

PLUMBING SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	- ABOVE GROUND CONDENSATE DRAIN
	- BELOW GROUND CONDENSATE DRAIN
	- DOMESTIC COLD WATER
	- DOMESTIC HOT WATER
	- DOMESTIC HOT WATER RECIRCULATING
	- ABOVE GROUND SANITARY
	- BELOW GROUND SANITARY
	- SANITARY VENT
	- WATER METER
	- HOSE BIBB OR WALL HYDRANT
	- CLEAN OUT PLUG
	- WALL CLEANOUT
	- FLOOR CLEAN OUT
	- FLOOR DRAIN
	- 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
	- DETAIL REFERENCE: TOP-DETAIL#, BOTTOM-DRAWING# SHOWN ON

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

- ### GENERAL NOTES
- REFERENCE THE SPECIFICATIONS FOR MATERIAL AND EQUIPMENT INSTALLATION STANDARDS.
  - THE PLUMBING INSTALLATION SHALL COMPLY WITH ALL FLORIDA BUILDING CODES.
  - FIELD VERIFY / COORDINATE INSTALLATIONS WITH ALL OTHER DISCIPLINES AS REQUIRED.
  - 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.
  - 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.
  - PROVIDE ALL OFFSETS AND FITTINGS AND MAKE CONNECTION TO SITE UTILITIES.
  - CONCEAL PIPING WITHIN INTERSTITIAL SPACE OR ABOVE CEILINGS, WITHIN WALLS OR CHASES EXCEPT IN MECHANICAL ROOMS OR AS SPECIFICALLY NOTED.
  - PROVIDE ACCESS PANELS FOR ALL VALVES CONCEALED IN WALLS OR ABOVE NON-ACCESSIBLE CEILINGS.
  - 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.
  - WHEN BEAM SLEEVE PENETRATIONS ARE NECESSARY, COORDINATE PENETRATIONS WITH ALL TRADES, THE ARCHITECT AND THE STRUCTURAL ENGINEER.
  - SEE ARCHITECTURAL DRAWINGS FOR FIXTURE LOCATIONS AND MOUNTING HEIGHTS.
  - PROVIDE AN AIR GAP, WHEN REQUIRED BY CODE, SERVING INDIVIDUAL FIXTURES, DEVICES, APPLIANCES AND APPARATUS.
  - ALL EXPOSED PIPE AND FITTINGS IN FINISHED AREAS SHALL BE CHROME PLATED.
  - PROVIDE CLEANOUTS IN ACCORDANCE WITH ALL STATE AND LOCAL CODES. INSTALL CLEANOUT WITH COVER FLUSH TO FINISH SURFACE.
  - 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.
  - 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.
  - 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.
  - 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	L/S	LITER PER SECOND
AD	AREA DRAIN/ACCESS DOOR	LA	LABORATORY AIR
AFF	ABOVE FINISH FLOOR	LAV	LAVATORY
AFG	ABOVE FINISH GRADE	LBS/HR	LBS/HR POUNDS PER HOUR
AG	AIR GAP	LOW	LABORATORY COLD WATER
AP	ACCESS PANEL	LHW	LABORATORY HOT WATER
AS	AUTOMATIC SPRINKLER	LNG	LIQUID NATURAL GAS
ASD	ADJUSTABLE SPEED DRIVES	LOX	LIQUID OXYGEN
ASD	AUTOMATIC SPRINKLER DRAIN	LV	LABORATORY VACUUM
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION, AIR CONDITIONING ENGINEERS	LW	LOW WATER
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	M	METER
ASPE	AMERICAN SOCIETY OF PLUMBING ENGINEERS	MA	MEDICAL AIR
ASR	AUTOMATIC SPRINKLER RISER	MAV	MANUAL AIR VENT
AV	ACID VENT	MBH	1000 BTUH
AW	ACID WASTE	MED	MEDICAL
BFP	REDUCED PRESSURE BACKFLOW PREVENTER	MER	MECHANICAL EQUIPMENT ROOM
BHP	BREAK HORSEPOWER	MH	MANHOLE
BSP	BLACK STEEL PIPE	MOU	MEMORANDUM OF UNDERSTANDING
BT	BATHTUB	MSB	MOP SERVICE BASIN
BTU	BRITISH THERMAL UNIT	MV	MEDICAL VACUUM
BTUH	BRITISH THERMAL UNIT PER HOUR	N2	NITROGEN
C	CELSIUS	N2O	NITROUS OXIDE
CA	COMPRESSED AIR	NC	NORMALLY CLOSED
CGA	COMPRESSED GAS ASSOCIATION	NG	NATURAL GAS
CFM	CUBIC FEET PER MINUTE	NIC	NOT IN CONTRACT
CI	CAST IRON	NO	NORMALLY OPEN
CO	CLEANOUT	NOM	NOMINAL
CS	CLINICAL SINK	NPW	NON POTABLE WATER
CV	CONTROL VALVE	NTS	NOT TO SCALE
DCW	DOMESTIC COLD WATER	O2	OXYGEN
DEMO	DEMOLITION(REMOVE FROM SERVICE)	OC	ON CENTER
DHW	DOMESTIC HOT WATER	OD	OUTSIDE DIAMETER
DHWR	DOMESTIC HOT WATER RETURN	OFD	OVERFLOW DRAIN
DHWS	DOMESTIC HOT WATER SUPPLY	OP	OPERATING ROOM
DI	DEIONIZED WATER	OVFL	OVERFLOW
DN	DOWN	PA	PASCAL
DOE	DEPARTMENT OF ENERGY	PD	PRESSURE DROP OR DIFFERENCE
DS	DOWNSPOUT	PDI	PLUMBING AND DRAINAGE INSTITUTE
DW	DISHWASHER	PG	PRESSURE GAGE
DWG	DRAWING	PP	PLUMBING PUMP
DWH	DOMESTIC WATER HEATER	PPM	PARTS PER MILLION
DWR	DRINKING WATER RETURN	PRS	PRESSURE REDUCING STATION
DWS	DRINKING WATER SUPPLY	PRV	PRESSURE REDUCING VALVE
DWV	DRAIN WASTE VENT	PSI	POUNDS PER SQUARE INCH
EL	ELEVATION	PSIA	POUNDS PER SQUARE INCH ATMOSPHERE
EMCS	EMERGENCY MONOSERRAT AND CENTRAL SYSTEM	PSIG	POUNDS PER SQUARE INCH GAGE
EPA	ENVIRONMENTAL PROTECTION AGENCY	PTRV	PRESSURE TEMPERATURE RELIEF VALVE
EPACT	ENERGY POLICY ACT	PW	POTABLE WATER
ESC	ESCUTCHEON	RD	ROOF DRAIN
ESH	EMERGENCY SHOWER	RDL	ROOF DRAIN LEADER
ET	EXPANSION TANK	RL	ROOF LEADER
EW	ELECTRIC WATER HEATER	RP	RECIRCULATION PUMP
EWS	EYE WASH STATION	RO	REVERSE OSMOSIS WATER
EWS/SH	EYE WASH/DRENCH SHOWER EXISTING TO REMAIN	RWL	RAIN WATER LEADER
F	FAHRENHEIT	SAN	SANITARY SEWER
FCO	FLOOR CLEANOUT	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
FCW	FILTERED COLD WATER	SCFM	STANDARD CUBIC FOOT/MINUTE
FD	FLOOR DRAIN	SCW	SOFTENED COLD WATER
FDC	FIRE DEPARTMENT (HOSE) CONNECTION	SDMH	STORM DRAIN MANHOLE
FM	FLOW METER	SMH	SANITARY MANHOLE
FOP	FUEL OIL PUMP	SP	SUMP PUMP
FOR	FUEL OIL RETURN	SPR	SPRINKLER LINE
FOS	FUEL OIL SUPPLY	SQFT/S	SQFT/SF SQUARE FEET
FOV	FUEL OIL VENT	SS	STAINLESS STEEL
FS	FLOOR SINK	ST	STORAGE TANK
FS	FLOOR SWITCH	SW	STORM WATER
FU	FIXTURE UNITS	TCV	TEMPERATURE CONTROL VALVE
GAL	GALLON	TD	TEMPERATURE DIFFERENCE
GCO	GRADE CLEANOUTS	TD	TRENCH DRAIN
GPD	GALLONS PER DAY	TDH	TOTAL DYNAMIC HEAD
GPH	GALLONS PER HOUR	TEMP	TEMPERATURE
GPM	GALLONS PER MINUTE	TMV	THERMOSTATIC MIXING VALVE
GPR	GAS PRESSURE REGULATOR	TP	TRAP PRIMER
GRS	GAS REGULATOR STATION	TSTAT	THERMOSTAT
GT	GREASE TRAP	TWR	TEMPERED WATER RETURN
GVTR	GAS VENT THROUGH ROOF	TWS	TEMPERED WATER SUPPLY
GW	GAS FIRED WATER HEATER	TYP	TYPICAL
H&CW	HOT & COLD WATER	V	VENT
HB	HOSE BIBB	VAC	VACUUM
HD	HUB DRAIN	VB	VACUUM BREAKER
HEX	HEAT EXCHANGER	VCO	VACUUM CLEANER OUTLET
HP	HORSEPOWER	VP	VACUUM PUMP
HS	HAND SINK	VS	VENT STACK
HST	HOT WATER STORAGE TANK(DOMESTIC)	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
KW	KILOWATT		
KWH	KILOWATT HOUR		

### PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE			TRIM		FLOW RATE / FLUSH RATE / FLOW CYCLE	DESCRIPTION / SPECIFICATIONS
	TYPE	MANUFACTURER	MODEL	MANUFACTURER	MODEL		
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	0124.131	MOEN	884	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	C6530BF-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 R/O10/DUWS. SHOWER STALL SHALL BE 2'0" X 2'4" 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 22" X 19" X 5" DEEP. DOUBLE BOWL SINK. PROVIDE SINK WITH CRUMB CUP STRAINER, AND 9" 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-GN2FACBSP 519-500W	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 9" CHROME PLATED BRASS FAUCET, VANDAL RESISTANT, SINGLE LEVER HANDLE AND 10" SPOUT FAUCET WITH HANDSPRAYER. (PROVIDE WITH EMERGENCY EYEWASH AND POINT OF USE TMY ON SINK LOCATED IN APPARATUS BAY/GARAGE)
MB-1	MOP BASIN	FIAT	MSB-1	FIAT	550AA	1.5 GPM	MOLDED STONE (WHITE) 24x24 552AA HOSEBRACKET, 889CC MOP HANGER BRACKET, E88AA24 24" STAINLESS STEEL BUMPER GUARDS.
MB-1	ICE MAKER SUPPLY BOX	GUY GREY	MIB1HA	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-50	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, 1/2 GATE TOP AND WHITE A.C.R. ANTI-SPLASH BOTTOM DOME STRAINER.
AD-1	AREA DRAIN (TRAFFIC RATED)	ZURN	ZC-355-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	Z1350XL	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			Description	
			KW	VOLTS	AMPS		
IWH-1	A.O. SMITH	CRVA-120E	14	208	1	67	INSTANTANEOUS WATER HEATER

### HOT WATER CIRCULATING PUMP SCHEDULE

Mark	TYPE	MANUFACTURER	MODEL	CAPACITY (GPM)	HEAD (FEET)	ELECTRICAL				
						HP	VOLTS	HERTZ	SPEED (RPM)	
CR-1		Taco	8014-SF1	4	18	18	115 V	1	60	350

### ELECTRIC WATER HEATER SCHEDULE

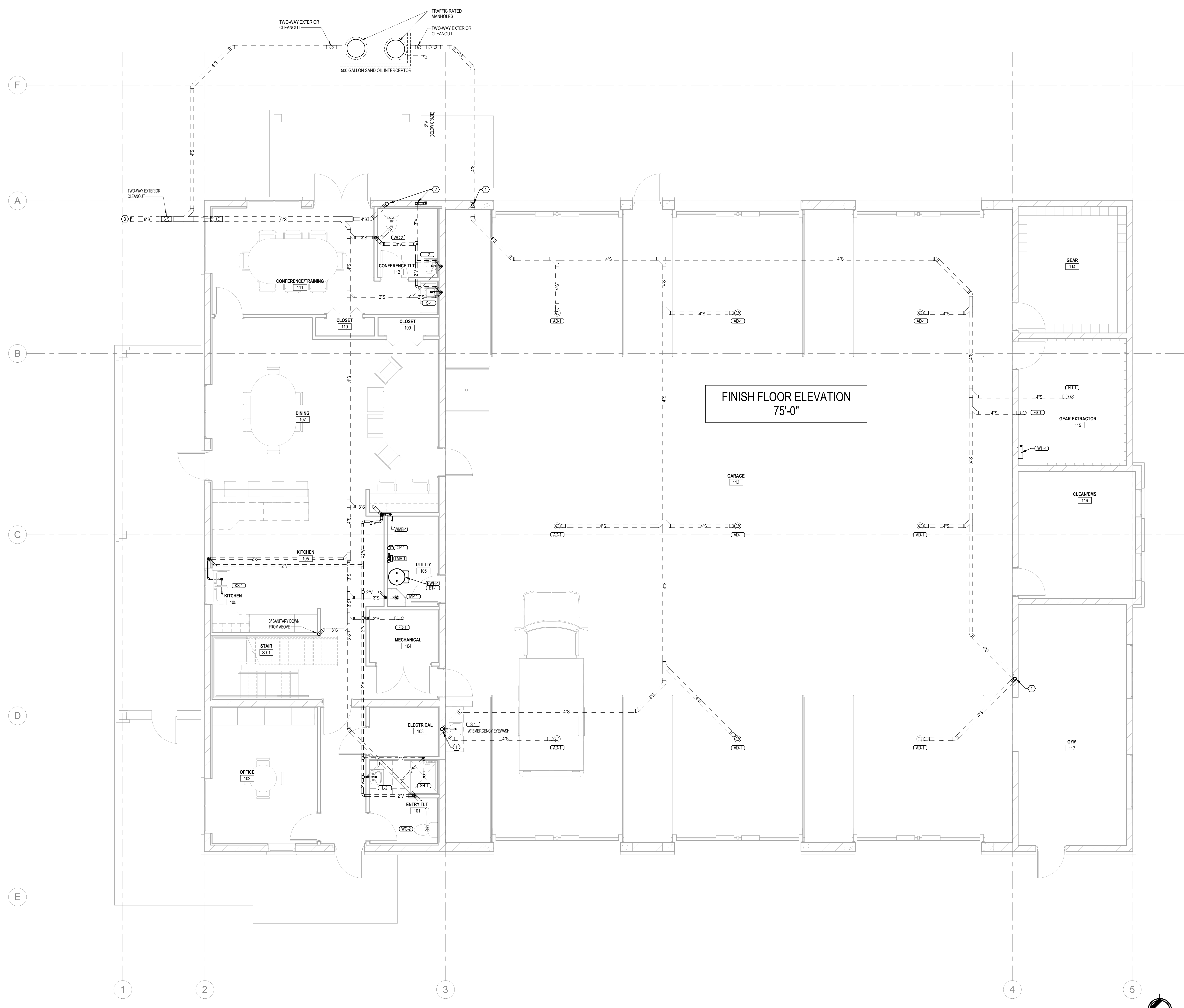
Identity Mark	MANUFACTURER	MODEL	STORAGE CAPACITY (GAL)	STORAGE TEMP (°F)	ELECTRICAL			RECOVERY (70 °F RISE)	Description	
					KW	VOLTS	PHASE			
EWH-1	A.O. SMITH	DRE-52-6	50	140	12.3	208	3	34	35	PROVIDE AND INSTALL EXPANSION TANK AMTROL 851-12C AND THERMOSTATIC MIXING VALVE EQUAL TO POWERS INTELLISTATION JR MODEL #L78350V.

### PLUMBING DRAWING INDEX

SHEET	DESCRIPTION
PS-1	PLUMBING LEGEND, GENERAL NOTES, SCHEDULES & SHEET INDEX
P2-1	PLUMBING LEVEL 1 GRAVITY PLAN
P2-2	PLUMBING LEVEL 2 GRAVITY PLAN
P3-1	PLUMBING LEVEL 1 PRESSURE PLAN
P3-2	PLUMBING LEVEL 2 PRESSURE PLAN
PA-1	PLUMBING ROOF PLAN
PS-1	PLUMBING DETAILS
PS-2	PLUMBING DETAILS
PS-1	PLUMBING RISERS
PS-2	PLUMBING RISERS

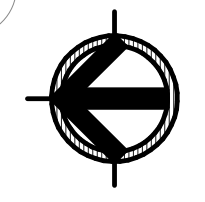
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 7370 Cabot Court, Suite 103  
 Melbourne, FL 32940  
 P 321.636.0274  
 www.tlc-engineers.com  
 TLC No. 521157  
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DATE: 5-03-22  
 Addendum # 1 - Water Heater  
 James G. Mullen, P.E.  
 FE License #60195  
 5/3/2022 7:17:06 AM  
 John P. Adams, AIA  
 Jerome Bankovich, Jr., AIA, LEED  
 Ethan J. Hine, AIA  
 Jennifer Zaffuto, AIA, LEED, NCARB  
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**KTH ARCHITECTS**  
 LAKE COUNTY  
 FIRE STATION NO. 71  
 PLUMBING LEGEND, GENERAL NOTES, SCHEDULES & SHEET INDEX  
 33662 CR 473, LEESBURG, FL 34788  
 20073A  
 NOVEMBER 10, 2021  
 100% CD Submittal - Bid Set  
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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"



**TLC ENGINEERING**  
 7370 Cabot Court, Suite 103  
 Melbourne, FL 32940  
 P 321.636.0274  
 www.tlc-engineers.com  
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**LAKE COUNTY**  
 FIRE STATION NO. 71  
 PLUMBING LEVEL 1 GRAVITY PLAN

NOVEMBER 10, 2021

**P2.1**

NO.	DESCRIPTION	DATE

James G. Mullen, P.E.  
 PE License #60195  
  
 5/3/2022 7:17:12 AM

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

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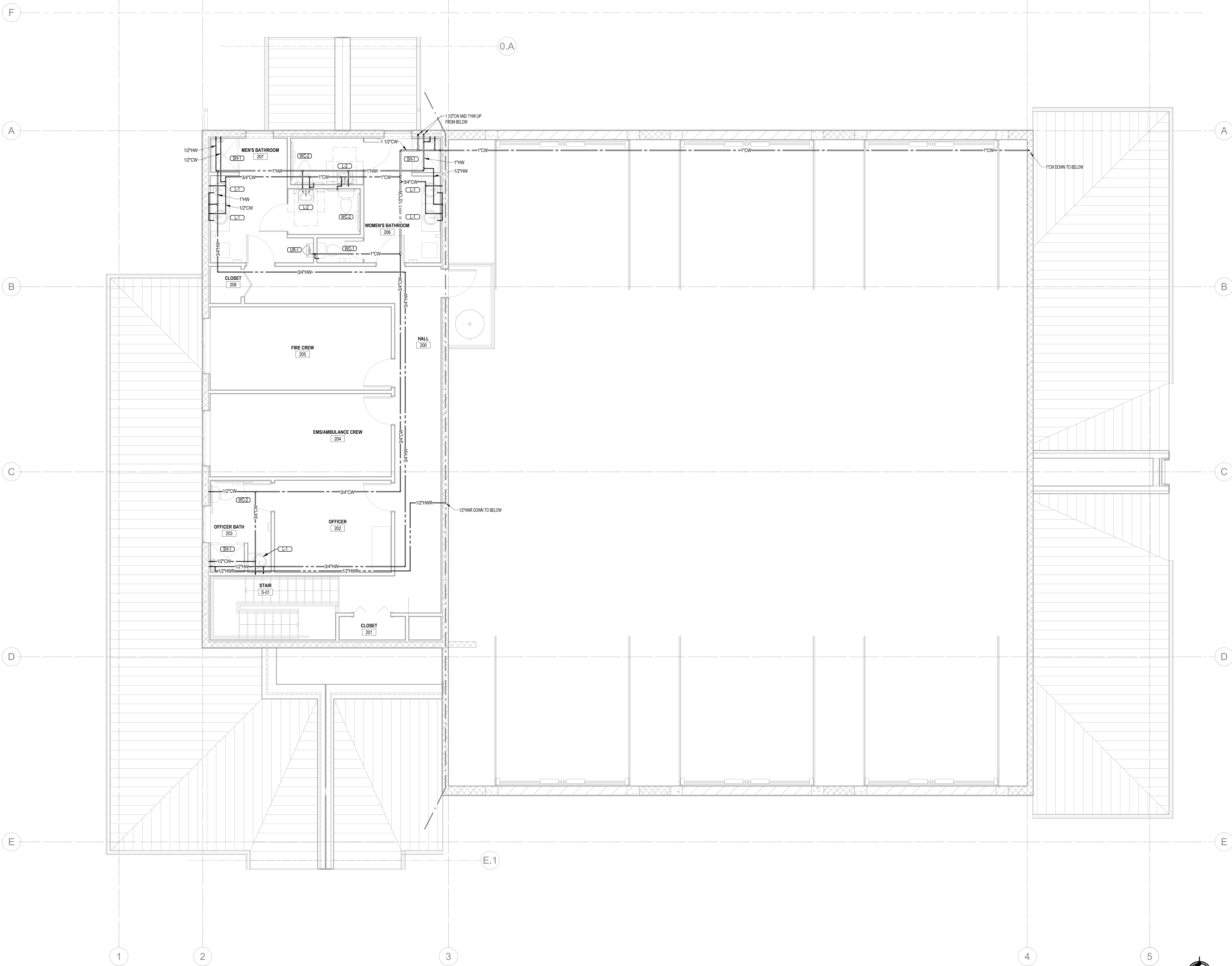


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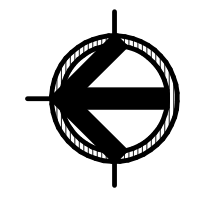
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1 SECOND FLOOR - PRESSURE  
1/4" = 1'-0"



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 P 321.636.0274  
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**LAKE COUNTY**  
 FIRE STATION NO. 71  
 PLUMBING LEVEL 2 PRESSURE PLAN

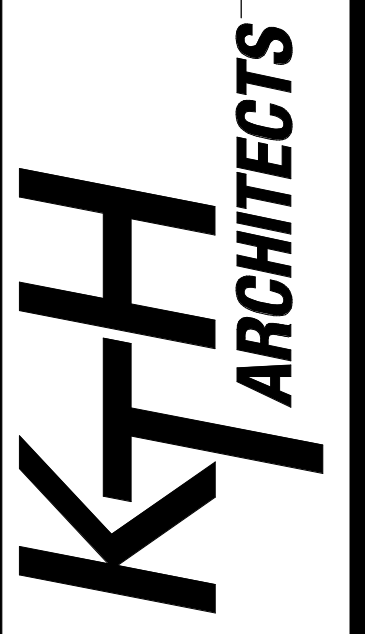
NOVEMBER 10, 2021

**P3.2**

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

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

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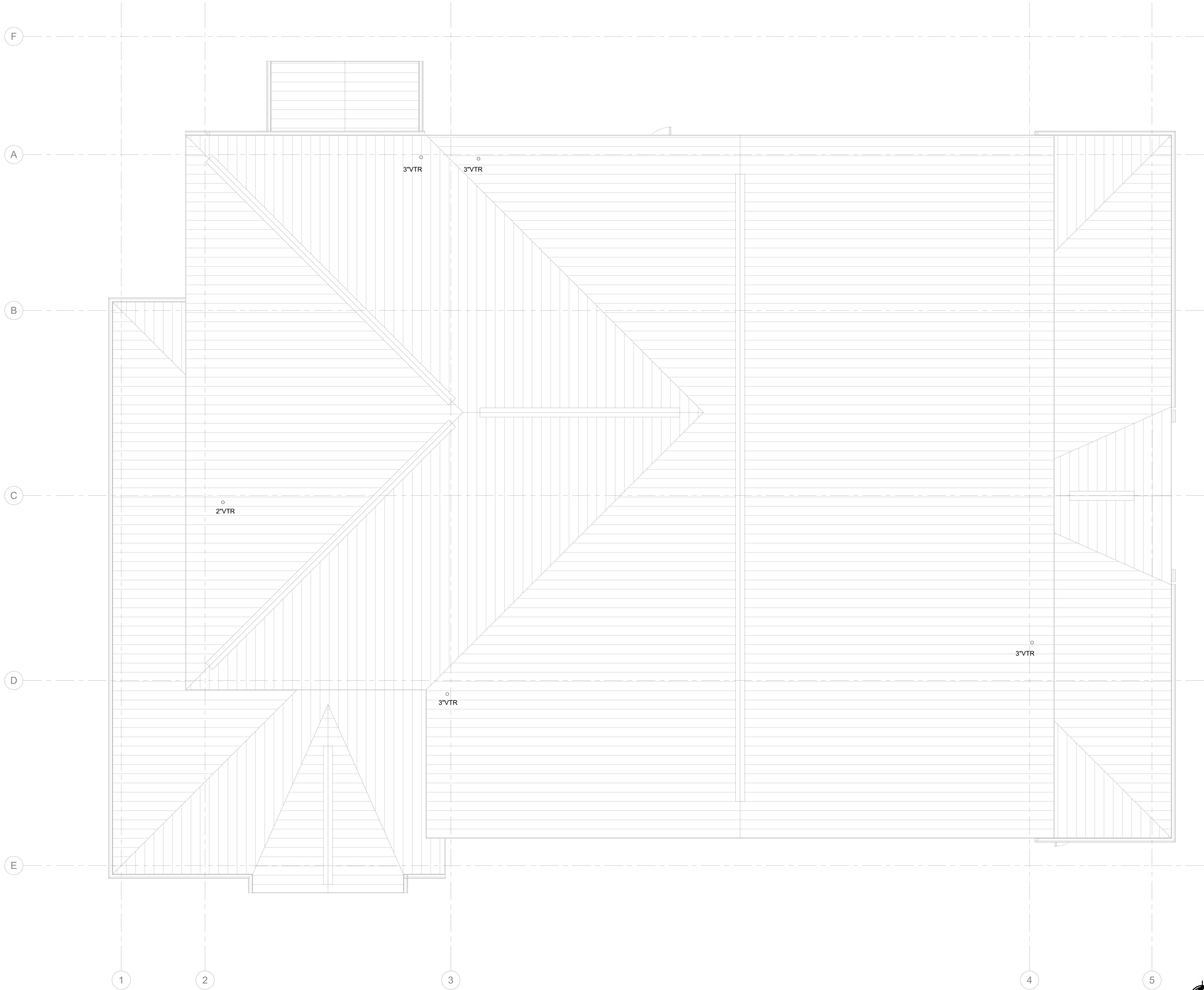


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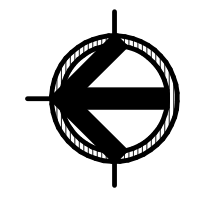
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NOVEMBER 10, 2021

NO.	DESCRIPTION	DATE



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



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Melbourne, FL 32940  
P 321.636.0274  
COA 15  
www.tlc-engineers.com  
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LAKE COUNTY  
FIRE STATION NO. 71  
PLUMBING ROOF PLAN

NOVEMBER 10, 2021

P4.1

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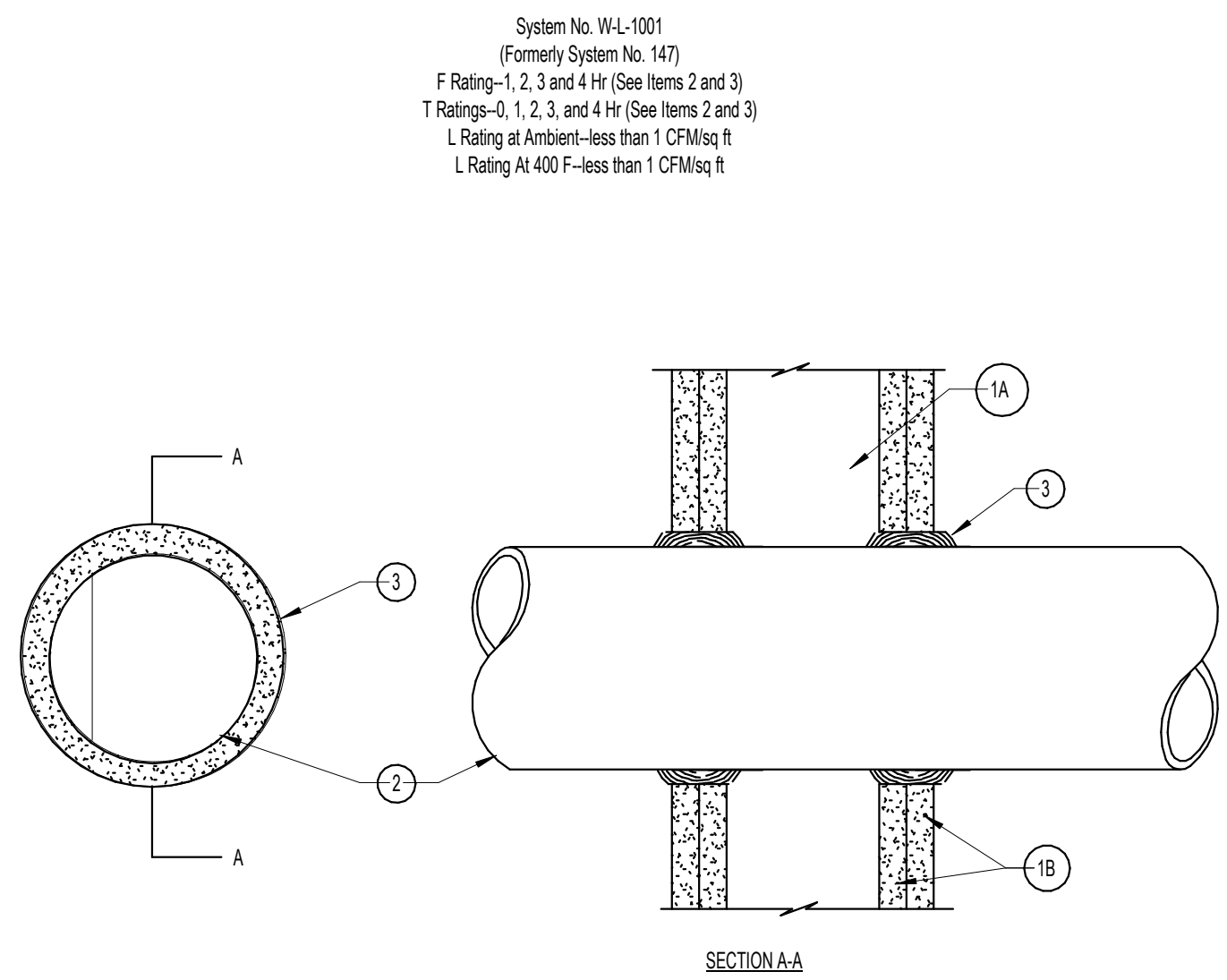
**KTH**  
ARCHITECTS

John P. Adams, AIA  
Jerome Bankovich, Jr., AIA, LEED  
Ethan J. Hine, AIA  
Jennifer Zaffuto, AIA, LEED, NCARB  
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PE License #60195  
5/3/2022 7:17:27 AM

NO.	DESCRIPTION	DATE



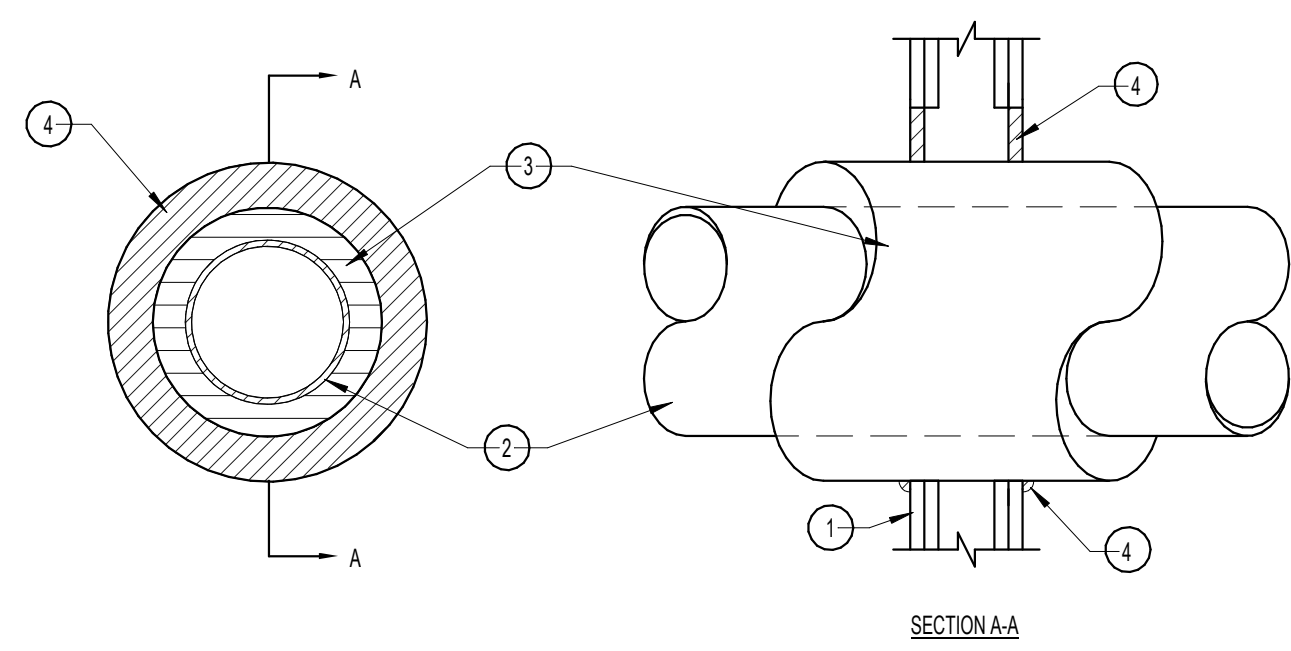


System No. WL-1001  
(Formerly System No. 147)  
F Rating - 1, 2, 3 and 4 Hr (See Items 2 and 3)  
T Rating - 0, 1, 2, 3, and 4 Hr (See Items 2 and 3)  
L Rating At Ambient - less than 1 CFM/sq ft  
L Rating At 400 F - less than 1 CFM/sq ft

- Wall Assembly - The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/steel stud 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:
  - Studs - Wall framing may consist of either wood studs (max 2 hr fire rated assembly) or steel channel studs. Wood studs to consist of nom 2x4 in. lumber spaced 16 in. OC with nom 2x4 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.
  - 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.
- Pipe or Conduit - Nom 1/2 in. diam (or smaller) Schedule 10 (or heavier) steel pipe, nom 1/2 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 1/2 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 freestop system (Item 3) is 2 hr. 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 freestop system. Pipe or conduit to be installed near center of stud cavity width and to be rigidly supported on both sides of wall assembly.
- FR, 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 entry from the wall. Caulk installed symmetrically on both sides of wall assembly. The hourly F Rating of the freestop 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 freestop 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	T Rating
1	0 to 3/16	1 or 2	0 or 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

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



System No. WL-5029  
(Formerly system no. 319)  
F Rating - 1 and 2 Hr (See Item 1)  
T Rating - 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

- Wall Assembly - The 1 or 2 hr fire-rated gypsum wallboard/steel stud assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
  - Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2x4 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
  - 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 18-5/8 in. The hourly F Rating of the freestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
- Through Penetrants - One metallic pipe, conduit or tubing to be centered within the freestop 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:
  - Steel Pipe - Nom 1/2 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - Conduit - Nom 4 in. diam (or smaller) electrical metallic tubing or steel conduit.
  - Copper Tubing - Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
  - Copper Pipe - Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
- 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 (BRG) 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 freestop 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:
 

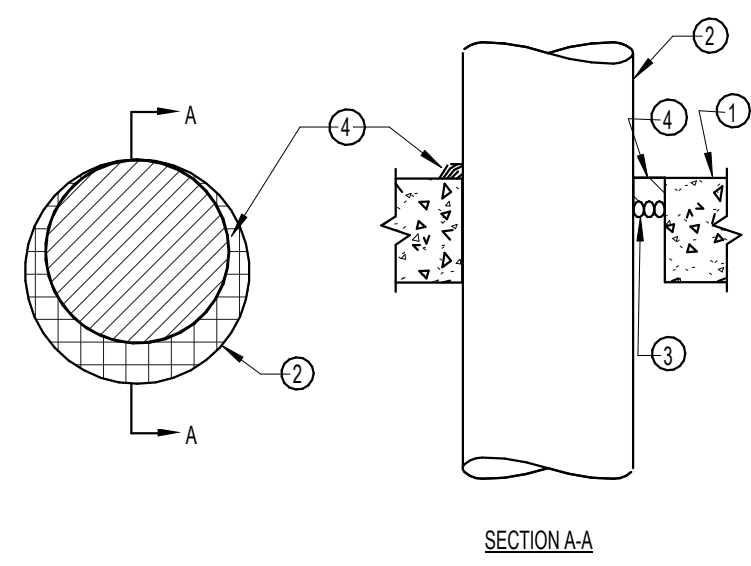
Wall Assembly Rating	Through Penetrant	Pipe Covering Thickness in.	Annular Space		T Rating	
			Min. In.	Max. In.	Min. Hr	Max. Hr
1	A or B	4	1	0	1-1/2	1/2
1	C or D	2	1 or 1-1/2	0	1-1/2	1/2
1	A or B	4	1	0	1-1/2	1
1	A	12	2	0	1-7/8	3/4
1	C or D	6	2	0	1-7/8	1
2	A or B	4	1	0	1-1/2	1
2	C or D	4	1 or 1-1/2	0	1-1/2	1
2	C or D	6	2	0	1-7/8	1
2	A or B	4	1	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. FR, Void or Cavity Material - Sealant - Min 5/8 in. thickness of FR material applied within the annular space, 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 FR material shall be applied at the pipe covering/gypsum wallboard interface on both surfaces of wall.

HULTI CONSTRUCTION CHEMICALS, DIV OF HULTI, INC. - FR 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 Rating At Ambient - 2 CFM/sq ft  
L Rating At 400 F - less than 1 CFM/sq ft

- 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 (cast) and precast concrete units (civ) categories in the fire resistance directory for names of manufacturers.
- steel sleeve - (optional, not shown) - max. 1/2" 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 other surface of wall, max. 1/2" 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 other surface of floor or wall.
- through penetrants - one metallic pipe, conduit or tubing to be installed either concentric, shy or eccentric ally within the freestop 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:
  - steel pipe - nom 3/4" dia. (or smaller) schedule 10 (or heavier) steel pipe
  - iron pipe - nom 3/4" dia. (or smaller) cast or ductile iron pipe
  - conduit - nom 6" dia. (or smaller) rigid steel conduit
  - conduit - nom 4" dia. (or smaller) rigid electrical metallic tubing
  - copper tubing - nom 6" dia. (or smaller) type (or heavier) copper tube
  - copper pipe - nom 6" dia. (or smaller) regular (or heavier) copper pipe

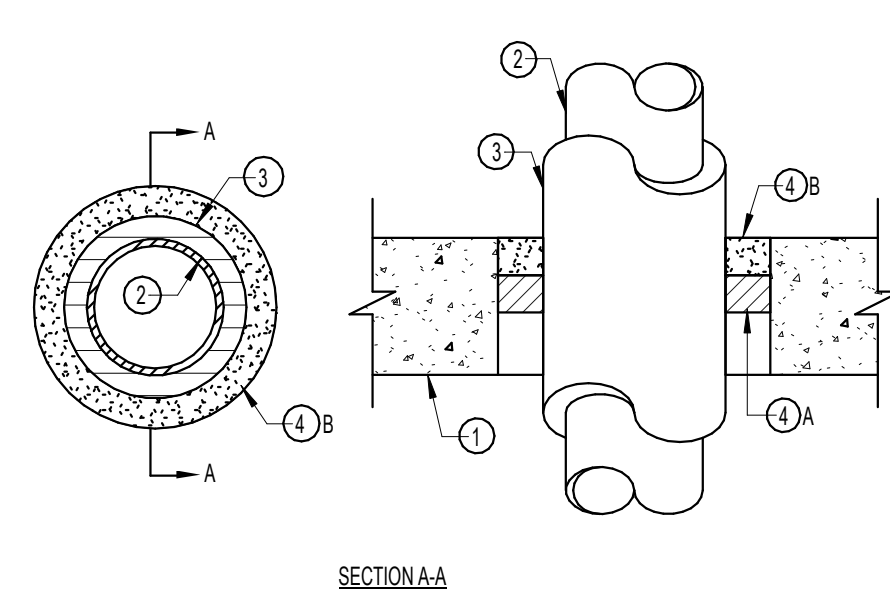
- packing material - polyethylene backer rod or nom. 1" thickness of tightly packed min steel wool batt or glass fiber insulation firmly packed into opening as a permanent form; packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of caulk fill material (Item 4).
- fill void or cavity material\* - caulk - applied to fill the annular space flush with top surface of floor. FR 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 T 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	T Rating
					rating, hr.
2-1/2	1/2-1/2	1-3/8	1/2	2	2
2-1/2	1/2-1/2	3-1/4	1	2	2
4-1/2	1/2	1-3/8	1/4 (A)	2	2
4-1/2	1/2	1-1/4	1/2	3	3
4-1/2	1/2-2/0	2	1	3	3
4-1/2	1/2-2/0	2	1	3	1-1/2
4-1/2	1/2-1/2	3-1/4	1	3	3
4-1/2	1/2	1-3/8	1 (B)	4	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. - Co 25WB-  
\*Bearing the UL Classification Marking

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



System No. CAJ-5001  
(Formerly System No. 91)  
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

- 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 Blocks\*. Max. diameter of opening is 18". See Concrete Blocks (CAZ) category in the Fire Resistance Directory for names of manufacturers.
- Steel Sleeve - (Optional, not shown) - Nom. 1/2" (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 other surface of wall. T Rating is 0 Hr when sleeve is used.

- Through Penetrants - Nom. 4" dia. (or smaller) type L (or heavier) copper pipe, nom. 1/2" dia. (or smaller) schedule 50 (or heavier) ductile iron pressure pipe, nom. 1/2" dia. (or smaller) Class 50 (or heavier) pipe cast or grouted in the opening and rigidly supported on both sides of the floor or wall assembly.
- Pipe Covering\* - Nom. 1-1/2 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 with self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. See pipe and equipment covering - Materials (BRG) 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.
- Freestop System - The details of the freestop system shall be as follows:
  - 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 wall as required to accommodate the required thickness of caulk fill material (Item 5).
  - FR, 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 freestop system are dependent upon the thickness of the floor or wall, the size of the 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 Covering Thickness, in.	Nom. Pipe Covering Thickness, in.	Annular Space, in.	F Rating	T Rating
2-1/2	4	1 OR 1-1/2	1/2 TO 3/8	2	1
4-1/2	4	2	1/4 TO 3/8	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 3/8	3	1
2-1/2	12	1/2	1/2 TO 3/8	2	0

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

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

DATE

DESCRIPTION

NO.

James G. Mullen, P.E.  
FE License #60195

5/3/2022 7:17:31 AM

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

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KTH ARCHITECTS

20073A

LAKE COUNTY  
FIRE STATION NO. 71  
PLUMBING DETAILS

33661 CR 473, LEESBURG, FL 34788

NOVEMBER 10, 2021

100% CD Submittal - Bid Set

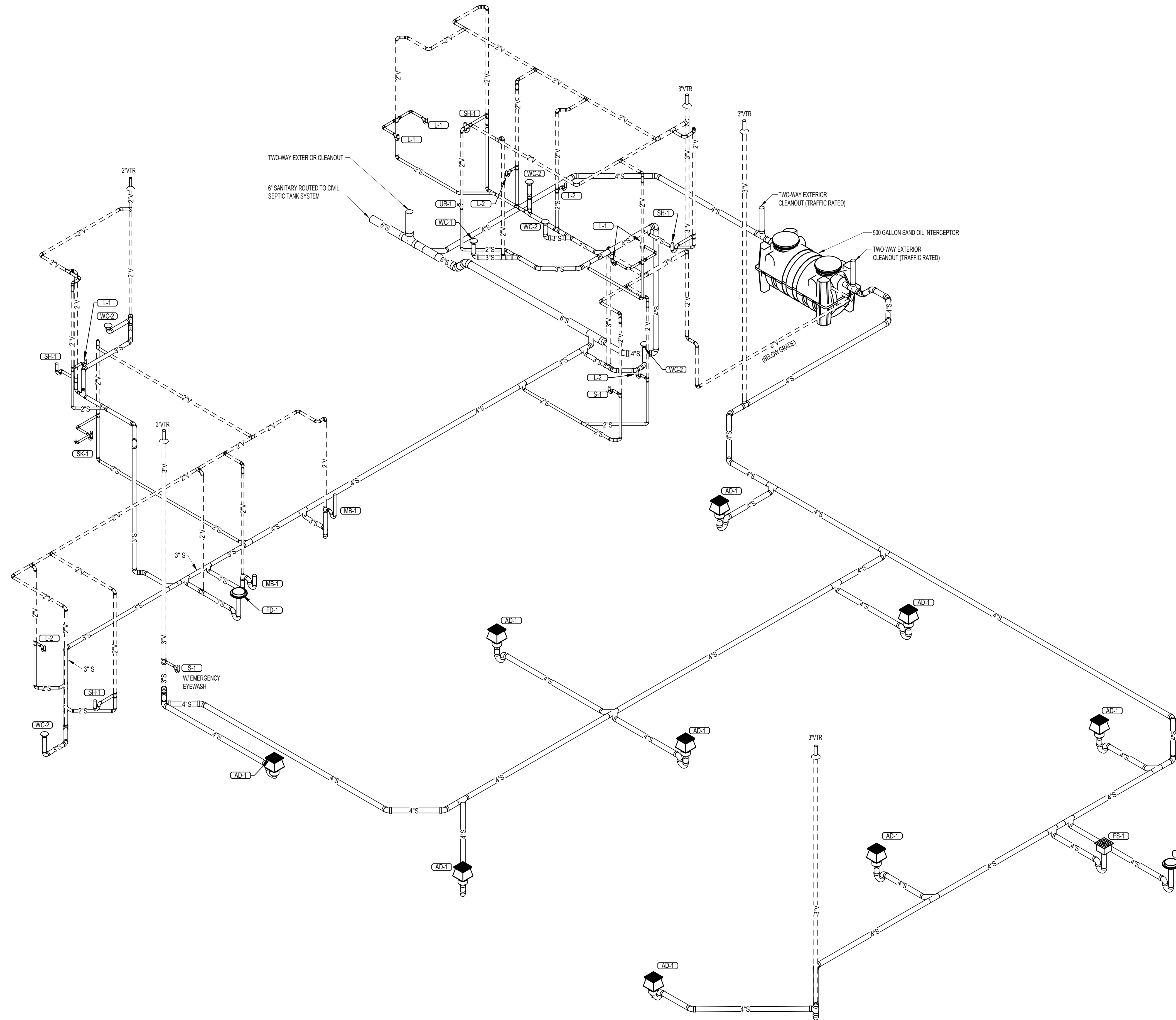
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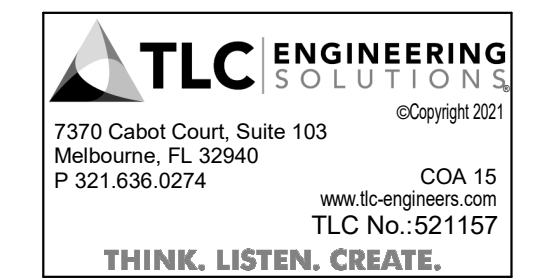
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S1 PLUMBING SANIATRY RISER  
P6.1 N.T.S.



100% CD Submittal - Bid Set

LAKE COUNTY  
FIRE STATION NO. 71  
PLUMBING RISERS

NOVEMBER 10, 2021

P6.1

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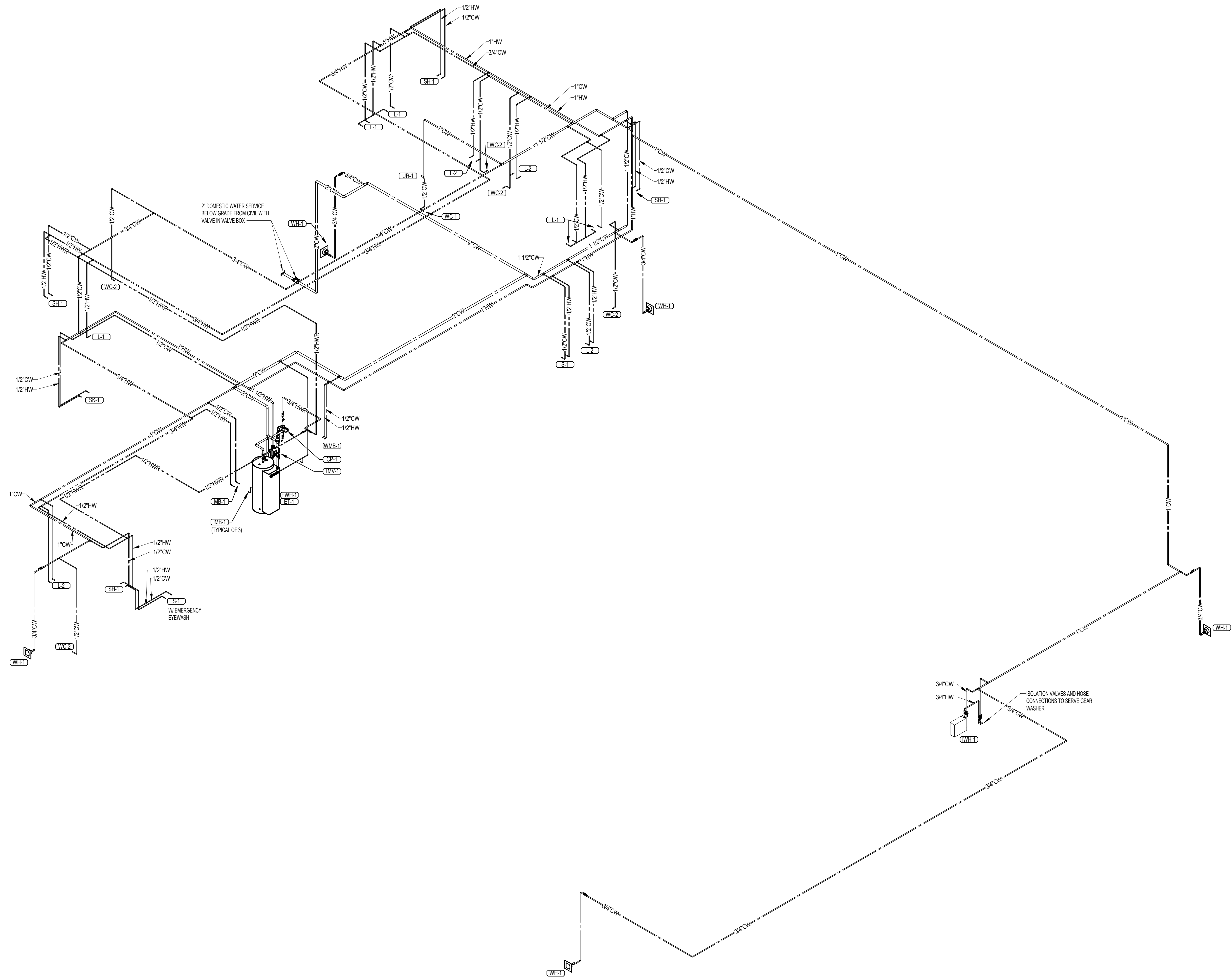
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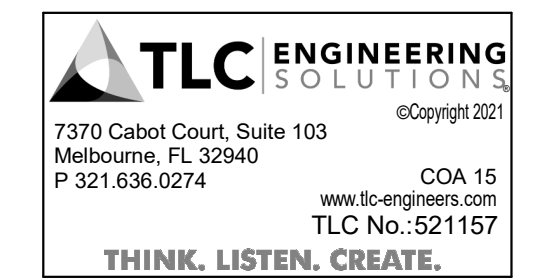
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W1 PLUMBING DOMESTIC WATER RISER  
 P6.2 N.T.S.



100% CD Submittal - Bid Set

LAKE COUNTY  
 FIRE STATION NO. 71  
 PLUMBING RISERS

NOVEMBER 10, 2021

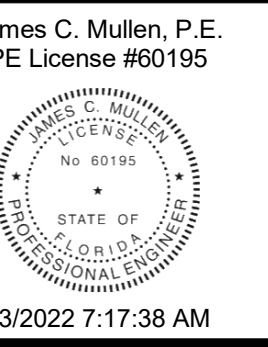
P6.2

20073A



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

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