTIONS
7370 Cabot Court, Suite 103
Melbourne, FL 32940
P 321.636.0274
COA 15
www.tlcengineering.com
TLC No.: 521157
THINK. LISTEN. CREATE.

PLAN NOTES:

1. PROVIDE A HYDRAULICALLY DESIGNED AUTOMATIC SPRINKLER SYSTEM WITH A LIGHT HAZZARD COVERAGE.
2. PROVIDE A HYDRAULICALLY DESIGNED AUTOMATIC SPRINKLER SYSTEM WITH A ORDINARY HAZZARD GROUP 1 COVERAGE.
3. PROVIDE A HYDRAULICALLY DESIGNED AUTOMATIC SPRINKLER SYSTEM WITH A ORDINARY HAZZARD GROUP 2 COVERAGE.
4. AREA TO BE PROTECTED BY A WET PIPE SYSTEM. SEE SPECIFICATION SECTION 211313 FOR DESIGN DENSITIES, AREAS OF COVERAGE, ETC.
5. SPRINKLER RISER - SEE DETAIL ON SHEET FP0.1.
6. 6" FIRE SERVICE FROM CIVIL SITE REMOTE BACKFLOW WITH FDC (REFER TO CIVIL PLANS FOR CONTINUATION)

1 FIRST FLOOR - FIRE PROTECTION
1/4" = 1'-0"

NO.	DESCRIPTION	DATE

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY JAMES C. MULLEN ON THE DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNITURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

James C Mullen

James C. Mullen, P.E.
PE License #60195
JAMES C. MULLEN LICENSE No 60195 STATE OF FLORIDA PROFESSIONAL ENGINEER
12/16/2022 9:53:21 AM

John P. Adams, AIA
Jerome Bankovich, Jr., AIA, LEED
Ethan J. Hine, AIA
Jennifer Zaffuto, AIA, LEED, NCARB

KTH ARCHITECTS
1741 KIWANIS TRAIL • DUBOIS, PA • 814.371.1541 • F 814.371.8801 • KTHarch.com
800 NORTH HIGHLAND AVE. • ORLANDO, FL • 407.203.6707 • F 407.409.0650

20073A

LAKE COUNTY
FIRE STATION NO.71
FIRE PROTECTION LEVEL 1
33661 CR 473, LEESBURG, FL 34788

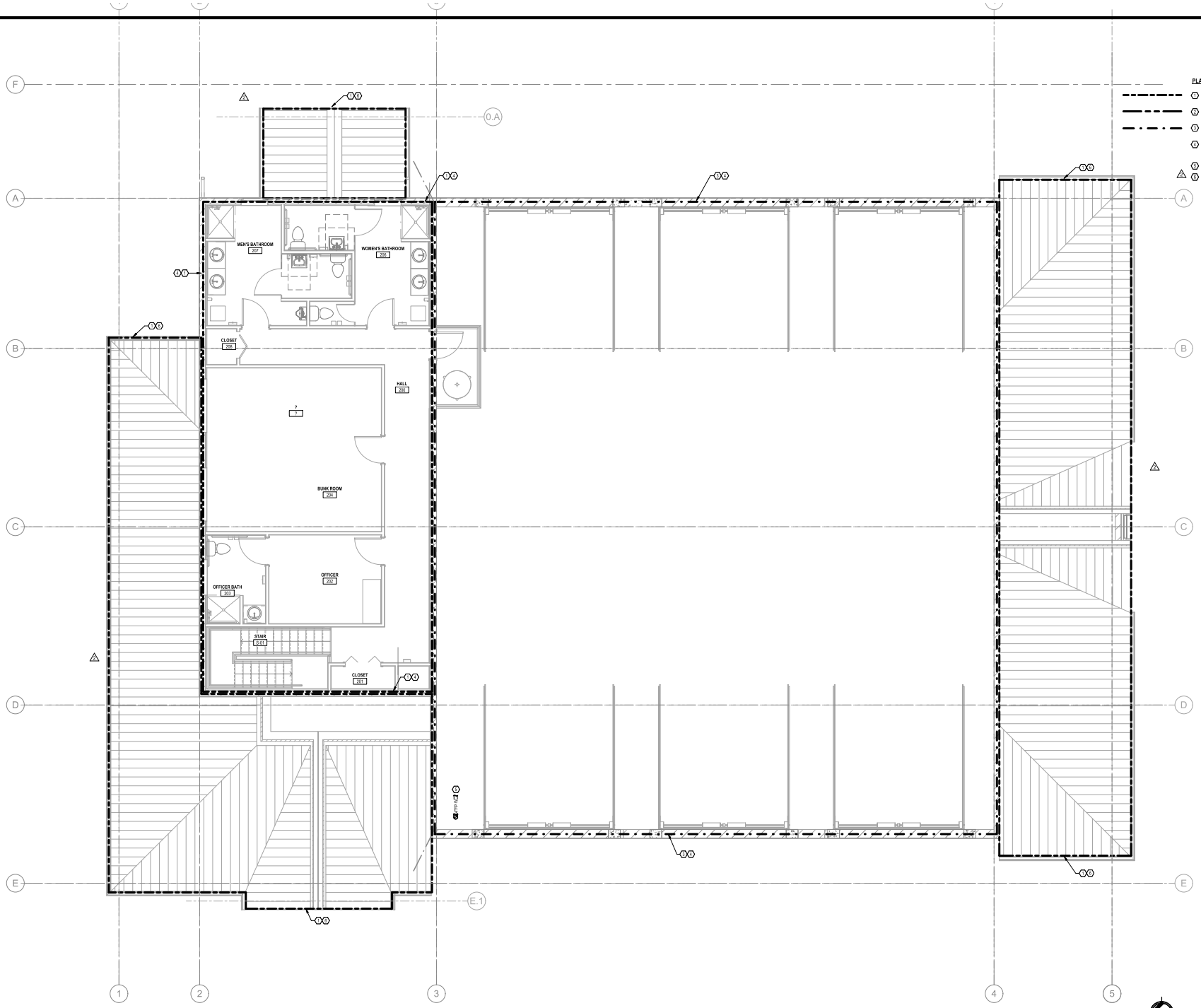
NOVEMBER 10, 2021

100% CD Submittal - Bid Set

FP2.1

TLC ENGINEERING SOLUTIONS
7370 Cabot Court, Suite 103
Melbourne, FL 32940
P 321.636.0274
COA 15
www.tlc-engineers.com
TLC No.:521157
THINK. LISTEN. CREATE.

BIM 360://20073A - Lake County Fire Station 71/521157_Lake Co FS 71_MEP_R18.rvt



1 SECOND FLOOR - FIRE PROTECTION
1/4" = 1'-0"

NO.	DESCRIPTION	DATE
2	PERMIT COMMENT RESPONSE	8-04-22

James C. Mullen, P.E.
PE License #60195
12/16/2022 9:53:24 AM

John P. Adams, AIA
Jerome Bankowski, Jr., AIA, LEED
Ellen J. Hiles, AIA
Jennifer Zaffuto, AIA, LEED, NCARB

KTH ARCHITECTS
1741 WYANNS TRAIL ● DUBOIS, PA ● 814-371-1541 ● F 814-371-8881 ● KTHarch.com
800 NORTH HIGHLAND AVE. ● ORLANDO, FL ● 407.203.8707 ● F 407.406.0650

TLC ENGINEERING SOLUTIONS
7370 Cabot Court, Suite 103
Melbourne, FL 32940
P 321.636.0274
COA 15
TLC No.: 521157

100% CD Submittal - Bid Set

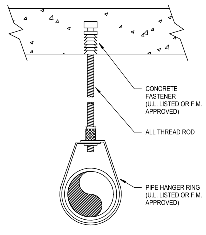
LAKE COUNTY
FIRE STATION NO.71
FIRE PROTECTION LEVEL 2

33661 CR 473, LEESBURG, FL 34788

20073A

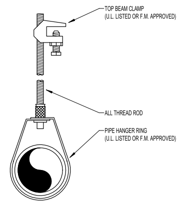
NOVEMBER 10, 2021

FP2.2

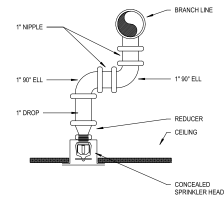


IF SYSTEM PRESSURE EXCEEDS 100 PSI PROVIDE HANGERS PER NFPA 13 9.2.3.4. AND 9.2.3.5.2 THAT PREVENTS UPWARD MOVEMENT OF THE PIPE FOR SPRINKLERS IN THE PENDENT POSITION. A MAXIMUM OF 12" FROM THE END SPRINKLER ON A BRANCH LINE AND ALL ARM-OVERS OVER 12".

1 HANGER - CONCRETE
N.T.S.

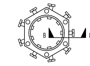


2 HANGER - STEEL
N.T.S.

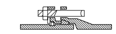


IF SYSTEM PRESSURE EXCEEDS 100 PSI PROVIDE HANGERS PER NFPA 13 9.2.3.4. AND 9.2.3.5.2 THAT PREVENTS UPWARD MOVEMENT OF THE PIPE FOR SPRINKLERS IN THE PENDENT POSITION. A MAXIMUM OF 12" FROM THE END SPRINKLER ON A BRANCH LINE AND ALL ARM-OVERS OVER 12".

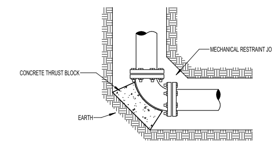
3 SWING JOINT
N.T.S.



MECHANICAL RESTRAINT JOINT



DETAIL "BB"



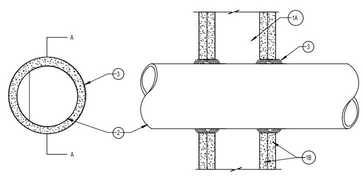
NOTE:

THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED EARTH. WHERE TRENCH WALLS HAVE BEEN DISTURBED EXCAVATE ALL LOOSE EARTH AND EXTEND THRUST BLOCK TO UNDISTURBED EARTH.

PROVIDE EITHER A THRUST BLOCK OR RETAINER GLAND AT EACH TRANSITION.

4 THRUST BLOCK TABLES
N.T.S.

System No. W-L-1001
(Formerly System No. 147)
F Rating--1, 2, 3 and 4 Hr (See Items 2 and 3)
T Ratings--0, 1, 2, 3, and 4 Hr (See Items 2 and 3)
L Rating at Ambient--less than 1 CFM/sq ft
L Rating At 400 F--less than 1 CFM/sq ft



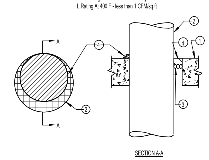
1. Wall Assembly--The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs--Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in. OC.
   B. Wallboard, Gypsum *--Nom 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 13-1/2 in.
2. Pipe or Conduit--Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe, nom 12 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) Class 50 (or heavier) ductile iron pressure pipe, nom 6 in. diam (or smaller) steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing, nom 6 in. diam (or smaller) Type L or (or heavier) copper tubing or nom 1 in. diam (or smaller) flexible steel conduit. When copper pipe is used, max F Rating of firestop system (Item 3) is 2 h. Steel pipes or conduits larger than nom 4 in. diam may only be used in walls constructed using steel channel studs. A max of one pipe or conduit is permitted in the firestop system. Pipe or conduit to be installed near center of stud cavity width and to be rigidly supported on both sides of wall assembly.
3. Fill, Void or Cavity Material*--Caulk--Caulk fill material installed to completely fill annular space between pipe or conduit and gypsum wallboard and with a min 1/4 in. diam bead of caulk applied to perimeter of pipe or conduit at its egress from the wall. Caulk installed symmetrically on both sides of wall assembly. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max pipe or Conduit Diam In.	Annular Space In.	F Rating Hr.	T Rating Hr.
1	3 to 3/16	1 or 2	0+, 1 or 2
1	1/4 to 1/2	3 or 4	3 or 4
4	0 to 1-1/2	1 or 2	0
6	1/4 to 1/2	3 or 4	0
12	3/16 to 3/8	1 or 2	0

+When copper is used, T Rating is 0h.
Minnesota Mining & Mfg. Co .--Types FB-2000, FB-2000+.
*Bearing the UL Classification Marking

5 WALL - DRYWALL - PIPE - 1,2,3,4 HOUR
N.T.S.

System No. C-AJ-1044
(formerly system no. 319)
F Rating - 2, 3 and 4 Hr (see items 2A and 4)
T Rating - 0 Hr
L Rating At Ambient - 2 CFM/sq ft
L Rating At 400 F - less than 1 CFM/sq ft



1. floor or wall assembly - lightweight or normal weight (100-150pcf) concrete. except as noted in table under item 4, min thickness of solid concrete floor or wall assembly is 4-1/2". floor may also be constructed of a min. 6" thick. ul classified hollow core precast concrete units*. when floor is constructed of hollow core precast concrete units, packing material (item 3) and caulk fill material (item 4) to be installed symmetrically on both sides of floor, flush with floor surface. wall assembly may also be constructed of any ul classified concrete blocks*. max. dia. of opening is in solid lightweight or normal weight concrete. floor is 32" max. dia. of opening in floor constructed of hollow-core precast concrete units is 7".

   see concrete blocks (cazt) and precast concrete units (cftv) categories in the fire resistance directory for names of manufacturers.

1A. steel sleeve - (optional, not shown) - max. 15" id (or smaller) schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. sleeve may extend a max. of 2" above top of floor or beyond either surface of wall. max. 16" id (or smaller) min. 0.028 wall thickness (or heavier) galvanized steel sleeve cast or grouted into floor or wall assembly. sleeve may extend a max. of 1/2" beyond either surface of floor or wall.

2. through penetrants - one metallic pipe, conduit or tubing to be installed either concentric ally or eccentric ally within the firestop system. max. annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in item 4. min. annular space between pipe or conduit and edge of through opening is 0". (point contact). pipe conduit or tubing to be rigidly supported on both sides of floor or wall assembly. the following types and sizes of metallic pipes, conduits or tubing may be used:

   A. steel pipe - nom. 30" dia. (or smaller) schedule 10 (or heavier) steel pipe
   B. iron pipe - nom. 30" dia. (or smaller) cast or ductile iron pipe
   C. conduit - nom. 6" dia. (or smaller) rigid steel conduit
   D. conduit - nom. 4" dia. (or smaller) steel electrical metallic tubing
   E. copper tubing - nom. 8" dia. (or smaller) type l (or heavier) copper tube
   F. copper pipe - nom. 6" dia. (or smaller) regular (or heavier) copper pipe

3. packing material - polyethylene backer rod or nom. 1" thickness of tightly packed min.eral wool batt or glass fiber insulation firmly packed into opening as a permanent form. packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of caulk fill material (item 4).

4. fill, void or cavity material* - caulk - applied to fill the annular space flush with top surface of floor. in wall assemblies, required caulk thickness to be installed symmetrically on both sides of wall, flush with wall surface, at point contact location between penetrant and sleeve or between penetrant and concrete, a min. 1/4" dia. bead of caulk shall be applied at top surface pipe conduit or tubing to be rigidly supported on both sides of floor or wall of floor and at both surfaces of wall. the hourly f ratings and the min. required caulk thickness' are dependent upon a number of parameters, as shown in the following table:

min. floor or wall thickness, in.	nom. pipe tube or conduit dia.., in.	max. annular space, in.	min. caulk thickness, in.	f rating, hr.
2-1/2	1/2-12	1-3/8	1/2	2
2-1/2	1/2-12	3-1/4	1	2
4-1/2	1/2-6	1-3/8	1/4 (A)	2
4-1/2	1/2-12	1-1/4	1/2	3
4-1/2	1/2-20	2	1	3
4-1/2	1/2-20	2	1	3
4-1/2	1/2-12	3-1/4	1	3
4-1/2	1/2-6	1-3/8	1 (B)	4

(A) min. 2" thickness of mineral wool batt insulation required in annular space.
(B) min. 1" thickness of mineral wool batt insulation required in annular space. on both sides of floor or wall assembly. min 1" thickness of caulk to be installed flush with each surface of floor or wall assembly.

minnesota mining and manufacturing co. - cp 25wb+.
*bearing the ul classification marking

6 WALL/FLR - CONC - PIPE - 2,3,4 HOUR
N.T.S.

NO.	DESCRIPTION	DATE

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY JAMES C. MULLEN ON THE DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNITURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

James C Mullen

James C. Mullen, P.E.
PE License #60195
JAMES C. MULLEN LICENSE No 60195 STATE OF FLORIDA PROFESSIONAL ENGINEER
12/16/2022 9:53:27 AM

John P. Adams, AIA
Jerome Bankovich, Jr., AIA, LEED
Ethan J. Hine, AIA
Jennifer Zaffuto, AIA, LEED, NCARB
1741 KIWANIS TRAIL • DUBOIS, PA • P 814.371.1541 • F 814.371.8801 • KTHarch.com
800 NORTH HIGHLAND AVE. • ORLANDO, FL • 407.203.6707 • F 407.409.0650
KTH ARCHITECTS

20073A

LAKE COUNTY
FIRE STATION NO.71
FIRE PROTECTION DETAILS
33661 CR 473, LEESBURG, FL 34788

NOVEMBER 10, 2021

100% CD Submittal - Bid Set

TLC ENGINEERING SOLUTIONS
7370 Cabot Court, Suite 103
Melbourne, FL 32940
P 321.636.0274
COA 15
www.tlc-engineers.com
TLC No.:521157
THINK. LISTEN. CREATE.

FP3.1

HVAC SYMBOL LEGEND

SYMBOL	DESCRIPTION
	-CEILING DIFFUSER, ROUND NECK (CEILING DIFFUSERS ARE 4-WAY THROW UNO)
	-ROUND DIFFUSER
	-CEILING RETURN
	-CEILING EXHAUST
	-CEILING DIFFUSER, RECTANGULAR OR SQUARE NECK (CEILING DIFFUSERS ARE 4-WAY THROW UNO)
	-SUPPLY REGISTER OR GRILLE (VERTICAL MOUNT, SIDEWALL)
	-RETURN/EXHAUST REGISTER OR GRILLE (VERTICAL MOUNT, SIDEWALL)
	-REVISION REFERENCE
	-DETAIL REFERENCE: TOP-DETAIL#, BOTTOM-DRAWING# SHOWN ON
	-THERMOSTAT/TEMPERATURE SENSOR
	-HUMIDISTAT/HUMIDITY SENSOR
	-DUCT SMOKE DETECTOR
	-CONNECT TO EXISTING
	-DEMOLISH TO POINT INDICATED
	-MOTORIZED CONTROL DAMPER
	-TEMPERATURE SENSOR
	-PRESSURE SENSOR
	-BACKDRAFT DAMPER
	-NEUTRAL RELATIVE PRESSURE
	-POSITIVE RELATIVE PRESSURE
	-NEGATIVE RELATIVE PRESSURE
	-SHEET NOTE CALLOUT
	-SHEET NOTE CALLOUT
	-SHEET NOTE CALLOUT
	-CEILING MOUNTED ACCESS DOOR

SYMBOL	DESCRIPTION
	-FIRE DAMPER (WITH ACCESS PANEL)
	-FIRE & SMOKE DAMPER (WITH ACCESS PANEL)
	-EXISTING FIRE DAMPER TO REMAIN
	-EXISTING FIRE & SMOKE DAMPER TO REMAIN
	-SOUND ATTENUATOR
	-MOTOR OPERATED CONTROL DAMPER (MOD)
	-AIR FLOW MEASURING STATION
	-MANUAL BALANCING DAMPER
	-DOOR GRILLE
	-UNDERCUT DOOR
	-ACCESS DOORS, VERTICAL OR HORIZONTAL
	-STAINLESS STEEL DUCTWORK
	-FLEXIBLE CONNECTION
12x8	-FLAT OVAL DUCT
24x12	-NEW DUCTWORK, FIRST DIMENSION IS SIDE SHOWN
24x12	-EXISTING DUCTWORK TO REMAIN
24x12	-EXISTING DUCTWORK TO BE REMOVED
24x12	-DUCT ELBOW, POSITIVE PRESSURE (SUPPLY), FIRST
DOWN / UP WHN FLOOR	DIMENSION INDICATES SIDE TO WHICH ARROW IS POINTING
	-DUCT ELBOW, EXHAUST
	-DUCT ELBOW, NEGATIVE PRESSURE, RETURN
	-DUCT ELBOW UP THROUGH ROOF OR SLAB ABOVE
	-RECTANGULAR DUCT SECTION UP, POSITIVE PRESSURE, SUPPLY OR OUTSIDE AIR
	-RECTANGULAR DUCT SECTION UP, NEGATIVE PRESSURE, RETURN
	-RECTANGULAR DUCT SECTION UP, EXHAUST
	-ROUND DUCT SECTION UP
	-FLAT OVAL DUCT SECTION UP

SYMBOL	DESCRIPTION
	-TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME WITH ELECTRIC HEAT
	-TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME WITH ELECTRIC HEAT
	-TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN-POWERED
	-TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN-POWERED, WITH ELECTRIC HEAT
	-ELECTRIC DUCT HEATER (W/ PANEL CLEARANCE)
	-HYDRONIC REHEAT COIL
	-INLINE CENTRIFUGAL FAN
	-PACKAGED TERMINAL AIR CONDITIONER (PTAC)
UP DN	-CHANGE OF ELEVATION
	-FLEXIBLE DUCT
	-TRANSITION, CONCENTRIC
	-TRANSITION, ECCENTRIC
12x8 8"	-TRANSITION, SQUARE TO ROUND
	-SQUARE THROAT TEE
12x8	-RADIUS TEE
	-RECTANGLE-TO-ROUND TAKE-OFF
	-STANDARD BRANCH TAKE-OFF
	-SPIN-IN TAKE-OFF
	-SQUARE THROAT ELBOW W/TURNING VANES
	-RADIUS ELBOW
	-RECTANGULAR/ROUND BRANCH TAKE-OFF OR ROUND/ROUND BRANCH TAKE-OFF
	-EXHAUST DUCT UP THROUGH SLAB W/ FAN ON ROOF ABOVE
	-EXHAUST FAN ON ROOF W/ DUCT DOWN THROUGH ROOF

HVAC ABBREVIATIONS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFD	-ADJUSTABLE FREQUENCY DRIVE	LD	-LINEAR DIFFUSER
AFF	-ABOVE FINISHED FLOOR	MBH	-THOUSAND BTUs PER HOUR
AFR	-ABOVE FINISHED ROOF	MCA	-MINIMUM CIRCUIT AMPS
AHU	-AIR HANDLING UNIT	MOCP	-MAXIMUM OVER CURRENT PROTECTION
AP	-ACCESS PANEL	MOD	-MOTOR OPERATED CONTROL DAMPER (MOD)
BOP	-BOTTOM OF PIPE	NC	-NORMALLY CLOSED
BHP	-BRAKE HORSEPOWER	NO	-NORMALLY OPEN
BTU	-BRITISH THERMAL UNIT	NTS	-NOT TO SCALE
CL	-CENTER LINE	OA	-OUTSIDE AIR
CFM	-CFM (CUBIC FEET PER MINUTE)	OAL	-OUTSIDE AIR LOUVER
CD	-CEILING DIFFUSER	PRV	-PRESSURE REDUCING VALVE
CT	-COOLING TOWER	PRS	-PRESSURE REDUCING STATION
CV	-CONSTANT AIR VOLUME	PSI	-POUNDS PER SQUARE INCH
ΔP	-CHANGE IN PRESSURE	PSIG	-PSI GAUGE
ΔT	-CHANGE IN TEMPERATURE	PTAC	-PACKAGED TERMINAL AIR CONDITIONER
CFM	-CUBIC FEET PER MINUTE	PVC	-POLYVINYL CHLORIDE PIPE
CU	-CONDENSING UNIT	RA	-RETURN AIR
DDC	-DIRECT DIGITAL CONTROLS	RHC	-REHEAT COIL
DN	-DOWN	RHP	-ROOFTOP HEAT PUMP
EAT	-ENTERING AIR TEMPERATURE	RPM	-REVOLUTIONS PER MINUTE
ESP	-EXTERNAL STATIC PRESSURE	RSL	-REFRIGERANT SUCTION & LIQUID LINES
EWT	-ENTERING WATER TEMPERATURE	RTU	-ROOFTOP AIR HANDLING UNIT
FCU	-FAN COIL UNIT	SA	-SUPPLY AIR
FD	-FIRE DAMPER	SP	-STATIC PRESSURE
FF	-FINAL FILTERS	TSP	-TOTAL STATIC PRESSURE
FLA	-FULL LOAD AMPS	UNO	-UNLESS NOTED OTHERWISE
FPM	-FEET PER MINUTE	V/PH	-VOLTS/PHASE
GPM	-GALLONS PER MINUTE	VAV	-VARIABLE AIR VOLUME
KW	-KILOWATT	VFD	-VARIABLE FREQUENCY DRIVE
LAT	-LEAVING AIR TEMPERATURE		
LWT	-LEAVING WATER TEMPERATURE		

HVAC GENERAL NOTES

1. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
2. DIMENSIONS 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. FOR PROJECTS INVOLVING RENOVATION, COORDINATE NEW WORK WITH EXISTING ELEMENTS SUCH AS THE BUILDING STRUCTURE AND ARCHITECTURAL FEATURES, SPRINKLER PIPING, LIGHTS, PLUMBING, AND ELECTRICAL CONDUIT.
3. DUCT CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARD.
4. SEE SPECIFICATIONS FOR GAUGES, THICKNESS, BRACING, REQUIREMENTS, ETC., OF DUCTWORK.
5. PROVIDE AIR TURNING VANES IN ALL 90 DEGREE RECTANGULAR DUCT ELBOWS.
6. DUCT SIZES AND ALL OPENINGS THROUGH BUILDING CONSTRUCTION SHALL SUIT EQUIPMENT FURNISHED.
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 OTHER EQUIPMENT, FURNITURE, AND DOOR SWINGS.
9. ALL EQUIPMENT, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED AND/OR SPECIFIED. PROVIDE ADDITIONAL SUPPORTS AS REQUIRED TO PROVIDE A VIBRATION-FREE, RIGID INSTALLATION.
10. ALL DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
11. DAMPERS AND INSIDES OF DUCTS VISIBLE THROUGH GRILLES, REGISTERS AND DIFFUSERS SHALL BE PAINTED FLAT BLACK.
12. REFER TO TYPICAL DETAILS FOR PIPING AND INSTALLATION OF EQUIPMENT.
13. TRAPPED CONDENSATE DRAINS FROM ALL MECHANICAL EQUIPMENT SHALL BE PROVIDED FOR PROPER DRAINAGE TO SUIT EQUIPMENT FURNISHED.
14. ACCESS PANELS IN DUCTWORK AND CEILINGS SHALL BE PROVIDED WHERE REQUIRED FOR OPERATION, BALANCING OR MAINTENANCE OF ALL MECHANICAL EQUIPMENT.
15. 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.
16. PROVIDE CONCRETE HOUSEKEEPING PAD UNDER ALL FLOOR MOUNTED EQUIPMENT. REFER TO SPECIFICATIONS FOR DETAILED REQUIREMENTS.
17. VERIFY FINISH WITH ARCHITECT PRIOR TO PURCHASING GRILLES, REGISTERS, DIFFUSERS, LOUVERS AND OTHER AIR DISTRIBUTION DEVICES.
18. PROVIDE FLEXIBLE DUCT CONNECTIONS ON ALL DUCTWORK CONNECTING TO EACH FAN, AIR HANDLING UNITS, AND FAN COIL UNITS.
19. PROVIDE TRANSITIONS AT DIFFUSER NECKS AS REQUIRED TO MATCH SIZES OF FLEX DUCTS TO BE CONNECTED.
20. INTERRUPTIONS TO EXISTING SERVICES SHALL BE SCHEDULED FOR TIMES OTHER THAN NORMAL OPERATING HOURS (SUCH AS NIGHTS AND WEEKENDS). SUCH INTERRUPTIONS TO SERVICES SHALL NOT BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF THE OWNER'S REPRESENTATIVE AND PROPER COORDINATION WITH OTHER TRADES. PRE-WORK SHALL BE PERFORMED TO MAKE THE SHUTDOWN PERIOD AS BRIEF AS POSSIBLE.
21. ALL EQUIPMENT, DUCTWORK, ETC., TO BE REMOVED SHALL REMAIN PROPERTY OF THE OWNER OR DISPOSED OF LEGALLY, AS DIRECTED BY OWNER.
22. MAINTAIN CLEARANCE OF A MINIMUM OF 8' BETWEEN DUCTWORK, PIPING, EQUIPMENT, ETC., AND ALL FIRE RATED AND FIRE/SMOKE RATED PARTITIONS. TO ALLOW FOR INSPECTIONS OF RATED WALLS.
23. LOCATE ALL OUTSIDE AIR INTAKES A MINIMUM OF 10' CLEAR FROM ALL PLUMBING VENTS AND EXHAUST AIR DISCHARGE LOCATIONS.
24. DUCT RUNOUTS TO DIFFUSERS SHALL MATCH THE SIZE OF THE DIFFUSER NECK.
25. WATER PRESSURE DROPS THROUGH COIL CONTROL VALVES SHALL NOT EXCEED 5 PSI.
26. UNLESS OTHERWISE NOTED, ALL EQUIPMENT AND VALVE DRAINS SHALL BE INDEPENDENTLY PIPED FULL SIZE TO THE NEAREST PLUMBING DRAIN.
27. SLEEVE AND SEAL ALL PIPING PENETRATIONS THROUGH BUILDING PARTITIONS. PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS IN CHILLED WATER AND HOT WATER PIPING.
28. PIPING, DUCTWORK, LEAK PROTECTION APPARATUS, OR OTHER EQUIPMENT FOREIGN TO ELECTRICAL SWITCHBOARDS, PANELBOARDS, DISTRIBUTION BOARDS, OR MOTOR CONTROL CENTERS SHALL NOT BE INSTALLED WITHIN THE REQUIRED SPACE FOR WORKING CLEARANCES OR DEDICATED SPACES OF THE ELECTRICAL EQUIPMENT, EXTENDING IN FRONT OF AND FROM FLOOR TO STRUCTURAL CEILING WITH A WIDTH AND DEPTH OF THE ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NEC-110.26.

HVAC DRAWING INDEX

APPLICABLE CODES:
ALL WORK UNDER THIS DIVISION SHALL BE IN STRICT COMPLIANCE AND IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE FOLLOWING CODES AND STANDARDS INCLUDING THE REGULATIONS OF GOVERNING LOCAL, STATE, COUNTY AND OTHER APPLICABLE CODES. REFER TO SPECIFICATIONS FOR ADDITIONAL CODE REQUIREMENTS.

BUILDING CODES:
- FLORIDA BUILDING CODE, 7TH EDITION (2020)
- FLORIDA MECHANICAL CODE, 7TH EDITION (2020)
- FLORIDA ENERGY CONSERVATION CODE, 7TH EDITION (2020)
- FLORIDA FIRE PREVENTION CODE, 7TH EDITION (2020)

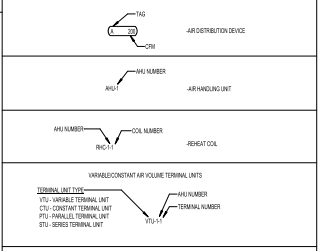
ADDITIONAL CODES, STANDARDS, AND REQUIREMENTS
1. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
2. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE).
3. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA).
4. REQUIREMENTS OF LOCAL POWER COMPANY.
5. THE AMERICANS WITH DISABILITIES ACT (ADA).
6. OWNER'S PUBLISHED DESIGN STANDARDS.

ALL MATERIALS SHALL BE NEW AND FREE OF DEFECTS, AND SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LAB, AS DEFINED BY OSHA, WHERE NO LABELING OR LISTING SERVICE IS AVAILABLE FOR CERTAIN TYPES OF EQUIPMENT, TEST DATA SHALL BE SUBMITTED TO VALIDATE THAT EQUIPMENT MEETS OF EXCEEDS AVAILABLE STANDARDS.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS
- NFPA 10, 2018 EDITION, STANDARD FOR PORTABLE FIRE EXTINGUISHERS.
- NFPA 13, 2019 EDITION, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS.
- NFPA 20, 2016 EDITION, STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION.
- NFPA 30, 2018 EDITION, FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE.
- NFPA 37, 2015 EDITION, STANDARD FOR THE INSTALLATION AND USE OF STATIONARY COMBUSTION ENGINES AND GAS TURBINES.
- NFPA 45, 2011 EDITION, STANDARD ON FIRE PROTECTION FOR LABORATORIES USING CHEMICALS.
- NFPA 54, 2018 EDITION, NATIONAL FUEL GAS CODE.
- NFPA 70, 2017 EDITION, NATIONAL ELECTRICAL CODE®.
- NFPA 72, 2019 EDITION, NATIONAL FIRE ALARM AND SIGNALING CODE.
- NFPA 75, 2020 EDITION, STANDARD FOR THE PROTECTION OF INFORMATION TECHNOLOGY EQUIPMENT.
- NFPA 80, 2019 EDITION, STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES.
- NFPA 85, 2015 EDITION, BOILER AND COMBUSTION SYSTEMS HAZARDS CODE.
- NFPA 88A, 2015 EDITION, STANDARD FOR PARKING STRUCTURES.
- NFPA 90A, 2018 EDITION, STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS.
- NFPA 90B, 2015 EDITION, STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR-CONDITIONING SYSTEMS.
- NFPA 92, 2015 EDITION, STANDARD FOR SMOKE CONTROL SYSTEMS.
- NFPA 99, 2018 EDITION, HEALTH CARE FACILITIES CODE.
- NFPA 101, 2018 EDITION, LIFE SAFETY CODE®.
- NFPA 110, 2016 EDITION, STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS.
- NFPA 111, 2016 EDITION, STANDARD ON STORED ELECTRICAL ENERGY EMERGENCY AND STANDBY POWER SYSTEMS.
- NFPA 780, 2017 EDITION, INSTALLATION OF LIGHTNING PROTECTION SYSTEMS

TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THESE PLANS AND SPECIFICATIONS COMPLY WITH THE 2020 FLORIDA BUILDING CODE AND THE FLORIDA FIRE PREVENTION CODE (2020) AND ALL LOCAL CODES AND ORDINANCES.

HVAC EQUIPMENT TAGS



HVAC PIPING SYMBOL LEGEND

SYMBOL	DESCRIPTION
CWS	-CONDENSER WATER SUPPLY
CWR	-CONDENSER WATER RETURN
CHWS	-CHILLED WATER SUPPLY
CHWR	-CHILLED WATER RETURN
CD	-CONDENSATE
CR	-CONDENSATE RETURN
PC	-PUMPED CONDENSATE
HWR	-HOT WATER RETURN
HWS	-HOT WATER SUPPLY
HPS	-HIGH PRESSURE STEAM SUPPLY
MPS	-MEDIUM PRESSURE STEAM SUPPLY
LPS	-LOW PRESSURE STEAM SUPPLY
HPR	-HIGH PRESSURE STEAM RETURN
MPR	-MEDIUM PRESSURE STEAM RETURN
LPR	-LOW PRESSURE STEAM RETURN
RL	-REFRIGERANT LIQUID
RS	-REFRIGERANT SUCTION
	-TEE, OUTLET DOWN
	-TEE, OUTLET UP
	-45° PIPE RISE (R) / DROP (D)
	-PIPE ANCHORS
	-CONCENTRIC REDUCER
	-ECCENTRIC REDUCER

SYMBOL	DESCRIPTION
	-FLOW DIRECTION
	-VALVE
	-BALL VALVE
	-CALIBRATING BALANCING VALVE
	-BUTTERFLY VALVE
	-GAS COCK
	-UNION
	-STRAINER
	-CONTROL VALVE
	-SOLENOID VALVE
	-PSI REG.
	-CHECK VALVE
	-FLOW SWITCH
	-SLOPE DIRECTION (DOWN)
	-FLEX CONNECTION
	-G.S.Y. GATE VALVE
	-STEAM TRAP
	-THREE-WAY CONTROL VALVE
	-THERMOMETER

SYMBOL	DESCRIPTION
EQUIP	-P-TRAP
	-TWO-WAY CHECK VALVE
MV	-MANUAL VENT
	-PRESSURE GAUGE
	-RELIEF VALVE
FM	-FLOW METER
M	-WATER METER
	-INLINE PUMP
	-INLINE PUMP
	-VALVE ON RISER
	-CAP
	-CONNECTION, BOTTOM
	-CONNECTION, TOP
	-COUPLING
	-ELBOW, 90°
	-ELBOW, 45°
	-ELBOW, TURNED DOWN
	-ELBOW, TURNED UP

NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT

NO.	DESCRIPTION	DATE
1	PERMIT COMMENT RESPONSE	8-3-22
2	PERMIT COMMENT RESPONSE II	09-02-22
3		

James C. Mullen, P.E.
PE License #60195

12/16/2022 9:53:29 AM

John P. Adams, AIA
Jerome Bankowski, Jr., AIA, LEED AP
Jennifer Zaffuto, AIA, LEED, NCARB
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KTH ARCHITECTS

100% CD Submittal - Bid Set

LAKE COUNTY
FIRE STATION NO.71
MECHANICAL LEGEND, GENERAL NOTES, & SHEET INDEX
33661 CR 473, LEESBURG, FL 34788

20073A

NOVEMBER 10, 2021

M0.1

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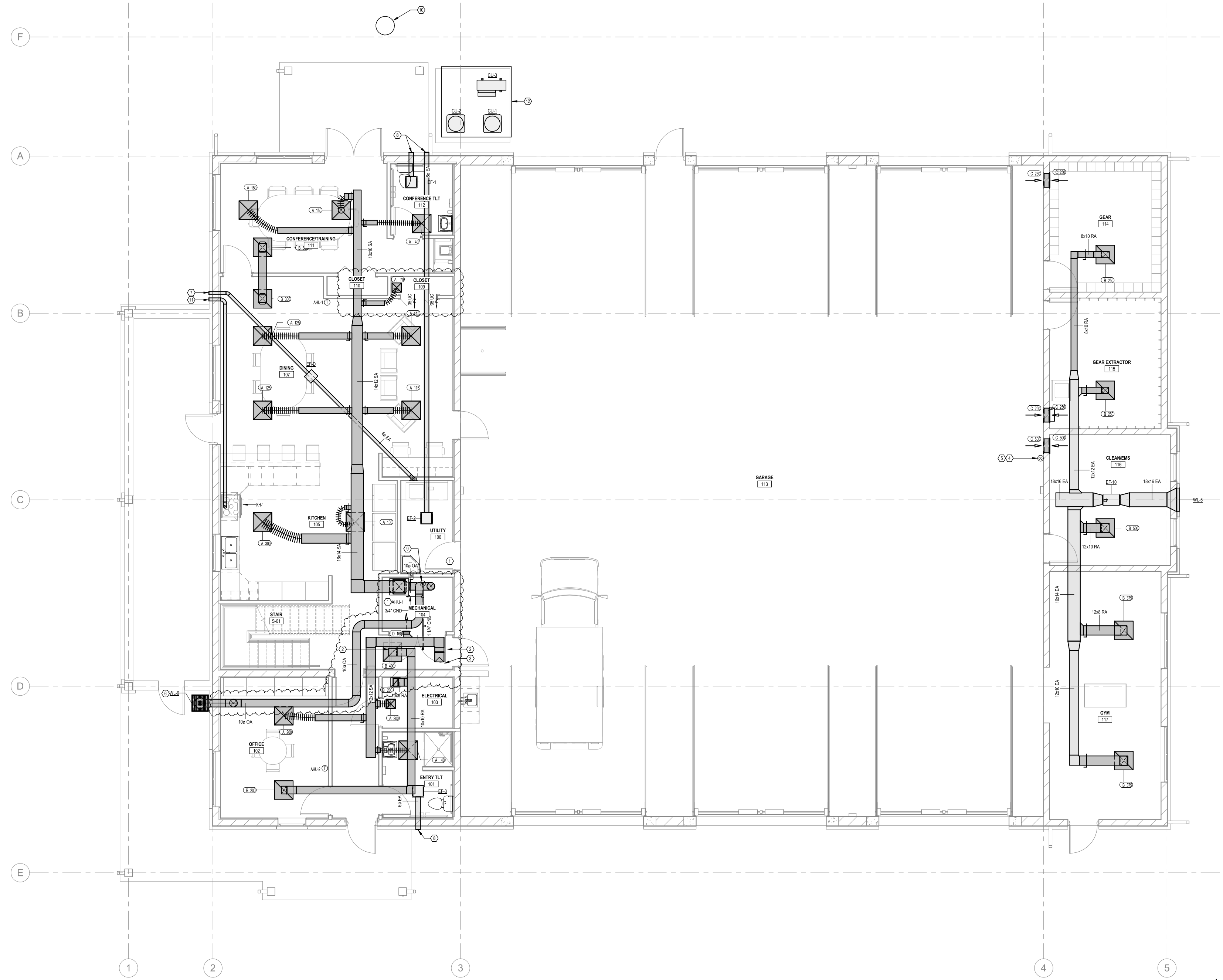

1 FIRST FLOOR - DUCTWORK
1/4" = 1'-0"

PLAN KEY NOTES:

1. SLOPE PIPE AT 1/8" PER FOOT, PROVIDE INDIRECT DISCHARGE TO HUB DRAIN IN THE MECHANICAL ROOM.
2. DOOR GRILLES TO BE PROVIDED SIMILAR TO PRICE ATGH, 20X38.
3. 12" X 12" SA DUCT UP TO 2ND FLOOR.
4. CO AND NOx SENSOR CONTROLLING EF-8.
5. TOXIC GAS SENSOR AND ILLUMINATED PUSH BUTTON CONTROLLING EERS UNITS.
6. WL-6 TO BE INSTALLED IN CEILING.
7. PROVIDE 4"Ø EXHAUST WALL CAP FOR DRYER. SIMILAR TO FAMCO DWVP.COORDINATE COLOR WITH ARCHITECT.
8. PROVIDE 6"Ø EXHAUST WALL CAP. SIMILAR TO FAMCO SDWVP.COORDINATE COLOR WITH ARCHITECT.
9. PROVIDE HUB DRAIN SIMILAR TO WATTS FD-100-DD 3"Ø .
10. DRYWELL. SEE DETAIL 6/M5.1. PROVIDE SPEARS 3" PVC BACKWATER VALVE WITH EXTENSION KIT #S375P-AK OR EQUAL.
11. (Revision 2) PROVIDE 4"Ø EXHAUST WALL CAP FOR KITCHEN HOOD. SEE ARCHITECT FOR HOOD MODEL AND SPECS. COORDINATE COLOR WITH ARCHITECT.
12. 6" EQUIPMENT PAD FOR CONDENSING UNITS.

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NO.	DESCRIPTION	DATE
2	PERMIT COMMENT RESPONSE	8-04-22
4	TRUSS DESIGN AND OH DOOR SHIFT	11-30-22

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John P. Adams, AIA
Jerome Bankovich, Jr., AIA, LEED
Ethan J. Hine, AIA
Jennifer Zaffuto, AIA, LEED, NCARB
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LAKE COUNTY
FIRE STATION NO.71
MECHANICAL LEVEL 1 DUCTWORK PLAN

33661 CR 473, LEESBURG, FL 34788

NOVEMBER 10, 2021

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7370 Cabot Court, Suite 103
Melbourne, FL 32940
P 321.636.0274
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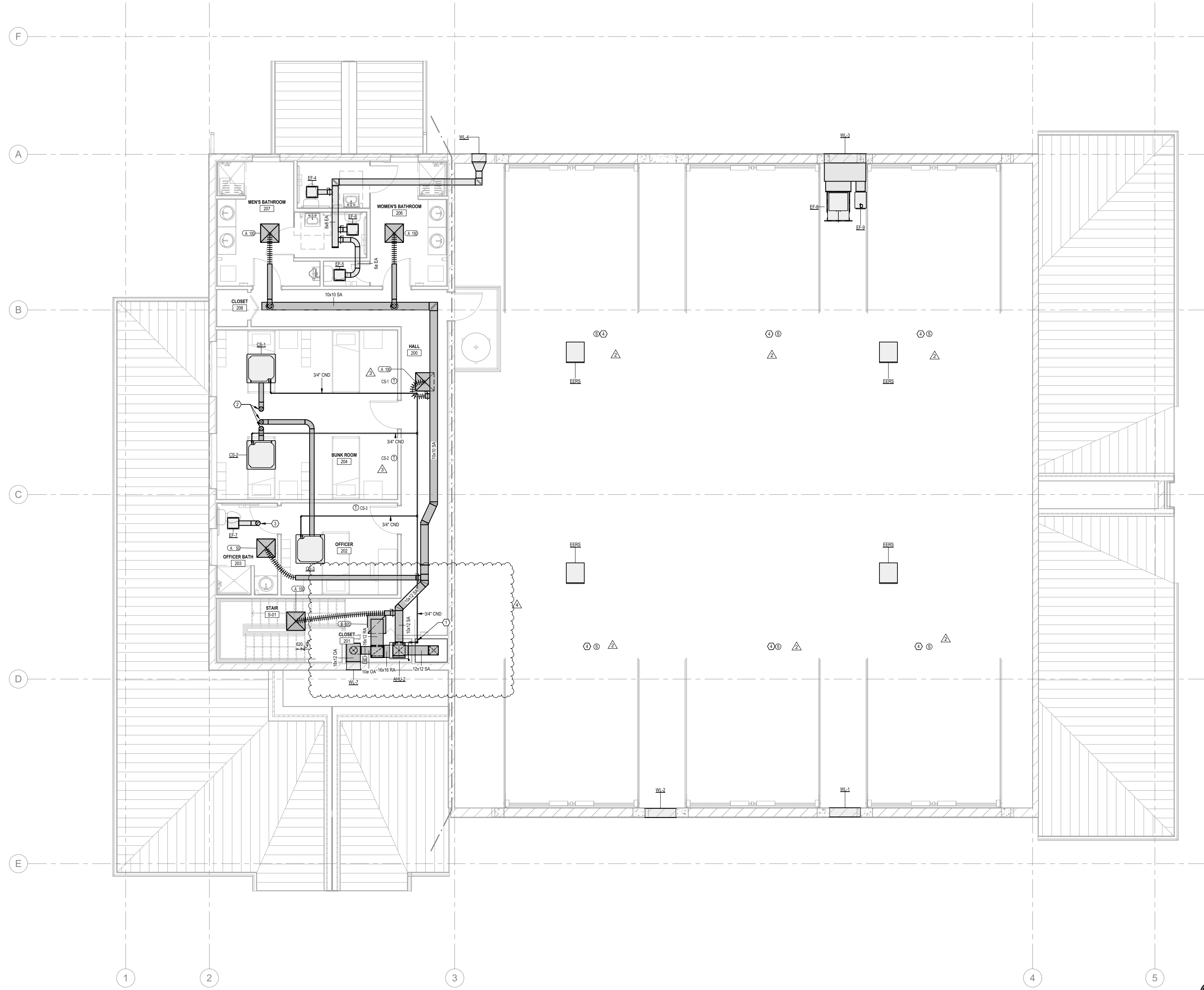

1 SECOND FLOOR - DUCTWORK
1/4" = 1'-0"

PLAN KEY NOTES:

1. 1" CD FROM AHU-2 - 1-1/4" CONDENSATE PIPE DOWN TO FIRST FLOOR. ROUTE CONDENSATE PIPING ABOVE CEILING DOWN TO MECHANICAL ROOM. PROVIDE INDIRECT DISCHARGE TO HUB DRAIN AND SLOPE PIPING AT 1/8" PER FEET.
2. PROVIDE GRAVITY DAMPER AND 6" Ø INTAKE ROOF CAP. SIMILAR TO FAMCO GBV COORDINATE COLOR WITH ARCHITECT.
3. PROVIDE 6"Ø EXHAUST ROOF CAP. SIMILAR TO FAMCO BKXP.COORDINATE COLOR WITH ARCHITECT.
4. PROVIDE CEILING MOUNTED OCCUPANCY SENSORS IN GARAGE SUCH THAT THERE IS FULL COVERAGE OF ALL ENTRY POINTS. OCCUPANCY SENSOR SHALL BE DT-300 CEILING MOUNTED SENSOR OR EQUIVALENT. SENSORS WILL ACTIVATE EF -8.

2

NO.	DESCRIPTION	DATE
2	PERMIT COMMENT RESPONSE	8-04-22
3	PERMIT COMMENT RESPONSE II	09-02-22
4	TRUSS DESIGN AND OH DOOR SHIFT	11-30-22

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PE License #60195

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John P. Adams, AIA
Jerome Bankovich, Jr., AIA, LEED
Ethan J. Hine, AIA
Jennifer Zaffuto, AIA, LEED, NCARB

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LAKE COUNTY
FIRE STATICAL NO.71
MECHANICAL LEVEL 2 DUCTWORK PLAN

33661 CR 473, LEESBURG, FL 34788

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EXHAUST FAN SCHEDULE

PLAN MARK	MFGR	MODEL	FAN TYPE	CFM	E.S.P.	DRIVE	FAN SPEED	HP	VOLTAGE/ PHASE	NOTES
EF-1	GREENHECK	SP-B90	CEILING MOUNTED	50	0.4	DIRECT	700	1/10	115/1	1-4
EF-2	GREENHECK	SP-B90	CEILING MOUNTED	50	0.4	DIRECT	700	1/10	115/1	1-4
EF-3	GREENHECK	SP-B90	CEILING MOUNTED	50	0.4	DIRECT	700	1/10	115/1	1-4
EF-4	GREENHECK	SP-B110ES	CEILING MOUNTED	75	0.4	DIRECT	650	1/10	115/1	1-4
EF-5	GREENHECK	SP-B110ES	CEILING MOUNTED	75	0.4	DIRECT	650	1/10	115/1	1-4
EF-6	GREENHECK	SP-AP0511W	CEILING MOUNTED	100	0.4	DIRECT	860	1/10	115/1	1-4
EF-7	GREENHECK	SP-B90	CEILING MOUNTED	50	0.4	DIRECT	700	1/10	115/1	1-4
EF-8	GREENHECK	BSQ-180	CENTRIFUGAL FAN	3400	0.3	BELT	907	3/4	115/1	1-5
EF-9	GREENHECK	SQ-98-VG	INLINE FAN	230	0.3	DIRECT	989	1/4	115/1	1-4,6
EF-10	GREENHECK	SQ-140-B	INLINE FAN	1750	0.4	DIRECT	1140	1/3	115/1	1-4,6
EF-D	FANTECH	DBF 110	INLINE FAN	120	0.6	DIRECT	700	1/10	115/1	1,3,4,7

NOTES:

1. PROVIDE WITH INTEGRAL DISCONNECT.
2. EXHAUST FAN SHALL BE INTERLOCKED WITH AHU.
3. PROVIDE EQUIPMENT SUPPORTS.
4. PROVIDE VIBRATION ISOLATORS.
5. EF-8 TO OPERATE OFF CONTROGEN SENSOR IN BAY.
6. PROVIDE INSULATED HOUSING FOR THE INLINE FAN EF-9 AND EF-10.
7. LINT TRAP IN LINE WITH TE FAN.

INDOOR SPLIT SYSTEM DX COOLING COIL

MARK	MANUFACTURER	MODEL	SUPPLY CFM	OUTSIDE AIR CFM	MOTOR HP	ESP	TOTAL MBH	SENSIBLE MBH	ENTERING DB TEMP	ENTERING WB TEMP	LEAVING DB TEMP	LEAVING WB TEMP	HEATER FUEL	KW	OUTPUT MBH	SEER	EER	MCA	MOCP	VOLTAGE	PHASE
AHU-1	LENNOX	CBA38MV-060	1,980	348	1.0	0.77	58.1	39.4	82 F	78 F	54.8	54.8	ELEC	8	32.1	16	12.2	38	40	208	1
AHU-2	LENNOX	CBA38MV-048	1,260	318	1.0	0.76	47.8	30.4	80 F	69.2 F	55.8	55.8	ELEC	8	26.5	16	12.2	45	45	208	1

NOTES:

1. PROVIDE WITH MERV 8 FILTER.
2. PROVIDE A SINGLE POINT ELECTRICAL CONNECTION FOR SUPPLY FAN, AND CONTROLS.
3. AHUs TO BE PROVIDED WITH 7 DAY PROGRAMMABLE THERMOSTAT.
4. MOTOR SPEED TO BE VARIABLE FOR BALANCING PURPOSES ONLY.
5. EDA-9000 DEHUMIDIFICATION SYSTEM FIELD INSTALLED.

AIR DISTRIBUTION SCHEDULE

MARK	CFM	NECK SIZE (IN)	FACE SIZE	DESCRIPTION
A	000-100	6Ø	24x24	LAY-IN CEILING SUPPLY DIFFUSER
	101-206	8Ø	24x24	BASIS OF DESIGN: TITUS TMS-AA
	201-375	10Ø	24x24	COLOR: WHITE
	376-550	12Ø	24x24	MATERIAL: ALUMINUM
	551-700	14Ø	24x24	OPPOSED BLADE DAMPERS: NO
	701-850	15Ø	24x24	INSULATED BACKPAN FROM MANUFACTURER
B	000-100	8Ø	24x24	LAY-IN CEILING RETURN/EXHAUST GRILLE
	101-206	8Ø	24x24	BASIS OF DESIGN: TITUS 50F
	201-400	10Ø	24x24	COLOR: WHITE
	401-600	12Ø	24x24	MATERIAL: ALUMINUM
	601-700	14Ø	24x24	OPPOSED BLADE DAMPERS: NO
	701-900	15Ø	24x24	1/2"x1/2"x1/2" GRID
				PAINT VISIBLE METAL INSIDE FLAT BLACK
C	000-245	12 X 8Ø	12x96	SIDEWALL RETURN DIFFUSER
	246-555	18 X 10	18x10	BASIS OF DESIGN: TITUS 350RL
	556-2110	24x24	24x24	COLOR: WHITE
				MATERIAL: ALUMINUM
				OPPOSED BLADE DAMPERS: NO
				DOUBLE DEFLECTION DIFFUSER
				0 DEGREE DEFLECTION
D	0-470	10x10	10x10	SIDEWALL SUPPLY DIFFUSER
	471-775	18x10	18x10	BASIS OF DESIGN: TITUS 350RL
	776-1280	24x14	24x14	COLOR: WHITE
				MATERIAL: ALUMINUM
				OPPOSED BLADE DAMPERS: NO
				DOUBLE DEFLECTION DIFFUSER
				0 DEGREE DEFLECTION

NOTES:

1. AIR DISTRIBUTION DEVICES LOCATED WITHIN ACOUSTICAL TILE CEILINGS SHALL BE PROVIDED WITH BORDER TYPE 3 FOR LAY-IN MOUNTING. AIR DISTRIBUTION DEVICES LOCATED WITHIN GYPSUM BOARD CEILINGS OR WALLS SHALL BE PROVIDED WITH BORDER TYPE 1 FOR SURFACE MOUNTING. REFER TO ARCHITECTURAL DOCUMENTS FOR CEILING TYPES.

2. AIR DISTRIBUTION DEVICES LOCATED IN SMALL ROOMS WHERE FULL 24"Qx4" 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.

CASSETTE MINI SPLITS SCHEDULE

MARK	SELECTION BASED ON: MANU.	MODEL	TYPE	CFM	OA CFM	TOTAL COOLING (BTUH)	HEATING CAPACITY (BTUH)	ELECTRICAL: VOLTS/PH	AMPS	WEIGHT (LBS)	SERVED BY	NOTES
CS-1	LG	LMCM09HV	CASSETTE	215	70	7,000	8,100	208/1	0.25	20	CU-3	1-5
CS-2	LG	LMCM09HV	CASSETTE	215	70	7,000	8,100	208/1	0.25	20	CU-3	1-5
CS-3	LG	LMCM09HV	CASSETTE	215	70	7,000	8,100	208/1	0.25	20	CU-3	1-5

NOTES:

1. PROVIDE A PROGRAMMABLE AND AUTOMATIC SWITCHING THERMOSTAT.
2. PROVIDE FACTORY MOUNTED DISCONNECT.
3. POWER FOR CASSETTE PROVIDED BY CONDENSING UNIT.
4. SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATION.
5. PROVIDE A CONDENSATE PUMP THAT IS POWERED INTERNALLY BY SINGLE POINT CONNECTION FROM MANUFACTURER.

SPLIT SYSTEM CONDENSING UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	NOMINAL TONS	AMBIENT TEMP	REFRIGERANT	MOTOR HP	FLA	RLA	MCA	MOCP	VOLTAGE	PHASE
CU-1	LENNOX	16ACA-059-230	5.0	95 F	R-410A	1/4	1.4	23.5	36	50	208	1
CU-2	LENNOX	XC16-048-230	4.0	95 F	R-410A	1/3	1.9	17.05	28	40	208	1
CU-3	LG	LMUU40HV	3.0	115 F	R-410A	1/3	0.58	---	14.3	30	208	1

NOTES:

1. PROVIDE A UNIT MOUNTED DISCONNECT.
2. PROVIDE CONDENSER COIL GUARD.
3. PROVIDE 5 YEAR COMPRESSOR WARRANTY.

KITCHEN HOOD SCHEDULE

MARK	MANUFACTURER	MODEL	CFM	SIZE OF HOOD	# OF EA. CONNECTIONS	SIZE OF EA. CONNECTIONS	MCA	MOCP	VOLTS/PHASE
KH-1	SEE ARCH. PLANS	D1030-D	250	30"x20"x24"	1	14"x10"	1.38	15	120/1

NOTES:

1. PROVIDE A WALL CANOPY STYLE EXHAUST HOOD.
2. HOOD SHALL BE ETL LISTED FOR USE OVER ANY'F COOKING SURFACE TEMPERATURES.
3. HOOD SHALL BE EQUIPPED WITH GREASE EXTRACTION UTILIZING STAINLESS-STEEL BAFFLE FILTERS AND A DEEP GREASE TROUGH.
4. PROVIDE ANSUL FIRE PROTECTION SYSTEM IN COMPLIANCE WITH NFPA 96.
5. PROVIDE FIELD WRAPPER 4" HIGH, BACKSPLASH 80" HIGH BY 80" LONG, RIGHT END STAND OFF 1" WIDE BY 54"LONG INSULATED AND RG SIDESPLASH 80" HIGH X 54" LONG.

ENGINE EXHAUST REMOVAL SYSTEM

MARK	MANUFACTURER	MODEL	SERVES	HP	VOLTS/PH	QUANTITY	WEIGHT	FILTER
EERS	AIRVAC	911	APPARATUS BAY	3/4	208/1	4	190	MERV 16+

NOTES:

1. 4-WAY AIRFLOW DESIGN
2. MOUNT 12' AFF.
3. PROVIDE ILLUMINATED PUSH PUTTON ON/OFF.
4. PROVIDE TOXIC GAS SENSOR THAT MONITORS CO & NO2, HONEYWELL MODEL: EXPOINT OR EQUIVALENT. SET UNITS TO TURN ON WHEN THE FIRST CONCENTRATION LIMIT THRESHHOLD IS REACHED (ALARM A).
5. FANS BE PROGRAMMED TO RUN FOR 1 HOUR UPON ACTIVATION, PER CONTROLS DIAGRAM.
6. PROVIDE CO2, NOX, AND MANUAL PUSH BUTTON CONTROLS

LOUVER SCHEDULE

MARK	MANUFACTURER	MODEL	SERVING	TYPE	AIRFLOW (CFM)	SIZE (WxH)	FREE AREA SQFT	NOTES
WL-1	GREENHECK	EAD-638	BAY	INTAKE	2525	30x36	4.8	1,2,3
WL-2	GREENHECK	EAD-638	BAY	INTAKE	2525	30x36	4.8	1,2,3
WL-3	GREENHECK	EAD-401	BAY	EXHAUST	2520	24x20	3.7	1,2,3
WL-4	GREENHECK	EAD-401	2ND FLOOR	EXHAUST	250	18x14	0.3	1,2,3
WL-5	GREENHECK	EAD-638	BAY	EXHAUST	3780	36x30	7.1	1,2,3
WL-6	GREENHECK	EAD-638	OUTSIDE AIR	INTAKE	3780	36x30	7.1	1,2,3
WL-7	GREENHECK	EAD-638	OUTSIDE AIR	INTAKE	340	18x18	2.1	1,2,3
WL-8	GREENHECK	EAD-638	OUTSIDE AIR	INTAKE	510	18x12	1.4	1,2,3

NOTES:

1. PROVIDE DRAINABLE STATIONARY LOUVERS.
2. COORDINATE COLOR WITH ARCHITECT.
3. PROVIDE 12" DEEP EXTRUDED FRAME OR LARGER TO COORDINATE WITH WALL SIZE.

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James C. Mullen, P.E.
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NO.	DESCRIPTION	DATE
1	PERMIT COMMENT RESPONSE	8-24-22
2	PERMIT COMMENT RESPONSE II	09-30-22
3	PLANS DESIGN AND DOOR SHIFT	11-30-22

John P. Adams, AIA
Jerome Bankoff, Jr., AIA, LEED
Jennifer Zaffuto, AIA, LEED, NCARB

KTH ARCHITECTS
1741 KIVANIS TRAIL ● DUBOIS, PA ● 814-371-1541 ● F 814-371-8801 ● KTHarch.com
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LAKE COUNTY
FIRE STATION NO.71
MECHANICAL EQUIPMENT SCHEDULES
33661 CR 473, LEESBURG, FL 34788

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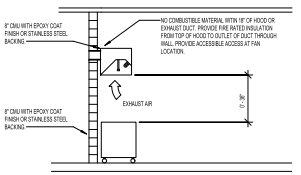

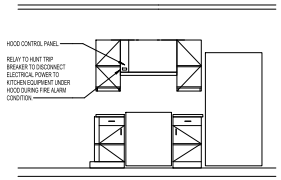

KITCHEN HOOD
No Scale

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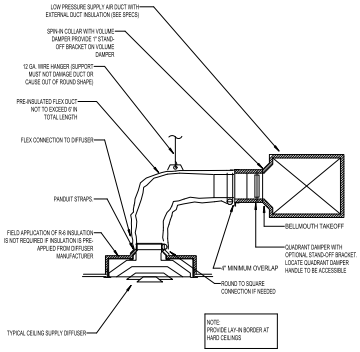

TYPICAL SUPPLY DIFFUSER CONNECTION
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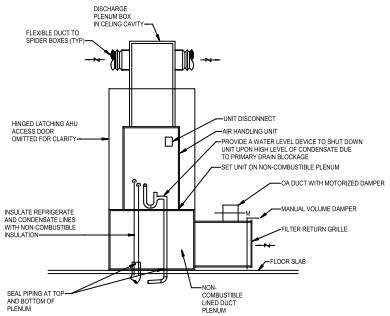

AHU FLOOR MOUNT
No Scale

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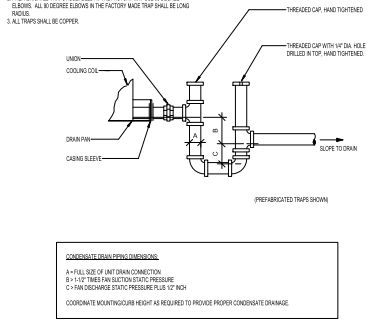

AHU CONDENSATE DRAIN TRAP
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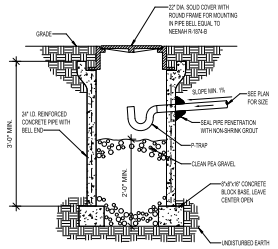

DRY WELL
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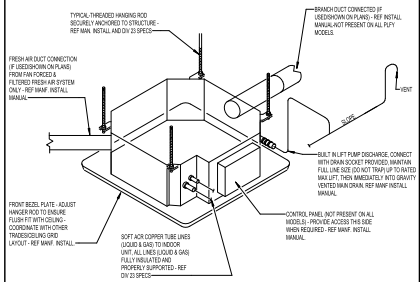

CASSETTE INDOOR UNIT
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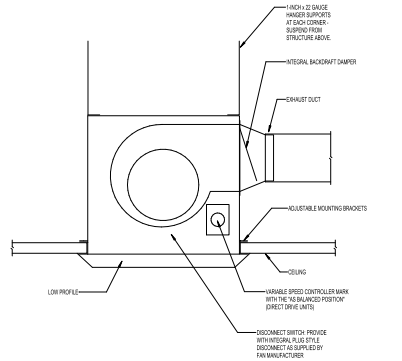

TYP. CEILING MOUNTED EXHAUST FAN
No Scale

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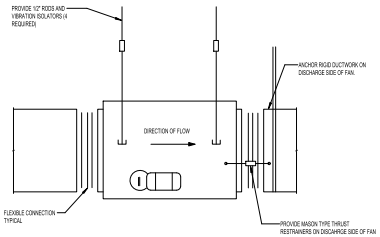
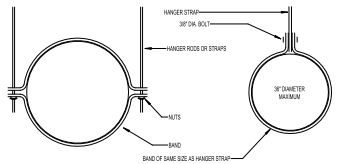


INLINE FAN - LARGE
No Scale

11

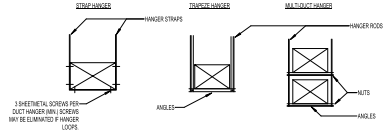


MINIMUM HANGER SIZES FOR ROUND DUCT								
DUCT DIAMETER	MAXIMUM SPACING	WIRE		ROD		STRAP		
		QUANTITY	SIZE	QUANTITY	SIZE	QUANTITY	SIZE
10" OR LESS	12'-0"	1	12 GAUGE	1	1/4"	1	1"x22 GAUGE
11"-18"	12'-0"	2	12 GAUGE	1	1/4"	1	1"x22 GAUGE
		1	8 GAUGE	--	--	--	--
19"-24"	12'-0"	2	10 GAUGE	1	1/4"	1	1"x22 GAUGE
25"-36"	12'-0"	2	8 GAUGE	1	3/8"	1	1"x20 GAUGE
37"-60"	12'-0"	--	--	2	3/8"	2	1"x20 GAUGE
61"-60"	12'-0"	--	--	2	3/8"	2	1"x18 GAUGE
61"-84"	12'-0"	--	--	2	3/8"	2	1"x18 GAUGE

NOTES:
1. STRAPS ARE GALVANIZED STEEL; RODS ARE UNCOATED OR GALVANIZED STEEL, BRIGHT BASIC OR GALVANIZED STEEL. ALL ARE ALTERNATIVES.
2. TABLE ALLOWS FOR CONVENTIONAL WALL THICKNESS, AND JOINT SYSTEMS PLUS ONE LB/SF OF INSULATION WEIGHT. IF HEAVIER DUCTS ARE TO BE INSTALLED, ADJUST HANGER SIZES TO BE WITHIN THEIR LOAD LIMITS.

TYPICAL ROUND DUCT SUPPORT
No Scale

9

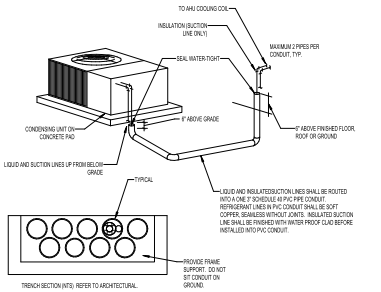


MINIMUM RECTANGULAR DUCT HANGER SIZES					
MAXIMUM DUCT WIDTH	MAXIMUM SPACING	WIRE SIZE	ROD SIZE	STRAP SIZE	TRAPEZE SIZE
24	10'-0"	10 GAUGE	--	1"x22 GAUGE	1x1x16 GAUGE
56	10'-0"	--	3/8"	1"x16 GAUGE	1x1x1/8
77	10'-0"	--	3/8"	1"x16 GAUGE	1.5x1.5x1/8
96	10'-0"	--	1/2"	1-1/2"x16 GAUGE	1.5x1.5x1/4
134	10'-0"	--	1/2"	1-1/2"x16 GAUGE	2.5x2.5x1/8
154	6'-0"	--	1/2"	1-1/2"x16 GAUGE	2.5x2.5x3/16
155	---	--	--	--	--

NOTES:
1. STRAPS ARE GALVANIZED STEEL, RODS ARE UNCOATED OR GALVANIZED STEEL, WIRE IS BLACK ANNEALED, BRIGHT BASIC OR GALVANIZED STEEL. ALL ARE ALTERNATIVES
2. TABLE ALLOWS FOR CONVENTIONAL WALL THICKNESS, AND JOINT SYSTEMS PLUS ONE LB/SF OF INSULATION WEIGHT. IF HEAVIER DUCTS ARE TO BE INSTALLED, ADJUST HANGER SIZES TO BE WITHIN THEIR LOAD LIMITS.
3. WHEN STRAP HANGERS ARE LAP JOINED USE THES MINIMUM FASTENERS:
Ts 18, 20, GUAGE — 2-#10 OR OR 1-1/4" BOLT
Ts 16 GUAGE — 2-1/4" BOLTS
Ts 14 GUAGE — 2-3/8" BOLTS
4. REFER TO SMACNA HVAC CONSTRUCTION STANDARDS FOR ADDITIONAL INFORMATION.

TYPICAL RECTANGULAR DUCT SUPPORT
No Scale

10



REFRIGERANT PIPING DIAGRAM
No Scale

8

TLC ENGINEERING SOLUTIONS
7370 Cabot Court, Suite 103
Melbourne, FL 32940
P 321.636.0274
COA 15
www.tlcengineering.com
TLC No.: 521157
THINK. LISTEN. CREATE.

NO.	DESCRIPTION	DATE

100% CD Submittal - Bid Set

James C. Mullen, P.E.
PE License #60195
12/16/2022 9:53:37 AM

John P. Adams, AIA
Jerome Bankoff, Jr., AIA, LEED
Jennifer Zaffuto, AIA, LEED, NCARB
1741 WYMANS TRAIL • DUBOIS, PA • 814-371-1541 • F 814-371-8801 • KTHarch.com
800 NORTH HIGHLAND AVE. • ORLANDO, FL • 407.205.8700 • F 407.406.0650
KTH ARCHITECTS

20073A

LAKE COUNTY
FIRE STATION NO.71
MECHANICAL DETAILS
33661 CR 473, LEESBURG, FL 34788

NOVEMBER 10, 2021

M5.1

SEQUENCE OF OPERATIONS:

AHU'S SHALL BE CONTROLLED BY THERMOSTAT AND SHALL HAVE A SETPOINT OF COOLING 72F (USER ADJUSTABLE) AND HEATING OF 68F (USER ADJUSTABLE) PROVIDE PROGRAMMABLE THERMOSTAT WITH 7 DAY PROGRAMMING CAPABILITY, WITH THREE DAILY PROGRAMS AVAILABLE.

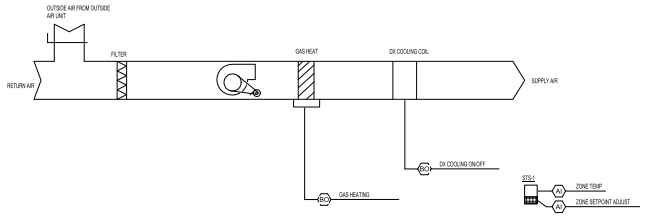
THE OUTSIDE AIR DUCT SHALL HAVE A DAMPER AT THE INLET TO EACH AHU RETURN SYSTEM THAT SHALL BE BALANCED TO THE SCHEDULED OUTSIDE AIR VOLUME WHEN ALL AHU FANS ARE ON.

AHU COOLING COIL SHALL OPERATE WHEN THE SPACE TEMPERATURE IS ABOVE THE SETPOINT.

AHU GAS FURNACE SHALL OPERATE WHEN THE SPACE TEMPERATUE IS BELOW THE SETPOINT.

THE COOING COIL AND HEATING COIL SHALL NOT OPERATE SIMULATNEOUSLY.

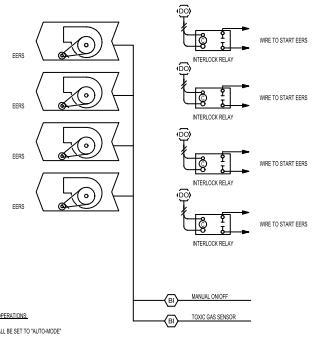
UNIT SHALL BE SET IN AUTO.



FURNACE W/ DX COOLING COIL CONTROLS DIAGRAM

No Scale

3



SEQUENCE OF OPERATIONS:

EERS UNITS SHALL BE SET TO "AUTO-MODE"

WHEN TOXIC GAS SENSOR ALARMS THAT THE CONCENTRAION OF CO, NO2, OR ANOTHER TOXIC GAS IS ABOVE THE MAXIMUM LIMIT, ALL EERS UNITS SHALL INITIATE START UP SEQUENCE AND REMAIN ON FOR 1 HOUR.

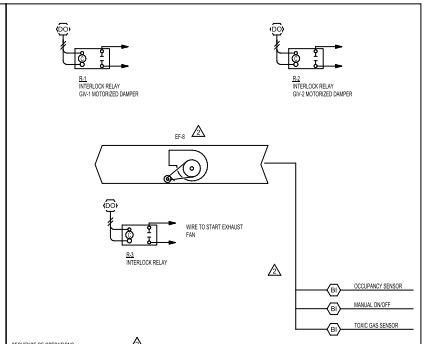
WHEN MANUAL ON/OFF PUSH BUTTON IS PRESSED, ALL EERS UNITS SHALL INITIATE START UP SEQUENCE AND REMAIN ON FOR 1 HOUR.

AFTER ONE HOUR, IF NO FURTHER ALARMS ARE ACTIVE, ALL EERS UNITS SHALL DE-ENERGIZE.

ENGINE EXHAUST REMOVAL CONTROLS DIAGRAM

No Scale

2



SEQUENCE OF OPERATIONS:

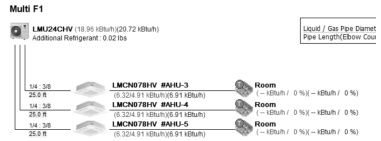
EF-6 SHALL OPERATE CONTINUOUSLY AT LOW FLOW 230 CFM ADJUSTABLE FOR GENERAL VENTILATION.

EF-6 SHALL OPERATE AT HIGH FLOW 3400 CFM ADJUSTABLE FOR EMERGENCY EXHAUST UPON ALARM FROM TOXIC GAS SENSOR. SENSOR SHALL ALARM CO AND NOX AND WHEN READINGS ARE ABOVE SET POINTS, FAN SHALL RUN AT HIGH FLOW. UPON A DROP IN READINGS BELOW SET POINT, THE FAN SHALL SHUT OFF.

APPARATUS BAY EXHAUST VENTILATION

No Scale

1



CASSETTE PIPPING DIAGRAM

No Scale

4

NO.	DESCRIPTION	DATE
2	PERMIT COMMENT RESPONSE	8-04-22

James C. Mullen, P.E.
PE License #60195

12/16/2022 9:53:38 AM

John P. Adams, AIA
Jerome Bankowski, Jr., AIA, LEED
Erin J. Hite, AIA
Jennifer Zaffuto, AIA, LEED, NCARB

KTH ARCHITECTS
1741 WYANNS TRAIL ● DUBOIS, PA ● P 814-371-1541 ● F 814-371-8801 ● KTHarch.com
800 NORTH HIGHLAND AVE. ● ORLANDO, FL ● P 407.203.6700 ● F 407.406.0650

20073A

LAKE COUNTY
FIRE STATION NO.71
MECHANICAL CONTROLS
33661 CR 473, LEESBURG, FL 34788

NOVEMBER 10, 2021

100% CD Submittal - Bid Set

M6.1

TLC ENGINEERING SOLUTIONS
7370 Cabot Court, Suite 103
Melbourne, FL 32940
P 321.636.0274
COA 15
TLC No.: 521157

PLUMBING SYMBOL LEGEND

SYMBOL	DESCRIPTION
CD	- ABOVE GROUND CONDENSATE DRAIN
CD	- BELOW GROUND CONDENSATE DRAIN
	- DOMESTIC COLD WATER
	- DOMESTIC HOT WATER
	- DOMESTIC HOT WATER RECIRCULATING
S	- ABOVE GROUND SANITARY
S	- BELOW GROUND SANITARY
	- SANITARY VENT
M	- WATER METER
	- HOSE BIBB OR WALL HYDRANT
COP	- CLEAN OUT PLUG
WCO	- WALL CLEANOUT
CO	- FLOOR CLEAN OUT
FD FD	- FLOOR DRAIN
FS	- FLOOR SINK
	- SHUT-OFF VALVE IN VALVE BOX
	- SHUTOFF VALVE
	- BALL VALVE
	- CALIBRATED BALANCING VALVE
	- CHECK VALVE (SWING)
	- PRESSURE REDUCING VALVE
	- REDUCED PRESSURE BACKFLOW PREVENTER
	- RELIEF OR SAFETY VALVE
	- SOLENOID OPERATED VALVE
	- SHUTOFF VALVE ON RISER
	- CONNECTION, TOP
	- CONNECTION, BOTTOM
	- ELBOW, TURNED DOWN
	- ELBOW, TURNED UP
	- TEE, TURNED UP
	- TEE, TURNED DOWN
	- CAP
	- DIRECTION OF FLOW
1 / P-1	- DETAIL REFERENCE: TOP-DETAIL#, BOTTOM-DRAWING# SHOWN ON

SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT

GENERAL NOTES

1. REFERENCE THE SPECIFICATIONS FOR MATERIAL AND EQUIPMENT INSTALLATION STANDARDS.
2. THE PLUMBING INSTALLATION SHALL COMPLY WITH 2020 (7th EDITION) FLORIDA BUILDING CODES, 2020 (7th EDITION) FLORIDA ENERGY CONSERVATION CODE AND 2020 (7th EDITION) PLUMBING CODES.
3. FIELD VERIFY / COORDINATE INSTALLATIONS WITH ALL OTHER DISCIPLINES AS REQUIRED.
4. NOTIFY OWNER AT LEAST 24 HOURS PRIOR TO INTERRUPTING EXISTING SERVICE. SCHEDULE DISCONNECTION AND TIE-INS TO MINIMIZE DISRUPTION OF SERVICES. SERVICES ARE NOT TO BE LEFT DISRUPTED DURING NON-NORMAL CONTRACTOR WORKING HOURS.
5. PLANS ARE NOT COMPLETELY TO SCALE. PIPE ROUTING SHOWN IS SCHEMATIC AND IS NOT INTENDED TO INDICATE EXACT ROUTING. CONTRACTOR SHALL PROVIDE ANY CLEARANCES. VERIFY STRUCTURAL, MECHANICAL AND ELECTRICAL INSTALLATIONS AND OTHER POTENTIAL OBSTRUCTIONS AND ROUTE PIPING TO AVOID INTERFERENCES.
6. PROVIDE ALL OFFSETS AND FITTINGS AND MAKE CONNECTION TO SITE UTILITIES.
7. CONCEAL PIPING WITHIN INTERSTITAL SPACE OR ABOVE CEILINGS, WITHIN WALLS OR CHASES EXCEPT IN MECHANICAL ROOMS OR AS SPECIFICALLY NOTED.
8. PROVIDE ACCESS PANELS FOR ALL VALVES CONCEALED IN WALLS OR ABOVE NON-ACCESSIBLE CEILINGS.
9. SLEEVE AND/OR FIRESTOP ALL PENETRATIONS THROUGH RATED WALLS, CEILINGS, AND FLOORS WITH U/L LISTED ASSEMBLIES. FIRESTOP ASSEMBLIES SHALL BE EQUAL TO OR EXCEED THE RATING OF THE WALL, CEILING OR FLOOR. SEE ARCHITECTURAL DRAWINGS FOR FINAL FINISHES.
10. WHEN BEAM SLEEVE PENETRATIONS ARE NECESSARY, COORDINATE PENETRATIONS WITH ALL TRADES, THE ARCHITECT AND THE STRUCTURAL ENGINEER.
11. SEE ARCHITECTURAL DRAWINGS FOR FIXTURE LOCATIONS AND MOUNTING HEIGHTS.
12. PROVIDE AN AIR GAP, WHEN REQUIRED BY CODE, SERVING INDIVIDUAL FIXTURES, DEVICES, APPLIANCES AND APPARATUS.
13. ALL EXPOSED PIPE AND FITTINGS IN FINISHED AREAS SHALL BE CHROME PLATED.
14. PROVIDE CLEANOUTS IN ACCORDANCE WITH ALL STATE AND LOCAL CODES. INSTALL CLEANOUT WITH COVER FLUSH TO FINISH SURFACE.
15. 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. ANY PIPING RUN OVER PANELS SHALL BE RE-ROUTED AT NO ADDITIONAL COST.
16. 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.
17. REFER TO ALL CONSULTANT'S DOCUMENTS INCLUDING, AS ADDITIONAL PLUMBING INFORMATION AND REQUIREMENTS ARE CONTAINED WITHIN THEIR DRAWINGS AND SPECIFICATIONS. CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR ADA REQUIREMENTS.
18. PROVIDE AND INSTALL AN ACCESSIBLE DUAL CHECK DEVICE ON ANY ITEMS AS REQUIRED BY CODE SUCH AS COFFEE MAKER, ICE MAKER, ETC...

PLUMBING ABBREVIATIONS

A/E	ARCHITECT/ENGINEER
AD	AREA DRAIN/ACCESS DOOR
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AG	AIR GAP
AP	ACCESS PANEL
AS	AUTOMATIC SPRINKLER
ASD	ADJUSTABLE SPEED DRIVES
ASD	AUTOMATIC SPRINKLER DRAIN
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION, AIR CONDITIONING ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASPE	AMERICAN SOCIETY OF PLUMBING ENGINEERS
ASR	AUTOMATICSPRINKLER RISER
AV	ACID VENT
AW	ACID WASTE
BFP	REDUCED PRESSURE BACKFLOW PREVENTER
BHP	BREAK HORSEPOWER
BSP	BLACK STEEL PIPE
BT	BATHTUB
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER/HOUR
C	CELSIUS
CA	COMPRESSED AIR
CGA	COMPRESSED GAS ASSOCIATION
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CO	CLEANOUT
CS	CLINICAL SINK
CV	CONTROL VALVE
DCW	DOMESTIC COLD WATER
DEMO	DEMOLITION(REMOVE FROM SERVICE)
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RETURN
DHWS	DOMESTIC HOT WATER SUPPLY
DI	DEIONIZED WATER
DN	DOWN
DOE	DEPARTMENT OF ENERGY
DS	DOWNSPOUT
DW	DISHWASHER
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DWR	DRINKING WATER RETURN
DWS	DRINKING WATER SUPPLY
DWV	DRAIN WASTE VENT
EL	ELEVATION
EMCS	ENERGY MONOSERRAT AND CENTRAL SYSTEM
EPA	ENVIROMENTAL PROTECTION AGENCY
EPACT	ENERGY POLICY ACT
ESC	ESCUTCHEON
ESH	EMERGENCY SHOWER
ET	EXPANSION TANK
EWH	ELECTRIC WATER HEATER
EWS	EYE WASH STATION
EWS/SH	EYE WASH/DRENCH SHOWER
ETR	EXISTING TO REMAIN
F	FAHRENHEIT
FCO	FLOOR CLEANOUT
FCW	FILTERED COLD WATER
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT (HOSE) CONNECTION
FM	FLOW METER
FOP	FUEL OIL PUMP
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOV	FUEL OIL VENT
FS	FLOOR SINK
FS	FLOW SWITCH
FU	FIXTURE UNITS
GAL	GALLON
GCO	GRADE CLEANOUTS
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GPR	GAS PRESSURE REGULATOR
GRS	GAS REGULATOR STATION
GT	GREASE TRAP
GVTR	GAS VENT THROUGH ROOF
GWH	GAS FIRED WATER HEATER
H&CW	HOT & COLD WATER
HB	HOSE BIBB
HD	HUB DRAIN
HEX	HEAT EXCHANGER
HP	HORSEPOWER
HS	HAND SINK
HST	HOT WATER STORAGE TANK(DOMESTIC)
HWB	HOT WATER BOILER
HWCP	HOT WATER CIRCULATING PUMP
HWP	HOT WATER PUMP
HYD	HYDRANT
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
ICW	INDUSTRIAL COLD WATER
IHW	INDUSTRIAL HOT WATER
INV	INVERT
IPC	INTERNATIONAL PLUMBING CODE
IRW	IRRIGATION WATER
IW	INDIRECT WASTE
IWH	INSTANTANEOUS WATER HEATER
IWR	INDUSTRIAL WATER RETURN
IWS	INDUSTRIAL WATER SUPPLY
KW	KILOWATT
KWH	KILOWATT HOUR
L/S	LITER PER SECOND
LA	LABORATORY AIR
LAV	LAVATORY
LBS/HR	LBS/HR POUNDS PER HOUR
LCW	LABORATORY COLD WATER
LHW	LABORATORY HOT WATER
LNG	LIQUID NATURAL GAS
LOX	LIQUID OXYGEN
LV	LABORATORY VACUUM
LW	LOW WATER
M	METER
MA	MEDICAL AIR
MAV	MANUAL AIR VENT
MBH	1000 BTUH
MED	MEDICAL
MER	MECHANICAL EQUIPMENT ROOM
MH	MANHOLE
MOU	MEMORANDUM OF UNDERSTANDING
MSB	MOP SERVICE BASIN
MV	MEDICAL VACUUM
N2	NITROGEN
N20	NITROUS OXIDE
NC	NORMALLY CLOSED
NG	NATURAL GAS
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOM.	NOMINAL
NPW	NON POTABLE WATER
NTS	NOT TO SCALE
O2	OXYGEN
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFD	OVERFLOW DRAIN
OR	OPERATING ROOM
OVFL	OVERFLOW
PA	PASCAL
PD	PRESSURE DROP OR DIFFERENCE
PDI	PLUMBING AND DRAINAGE INSTITUTE
PG	PRESSURE GAGE
PP	PLUMBING PUMP
PPM	PARTS PER MILLION
PRS	PRESSURE REDUCING STATION
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ATMOSPHERE
PSIG	POUNDS PER SQUARE INCH GAGE
PTRV	PRESSURE TEMPERATURE RELIEF VALVE
PW	POTABLE WATER
RD	ROOF DRAIN
RDL	ROOF DRAIN LEADER
RL	ROOF LEADER
RP	RECIRCULATION PUMP
RO	REVERSE OSMOSIS WATER
RWL	RAIN WATER LEADER
SAN	SANITARY SEWER
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SCFM	STANDARD CUBIC FOOT/MINUTE
SCW	SOFTENED COLD WATER
SDMH	STORM DRAIN MANHOLE
SMH	SANITARY MANHOLE
SP	SUMP PUMP
SPR	SPRINKLER LINE
SQFT/S	SQFT/SF SQUARE FEET
SS	STAINLESS STEEL
ST	STORAGE TANK
SW	STORM WATER
TCV	TEMPERATURE CONTROL VALVE
TD	TEMPERATURE DIFFERENCE
TD	TRENCH DRAIN
TDH	TOTAL DYNAMIC HEAD
TEMP	TEMPERATURE
TMV	THERMOSTATIC MIXING VALVE
TP	TRAP PRIMER
TSTAT	THERMOSTAT
TWR	TEMPERED WATER RETURN
TWS	TEMPERED WATER SUPPLY
TYP	TYPICAL
V	VENT
VAC	VACUUM
VB	VACUUM BREAKER
VCO	VACUUM CLEANER OUTLET
VP	VACUUM PUMP
VS	VENT STACK
VSD	VARIABLE SPEED DRIVE
VTR	VENT THROUGH ROOF
W	WASTE
WC	WATER CLOSET
WCO	WALL CLEANOUT
WG	WATER GAGE
WH	WALL HYDRANT
WH	WATER HEATER
WHA	WATER HAMMER ARRESTER
WL	WATER LINE
WM	WATER METER
WPD	WATER PRESSURE DROP
WS	WASTE STACK
WSFU	WATER SUPPLY FIXTURE UNITS
YCO	YARD CLEANOUT
YH	YARD HYDRANT

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE TYPE	FIXTURE MANUFACTURER	FIXTURE MODEL	TRIM MANUFACTURER	TRIM MODEL	FLOW RATE / FLUSH RATE / FLOW CYCLE	DESCRIPTION / SPECIFICATIONS
WC-1	WATER CLOSET	AMERICAN STANDARD	211CA.104	SLOAN	ROYAL 113	1.28 GPF	FLOOR MOUNTED, 15" HIGH, VITREOUS CHINA, 1.28 GPF, TANK TYPE WITH SIPHON JETTED ELONGATE BOWL.
WC-2	ACCESSIBLE WATER CLOSET	AMERICAN STANDARD	211AA.104	SLOAN	ROYAL 113	1.28 GPF	FLOOR MOUNTED, 16-1/2" HIGH, VITREOUS CHINA, 1.28 GPF, TANK TYPE WITH SIPHON JETTED ELONGATE BOWL.
UR-1	URINAL (ACCESSIBLE)	AMERICAN STANDARD	6501.010	SLOAN	ROYAL 186	0.125 GPF	WALL HUNG VITREOUS CHINA, 0.125 GPF, SIPHON JET URINAL WITH INTEGRAL FLUSHING RIM, INTEGRAL TRAP, AND 2" FEMALE FLANGED OUTLET CONNECTION.
L-1	SELF-RIMMING LAVATORY	AMERICAN STANDARD	0476.028	MOEN	8884	0.5 GPM	VITREOUS CHINA, 20" X 17" OVAL, PUNCHED FOR 4" CENTERSET FITTING. PROVIDE WITH SINGLE LEVER CAST BRASS FAUCET WITH VANDAL RESISTANT OUTLET.
L-2	LAVATORY (ACCESSIBLE)	AMERICAN STANDARD	0124.151	MOEN	8884	0.5 GPM	WALL HUNG VITREOUS CHINA FOR CONCEALED ARMS SUPPORT, 20" X 18-1/4", PUNCHED FOR 4" CENTERSET FITTING. PROVIDE WITH SINGLE LEVER CAST BRASS FAUCET WITH VANDAL RESISTANT OUTLET.
SH-1	SHOWER (ACCESSIBLE)	AQUA BATH	C6536BF-FUS	DELTA COMMERCIAL	T17TH335	1.5 GPM	PROVIDE WITH PRESSURE BALANCING MIXING VALVE WITH LEVER HANDLE, FIXED SHOWER HEAD WITH SHOWER ARM, HAND HELD SHOWER WITH FLEXIBLE HOSE, IN-LINE VACUUM BREAKER, 24" SLIDE BAR, AND INTEGRAL SERVICE STOPS. PROVIDE SEPARATE VALVE ROUGH-IN #10700-UNBX. SHOWER STALL DRAIN SHALL BE ZURN No. ZN-415-5" SQUARE TOP COATED CAST IRON DRAIN BODY WITH BOTTOM OUTLET, COMB. INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR.
SK-1	SELF-RIMMING SINK	ELKAY	DLR251910	MOEN	8884	1.5 GPM	TYPE 304 18-8 STAINLESS STEEL 25" X 19.5" X 5" DEEP. DOUBLE BOWL SINK. PROVIDE SINK WITH CRUMB CUP STRAINER, AND 8" CHROME PLATED BRASS FAUCET, VANDAL RESISTANT, SINGLE LEVER HANDLE AND 10" SPOUT FAUCET WITH HANDSPRAYER.
S-1	SELF-RIMMING SINK	ELKAY	LR2219	CHICAGO BRADLEY (APPARATUS BAY/GARAGE)	786-GN2F-ACSCP 919-590XW	.5	TYPE 304 18-8 STAINLESS STEEL 22" X 19" X 10" DEEP. INTERIOR AND TOP SURFACES SHALL BE POLISHED TO A HIGH LUSTER FINISH. PROVIDE SINK WITH CRUMB CUP STRAINER, AND 8" CHROME PLATED BRASS FAUCET, VANDAL RESISTANT, SINGLE LEVER HANDLE AND 10" SPOUT FAUCET WITH HANDSPRAYER. (PROVIDE WITH EMERGENCY EYEWASH AND POINT OF USE TMV ON SINK LOCATED IN APPARATUS BAY/GARAGE)
MB-1	MOP BASIN	FIAT	MSB-1	FIAT	830AA	1.5 GPM	MOLDED STONE (WHITE) 24x24 832AA HOSE/BRACKET, 889CC MOP HANGER BRACKET, 838AA24 24" STAINLESS STEEL BUMBER GUARDS.
IWB-1	ICE MAKER SUPPLY BOX	GUY GREY	MIB19/A	N/A	N/A	N/A	RECESSED SUPPLY BOX WITH WALL FLANGE MANUFACTURED FROM 18 GAUGE STEEL WITH WHITE POWDER COAT FINISH. FURNISH WITH 1/2"x1/4" COMPRESSION ANGLE VALVE.
WMB-1	WASHING MACHINE SUPPLY AND DRAIN BOX	GUY GREY	MWB19	N/A	N/A	N/A	RECESSED WASHING MACHINE BOX WITH 1/2" QUARTER TURN BALL VALVES, SHOCK ARRESTORS AND DRAIN CONNECTION
FD-1	FLOOR DRAIN	ZURN	Z-628	N/A	N/A	N/A	HEAVY DUTY CAST IRON FLOOR DRAIN AND COVER FOR USE IN UTILITY AND MECHANICAL ROOMS WITH TRAP GUARD.
FS-1	FLOOR SINK	ZURN	ZN-1920-3-33	N/A	N/A	N/A	CAST IRON FLOOR SINK WITH WHITE ACID RESISTING EPOXY COATED INTERIOR, 10 GRATE TOP AND WHITE A.C.R. ANTI-SPLASH BOTTOM DOME STRAINER.
AD-1	AREA DRAIN (TRAFFIC RATED)	ZURN	ZC-535-L	N/A	N/A	N/A	TRAFFIC RATED EXTRA HEAVY DUTY CAST IRON AREA DRAIN AND COVER FOR USE IN APPARATUS BAY/GARAGE WITH TRAP GUARD.
WH-1	WALL HYDRANT (FREEZELESS)	ZURN	Z1320XL	N/A	N/A	N/A	FREEZELESS WALL HYDRANT IN RECESSED LOCKABLE BOX - LOOSE KEY WITH VACUUM BREAKER (PROVIDE 2 KEYS PER EACH LOCATION)

INSTANTANEOUS ELECTRIC WATER HEATER SCHEDULE

Identity Mark	MANUFACTURER	MODEL	ELECTRICAL KW	VOLTS	PHASE	AMPS	Description
IWH-1	A.O. SMITH	CRVA-12EE	14	208	1	67	INSTANTANEOUS WATER HEATER

HOT WATER CIRCULATING PUMP SCHEDULE

Mark	TYPE	MANUFACTURER	MODEL	CAPACITY (GPM)	HEAD (FEET)	ELECTRICAL HP	VOLTS	PHASE	HERTZ	SPEED (RPM)
CP-1		Taco	0014-SF1	4	18	1/8	115 V	1	60	3250

ELECTRIC WATER HEATER SCHEDULE

Identity Mark	MANUFACTURER	MODEL	STORAGE CAPACITY (GAL)	STORAGE TEMP (°F)	ELECTRICAL KW	VOLTS	PHASE	FLA	RECOVERY (70 °F RISE)	Description
EWH-1	A.O. SMITH	DRE-52-6	50	140	12.3	208	3	34	35	PROVIDE AND INSTALL EXPANSION TANK AMTROL #ST-12C AND THERMOSTATIC MIXING VALVE EQUAL TO POWERS INTELLISTATION JR MODEL #LFRS150VL

PLUMBING DRAWING INDEX

NO.	DESCRIPTION	DATE
1	ADDENDUM # 1/WATER HEATER	5-03-22
2	PERMIT COMMENT RESPONSE #1	09-02-22

James C. Mullen, P.E.
PE License #60195

12/16/2022 9:53:43 AM

John P. Adams, AIA
Jerome Bankowich, Jr., AIA, LEED AP
Jennifer Zaffuto, AIA, LEED, NCARB

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100% CD Submittal - Bid Set

LAKE COUNTY
FIRE STATION NO.71
PLUMBING LEGEND, GENERAL NOTES, SCHEDULES & SHEET INDEX
33661 CR 473, LEESBURG, FL 34788

20073A

NOVEMBER 10, 2021

P0.1

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Melbourne, FL 32940
P 321.636.0274
COA 15
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TLC No.: 521157
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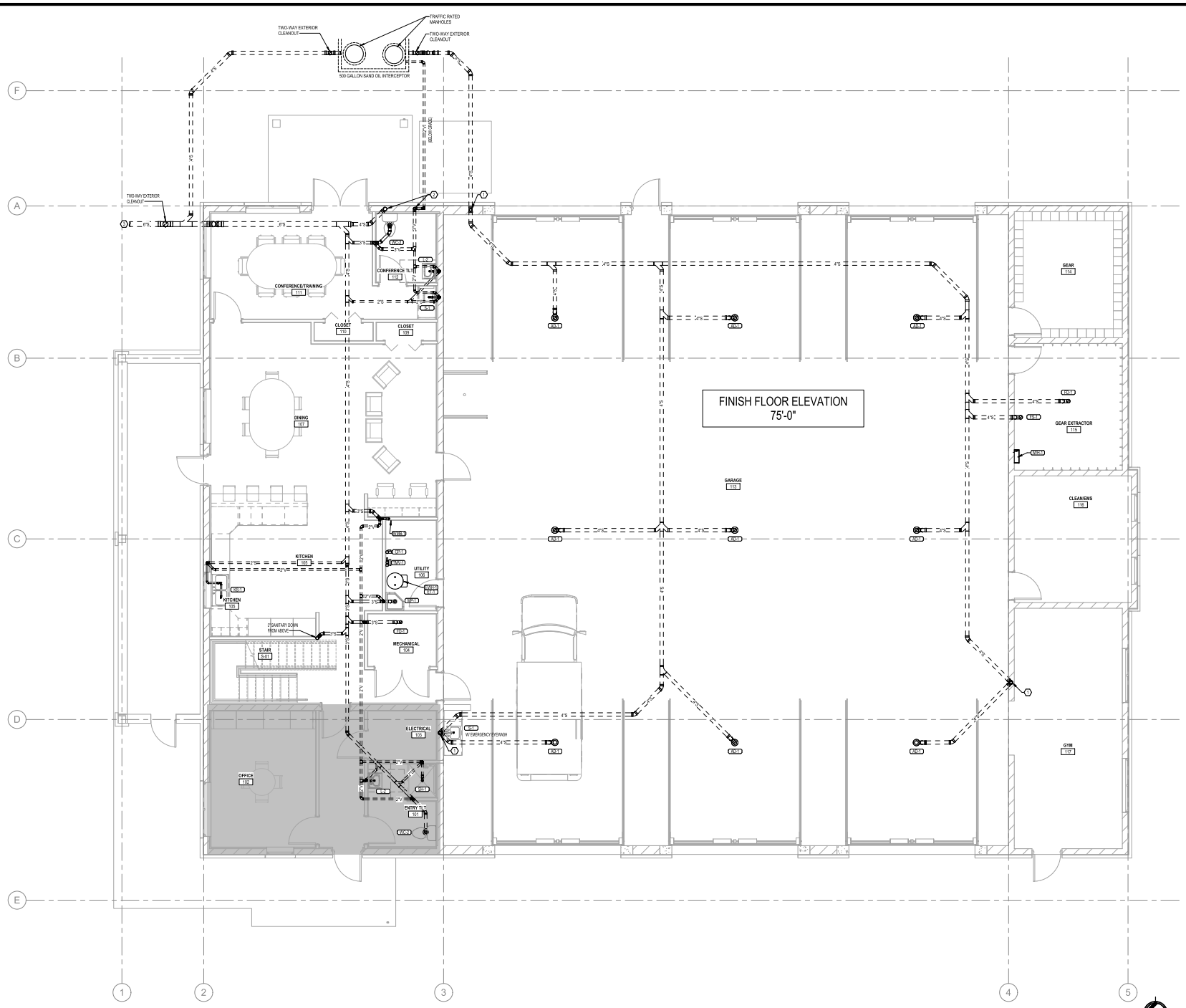

PLAN KEY NOTES:

1. 3" VENT UP IN WALL TO 3" VTR THRU ROOF ABOVE.
2. 4" SANITARY DOWN FROM ABOVE AND 3" VENT UP TO ABOVE SERVING SECOND FLOOR.
3. 6" SANITARY ROUTED TO CIVIL ON SITE SEPTIC SYSTEM - COORDINATE WITH CIVIL FOR INVERT ELEVATION PRIOR TO BEGINNING OF INSTALLATION.

1 FIRST FLOOR - GRAVITY
1/4" = 1'-0"

NO.	DESCRIPTION	DATE

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John P. Adams, AIA
Jerome Bankowski, Jr., AIA, LEED
Jennifer Zaffuto, AIA, LEED, NCARB
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FIRE STATION NO.71
PLUMBING LEVEL 1 GRAVITY PLAN

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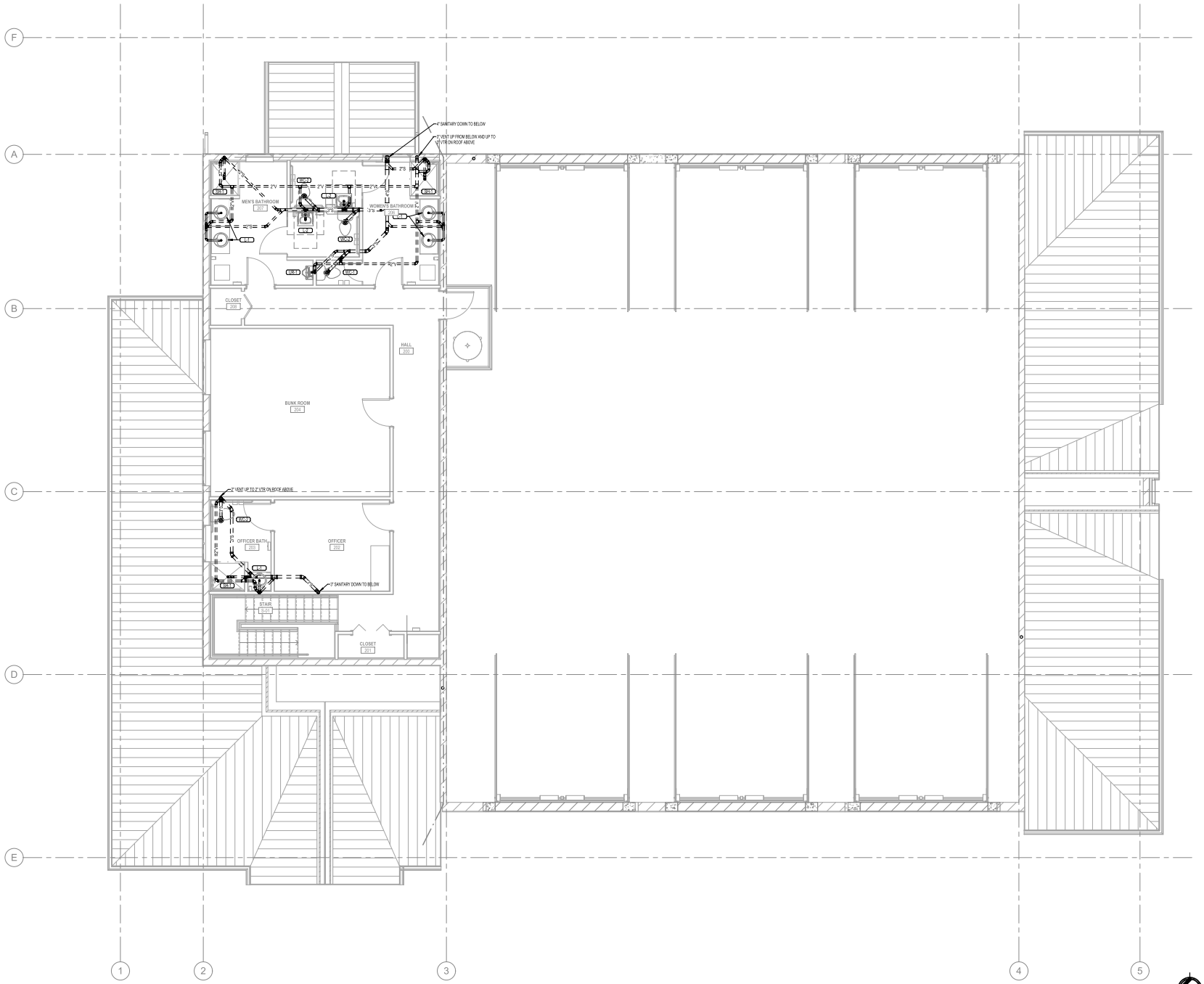

1 SECOND FLOOR - GRAVITY
1/4" = 1'-0"

NO.	DESCRIPTION	DATE

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12/16/2022 9:53:55 AM

Jerome Bankowski, Jr., AIA, LEED
Ethan J. Hicks, AIA
Jennifer Zaffuto, AIA, LEED, NCARB

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LAKE COUNTY
FIRE STATION NO.71
PLUMBING LEVEL 2 GRAVITY PLAN

33661 CR 473, LEESBURG, FL 34788

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P2.2

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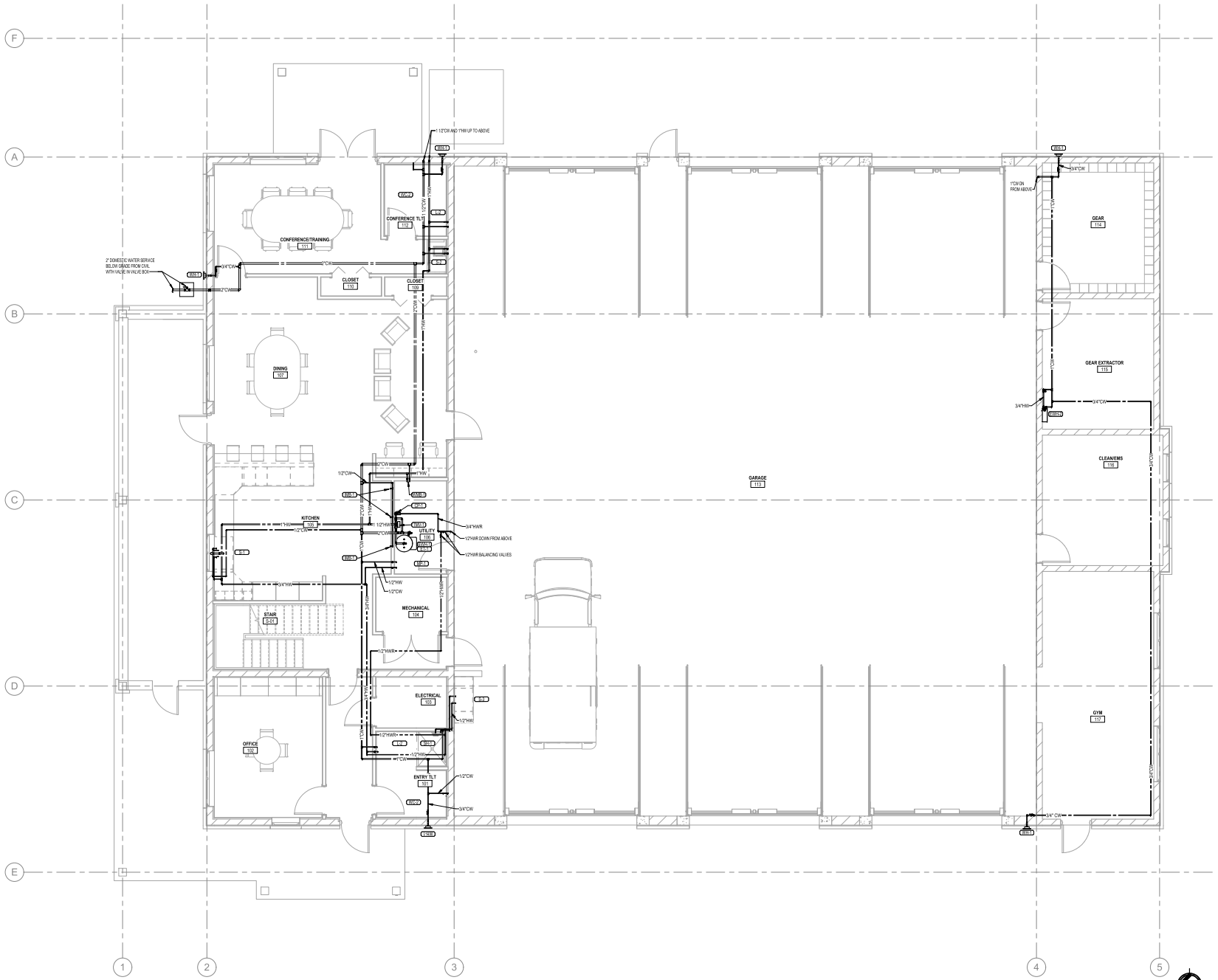

1 FIRST FLOOR - PRESSURE
1/4" = 1'-0"

NO.	DESCRIPTION	DATE

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12/16/2022 9:53:59 AM

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Ethan J. Hicks, AIA
Jennifer Zaffuto, AIA, LEED, NCARB

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LAKE COUNTY
FIRE STATION NO.71
PLUMBING LEVEL 1 PRESSURE PLAN

33661 CR 473, LEESBURG, FL 34788

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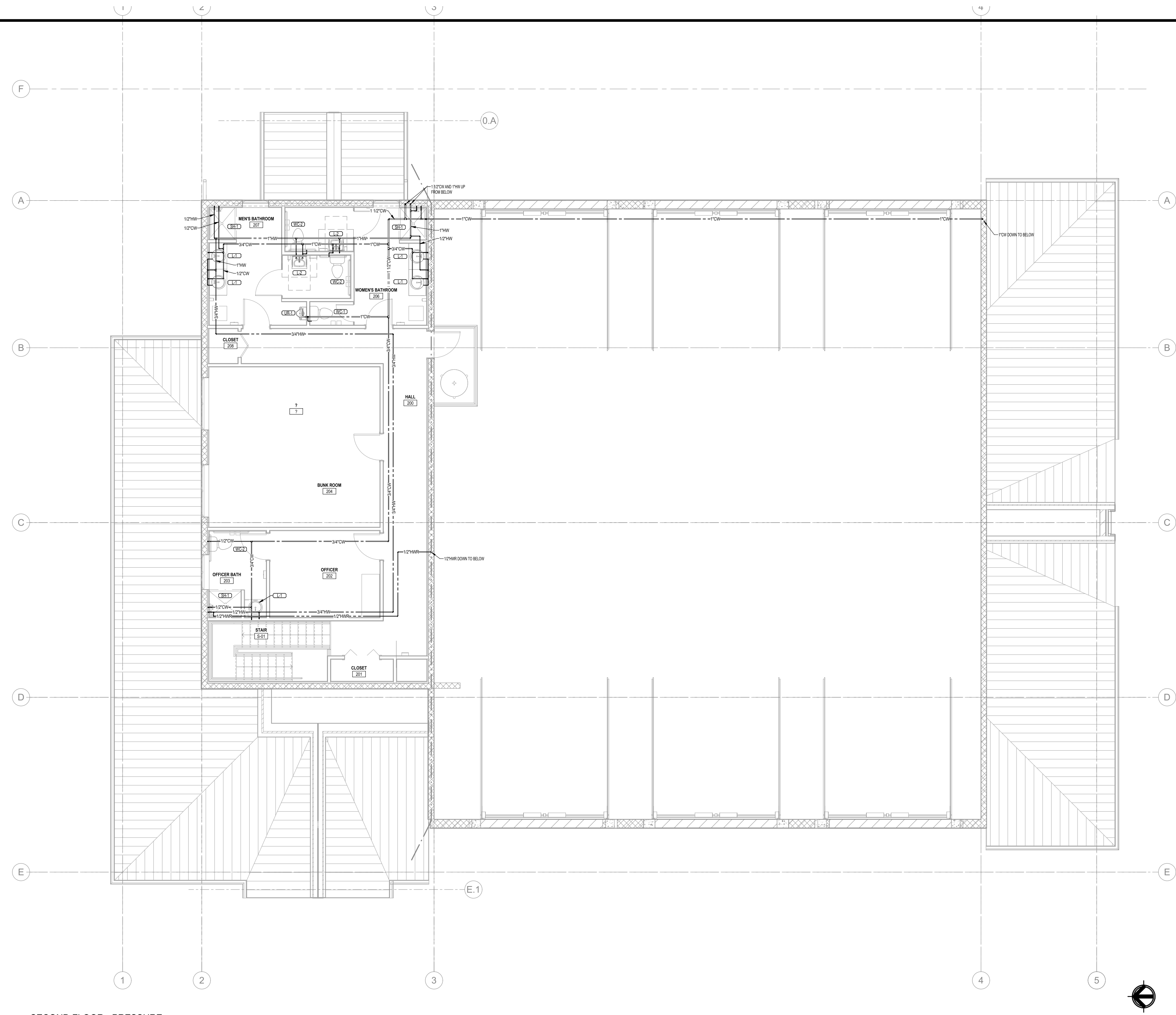

1 SECOND FLOOR - PRESSURE
1/4" = 1'-0"

100% CD Submittal - Bid Set

LAKE COUNTY
FIRE STATION NO.71
PLUMBING LEVEL 2 PRESSURE PLAN
33661 CR 473, LEESBURG, FL 34788
20073A

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P3.2

John P. Adams, AIA
Jerome Bankovich, Jr., AIA, LEED
Ethan J. Hine, AIA
Jennifer Zaffuto, AIA, LEED, NCARB
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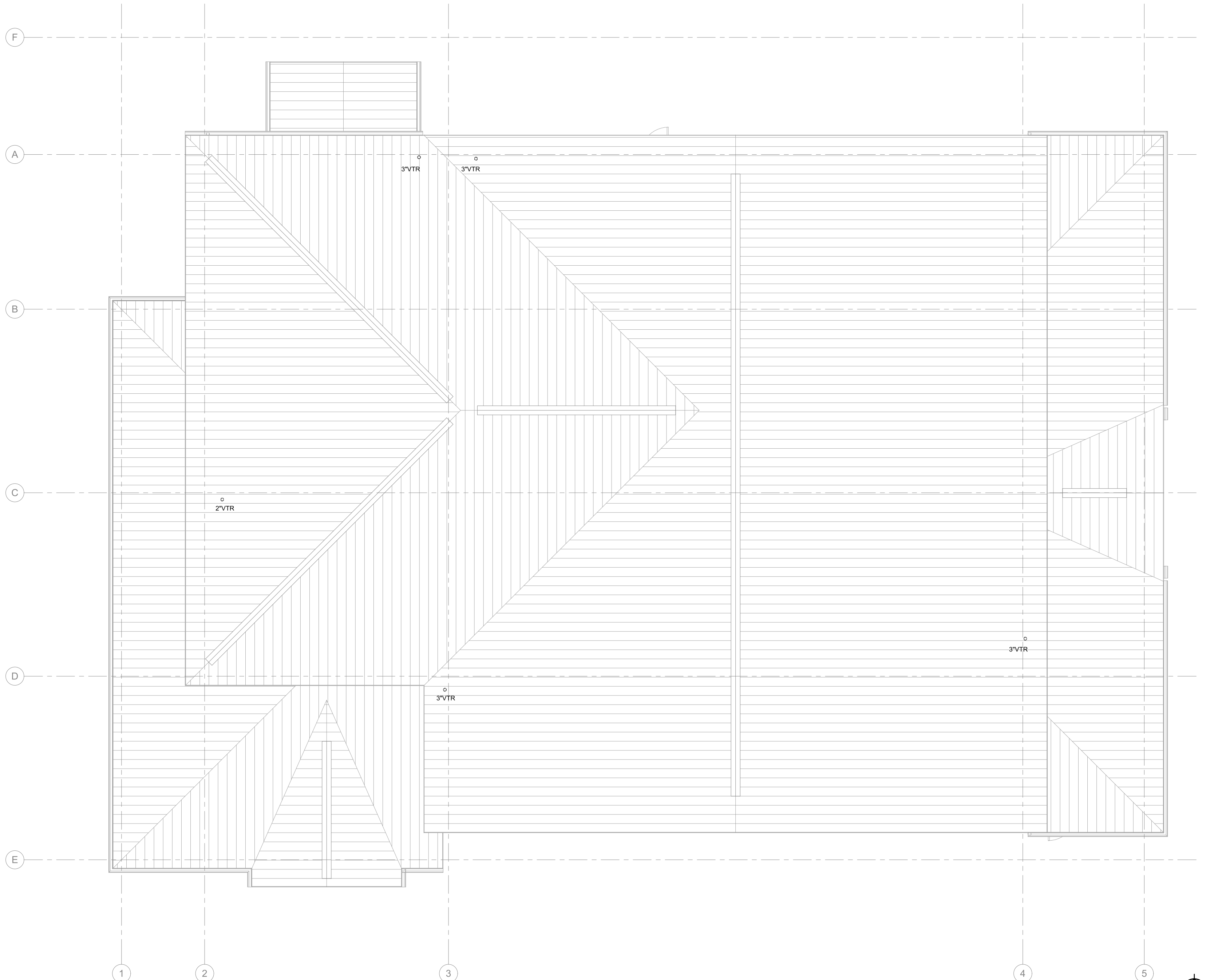
BIM 360://20073A - Lake County Fire Station 71/521157_Lake Co FS 71_MEP_R18.rvt



1 ROOF - PLUMBING
1/4" = 1'-0"

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John P. Adams, AIA
Jerome Bankovich, Jr., AIA, LEED
Ethan J. Hine, AIA
Jennifer Zaffuto, AIA, LEED, NCARB

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LAKE COUNTY
FIRE STATION NO.71
PLUMBING ROOF PLAN
33661 CR 473, LEESBURG, FL 34788

NOVEMBER 10, 2021

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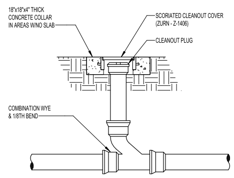
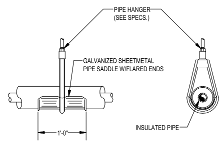
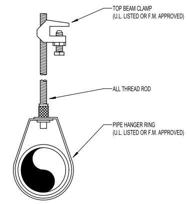


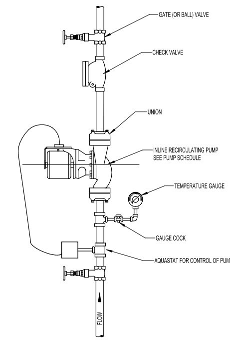
1 EXTERIOR CLEANOUT
N.T.S.



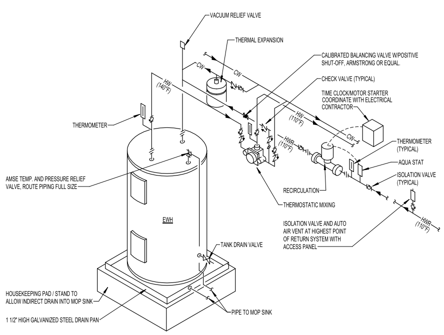
2 BACKWATER VALVE
N.T.S.



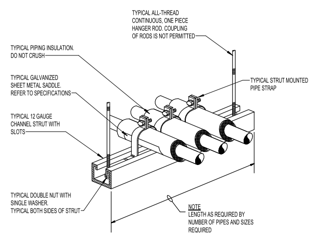
3 PIPE HANGER - STEEL
N.T.S.



4 RECIRCULATING PUMP
N.T.S.



5 ELECTRIC WATER HEATER
N.T.S.

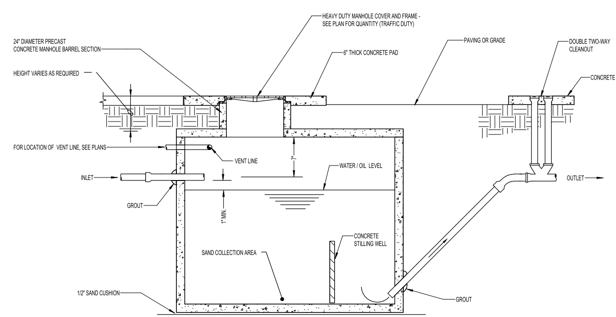


NOTE:

1. REFER TO SPECIFICATIONS AND FLOOR PLANS FOR

2. SPECIFIED HANGER ROD, STRUT, NUTS, WASHER, AND PIPE STRAPS SHALL BE OF GALVANIZED PLATED MATERIALS

6 TRAPEZE HANGER
N.T.S.



7 SAND OIL INTERCEPTOR
N.T.S.

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James C Mullen

James C. Mullen, P.E.
PE License #60195

JAMES C. MULLEN LICENSE No 60195 STATE OF FLORIDA PROFESSIONAL ENGINEER

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John P. Adams, AIA
Jerome Bankovich, Jr., AIA, LEED
Ethan J. Hine, AIA
Jennifer Zaffuto, AIA, LEED, NCARB

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LAKE COUNTY
FIRE STATION NO.71
PLUMBING DETAILS

33661 CR 473, LEESBURG, FL 34788

NOVEMBER 10, 2021

100% CD Submittal - Bid Set

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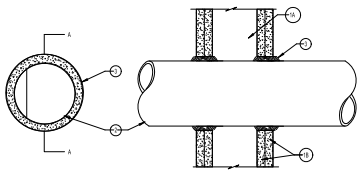
P5.1

System No. W-L-1001
(Formerly System No. 147)
F Rating – 1, 2, 3 and 4 Hr (See Items 2 and 3)
T Ratings – 0, 1, 2, 3, and 4 Hr (See Items 2 and 3)
L Rating at Ambient– less than 1 CFM/sq ft
L Rating At 400 F –less than 1 CFM/sq ft



SECTION A-A

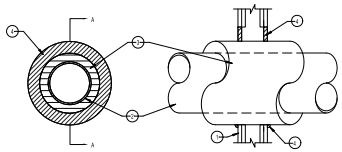
1. Wall Assembly– The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs– Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in deep channels spaced max 24 in. OC.
   B. Wallboard, Gypsum* – Nom 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 16-5/8 in. The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Pipe or Conduit– Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe, nom 12 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) Class 50 (or heavier) ductile iron pressure pipe, nom 6 in. diam (or smaller) steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing, nom 6 in. diam (or smaller) Type L (or heavier) copper tubing or nom 1 in. diam (or smaller) flexible steel conduit. When copper pipe is used, max F Rating of firestop system (Item 3) is 2 h. Steel pipes or conduits larger than nom 4 in. diam may only be used in walls constructed using steel channel studs. A max of one pipe or conduit is permitted in the firestop system. Pipe or conduit to be installed near center of stud cavity width and to be rigidly supported on both sides of wall assembly.
3. Fill, Void or Cavity Material*–Caulk–Caulk fill material installed to completely fill annular space between pipe or conduit and gypsum wallboard and with a min 1/4 in. diam bead of caulk applied to perimeter of pipe or conduit at its egress from the wall. Caulk installed symmetrically on both sides of wall assembly. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max pipe or Conduit Diam In.	Annular Space In.	F Rating Hr.	T Rating Hr.	
1		3 to 3/16	1 or 2	1+, 1 or 2
1		1/4 to 1/2	3 or 4	3 or 4
4		0 to 1-1/2	1 or 2	0
6		1/4 to 1/2	3 or 4	0
12		3/16 to 3/8	1 or 2	0

*When copper is used, T Rating is 0h.
Minnesota Mining & Mfg. Co. –Types FB-2000, FB-2003+.
+Bearing the UL Classification Marking

1 WALL - DRYWALL - PIPE - 1,2,3,4 HOUR
N.T.S.

System No. W-L-5029
F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1/2, 3/4, 1 and 1-3/4 Hr (See Item 3)
L Rating At Ambient - 4 CFM/Sq Ft
L Rating At 400 F - Less Than 1 CFM/Sq Ft



SECTION A-A

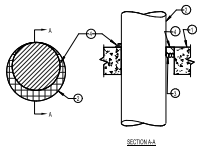
1. Wall Assembly - The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U305 or U403 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs – Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
   B. Wallboard, Gypsum* - 5/8 in. thick, 4 ft wide, with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 16-5/8 in. The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants - One metallic pipe, conduit or tubing to be centered within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe - Nom 12 in diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Conduit - Nom 4 in. diam (or smaller) electrical metallic tubing or steel conduit.
   C. Copper Tubing - Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
   D. Copper Pipe - Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Pipe Covering* - Nom 1, 1-1/2 or 2 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product.
   See Pipe and Equipment Covering - Materials (ERGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
   The hour T Rating of the firestop system is dependent on the hourly fire rating of the wall assembly in which it is installed, the size and type of through penetrant and the pipe covering thickness, as shown in the table below:

Wall Assembly Rating Hr	Through Penetrant Type+	Max Diam In.	Pipe Covering Thickness In.	Annular Space Min In.	Max In.	T Rating Hr
1	A or B	4	1	0	1-1/2	1/2
1	C or D	2	1 or 1-1/2	0	1-1/2	1/2
1	A or B	4	1-1/2	0	1-1/2	1
1	A	12	2	0	1-7/8	3/4
1	C or D	6	2	0	1-7/8	1
2	A or B	4	1	0	1-1/2	1
2	C or D	4	1 or 1-1/2	0	1-1/2	1
2	C or D	6	2	0	1-7/8	1
2	A or B	4	1-1/2	0	1-1/2	1-3/4
2	A	12	2	0	1-7/8	1-1/2
2	C or D	6	2	0	1-7/8	1

+Indicates penetrant type as itemized in Item 2.
4. Fill Void or Cavity Material* - Sealant - Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall for 1 or 2 hr walls, respectively. At the point contact location between pipe covering and gypsum wallboard, a min 1/2 in. diam bead of fill material shall be applied at the pipe covering/gypsum wallboard interface on both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI, Inc. - FS-ONE Sealant
*Bearing the UL Classification Marking

2 WALL - DRYWALL - PIPE/INSULATED - 1 AND 2 HOUR
N.T.S.

System No. CAJ-1044
(formerly system no. 319)
F Rating - 2, 3 and 4 Hr (see items 2A and 4)
T Rating - 0 Hr
L Ratings At Ambient – 2 CFM/sq ft
L Rating At 400 F - less than 1 CFM/sq ft



SECTION A-A

1. floor or wall assembly - lightweight or normal weight (100-150pcf) concrete, except as noted in table under item 4, min thickness of solid concrete floor or wall assembly is 4-1/2". floor may also be constructed of a min. 8" thick, ul classified hollow core precast concrete units**, when floor is constructed of hollow core precast concrete units, packing material (item 3) and caulk fill material (item 4) to be installed symmetrically on both sides of floor. flush with floor surface. wall assembly may also be constructed of any ul classified concrete blocks*. max. dia. of opening is in solid (lightweight or normal weight concrete, floor is 32" max. dia. of opening in floor constructed of hollow-core precast concrete units is 7".

   see concrete blocks (cast) and precast concrete units (ctv) categories in the fire resistance directory for names of manufacturers.

1A. steel sleeve - (optional, not shown) - max. 15" o.d or smaller) schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. sleeve may extend a max. of 2" above top of floor or beyond either surface of wall. max. 10" dia or smaller) min. 0.638 wall thickness (or heavier) galvanized steel sleeve cast or grouted into floor or wall assembly. sleeve may extend a max. of 10" beyond either surface of floor or wall.

2. through penetrants - one metallic pipe, conduit or tubing to be installed either concentric ally or eccentric ally within the firestop system. max. annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in item 4. min. annular space between pipe or conduit and edge of through opening is 0". (point contact). pipe conduit or tubing to be rigidly supported on both sides of floor or wall assembly. the following types and sizes of metallic pipes, conduits or tubing may be used:

   A. steel pipe - nom. 30" dia. (or smaller) schedule 10 (or heavier) steel pipe
   B. iron pipe - nom. 30" dia. (or smaller) cast or ductile iron pipe
   C. conduit - nom. 6" dia. (or smaller) rigid steel conduit
   D. conduit - nom. 4" dia. (or smaller) steel electrical metallic tubing
   E. copper tubing - nom. 8" dia. (or smaller) type l (or heavier) copper tube
   F. copper pipe - nom. 8" dia. (or smaller) regular (or heavier) copper pipe

3. packing material - polyethylene backer rod or nom. 1" thickness of tightly packed min wool wool batt or glass fiber insulation firmly packed into opening as a permanent form. packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of caulk fill material (item 4).

4. fill, void or cavity material* - caulk - applied to fill the annular space flush with top surface of floor. in wall assemblies, required caulk thickness to be installed symmetrically on both sides of wall, flush with wall surface, at point contact location between penetrant and sleeve or between penetrant and concrete, a min. 1/4" dia. bead of caulk shall be applied at top surface pipe conduit or tubing to be rigidly supported on both sides of floor or wall of floor and at both surfaces of wall. the hourly f ratings and the min. required caulk thickness* are dependent upon a number of parameters, as shown in the following table:

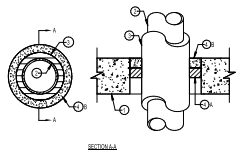
min. floor or wall thickness, in.	nom. pipe tube or conduit dia., in.	max. annular space, in.	min. caulk thickness, in.	f rating, hr.
2-1/2	1/2-12	1-3/8	1/2	2
2-1/2	1/2-12	3-1/4	1	2
4-1/2	1/2-4	1-3/8	1/4 (A)	2
4-1/2	1/2-12	1-1/4	1/2	3
4-1/2	1/2-20	2	1	3
4-1/2	1/2-30	2	1	3
4-1/2	1/2-12	3-1/4	1	3
4-1/2	1/2-6	1-3/8	1 (B)	4

(A) min. 2" thickness of mineral wool batt insulation required in annular space.
(B) min. 1" thickness of mineral wool batt insulation required in annular space. on both sides of floor or wall assembly. min 1" thickness of caulk to be installed flush with each surface of floor or wall assembly.

minnesota mining and manufacturing co. - cp 25wb+.
*bearing the ul classification marking

3 WALL/FLR - CONC - PIPE - 2,3,4 HOUR
N.T.S.

System No. C-AJ-5001
(Formerly System No. 01)
F Rating - 1-1/2, 2 and 3 Hr. (See Item 4)
T Rating - 0, 1/2, 3/4 and 1 Hr. (See Item 1a and 4)
L Rating At Ambient – 2 CFM/sq ft.
L Rating At 400°F - less than 1 CFM/sq ft.



SECTION A-A

1. Floor or Wall assembly - Min. 2- 1/2" thick reinforced lightweight or normal weight (100-150) pcf concrete. Wall may also be constructed of any UL Classified Concrete Block*. Max. diameter of opening is 95". See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

1A. Steel Sleeve - (Optional, not shown) - Nom. 10" (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. Sleeve may extend a max. of 2" above top of floor or beyond either surface of wall. T Rating is 0 Hr. when sleeve is used.

2. Through-Penetrants - Nom. 4" dia. (or smaller) type L (or heavier) copper pipe, nom. 12" dia. (or smaller) service weight (or heavier) cast iron soil pipe, nom. 12" dia. (or smaller) class 50 (or heavier) ductile iron pressure pipe or nom. 12" dia. (or smaller) Schedule 10 (or heavier) steel pipe centered in the opening and rigidly supported on both sides of the floor or wall assembly.

3. Pipe Covering* - Nom. 1/2 to 2" thick hollow cylindrical heavy density (min. 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt strip tape supplied with the product.
   See pipe and equipment covering - materials*(ERGU) category in Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less must be used.

4. Firestop System - The details of the firestop system shall be as follows:

   A. Packing Material - Nom. 1" thickness of firmly packed mineral wool batt insulation used as a permanent form. packing material to be recessed from top surface of floor or above or from both surfaces of as required to accommodate the required thickness of caulk fill material (item b).

   B. Fill, Void or Cavity Material* - Caulk - Applied to fill the annular space flush with top surface of floor or sleeve or flush with both surfaces of wall. When nom. pipe covering thickness is 2" min. thickness of caulk fill material is 2". When nom. pipe covering thickness is 1-1/2" or less, min. thickness of caulk fill material is 1". The hourly F and T Ratings of the firestop system are dependent upon the thickness of the floor or wall, the size of pipe, the thickness of pipe covering material and the size of the annular space (between the pipe covering material and the edge of the circular through opening), as shown in the following table:

Min. Floor Or Wall Thickness, In.	Max. Pipe Dia.	Nom. Pipe Covering Thickness, In.	Annular Space, In.	F Rating, Hr.	T Rating, Hr.
2-1/2	4	1 OR 1-1/2	1/2 TO 3-3/8	2	1
4-1/2	4	2	1/4 TO 3-5/8	2	1-1/2
2-1/2	12	1	1/2 TO 1-1/2	2	1/2
4-1/2	12	1	1/2 TO 2-3/8	3	1
2-1/2	12	1/2	1/2 TO 2-3/8	2	0

Minnesota Mining and Manufacturing Co. - Cp 25WB+.
*Bearing the UL Classification Marking

4 WALL/FLR - CONC - PIPE/INSULATED - 2,3 HOUR
N.T.S.

James C. Mullen, P.E.
PE License #60195
STATE OF FLORIDA
No. 60195
12/16/2022 9:54:10 AM

John P. Adams, AIA
Jerome Bankowski, Jr., AIA, LEED
Jennifer Zaffuto, AIA, LEED, NCARB
1741 MYANNS TRAIL ● DUBOIS, PA ● 814-371-1541 ● F 814-371-8881 ● KTHarch.com
800 NORTH HIGHLAND AVE ● ORLANDO, FL ● 407.205.8700* ● F 407.406.0650
KTH ARCHITECTS

NO.	DESCRIPTION	DATE

100% CD Submittal - Bid Set

LAKE COUNTY
FIRE STATION NO.71
PLUMBING DETAILS
33661 CR 473, LEESBURG, FL 34788

NOVEMBER 10, 2021

20073A

P5.2

TLC ENGINEERING SOLUTIONS
7370 Cabot Court, Suite 103
Melbourne, FL 32940
P 321.636.0274
COA 15
www.tlcengineering.com
TLC No.: 521157
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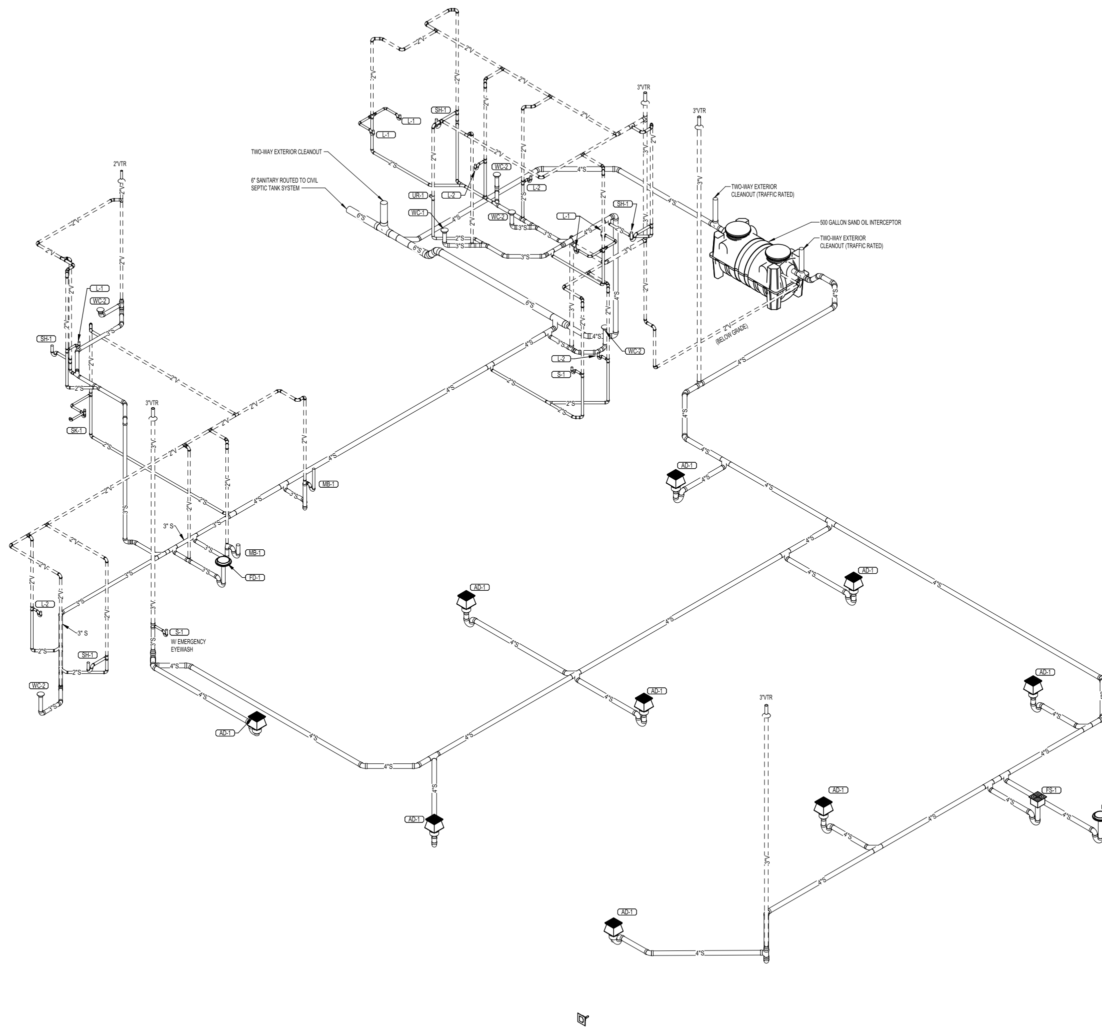

S1 PLUMBING SANIATRY RISER
P6.1 N.T.S.

NO.	DESCRIPTION	DATE

James C. Mullen, P.E.
PE License #60195
12/16/2022 9:54:14 AM

John P. Adams, AIA
Jerome Bankovich, Jr., AIA, LEED
Ethan J Hine, AIA
Jennifer Zaffuto, AIA, LEED, NCARB

KTH ARCHITECTS
1741 KIWANIS TRAIL • DUBOIS, PA • P 814.371.1541 • F 814.371.8801 • KTHarch.com
800 NORTH HIGHLAND AVE. • ORLANDO, FL • P 407.203.6707 • F 407.409.0650

20073A

LAKE COUNTY
FIRE STATION NO.71
PLUMBING RISERS
33661 CR 473, LEESBURG, FL 34788

NOVEMBER 10, 2021

100% CD Submittal - Bid Set

TLC ENGINEERING SOLUTIONS
7370 Cabot Court, Suite 103
Melbourne, FL 32940
P 321.636.0274
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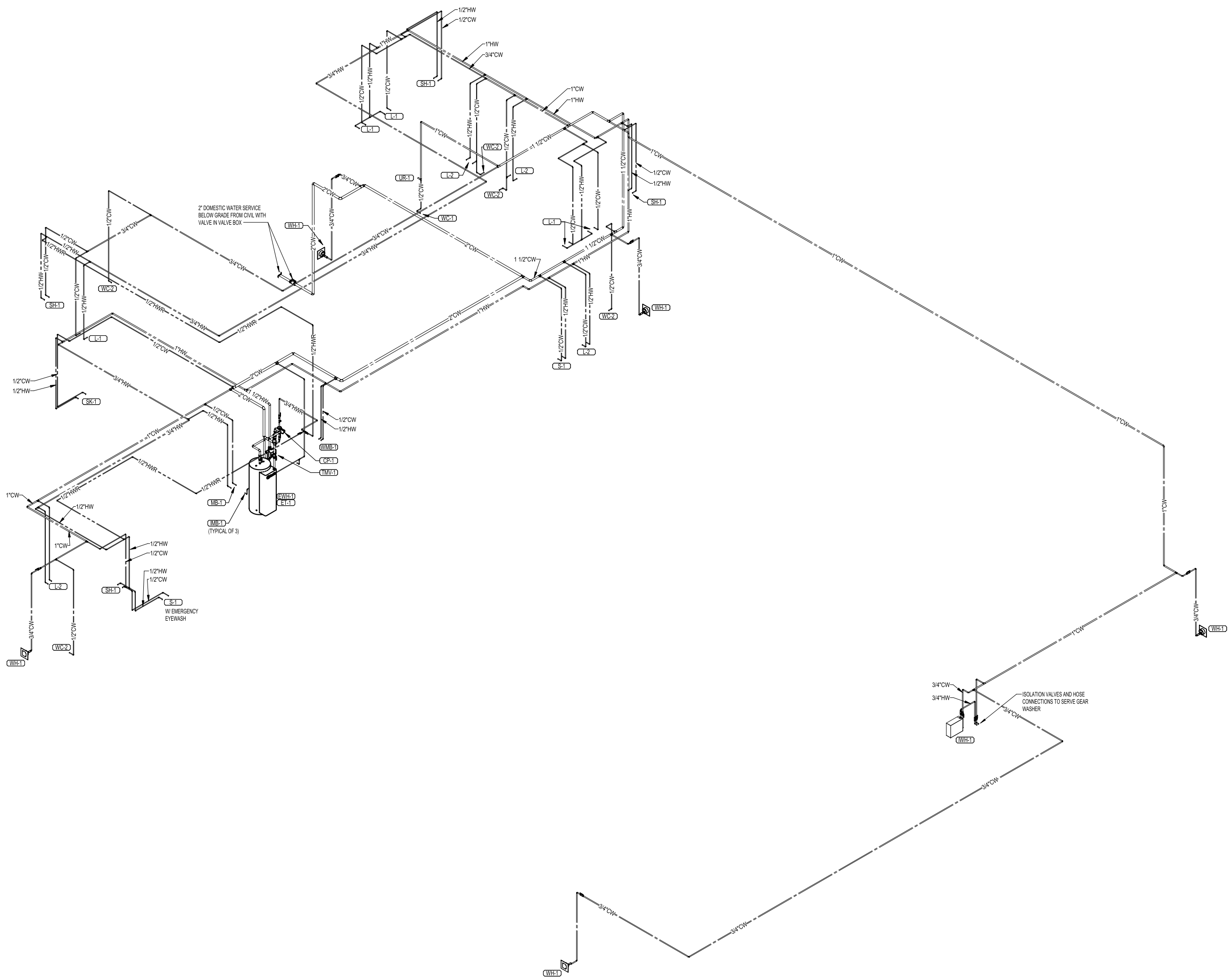
P6.1



W1 / P6.2 PLUMBING DOMESTIC WATER RISER
N.T.S.

NO. | DESCRIPTION | DATE

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PE License #60195
12/16/2022 9:54:17 AM

John P. Adams, AIA
Jerome Bankovich, Jr., AIA, LEED
Ethan J Hine, AIA
Jennifer Zaffuto, AIA, LEED, NCARB

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LAKE COUNTY
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PLUMBING RISERS
33661 CR 473, LEESBURG, FL 34788

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NOVEMBER 10, 2021

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Melbourne, FL 32940
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