

1. ALL PLUMBING WORK SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF PLUMBING CODE OF NEW YORK STATE 2020 AND ALL AUTHORITIES HAVING JURISDICTION.
2. EXTERIOR UTILITIES ARE DIAGRAMMATIC AND EXACT LOCATION AND INVERT ELEVATIONS SHALL BE AS INDICATED OR AS REQUIRED TO MEET EXISTING CONDITIONS. COORDINATE WORK WITH SITE PLAN.
3. PROVIDE ALL REQUIRED OFFSETS, FITTINGS, VALVES, TRAPS, DRAINS, ETC. EVEN THOUGH THOUGH NOT INDICATED DUE TO SMALL SCALE OF THE DRAWING.
4. CHECK DRAWINGS OF OTHER TRADES AND ARRANGE WORK TO AVOID CONFLICTS.
5. INSTALL PIPING TO MAINTAIN MAXIMUM HEADROOM AND ABOVE ARCHITECT'S APPROVED CEILING HEIGHTS.
6. RUN PIPING IN WALL CHASES, RECESSES, PIPE SHAFTS, AND HUNG CEILING WHERE SAME ARE PROVIDED OR SPECIALLY APPROVED.
7. INSTALL PIPING UNDER THE BUILDING AS HIGH AS POSSIBLE. DO NOT PERMANENTLY CLOSE UP, FUR IN, OR COVER PIPING BEFORE EXAMINATION AND TEST.
8. PROVIDE CONTROL GATE VALVES WHERE NOTED OR REQUIRED FOR COMPLETE REGULATING CONTROL OF ALL SYSTEM, PLUMBING FIXTURES, AND EQUIPMENT.
9. VALVES SHALL BE INSTALLED ACCESSIBLE BUT NO VALVES SHALL BE INSTALLED WITH HANDLES POINTING DOWN.
10. PROVIDE BALANCING GLOBE VALVES ON ALL HOT WATER CIRCULATING BRANCHES AS REQUIRED.
11. USE REDUCING FITTINGS FOR CHANGES OF PIPE SIZE. USE NO BUSHING EXCEPT WITH SPECIAL PERMISSION.
12. USE EXTRA HEAVY PIPE FOR NIPPLES WHERE UNTHREADED PORTION IS LESS THAN 1-1/2". USE NO CLOSE NIPPLES, EXCEPT WITH SPECIAL PERMISSION. USE 45° SHOULDER NIPPLES.
13. PROVIDE UNIONS OR FLANGES AT CONNECTIONS TO RISERS, BYPASSES, AND EQUIPMENT.
14. RUN LOCAL HORIZONTAL DRAINAGE PIPING AT GRADE OF 1/4" PER FOOT WHEREVER POSSIBLE BUT NOT LESS THAN 1/8" PER FOOT; HOUSE DRAINAGE AT 1/8" PER FOOT UNLESS OTHERWISE NOTED, AND OUTSIDE DRAINAGE PIPING AS INDICATED OR REQUIRED.
15. RUN VENT PIPING WITH LONG-TURN ELBOWS AT CHANGES IN DIRECTION, PITCH TO DRAIN OUT CONDENSATION, AND CONNECT AT BASE TO PREVENT ACCUMULATION OF RUST.
16. PROVIDE CLEANOUTS (FULL SIZE UP TO 4" AND AT LEAST HALF-SIZE FOR LARGER PIPES WITH 4" MINIMUM), WHERE INDICATED, APPROXIMATELY EVERY 50 FEET ON HORIZONTAL DRAIN PIPING; AT CHANGES IN DIRECTION, AT BASE OF LEADERS, SOIL AND WASTE STACKS AND AS REQUIRED.
17. PROVIDE DRAIN BIES AT BASE OF ALL WATER RISERS.
18. ALL SUBMERGED INLETS AND INSIDE HOUSE CONNECTIONS SHALL BE PROVIDED WITH AIRPUSH TYPE VACUUM BREAKERS.
19. PROVIDE ALL REQUIRED WATER PIPING FOR HEATING VENTILATING AND AIR CONDITIONING EQUIPMENT TO WITHIN 10 FT. OF THE EQUIPMENT CONNECTION AND

1. ALL NEW PLUMBING WORK SHALL CONFORM TO PLUMBING CODE OF NEW YORK STATE 2020.
2. ALL MATERIALS USED SHALL BE NEW, UNLESS OTHERWISE NOTED.
3. THE PLUMBING CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR HIS WORK AND MATERIALS AND SHALL GUARANTEE THE WORK OF HIS CONTRACT FOR A PERIOD OF ONE YEAR FROM THE DATE OF COMPLETION OF HIS WORK.
4. PLUMBING CONTRACTOR SHALL CONSULT AND COOPERATE WITH THE GENERAL CONTRACTOR, HEATING AND VENTILATING CONTRACTOR, ELECTRICAL CONTRACTOR, ETC., IN ORDER TO AVOID INTERFERENCE DURING INSTALLATION OF PIPING, EQUIPMENT, ETC.
5. PLUMBING CONTRACTOR SHALL DO ALL FILING OF PLANS WITH THE LOCAL AUTHORITIES AND PAY ALL FILING FEES AS REQUIRED BY LAW. HE SHALL OBTAIN ALL WORK PERMITS AND WRITE-OFFS TO EFFECT THIS INSTALLATION IN A LEGAL MANNER.
6. PLUMBING CONTRACTOR SHALL PERFORM ALL TESTS REQUIRED BY THE LOCAL AUTHORITIES HAVING JURISDICTION AND SUBMIT THE WORK TO ALL INSPECTIONS REQUIRED BY THEM AT NO ADDITIONAL COST TO THE CLIENT. THE CONTRACTOR SHALL FURNISH ALL CERTIFICATES OF INSURANCE AS REQUIRED BY THE LAW.
7. PLUMBING CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS TO EXISTING PLUMBING EQUIPMENT REGARDLESS OF WHETHER SHOWN HEREIN WITHOUT ANY ADDITIONAL COST TO THE CLIENT.
8. PLUMBING CONTRACTOR SHALL CHECK JOB SITE FOR EXISTING PLUMBING AND SIZES BEFORE BIDDING ON THE JOB.
9. PLUMBING CONTRACTOR SHALL DO ALL NECESSARY CUTTING, EXCAVATION, BACK-FILLING FOR THE INSTALLATION OF NEW PLUMBING AND PATCHING BACK TO ORIGINAL STATE.
10. ALL NEW PLUMBING CONNECTIONS TO THE NEW PLUMBING EQUIPMENT SHALL BE IN ACCORDANCE WITH THE 2018 PLUMBING CODE OF NEW YORK STATE 2020 AND THE MANUFACTURER'S SPECIFICATIONS.
11. ALL NEW UNDERGROUND SOIL, WASTE, VENT PIPING AND FITTINGS SHALL BE SCHEDULE 40 PVC.
12. ALL NEW SOIL, WASTE, VENT PIPING AND FITTINGS ABOVE FINISH FLOOR SHALL BE SCHEDULE 40 PVC.
13. ALL NEW COLD WATER PIPING, HOT WATER PIPING AND FITTINGS SHALL BE COPPER TUBING TYPE "L" WITH COPPER FITTINGS UTILIZING APPROVED LEAD FREE SOLDER.
14. ALL NEW COLD WATER PIPING, HOT WATER PIPING AND FITTINGS SHALL BE COVERED WITH 1/2" FIBERGLASS PIPE INSULATION AS MANUFACTURED BY OWENS CORNING FIBERGLASS, 25C-P PIPING INSULATION OR APPROVED EQUAL. ALL EXPOSED PIPING, FITTINGS AND VALVES SHALL ALSO BE COVERED WITH ZESTON 2000 PVC JACKETING, WITH WELDED SEALS.
15. ALL NEW PIPING HANGERS AND SUPPORTS SHALL COMPLY WITH THE PLUMBING CODE OF NEW YORK STATE 2020.
16. ALL NEW COLD AND HOT WATER SUPPLY PIPING SHALL HAVE ANGLE

17. ALL NEW EXPOSED PIPING AND FITTINGS AT FIXTURES SHALL BE HEAVY PIPING PASSING THROUGH WALLS ON BOTH SIDES.
18. PROVIDE HEAVY CHROME PLATED ESCUTCHEON PLATES AROUND ALL NEW PIPING PASSING THROUGH WALLS ON BOTH SIDES.
19. ALL NEW VALVES SHALL BE FAIRBANKS 125 P.S.I. OR APPROVED EQUAL.
20. PLUMBING CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS ON NEW PLUMBING FIXTURES AND EQUIPMENT FOR APPROVALS BEFORE INSTALLATION OF SAME.
21. ALL DOMESTIC WATER SYSTEMS SHALL BE FLUSHED AND SANITIZED IN ACCORDANCE WITH THE PLUMBING CODE OF NEW YORK STATE 2020: SECTION 610.1 AND LOCAL ADMINISTRATIVE AUTHORITY.

TESTING: DOMESTIC COLD, HOT WATER SYSTEMS SHALL BE TESTED TO A HYDROSTATIC PRESSURE OF 150 PSI. THE TEST PRESSURE SHALL BE HELD FOR A PERIOD OF NOT LESS THAN 2 HOURS AND THE SYSTEM SHALL BE MORE THAN 2 PSI DURING THE TEST PERIOD. IT SHALL BE CONSIDERED TIGHT. SANITARY SEWER SYSTEM SHALL BE TESTED IN ACCORDANCE WITH PLUMBING CODE OF NEW YORK STATE 2020: THE SYSTEM SHALL BE PROVEN TIGHT UNDER 10'-0" HEAD OVER NEW BUILDING ROOF FOR A PERIOD OF 2 HOURS AND THE WATER LEVEL MUST REMAIN CONSTANT THROUGHOUT THE TEST WITHOUT ADDING WATER.

22. ALL NEW COMPRESSED AIR AND VACUUM PIPING SHALL BE COPPER TUBING TYPE "L" WITH COPPER FITTINGS UTILIZING APPROVED LEAD FREE SOLDER.
23. HORIZONTAL STORM PIPING SHALL BE COVERED WITH 1" FIBERGLASS PIPE INSULATION AS MANUFACTURED BY OWENS CORNING FIBERGLASS 256-P PIPING INSULATION OR APPROVED EQUAL.

AFG	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
BT	BATH TUB
CAP.	CAPACITY
CD	CONDENSATE DRAIN
CHV	CHEMICAL VENT
CHW	CHEMICAL WASTE
CO	CLEANOUT
CODP	CLEANOUT WITH DECK PLATE
COMB.	COMBUSTION
COWP	CLEANOUT WITH WALL PLATE
CW	COLD WATER
DF	DRINKING FOUNTAIN
DCV	DOUBLE CHECK VALVE
DCDV	DOUBLE CHECK DETECTOR VALVE
ESE	EMERGENCY SHOWER AND EYE WASH STATION
FD	FLOOR DRAIN
FS	FLOOR SINK
FW	FILTERED WATER
G	GAS
HS	HAND SINK
HSH	HANDICAP SHOWER
HW	HOT WATER MIN. 120°F
HHW	HOT WATER HEATER
HWR	HOT WATER RE-CIRCULATION
KSK	KITCHEN SINK
L	STORM DRAIN LEADER
LAV	LAVATORY
MAX.	MAXIMUM
MFR.	MANUFACTURER
MIN.	MINIMUM
MS	MOP SINK
MV	THERMOSTATIC MIXING VALVE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NT	NEUTRALIZATION TANK
OPER.	OPERATING
P	PLUMBING
PD	PUMPED DRAIN
PW	PUMPED WASTEWATER
RD	ROOF DRAIN
RD&O	ROOF DRAIN WITH OVERFLOW
RDS	ROOF DRAIN SECONDARY/EMERGENCY
S	SANITARY
SH	SHOWER
SL	SECONDARY STORM DRAIN LEADER
PHS	PH SAMPLING
ST	STORM
TEMP.	TEMPERATURE
TP	TRAP PRIMER
TYP.	TYPICAL
VTR	VENT THROUGH ROOF
V	VENT
VB	VACUUM BREAKER
W	WATER
WC	WATER CLOSET
WH	WALL HYDRANT
WW	WORM WATER
WMB	WASHING MACHINE BOX

-----	NEW EQUIPMENT
-----	NEW CW PIPE
-----	NEW HW PIPE 110°F
-----	NEW HWR PIPE
-----	NEW FILTERED WATER PIPE
-----120-----120-----	NEW HW 120°F
-----140-----140-----	NEW HW 140°F
-----G-----G-----	NEW GAS PIPING
-----WW-----WW-----	NEW WARM WATER PIPING
-----	NEW SANITARY PIPE ABOVE SLAB/GRADE
-----	NEW SANITARY PIPE BELOW SLAB/GRADE
-----	NEW VENT PIPE
-----GW-----GW-----	NEW GREASE WASTE PIPE ABOVE SLAB/GRADE
-----ST-----ST-----	NEW STORM DRAIN PIPE ABOVE SLAB/GRADE
-----US-ST-----US-ST-----	NEW UNDER SLAB STORM DRAIN PIPE
-----	EXISTING EQUIPMENT
-----	EXISTING CW PIPE
-----	EXISTING HW PIPE
-----	EXISTING HWR PIPE
-----	EXISTING FW PIPE
-----120-----120-----	EXISTING HW WATER 120°F PIPE
-----140-----140-----	EXISTING HIGH TEMPERATURE WATER PIPE
-----G-----G-----	EXISTING GAS PIPE
-----WW-----WW-----	EXISTING WARM WATER PIPE
-----	EXISTING SANITARY PIPE ABOVE SLAB
-----	EXISTING SANITARY PIPE UNDER SLAB/GRADE
-----	EXISTING VENT PIPE
-----ST-----ST-----	EXISTING STORM PIPE ABOVE GRADE/SLAB
-----US-ST-----US-ST-----	EXISTING UNDER SLAB/GRADE STORM PIPE
////////////////////	REMOVAL WORK
-----○	PIPE DOWN
-----○	PIPE UP
-----⌒	PIPE "T" DOWN
-----⌒	PIPE "T" UP
-----○	PIPE 45° DOWN
-----	PIPE UNION
-----○	"P" TRAP (PLAN VIEW)
⌘	GATE VALVE
⌘	BALL VALVE
⌘	GLOBE VALVE
⌘	BUTTERFLY VALVE
⌘	MOTORIZED VALVE (ELECTRIC)
⌘	CHECK VALVE
⌘	SEISMIC SHUT-OFF VALVE
⌘	ANGLE VALVE
⌘	PLUG VALVE
⌘	RELIEF VALVE
⌘	OS&Y VALVE WITH TAMPER SWITCH
⌘	THERMOSTATIC MIXING VALVE
⌘	HOSE BIBB
⌘	WALL HYDRANT
⌘	PUMP
⌘	FLOOR DRAIN
⌘	KEYED NOTE
⌘	EQUIPMENT TAG
⌘	CLEAN-OUT
⌘	CLEAN-OUT AND DECK PLATE
⌘	PRESSURE GAUGE
⌘	THERMOMETER
⌘	CUT INTO EXISTING, REMOVE EXISTING AS REQUIRED AND CONNECT NEW TO EXISTING
⌘	CUT INTO EXISTING, REMOVE EXISTING AS REQUIRED, CAP AND SEAL OPEN END.

HOT WATER HEATER													
TAG	LOCATION	TYPE	TANK CAPACITY (GAL)	FIRST HOUR FLOW (GPH)	RECOVERY RATE (GPM)	TEMP. RISE (°F)	FUEL TYPE	INPUT	ELECTRIC DATA VOLT/PH./HZ.	BASIS OF DESIGN MFR.	MODEL	OPERATING WEIGHT (LB.)	REMARKS
EHWH	SEE PLAN	POINT OF USE	2.5	—	7	90	ELECTRIC	1.44 W	120/1/60	AO SMITH	EPU-2.5	38	1
REMARKS: 1. COORDINATE LOCATION OF ELECTRICAL CONNECTION IN THE FIELD. 2. TANK CONSTRUCTION SHALL BE ASME CERTIFIED.													

TAG	FIXTURE FUNCTION	DESCRIPTION	BASIS OF DESIGN MANUFACTURER	MODEL	REMARKS
CODP	FLOOR CLEANOUT	PVC BODY, ROUND HEAVY DUTY CAST IRON TOP, POLY-PROPYLENE AIR BUBB PLUG, ADJUSTABLE TO FINISHED FLOOR	ST. LOUIS	851	2,4
CO	CLEANOUT	PVC BODY, ROUND PVC TOP, CLEANOUT PLUG SHALL INCLUDE A 1/4"-20 THREADED BRASS INSERT FOR OPTIONAL ATTACHMENT OF COVER.	ST. LOUIS	875	2,4
FD	FLOOR DRAIN	5" ROUND GRATE, 2" BOTTOM OUTLET, DUCO CAST IRON BODY WITH FLASHING COLLAR AND POLISHED BRONZE ADJUSTABLE STRAINER HEAD, AND TRAP PRIMER CONNECTION.	J.R. SMITH	2010	
HB	HOSE BIBB	CAST BRASS CONSTRUCTION, HEX SHOULDER, 1/2" MALE NPT WITH TEE HANDLE AND VACUUM BREAKER	WATTS	SC8-5	
MV	UNDER SINK THERMOSTATIC MIXING VALVE	VALVE SHALL BE STANDARD ASSE 1070 CERTIFIED AND 3RD PARTY CERTIFIED AS LEAD FREE. VALVE SHALL HAVE BRONZE BODY, COPPER ENCAPSULATED THERMOSTAT, BRASS AND ENGINEERED POLYMER INTERNALS, STAINLESS STEEL SPRING, LOCKING TEMPERATURE ADJUSTMENT, INTEGRAL CHECK VALVES ON INLETS, IPS CONNECTIONS, MOUNTING BRACKET. MINIMUM FLOW 0.25 GPM @ 120°F, MAXIMUM HOT WATER TEMPERATURE 180°F. TEMPERATURE ADJUSTMENT RANGE 95°F TO 120°F. TEMPERATURE SETTING 105°F.	LEONARD	170-LF-BP	
RPZ-A	REDUCED PRESSURE ZONE BACKFLOW PREVENTER 2 1/2" TO 10"	THE ASSEMBLY LEAD FREE CONSTRUCTION SHALL CONSIST OF A PRESSURE DIFFERENTIAL RELIEF VALVE LOCATED IN A ZONE BETWEEN TWO POSITIVE SEATING CHECK VALVES AND CAPTURED SPRINGS. BACK-SIPHONAGE PROTECTION SHALL INCLUDE PROVISION TO ADMIT AIR DIRECTLY TO THE REDUCED PRESSURE ZONE. SEPARATE CHANNEL FROM THE WATER DISCHARGE CHANNEL. THE ASSEMBLY SHALL INCLUDE TWO TIGHTLY CLOSING SHUTOFF VALVES BEFORE AND AFTER THE VALVE AND TEST COCKS. THE ASSEMBLY SHALL MEET THE REQUIREMENTS OF ASSE STD. 1013; AWWA STD. C511-92; AND UL CLASSIFIED FILE NO. EX3185.	WATTS	LF-909-NRS	4
RPZ-B	REDUCED PRESSURE ZONE BACKFLOW PREVENTER 2" AND BELOW	THE ASSEMBLY SHALL CONSIST OF TWO POSITIVE SEATING CHECK MODULES WITH CAPTURED SPRINGS AND RUBBER SEAT DISCS. THE CHECK MODULE SEATS AND SEAT DISCS SHALL BE REPLACEABLE. SERVICE OF ALL INTERNAL COMPONENTS SHALL BE THROUGH A SINGLE ACCESS COVER SECURED WITH STAINLESS STEEL BOLTS, SHALL BE CONSTRUCTED USING LEAD FREE CAST COPPER SILICON ALLOY. THE ASSEMBLY SHALL ALSO INCLUDE TWO RESILIENT SEATED ISOLATION VALVES; FOUR TOP MOUNTED, RESILIENT SEATED TEST COCKS. THE VALVE BODY SHALL UTILIZE A COATING SYSTEM WITH BUILT IN ELECTROCHEMICAL CORROSION INHIBITOR AND MICROBIAL INHIBITOR	WATTS	LF-007	4
TS	TRAP SEAL	INLINE FLOOR DRAIN TRAP SEAL WITH UV RESISTANT ABS PLASTIC FRAME, SILICON RUBBER SEALING FLAPPER AND FOUR FLEXIBLE SEALING RIBS.	MIFAB	MI-GARD	
WH	WALL HYDRANT	CONCEALED NON-FREEZE KEY OPERATED WALL HYDRANT WITH NICKEL BRONZE BOX AND DOOR, CHROME PLATED HYDRANT FACE, INTEGRAL VACUUM BREAKER, 18" LONG, 3/4" HOSE CONNECTION, 3/4" FEMALE x 1" MALE PIPE CONNECTION, ALL BRONZE HEAD, SEAT CASTING AND INTERNAL WORKING PARTS, BRONZE WALL CASING, AND LOOSE KEY.	WATTS	HY-725-18	5
REMARKS: 1. UNLESS OTHERWISE INDICATED SIZE SHALL MATCH SIZE OF RESPECTIVE PIPE IT CONNECTS TO. 2. CLEANOUT SHALL BE SAME SIZE AS PIPE BEING SERVED. 3. LENGTH SHALL BE DETERMINED IN THE FIELD BASED ON ACTUAL CONDITIONS.. 4. SIZE SHALL MATCH THE PIPE SIZES SHOWN ON PLANS. 5. WALL OPENING 5.25 X 6.25. CONTRACTOR TO COORDINATE LENGTH WITH FIELD CONDITIONS. 6. THIS SCHEDULE IS COMPREHENSIVE. ALL MARKS MAY OR MAY NOT BE USED ON PLANS.					

PLUMBING FIXTURE SCHEDULE											
TAG	DESCRIPTION	TYPE	RATED FLOW	MAKE AND MODELS			CONNECTION SIZE (IN.)				REMARKS
				FIXTURE	VALVE	FAUCET / TRIM	C.W.	H.W.	WASTE	VENT	
LAV	LAVATORY	WALL MOUNT	0.5 GPM	AMERICAN STANDARD "COMRADE" MODEL 0124.024, 20 x 18½" WALL MOUNT, VITREOUS CHINA WITH FAUCET LEDGE, 4" ON CENTERS FAUCET HOLES, 1¼" TRAP.	AMERICAN STANDARD SERIES "SELECTRONIC" BELOW DECK THERMOSTATIC WATER MIXING VALVE TO BE USED WITH "SELECTRONIC" & METERING FAUCETS. ASSE 1070 CERTIFIED DOWN TO 0.35 GPM. ANTI-SCALD PROTECTION, BUILT-IN CHECK VALVES PREVENT CROSS-FLOW, ADJUSTABLE TEMPERATURE.	AMERICAN STANDARD SERIES "SELECTRONIC" ELECTRONIC PROXIMITY LAVATORY FAUCET MODEL 6059.105, HARD WIRED AC POWERED, 0.5 GPM PRESSURE COMPENSATING, VANDAL-RESISTANT MULTI-LAMINAR SPRAY. CAST BRASS SPOUT WITH PROGRAMMABLE, MULTI-FUNCTION SENSOR, SELF-CLEANING SOLENOID VALVE	½	½	1½	1¼	HANDICAPPED ACCESSIBLE. MCGUIRE, PRO WRAP FOR EXPOSED WASTE, HOT & COLD WATER PIPING
WC	WATER CLOSET	FLUSH VALVE	1.6 GPF	AMERICAN STANDARD WALL MOUNTED ELONGATED "AFWALL FLOWISE" MODEL 2257.001. VITREOUS CHINA, HIGH EFFICIENCY LOW CONSUMPTION, ELONGATED BOWL, CONVENTIONAL GLAZE, 2-1/8" TRAPWAY, DIRECT-FED SIPHON JET ACTION,	SLOAN REGAL MANUAL FLUSHOMETER MODEL REGAL 111-1.6. POLISHED CHROME FINISH, TOP SPUD, SINGLE FLUSH, DIAPHRAGM VALVE, VALVE BODY MATERIAL SEMI-RED BRASS.	-	1	-	4	2	SEAT: AMERICAN STANDARD "EVERCLEAN" ROUND FRONT MODEL 5282.011 SOLID PLASTIC, COMPLETE WITH BOLTS, NUTS AND WASHERS

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PRELIMINARY NOT FOR
CONSTRUCTION
DATE: 01/25/23

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PROJECT



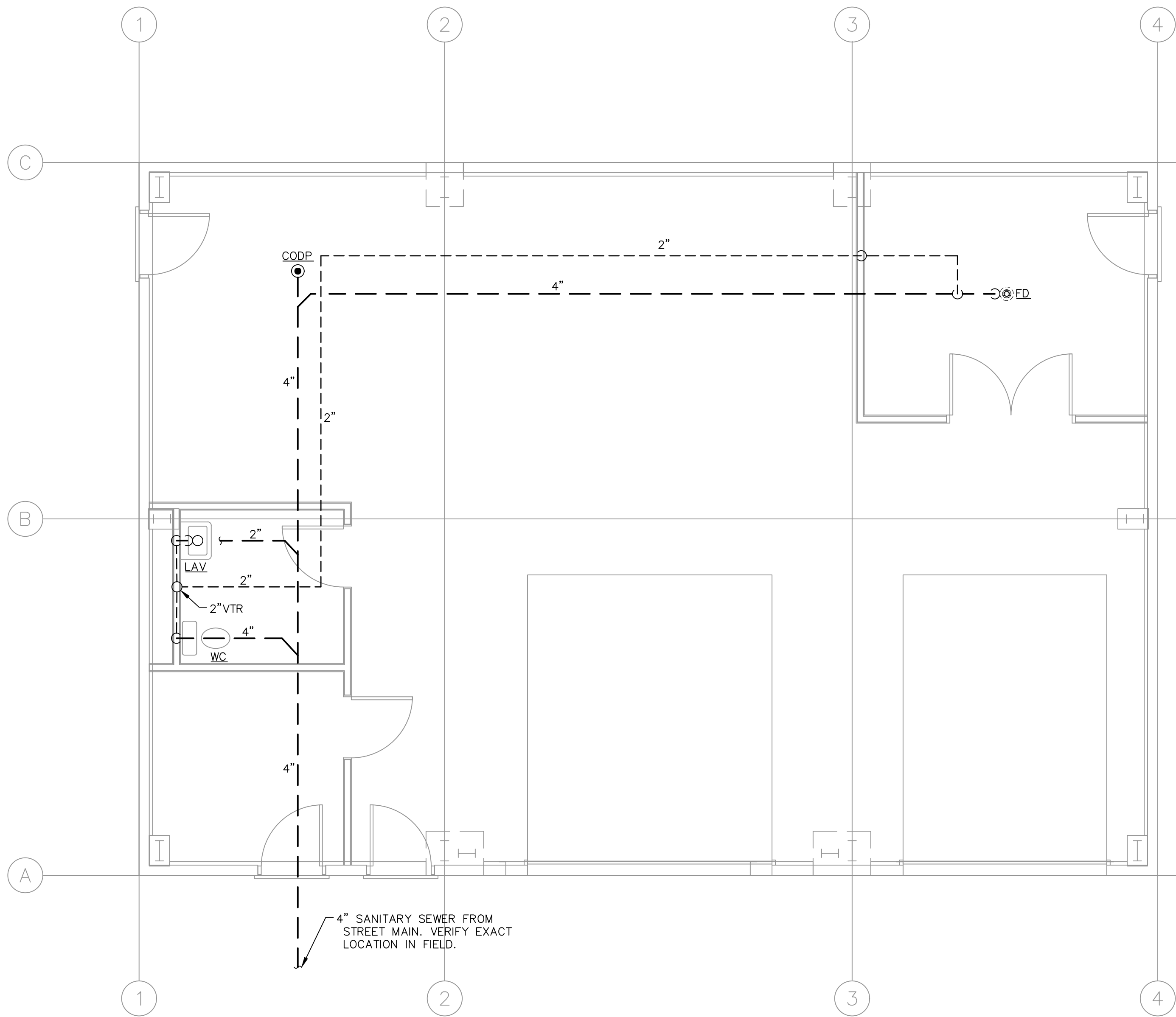
**TOWN OF HAVERSTRAW
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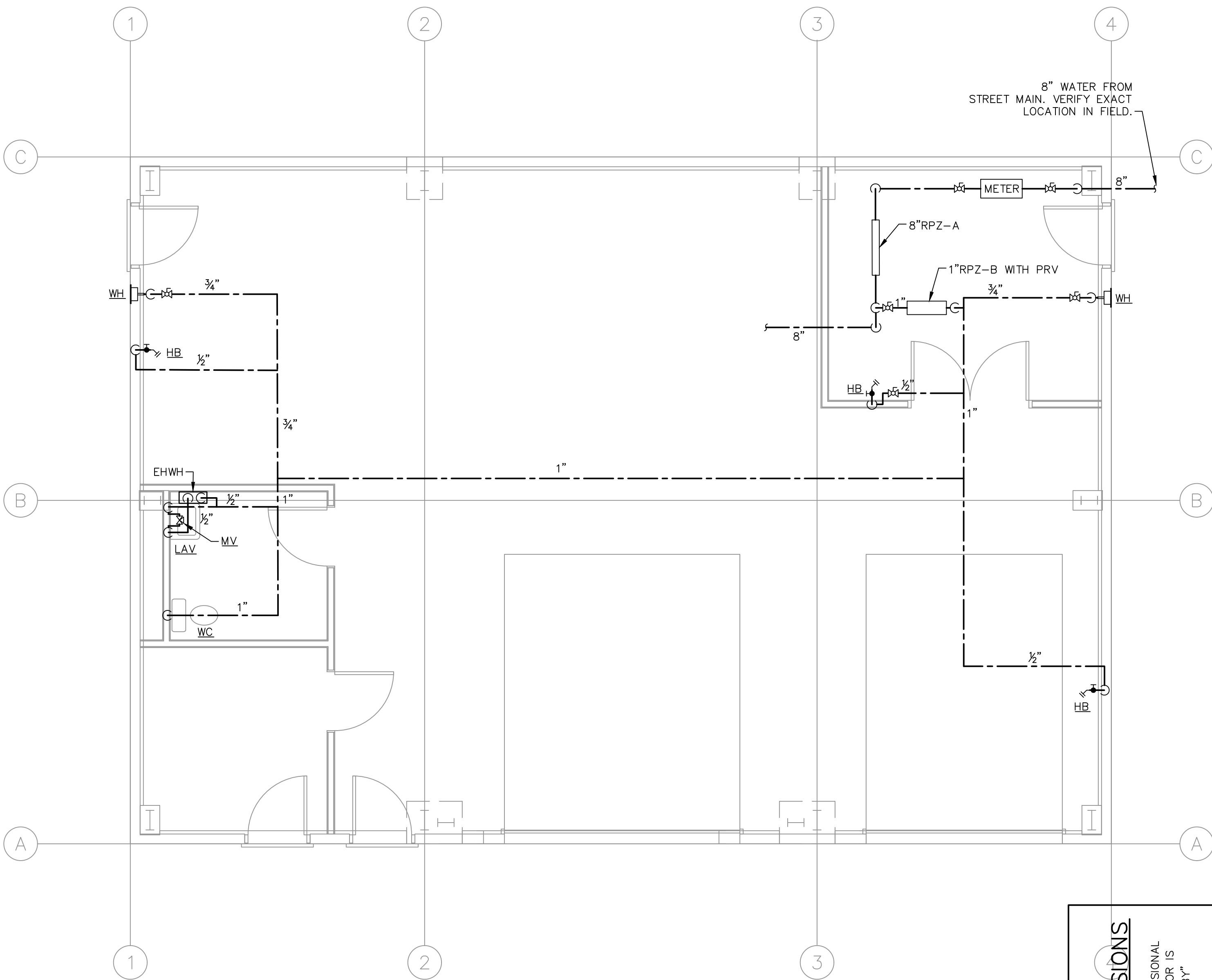
PLUMBING SYMBOLS, ABBREVIATIONS, AND NOTES

GREGORY GIORDANO	PROJECT #:
	22-286
	P-100

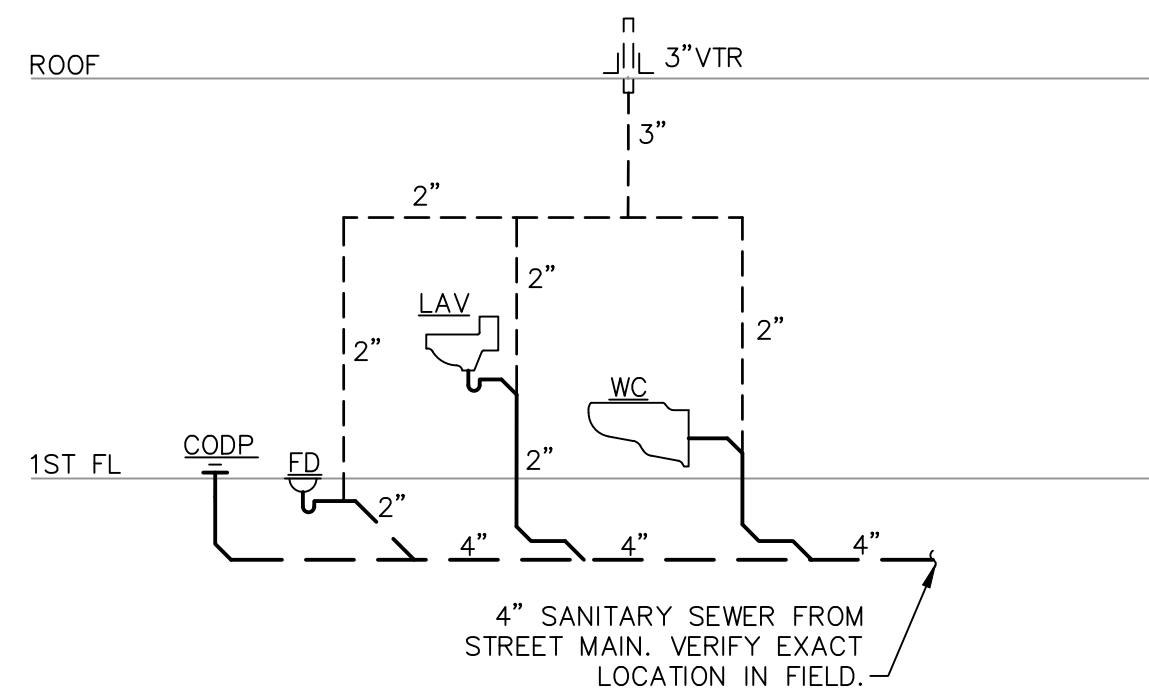
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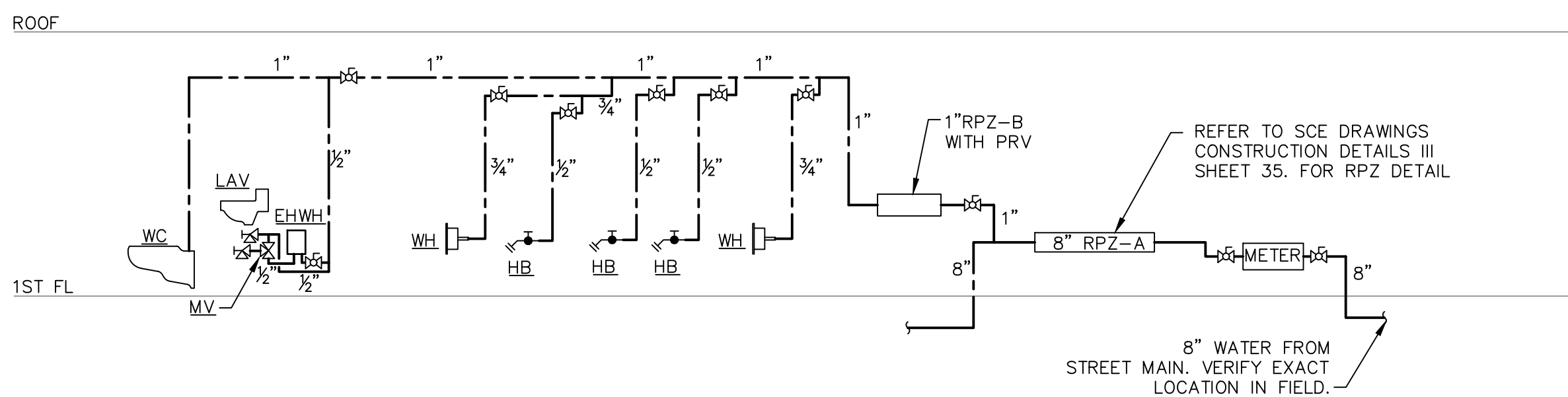
1 PLUMBING SANITARY FLOOR PLAN
SCALE: 1'-0"=1/4"



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



2 PLUMBING SANITARY RISER DIAGRAM
SCALE: 1'-0"=1/4"



4 PLUMBING DOMESTIC WATER RISER DIAGRAM
SCALE: 1'-0"=1/4"

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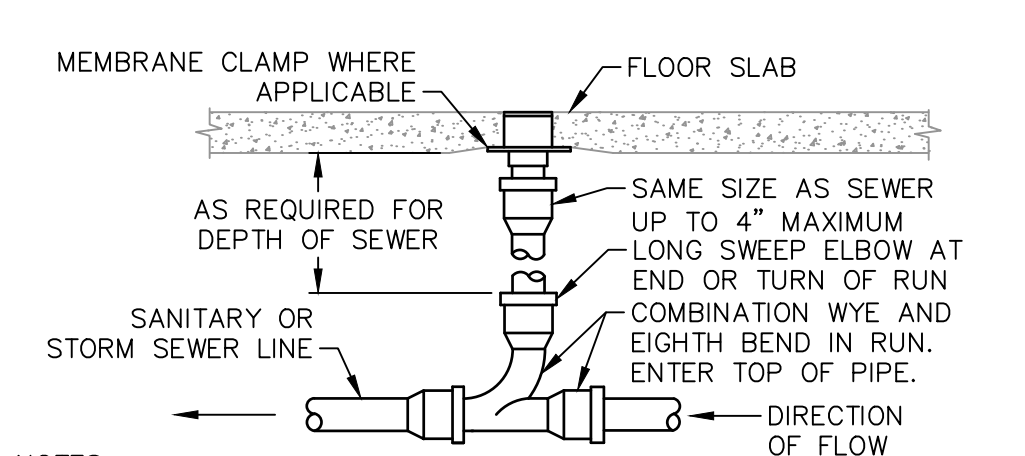
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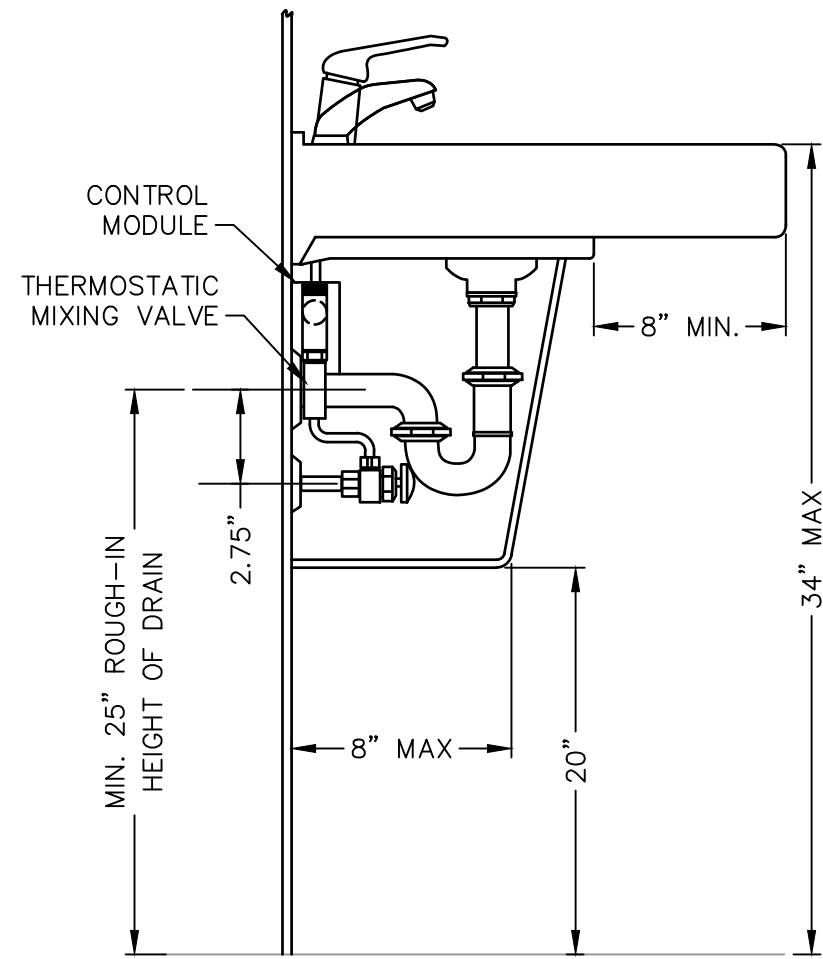
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PLUMBING FLOOR
PLAN AND RISER
DIAGRAMS

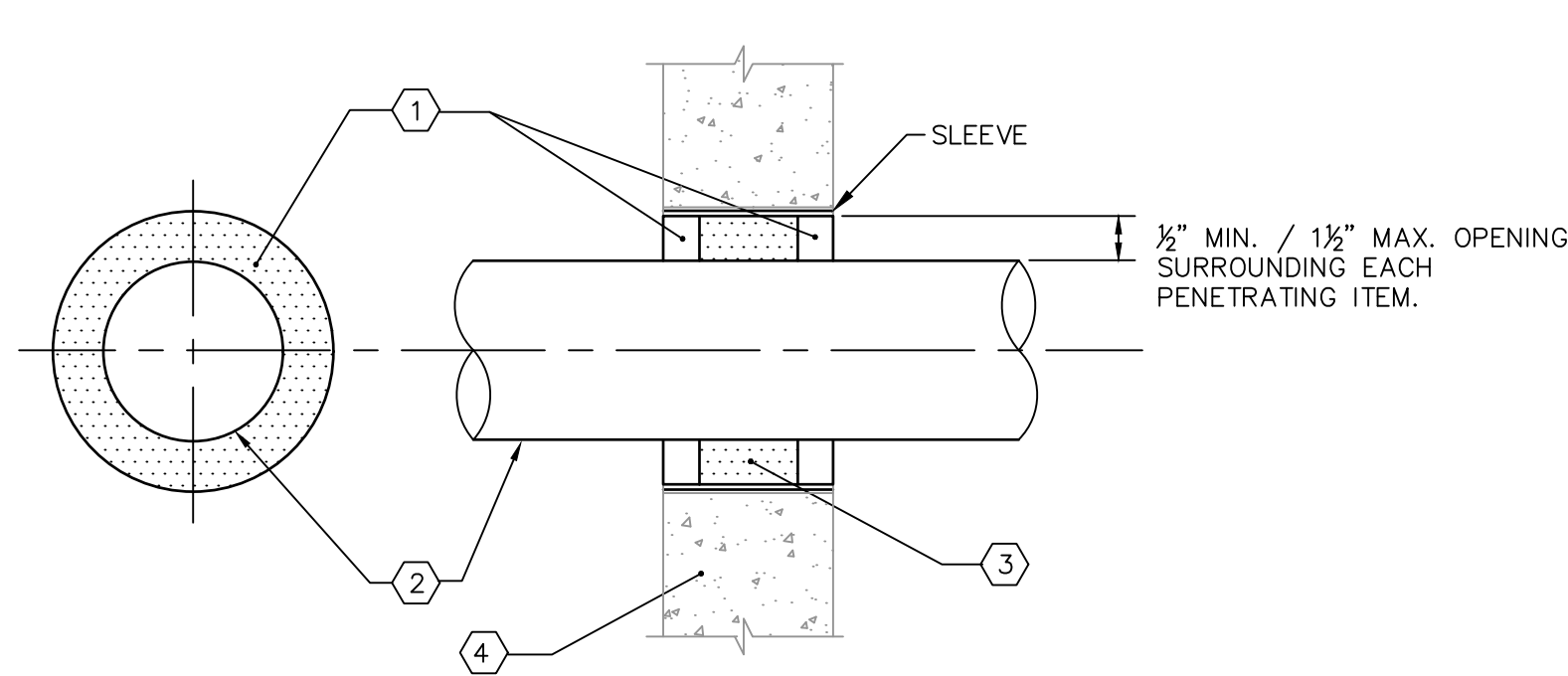


- NOTES:
1. ROUND SECURED GASKETED NICKEL BRONZE ADJUSTABLE TOP WITH "CO" CAST IN COVER.
 2. PROVIDE CLEANOUT TOP WITH VARIATIONS SUITABLE FOR FLOOR COVERING (CARPET MARKER, RECESSED FOR TILE, SCORiated FOR UNFINISHED FLOORS).
 3. PROVIDE GASKETED PLASTIC PLUG IN CAST IRON BODY. USE TEFLON JOINT COMPOUND ON PLUG THREADS. CLEAN THE TOP OF EXPOSED CLEANOUT AFTER INSTALLATION.
 4. LOCATE AT BUILDING EXIT, AT ENDS OF RUNS, AT TURNS OF PIPE GREATER THAN 45 DEGREES, AT 75' INTERVALS ON STRAIGHT RUNS, AND/OR WHERE SHOWN ON PLANS.
 5. PROVIDE BACK FILL.
 6. LOCATE CLEANOUTS WHERE THERE IS 18" CLEAR AROUND. CONSULT LOCAL CODES FOR OTHER CLEANOUT REQUIREMENTS.

1 CLEANOUT INSTALLATION
SCALE: NO SCALE

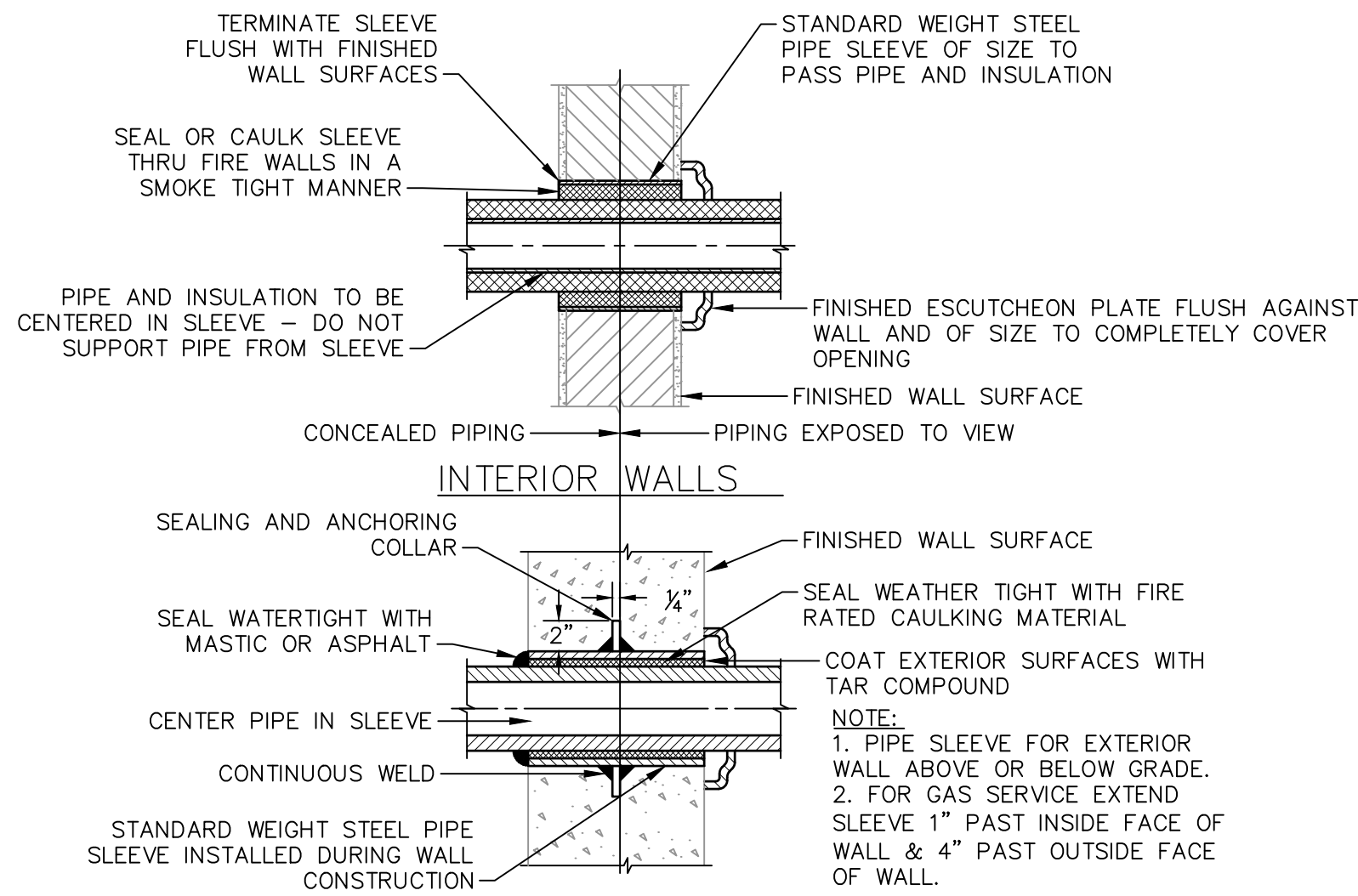


2 HANDICAPPED LAVATORY CLEARANCES
SCALE: NO SCALE

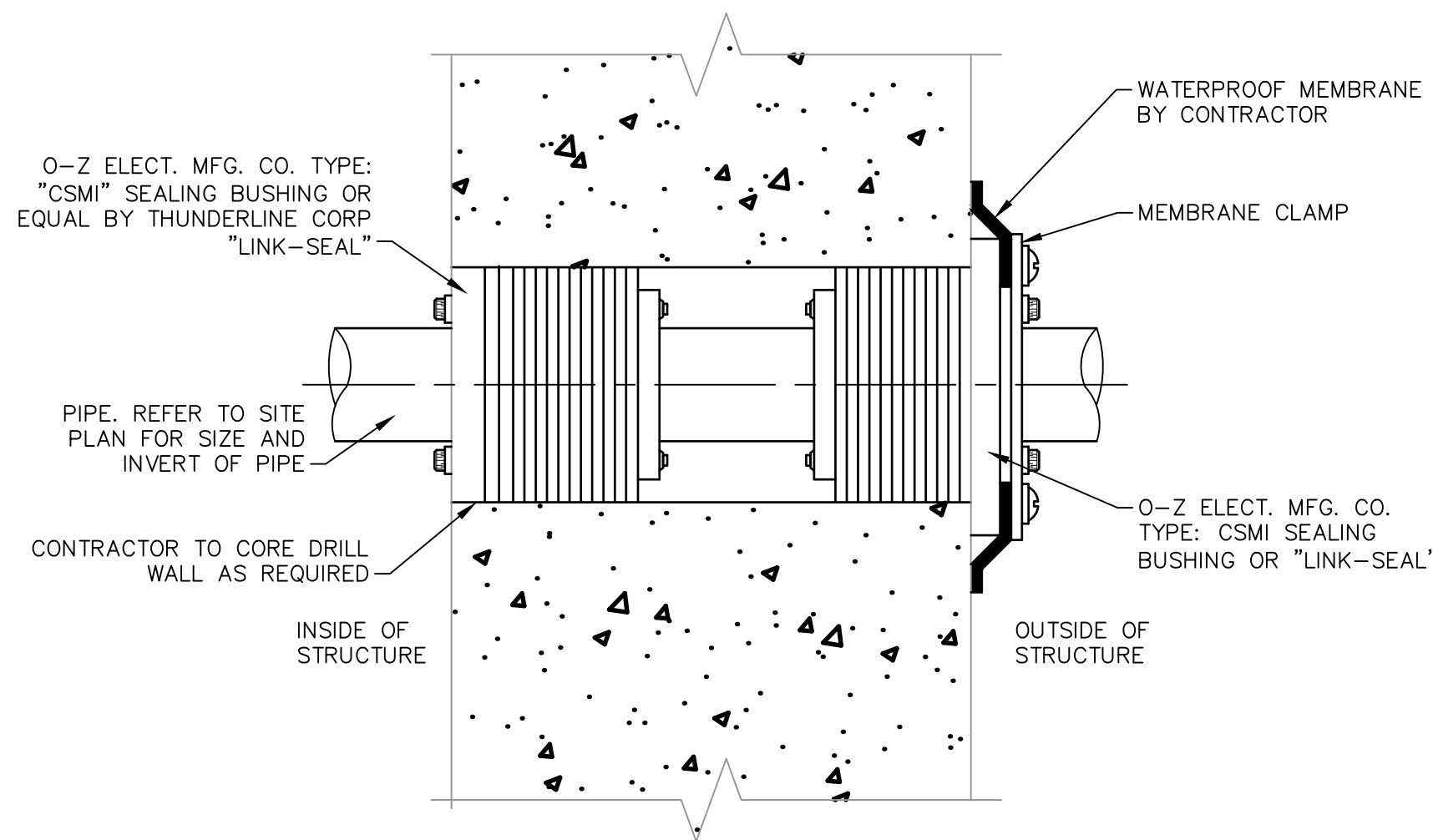


- NOTES:
- 1 FLAME SEAL PUTTY - MINIMUM OF 1" THICK
 - 2 PIPE
 - 3 STUFFED CERAMIC FIBER INSULATION
 - 4 WALL OR FLOOR

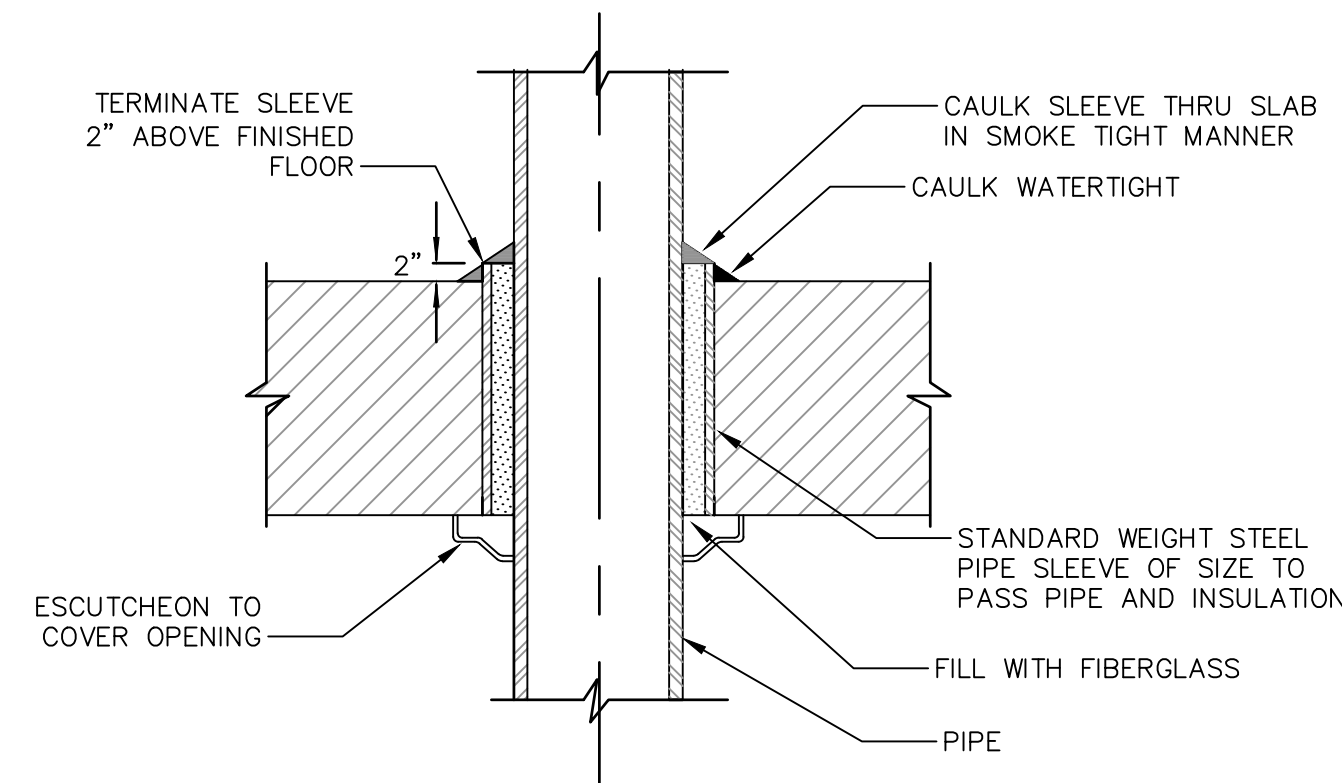
3 PIPE PENETRATION THROUGH FIRE RATED WALL
SCALE: NO SCALE



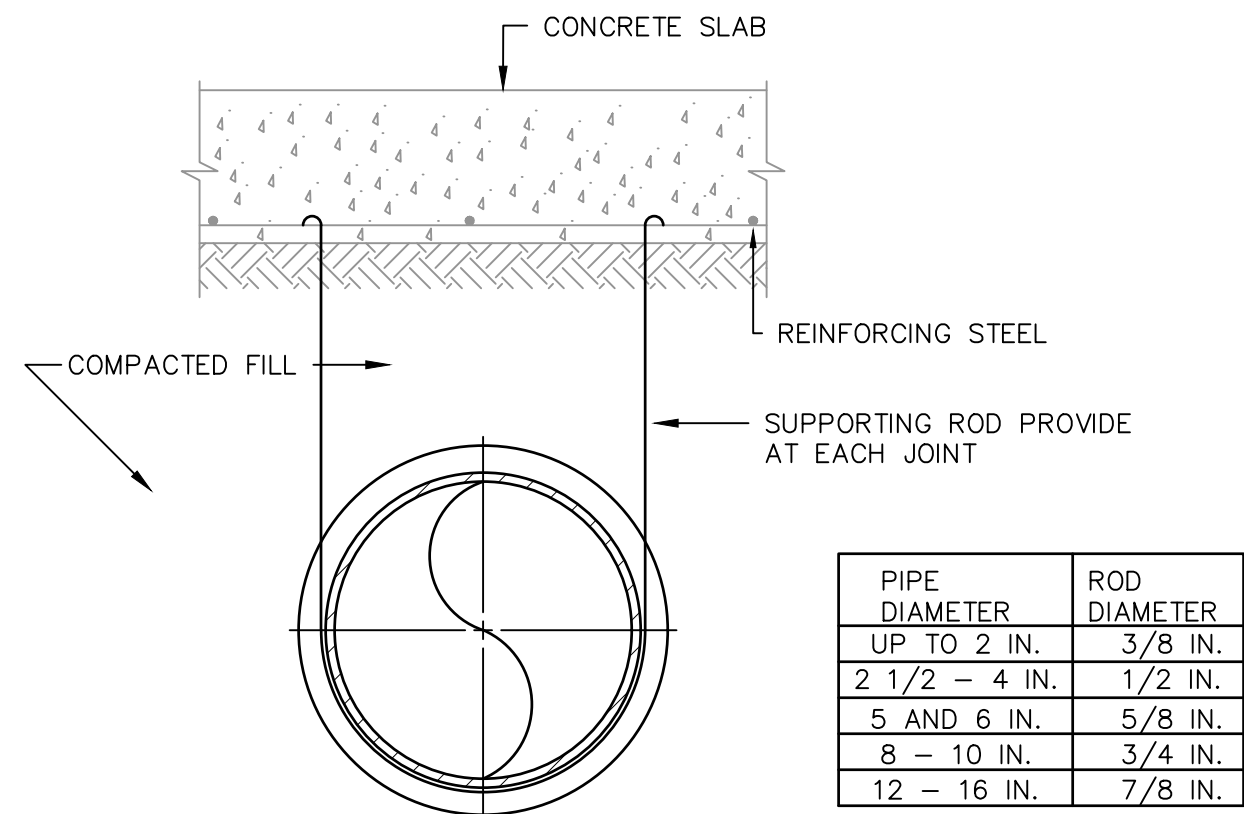
4 PIPE PENETRATION THROUGH NON-RATED WALL
SCALE: NO SCALE



5 EXTERIOR WALL SEAL
SCALE: NO SCALE



6 PIPE SLEEVE THRU FLOOR
SCALE: NO SCALE



7 PIPING SUPPORT BELOW SLAB
SCALE: NO SCALE

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**TOWN OF HAVERSTRAW
RECREATION COMPLEX**
70 CHAPEL STREET
HAVERSTRAW, NY 10923

PLUMBING DETAILS

GREGORY GIORDANO

PROJECT #:

22-286

P-300

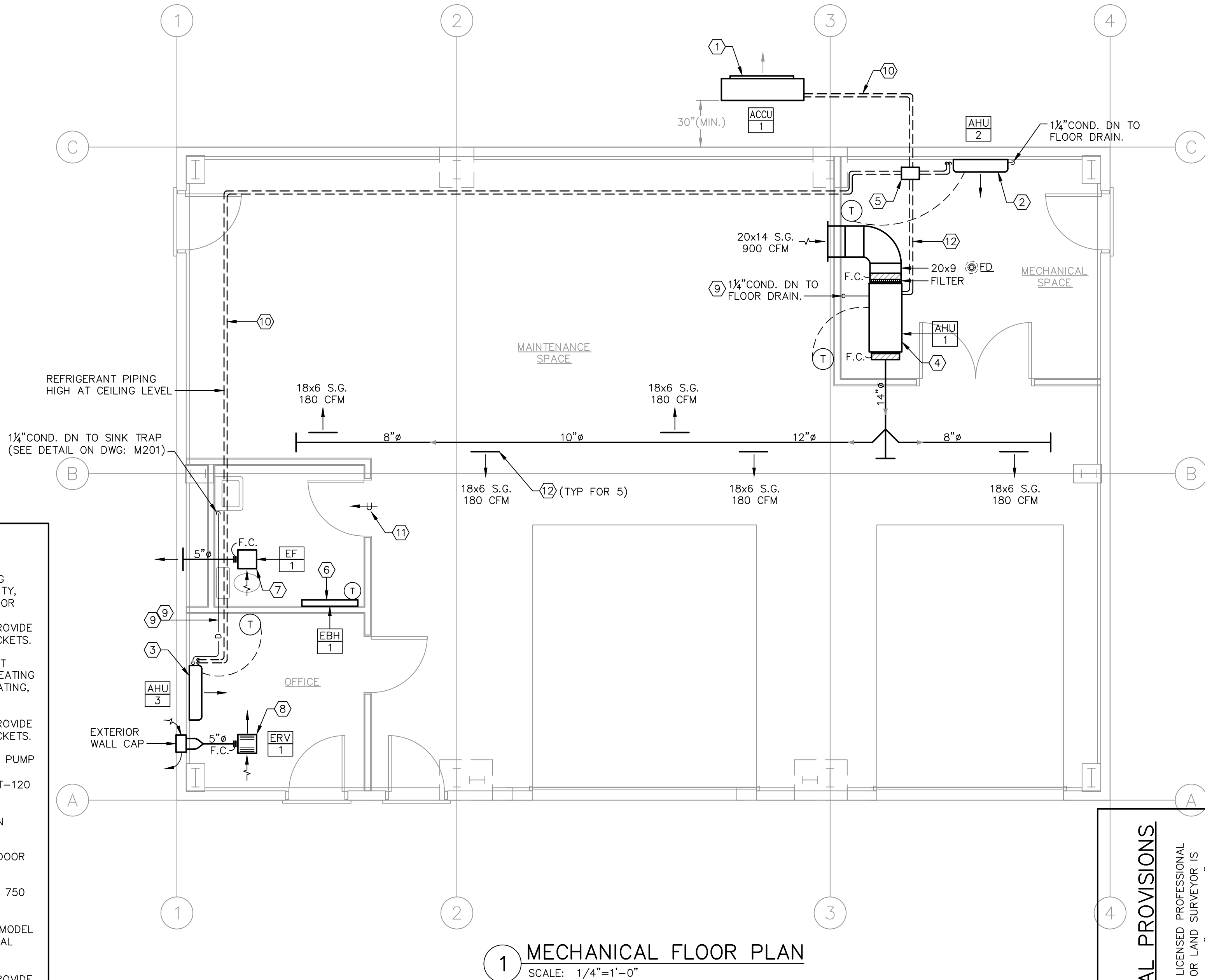
ACU	AIR COOLED CONDENSING UNIT	HP	GEAR PUMP, HORSEPOWER
AFF	ABOVE FINISHED FLOOR	KW	KILOWATT
AS	AIR SEPARATOR	LAT	LEAVING AIR TEMPERATURE
BTUH	BRITISH THERMAL UNIT	LB	POUNDS
CFM	CUBIC FEET PER MINUTE	COND.	CONDENSATE
COND.	CONDENSATE	LWT	LEAVING WATER TEMPERATURE
D	DRAIN	MBH	1000 BTUH
DB	DRY BULB	MCA	MINIMUM CIRCUIT AMPACITY
DN	DOWN	MD	MOTORIZED DAMPER
EAT	ENTERING AIR TEMPERATURE	MOP	MAXIMUM OVERCURRENT PROTECTION
EBH	ELECTRIC BASEBOARD HEATER	NTS	NO TO SCALE
EER	ENERGY EFFICIENCY RATIO	PSI	POUNDS PER SQUARE INCH
EF	EXHAUST FAN	S.G.	SUPPLY GRILLE
EUH	ELECTRIC UNIT HEATER	VD	VOLUME DAMPER
ESP	EXTERNAL STATIC PRESSURE	W	WATT
ERV	ENERGY RECOVERY VENTILATOR	W/	WITH
EWT	ENTERING WATER TEMPERATURE	WB	WET BULB
FC	FLEXIBLE CONNECTION	WMS	WIRE MESH SCREEN
FD	FIRE DAMPER		

3. GENERAL NOTES ON THIS DRAWING ARE APPLICABLE TO EACH MECHANICAL DRAWING OF THIS SET. SEE EACH DRAWING FOR SPECIFIC NOTES APPLICABLE TO EACH DRAWING.
2. OUTSIDE AIR INTAKE OPENINGS FOR VENTILATION AIR SHALL BE LOCATED 10 FEET MEASURED IN ANY DIRECTION FROM ANY FLUES, VENTS, CHIMNEYS, GAS METERS, GAS REGULATORS, PLUMBING VENTS UNLESS TOP OF SUCH INTAKE OPENING IS 2 FEET BELOW ANY OF THE LISTED ITEMS.
3. OVERHEAD PIPING IN SPACES WITHOUT HUNG CEILINGS SHALL BE RUN AS CLOSE TO ROOF DECK AS PRACTICABLE, AS CLOSE TO PARALLEL JOISTS AS POSSIBLE AND ABOVE LIGHTING FIXTURES TO CONCEAL PIPING.
4. COORDINATE LIGHTING FIXTURE LAYOUT AND ACCESSORIES INSTALLED BY OTHER TRADES SO AS TO PRESENT A NEAT AND ATTRACTIVE INSTALLATION THROUGHOUT THE ENTIRE BUILDING.
5. ARRANGE PIPING AND DUCTWORK, PARTICULARLY ABOVE CEILING, AS REQUIRED TO CLEAR STRUCTURE, DUCTS, CONDUIT, ETC. ALLOWING SPACE FOR PIPE HANGERS, EXPANSION LOOPS AND ACCESS TO VALVES, FILTERS AND MAINTENANCE OF EQUIPMENT.
6. EQUIPMENT WITH FILTERS SHALL BE INSTALLED SO THAT FILTERS CAN BE EASILY REMOVED AND REPLACED.
7. COORDINATE LOCATION AND INSTALLATION OF EQUIPMENT WITH OTHER TRADES.
8. THERMOSTATS SHALL BE LOCATED AS INDICATED. INSTALL AT 5'-0" ABOVE FINISH FLOOR.
9. VALVES AND SPECIALTIES SHALL BE LINE SIZE, EXCEPT FOR CONTROL AND BALANCING VALVES OR UNLESS NOTED OTHERWISE.
10. EXTEND DRAIN LINES TO NEAREST FLOOR DRAIN OR AS INDICATED. ROUTING SHALL NOT INTERFERE WITH PASSAGEWAYS AND MAINTENANCE. DRAINS FROM AIR CONDITIONING CONDENSATE DRAIN PANS SHALL BE TRAPPED. SLOPE SUSPENDED CONDENSATE DRAIN PIPING AT 1/8" PER FOOT (1 PER 100).
11. PIPING AND DUCTWORK INSULATION SHALL BE RUN CONTINUOUSLY THROUGH NON-RATED FLOORS, WALLS AND PARTITIONS, UNLESS OTHERWISE NOTED.
12. NO PIPING SHALL BE SMALLER THAN 1/2" UNLESS OTHERWISE NOTED.
13. RUNOUTS SHALL PITCH DOWN IN DIRECTION OF FLOW A MINIMUM OF 1/8" PER FOOT.
14. PROVIDE UNION OR FLANGED CONNECTIONS AT EACH PIECE OF EQUIPMENT AND ON BOTH SIDES ON CONTROL VALVES AND PRESSURE REGULATING VALVES. PROVIDE SHUT-OFF VALVES ON BOTH SIDES OF AUTOMATIC VALVES.
15. RELIEF VALVE DRAIN PIPING SHALL BE EXTENDED TO 6" (150) ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.
16. PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE SPECIFICATION. ADDITIONAL SUPPORTS OR HANGERS SHALL BE ADJACENT TO ELBOWS, TO PREVENT WEIGHT OF PIPING BEING PLACED ON THE EQUIPMENT.
17. CORRECT SETTING ON BALANCING FITTINGS SHALL BE PERMANENTLY MARKED.
18. LOCATE AND SIZE CONCRETE PADS AND CURBS FOR MECHANICAL EQUIPMENT IN ACCORDANCE WITH ACTUAL EQUIPMENT PURCHASED.
19. FOR LOCATION OF MOTOR STARTERS, SEE ELECTRICAL DRAWINGS.
20. ALL DUCT SIZES INDICATED ON THE DRAWINGS ARE CLEAR INSIDE DIMENSIONS.

	NEW WORK
	NEW CONDENSATE
	PIPE DOWN
	PIPE UP
	VOLUME DAMPER
	FIRE DAMPER
	MOTORIZED DAMPER
	THERMOSTAT
	KEYED NOTE
	EQUIPMENT TAG
(XXX)	AIR FLOW IN CUBIC FEET PER MINUTE
	SUPPLY AIRFLOW
	RETURN AIRFLOW
	EQUIPMENT DESIGNATION. TOP REPRESENTS EQUIPMENT DESIGNATION, BOTTOM REPRESENTS EQUIPMENT TYPE

NOTE:
NOT ALL ABBREVIATIONS AND SYMBOLS MAY
APPEAR ON THE DRAWINGS FOR THIS PROJECT.

- (1) PROVIDE 5.0 TON MITSUBISHI MULTI-ZONE INVERTER HEAT PUMP CONDENSING UNIT, MODEL MSZ-SM6GNAM, 60.0 MBH COOLING, 65.0 MBH HEATING CAPACITY, 208/230V/1PH/60HZ, 5,230 WATTS, 46 MCA, 55 MOPC, R-410A, COMPRESSOR RLA-19.0, LRA-22.0, TOTAL WEIGHT-300 LBS.
INSTALL ONLY IN COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL REQUIRED HANGING RODS, INLINE VIBRATION ISOLATORS, MOUNTING BRACKETS.
- (2) PROVIDE MITSUBISHI WALL MOUNTED INDOOR UNIT FOR MSZ MULTI ZONE HEAT PUMP SYSTEM, MODEL MSZ-EF09NAS, 9,000 BTUH COOLING, 10,900 BTUH HEATING CAPACITY, 208/230V/1PH/60HZ, 370 CFM MAX. COOLING/420 CFM MAX HEATING, 30 WATTS MOTOR OUTPUT, TOTAL WEIGHT-26 LBS. PROVIDE WALL MOUNTED THERMOSTAT AS RECOMMENDED BY THE MANUFACTURER.
INSTALL ONLY IN COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL REQUIRED HANGING RODS, INLINE VIBRATION ISOLATORS, MOUNTING BRACKETS.
- (4) PROVIDE MITSUBISHI HORIZONTAL AIR HANDLING UNIT FOR MULTI-ZONE HEAT PUMP SYSTEM, MODEL SZV-KP36NA, 36,000 BTUH, 0.5" E.S.P. 900 CFM MAX., 208/230V/1PH/60HZ, 244 WATTS MOTOR, 3.3 FEA, 4.13 MCA, TOTAL WEIGHT-120 LBS. PROVIDE WALL MOUNTED THERMOSTAT AS RECOMMENDED BY THE MANUFACTURER. INSTALL ONLY IN COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL REQUIRED HANGING RODS, INLINE VIBRATION ISOLATORS, MOUNTING BRACKETS.
- (5) PROVIDE MITSUBISHI BRANCH BOX, MODEL PAC-32BC POWERED BY THE OUTDOOR UNIT.
- (6) PROVIDE 3'-0" LONG ELECTRIC BASEBOARD HEATER, CADET-MODEL 3F750W, 750 WATTS, 2,560 BTUH, 120V/1PH/60HZ WITH BUILD-IN THERMOSTAT.
- (7) PROVIDE CEILING MOUNTED CENTRIFUGAL TOILET EXHAUST FAN, PANASONIC, MODEL FV0510-VS1, 80 CFM @ 0.25" S.P., 7.2 WATTS, 0.39 AMPS, 0.4 SONES, TOTAL WEIGHT-7.0 LBS, 120V/1PH/60HZ. INTERLOCK FAN WITH WALL LIGHT SWITCH. PROVIDE DISCONNECT SWITCH. COLOR AS PER ARCHITECT.
INSTALL ONLY IN COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL REQUIRED HANGING RODS, INLINE VIBRATION ISOLATORS, MOUNTING BRACKETS
- (8) PROVIDE PANASONIC/WHISPER ENERGY RECOVERY VENTILATOR (ERV) ABOVE CEILING, MODEL FV-04VE1, 40 CFM MAX. EXHAUST AIR @ 0.1" S.P., 0.8 SONES, 23 WATTS, 0.15 AMPS, 120V/1PH/60HZ. FAN SHALL BE PROVIDED WITH EXTERIOR POLYPROPYLENE WALL CAP WITH Y-SHAPE ADAPTOR MODEL FV-WC04VE1.
INSTALL ONLY IN COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL REQUIRED HANGING RODS, INLINE VIBRATION ISOLATORS, MOUNTING BRACKETS.
- (9) PROVIDE 1¼" CONDENSATE LINE FROM EACH COIL PITCHED TO FLOOR DRAIN IN THE MECHANICAL SPACE OR TO SINK TRAP INSIDE ADA RESTROOM.
COORDINATE EXACT LOCATION WITH PLUMBING CONTRACTOR.
- (10) REFRIGERANT PIPING TO BE INSULATED, SIZED AND RUN AS PER MANUFACTURER'S RECOMMENDATION.
- (11) PROVIDE 1" DOOR UNDERCUT FOR ADA RESTROOM AS INDICATED ON THE PLAN.
- (12) PROVIDE SIDEWALL GRILLE, CARNES-MODEL RADMH.



TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH REQUIREMENTS OF 2020 INTERNATIONAL ENERGY CONSERVATION CODE (IECC).

THE PROPOSED PROJECT COMPLIES TO THE FOLLOWING GUIDELINES, PROVISIONS, RULES, AND REGULATIONS:

1. 2020 ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE.

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE. FURTHERMORE, THE ABOVE STATEMENT IS SUBMITTED OR INCLUDED IN THE PW-1 APPLICATION.

SPACE DESCRIPTION	SPACE NUMBER	ZONE AREA (Az) (SQ.FT.)	ZONE POPU-LATION	CODE MINIMUM CRITERIA							TOILET FIXTURE COUNT	CALCULATED BREATHING ZONE OUTSIDE AIR (Vb2) (CFM)	ZONE O.A. FLOW (CFM)		ZONE EXH. FLOW (CFM)	
				OCCUPANCY CLASSIFICATION	O.A. BREATHING ZONE (Rp) (CFM/PERS.)	O.A. RATE BREATHING ZONE (Ra) (CFM/SQ.FT.)	DEFAULT OCCUPANT DENSITY (#/1000 SQ.FT.)	ZONE DISTRIBUTION EFFECTIVENESS (Ez)	KITCHEN EXHAUST RATE (CFM)	TOILET EXHAUST RATE (CFM/FIXT.)			CALCULATED (Voz)	DESIGN (Voz)	CALCULATED	DESIGN
OFFICE	—	120	1	OFFICE	5.00	0.06	5	1.00	—	—	—	33	33	35	0	0
MAINTENANCE SPACE	—	1,640	0	STORAGE	0.00	0.12	0.00	1.00	—	—	—	197	197	195	0	0
MECHANICAL SPACE	—	180	0	STORAGE	0.00	0.12	0.00	1.00	—	—	—	22	22	25	0	0
ADA RESTROOM	—	75	0	PUBLIC SPACE/TOILET	0.00	0.00	0.00	1.00	—	50	1	0	0	0	50	80

KOWIDGE ARCHITECTURE & DESIGN
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(845)342-4080 - mail@kad.group

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HAVERSTRAW, NY 10923

MECHANICAL FLOOR PLAN, SYMBOLS, NOTES & SCHEDULE

GREGORY GIORDANO

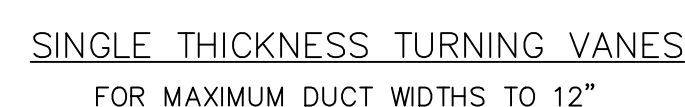
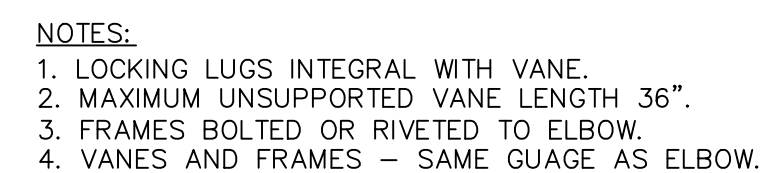
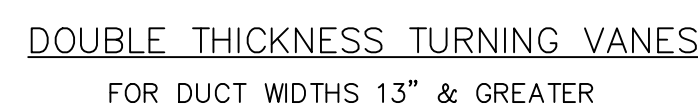
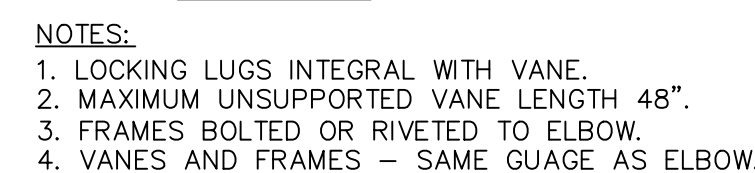
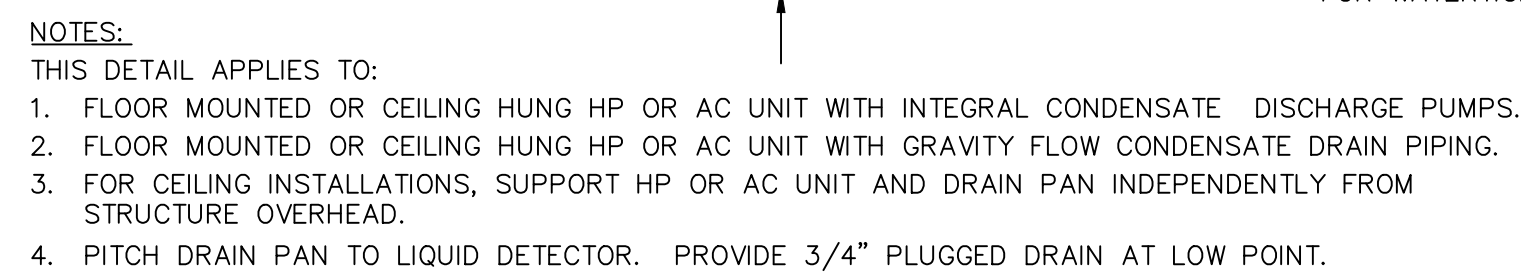
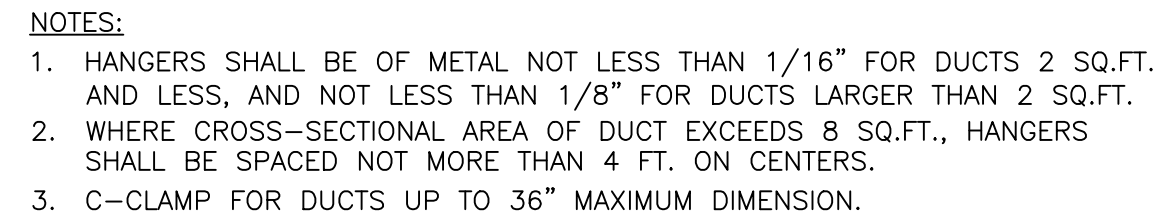
PROJECT #:	22-286
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M-100

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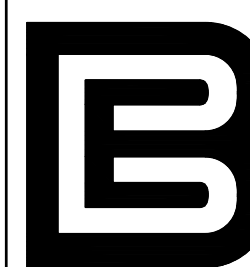
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TOWN OF HAVERSTRAW RECREATION COMPLEX

70 CHAPEL STREET
HAVERSTRAW, NY 10923

MECHANICAL DETAILS

GREGORY GIORDANO

PROJECT #:

22-286

M-200

COVER SUPPORT BRACKETS OF 3/16" X 1-1/2" STEEL SHALL BE SECURELY WELDED TO FULL HEIGHT BACK CONSTRUCTED OF 18 GAUGE ZINC COATED STEEL.

(FOR FLOOR MOUNTED STYLES – BACKS SHALL INCLUDE A FULL 18 GAUGE BOTTOM WITH FRONT FLANGED UP TO PERMIT SECURING OF ENCLOSURE FRONT.)

(FOR WALL MOUNTED STYLES – BOTTOM OF BACK SHALL FLANGE FORWARD A HALF INCH TO PROVIDE A CONTINUOUS STIFFENER AND POSITION COVER SUPPORT BRACKETS.)

(FOR PEDESTAL MOUNTED STYLES – BOTTOM OF BACK SHALL FLANGE FORWARD A HALF INCH TO PROVIDE A CONTINUOUS STIFFENER AND TO POSITION COVER SUPPORT BRACKETS. PEDESTAL SHALL CONSIST OF 111 STEEL PIPE WELDED TO THE BOTTOM OF THE COVER SUPPORT BRACKET AND ENCLOSED BY A CAST ALUMINUM BASE WITH FLOOR FASTENER CONCEALED WITHIN THE BASE. TOP OF THE BACK SHALL BE PROVIDED WITH A CONTINUOUS CHANNEL TO SECURELY POSITION THE ENCLOSURE. EXPOSED SURFACE OF BACK SHALL BE POWDER COATED ENAMEL THE SAME COLOR AS THE ENCLOSURE.)

EACH HEATER SHALL BE PROVIDED WITH AN AUTOMATIC RESET THERMAL CUTOUT, LINEAR CAPILLARY TYPE TO ASSURE CONSTANT PROTECTION AGAINST OVERHEATING THE ENTIRE LENGTH OF THE HEATER.

FOR STYLE 6 AF, ENCLOSURE SHALL CONSIST OF .090 INCH THICK (11 GAUGE) EXTRUDED ALUMINUM TOP AND FRONT CLEAR ANODIZED 204 RL INLET AND DISCHARGE VANES AT LEAST 5/16" DEEP SHALL BE CONTINUOUS AND PUNCHED OPENINGS SHALL BE PENCIL PROOF. ENCLOSURE JOINTS SHALL BE FLUSH AND ALIGNMENT PROVIDED BY A 3/16" DIAMETER PIN IN TOP EXTRUSION.

FOR STYLE 7-36AF, ENCLOSURE SHALL CONSIST OF .090 THICK (1.1 GAUGE) EXTRUDED ALUMINUM INLET AND DISCHARGE GRILLES WITH 5/16" DEEP VANES, FACTORY ASSEMBLED TO 14 GAUGE ALUMINUM FRONT, ALL CLEAR ANODIZED 204 RL. GRILLE OPENINGS SHALL BE PENCIL PROOF. EXTRUDED ALUMINUM JOINT TRIMS 3/4" WIDE SHALL BE PROVIDED AT ENCLOSURE JOINTS.

FOR STYLE 6-36 VF, 6VW, OR 6VP ENCLOSURE, SHALL CONSIST OF .090" THICK (11 GAUGE) EXTRUDED ALUMINUM DISCHARGE GRILLE, CLEAR ANODIZED, 204 RL AND AN ENAMELED 16 GAUGE STEEL FRONT. THE GRILLE VANES SHALL BE AT LEAST 5/16" DEEP AND PUNCHED OPENINGS SHALL BE PENCIL PROOF. ENCLOSURE JOINTS SHALL BE FLUSH WITH CONCEALED FASTENERS IN FRONT AND 3/16 DIAMETER ALIGNMENT PIN IN TOP.

FOR STYLES 6-36 TF, 6 TW, AND 6TP, ENCLOSURE SHALL CONSIST OF AN ENAMELED 16 GAUGE STEEL TOP AND FRONT WITH PENCIL PROOF DISCHARGE LOUVERS. ENCLOSURE JOINTS SHALL BE FLUSH WITH CONCEALED FASTENERS IN FRONT AND TOP.

HEATERS SHALL BE FURNISHED WITH ALL ACCESSORIES NECESSARY FOR WALL TO WALL APPLICATION UNLESS NOTED OTHERWISE. (DESCRIBE BRIEFLY OPTIONS SUCH AS HIGH WALL MOUNTING, FEED THROUGH PEDESTALS, BUILT-IN CONTROLS, OPTIONAL FINISH, ETC.)

18. CADET ELECTRIC BASEBOARD HEATERS

ELECTRIC BASEBOARD HEATERS ARE UL LISTED, FACTORY RATED AT 120V, 208V, AND DUAL RATED FROM 208V TO 240V. ELEMENT IS STEEL SHEATHED CALROD ELEMENT WITH CHANNEL SHAPED ALUMINUM FINS. A FULL LENGTH CAPILLARY SENSOR TUBE IS AN INTEGRAL PART OF EACH UNIT. CASE, COVER, AND DEFLECTOR ARE MADE OF 24 GAUGE STEEL WITH 20 GAUGE JUNCTION BOXES CONTAINING A GROUNDING SCREW. ALL METAL PIECES ARE FINISHED WITH A POWDER COAT PAINT SYSTEM.

TECHNICAL INFORMATION

BASEBOARD HEATERS WORK BEST WHEN PLACED UNDER A WINDOW AND AT LEAST 12 INCHES AWAY FROM FURNITURE OR OTHER OBJECTS. KEEP AT LEAST 12 INCHES MINIMUM FROM OBJECTS HANGING ABOVE (I.E., DRAPES). DO NOT INSTALL BELOW ELECTRICAL OUTLETS. THE ELECTRIC BASEBOARD HEATER MAY BE PLACED DIRECTLY ON THE FLOOR AND MOUNTED TO THE WALL.

19. AUTOMATIC CONTROLS

A. PROVIDE AN ELECTRIC/ELECTRONIC CONTROL SYSTEM COMPLETE WITH ALL NECESSARY CONTROL DEVICES, THERMOSTATS, RELAYS, SWITCHES, WIRING, AND TO PROVIDE THE FUNCTIONS AS SPECIFIED. ALL CONTROLS SHALL BE THE PRODUCT OF ONE MANUFACTURER.

B. THE CONTROL SYSTEM SHALL BE INSTALLED COMPLETE IN ALL RESPECTS BY COMPETENT MECHANICS, REGULARLY EMPLOYED BY THE MANUFACTURER OF THE CONTROL SYSTEM. ALL ELECTRIC WIRING IN CONNECTION WITH THE CONTROL SYSTEM SHALL BE INSTALLED UNDER THIS SECTION.

C. THE MECHANICAL CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL, TERMINAL POINT TO TERMINAL POINT, COMPLETELY COORDINATED AND INTEGRATED WIRING DIAGRAMS FOR ALL WIRING REQUIRING FIELD INSTALLATION BY THE ELECTRICAL CONTRACTOR, OR THE MECHANICAL CONTRACTOR'S ELECTRICIAN.

D. SPECIFIC WIRING DIAGRAMS OF FACTORY INSTALLED EQUIPMENT WIRING SHALL ALSO BE SUBMITTED FOR APPROVAL AND FURNISHED TO THE ELECTRICAL CONTRACTOR FOR HIS INSTALLATION REQUIREMENTS AND OTHER USES.

E. SERVICE – AFTER COMPLETION OF THE CONTROL SYSTEM INSTALLATION, THE CONTROL CONTRACTOR SHALL REGULATE AND ADJUST THERMOSTAT, CONTROL RELAYS, ETC., AND PLACE THEM IN COMPLETE OPERATING CONDITION SUBJECT TO THE APPROVAL OF THE ENGINEERS. COMPLETE INSTRUCTIONS SHALL BE GIVEN TO THE OWNER.

F. ALL FIELD WIRING WORK INCLUDING INTERLOCKING WIRING IN CONNECTION WITH THE ELECTRICAL CONTROL SYSTEM FOR AUTOMATIC CONTROLS SHALL BE PROVIDED BY THE HVAC CONTRACTOR. THE CONTRACTOR SHALL HAVE THE CONTROL MANUFACTURER FURNISH APPROVED DETAIL TERMINAL TO TERMINAL WIRING DIAGRAMS TO FACILITATE THE FIELD WIRING. ALL WORK SHALL BE IN ACCORDANCE WITH THE NEW YORK CITY ELECTRICAL CODE.

G. WORK SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:

1)ALL CONTROLS AND WIRING FOR NEW EQUIPMENT.

H. CONTROL DEVICES SHALL BE FACTORY SET FOR THE SCHEDULED MINIMUM AND MAXIMUM VALUES.

I. WHERE NOT OTHERWISE SPECIFIED, RECOMMENDATIONS OF THE CONTROL MANUFACTURER'S OF VARIOUS PRODUCTS SHALL APPLY.

J. REMOTE ALARM PANEL SHALL BE ELECTRIC WALL MOUNTED AND SHALL INCORPORATE AN AUDIBLE ALARM AS WELL AS VISUAL ALARM INDICATORS. THE NUMBER AND SIZE OF THE VISUAL ALARM INDICATORS SHALL BE SUCH AS TO PERMIT THE DISPLAY OF THE MESSAGES INDICATED IN THE SEQUENCE OF OPERATION. THE PANEL SHALL BE SIMILAR TO MODEL RCM-4 MANUFACTURED BY LIEBERT OR AN APPROVED EQUAL.

K. ROOM THERMOSTAT

a) ROOM THERMOSTAT SHALL BE FULLY PROPORTIONING WITH FEEDBACK AND SHALL HAVE ADJUSTABLE SENSITIVITY OR THROTTLING RANGE, AND A SCALE RANGE OF 56F TO 85F. THE CONTROL POINT SHALL BE ADJUSTABLE 10F ABOVE AND BELOW ITS INTENDED SETTING.

b) ROOM THERMOSTAT SHALL BE CAPABLE OF CONTROLLING WITHIN 1-1/2°F BUT SHALL BE RESPONSIVE TO 1/4°F CHANGE.

c) ROOM TYPE THERMOSTAT SHALL BE COOLING OR HEATING INDICATION. FINISH AND FINAL LOCATIONS SHALL BE APPROVED BY THE ENGINEER.

d) UNLESS OTHERWISE NOTED, INSTALL WALL MOUNTED THERMOSTATS 4'-6" ABOVE THE FLOOR MEASURED TO THE CENTER LINE OF THE INSTRUMENT.

e) THE CONTROLS FOR INDUCTION UNITS ARE PNEUMATIC TYPE. NEW THERMOSTATS MUST BE COMPATIBLE WITH THE EXISTING EQUIPMENT AND APPROVED BY BUILDING MANAGER. AIR TUBING SHALL BE SEAMLESS COPPER TUBING WITH SOLDERED FITTINGS IN CONCEALED SPACES, AND COMPRESSION FITTING IN ACCESSIBLE SPACES. TUBING SHALL BE PROPERLY SUPPORTED USING STRAPS, CLEATS OR HANGERS. ALL TUBING SHALL BE TESTED AT 30 PSIG FOR A PERIOD OF 24 HOURS TO MAINTAIN A PRESSURE OF 25 PSIG. PLUGGED TEE FOR PRESSURE GAUGE SHALL BE INSTALLED AT VALVE CONNECTIONS.

L. DUCT-MOUNTED SMOKE DETECTORS SHALL BE INSTALLED FOR AC UNITS AS SHOWN ON CONTRACT DRAWINGS. WHEN SMOKE CONDITIONS EXIST, ANY ONE OF THE DUCT-MOUNTED SMOKE DETECTORS SHALL SOUND AN ALARM AND STOP RESPECTIVE FANS SERVING AREA OF ALARM. DUCT SMOKE DETECTORS SHALL BE IN ACCORDANCE WITH THE ELECTRICAL SPECIFICATIONS.

M. PROVIDE PROGRAMMABLE ELECTRONIC THERMOSTAT CONSISTING OF A WALL MOUNTING UNIT WITH A REMOTE CEILING MOUNTED TEMPERATURE SENSOR. THE THERMOSTAT SHALL HAVE COOLING AND HEATING CONTROL CAPABILITY AND BE ABLE TO INTERFACE WITH AND OUTDOOR CONDENSING UNIT AND AN INDOOR FURNACE AS SPECIFIED HEREIN. THE THERMOSTAT PROGRAMMING SHALL ALLOW FOR SETTING THE OCCUPIED AND UN-OCCUPIED PERIODS FOR 24 HOURS A DAY AND SEVEN (7) DAYS A WEEK. THE THERMOSTAT SHALL FEATURE A MANUAL SWITCHOVER FROM COOLING TO HEATING.

20. SEQUENCE OF OPERATION

A. AIR HANDLING UNIT AHU-1,2,3 – THE FAN IN THE UNIT SHALL RUN CONTINUOUSLY DURING THE OCCUPIED MODE. THE WALL MOUNTED THERMOSTAT SHALL CYCLE THE COMPRESSOR OR SHALL CYCLE THE HEAT EXCHANGER TO MAINTAIN ROOM TEMPERATURE SET POINT OF 75°F (ADJUSTABLE) IN COOLING SEASON AND 70°F(ADJUSTABLE)IN HEATING SEASON.

B. CEILING MOUNTED TOILET EXHAUST FANS – THE FANS SHALL BE INTERLOCKED WITH WALL SWITCH.

21. BALANCING – ADJUSTING AND TESTING

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A TESTING AND BALANCING (T&B) CONTRACTOR TO PERFORM ALL AIR SYSTEMS BALANCING SPECIFIED HEREIN. T&B CONTRACTOR SHALL REVIEW CONTRACT DRAWING WITHIN FIRST MONTH OF AWARDING OF THE HVAC CONTRACT.

B. THE T&B CONTRACTOR SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB); MOREOVER, HE MUST HAVE ALL CREDENTIALS AND CAPABILITY REQUIRED FOR AABC OR NEBB MEMBERS AND MUST HAVE AT LEAST 4 YEARS EXPERIENCE IN AIR AND WATER BALANCING ON COMPARABLE PROJECTS IN SIZE AND SCOPE.

C. IF THE T&B CONTRACTOR FINDS THAT HE CANNOT BALANCE ANY AIR SYSTEM, OR IF HE FINDS ANY POTENTIALLY DETRIMENTAL OPERATING CONDITION, HE SHALL IMMEDIATELY ADVISE THE ARCHITECT IN WRITING AND SHALL STATE THE REASONS WHY BALANCING CANNOT BE ACHIEVED. HE SHALL ALSO MAKE CORRECTIVE RECOMMENDATIONS ON WHAT IS TO BE DONE BY THE INSTALLING CONTRACTOR. AFTER REVIEW OF THESE RECOMMENDATIONS, THE ARCHITECT WILL DIRECT THE CONTRACTOR TO PERFORM ALL NECESSARY WORK TO ALLOW THE BALANCING CONTRACTOR TO BALANCE THE VARIOUS SYSTEMS ACCORDING TO THE SPECIFICATIONS. CONTRACTOR IS EXPECTED TO DO WITHOUT EXTRA CHARGE, CHANGES TO THE SHEAVES AND FAN BELTS, AS SPECIFIED OR REQUIRED.

D. THE T&B CONTRACTOR SHALL COORDINATE HIS WORK WITH THE INSTALLING CONTRACTOR THROUGH THE CONSTRUCTION MANAGER. THE T&B CONTRACTOR SHALL HAVE NO BUSINESS AFFILIATION WITH THE INSTALLING CONTRACTOR.

E. HIS TECHNICIANS MUST BE CERTIFIED THROUGH COMPLETION OF SMACNA OR OTHER SUCH APPROVED SPONSORED TRAINING PROGRAMS FOR AIR BALANCING; TECHNICIAN QUALIFICATIONS MUST BE SUBMITTED FOR REVIEW PRIOR TO COMMENCEMENT OF FIELD WORK.

F. THE BALANCING EFFORT SHALL BE DONE UNDER THE DIRECT SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER, RETAINED BY THE INSTALLING CONTRACTOR, WHO WILL CERTIFY THE ACCURACY OF THE FINAL BALANCING DATA AND REPORTS.

G. COMPRESSED AIR, FUEL OIL, REFRIGERANTS, GLYCOL AND CHEMICALS REQUIRED FOR TESTING AND START-UP OF SYSTEMS SHALL BE FURNISHED BY THE CONTRACTOR. ELECTRIC POWER AND WATER WILL BE MADE AVAILABLE TO THE CONTRACTOR AT SOURCES DIRECTED.

H. WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

a) REVIEW CONTRACT DOCUMENTS TO CONFIRM READINESS FOR BALANCING WORK.

b) DEVELOP AN APPROVED PROCEDURE FOR, AND PERFORM PRE-STARTUP SYSTEM CHECKOUT FOR, ALL SYSTEMS AND RELATED EQUIPMENT.

c) BALANCE ALL AIR SYSTEMS.

d) PERFORM FAN OPERATING TESTS.

e) WITNESS EQUIPMENT CAPACITY AND EFFICIENCY TESTS TO BE CONDUCTED BY VENDORS OR OTHER DESIGNATED PARTIES.

f) SUBMIT ALL APPARATUS TEST REPORTS WITNESSED.

I. CONSTRUCTION MANAGER WILL SUPPLY T&B CONTRACTOR WITH A SCHEDULE OF PROJECTED COMPLETION TIME AND PHASING FOR EACH SYSTEM AND A LIST OF SYSTEMS WITH SPECIAL OR UNUSUAL REQUIREMENTS.

J. THE T&B CONTRACTOR SHALL THEN SUBMIT TO THE CONSTRUCTION MANAGER FOR APPROVAL A DETAILED TIME SCHEDULE FOR AIR BALANCE ON EACH SYSTEM.

K. IMMEDIATELY AFTER AWARD OF THE HVAC CONTRACT, THE T&B CONTRACTOR SHALL REVIEW THE DRAWINGS AND SPECIFICATIONS AND SHALL INDICATE ANY DEFICIENCIES (OR ADDITIONAL FEATURES) IN THE AIR SYSTEMS WHICH WOULD PRECLUDE (OR IMPROVE) PROPER ADJUSTING OR BALANCING. THESE INCLUDE:

a) ADDITIONAL AIR VOLUME DAMPERS.

b) INSTALLATION OF ADDITIONAL "PEET'S PLUGS" PORTS, ETC.

L. SUBMIT FOR APPROVAL SAMPLE FORMS THAT HE INTENDS TO USE FOR TABULATING BALANCING REPORTS WHICH SHALL INCLUDE FAN OR OTHER EQUIPMENT TAGS OR LABELS. THESE FORMS SHOULD BE SIMILAR TO THE AABC "TEST AND BALANCE" FORMS DESCRIBED IN "NATIONAL STANDARDS FOR FIELD MEASUREMENTS AND INSTRUMENTATION" VOL. II, NO. 12173, OF AABC OR NEBB EQUIVALENT AS STATED IN "HVAC SYSTEMS – TESTING ADJUSTING AND BALANCING".

M. DESCRIBE THE INSTRUMENTATION (INCLUDING ACCURACY LIMITATIONS) OF EACH DEVICE PROPOSED FOR USE ON THIS PROJECT FOR AIR AND WATER BALANCING. AS A MINIMUM, INSTRUMENTATION USAGE APPLICATION AND ACCURACY LIMITATIONS ACCEPTABLE ON THIS PROJECT SHALL BE THOSE DESCRIBED IN "HVAC SYSTEMS – TESTING, ADJUSTING AND BALANCING" PUBLISHED BY SHAW METAL AND AIR-CONDITIONING NATIONAL ASSOCIATION, INC. (SMACNA).

N. SPECIFY TYPE OR TYPES OF INSTRUMENTS TO BE USED FOR AIR BALANCING THAT HE PROPOSES TO USE FOR MEASURING AIR QUANTITIES AT AIR TERMINALS.

O. DESCRIBE THE PROCEDURE USED TO MAKE AIR FLOW MEASUREMENTS WITH EACH MEASURING DEVICE.

P. INSTRUMENTATION USED IN AIR BALANCE SHALL BE FACTORY CALIBRATED AND CERTIFIED AS ACCURATE BEFORE AND AFTER TEST AND BALANCE. SUBMIT COPIES OF FACTORY CERTIFIED CALIBRATION RECORDS TO THE ARCHITECT/OWNER FOR REVIEW.

Q. THE OWNER HAS RIGHT TO REQUEST INSTRUMENT RECALIBRATION, OR USE OF OTHER INSTRUMENTS AND BALANCING METHODOLOGY, WHERE ACCURACY OF READINGS IS QUESTIONABLE.

R. SUBMIT A START-UP CHECKOUT LIST FOR EACH SYSTEM AND FOR EACH MAJOR PIECE OF EQUIPMENT FOR APPROVAL.

S. BALANCING REPORTS:

a) AFTER BALANCING AND TESTING HAVE BEEN PERFORMED, THE BALANCING CONTRACTOR SHALL SUBMIT FOUR (4) BOUND COPIES OF RECORDED TEST DATA AND EQUIPMENT PERFORMANCE REPORTS ON THE BALANCING OF AIR SYSTEMS.

b) THE REPORTS SHALL DEMONSTRATE THAT AIR SYSTEMS ARE PROPERLY BALANCED AS DESIGNED OR SPECIFIED; SUBMIT RESULTS ON APPROVED FORMS.

c) THE REPORTS SHALL SHOW THAT FANS ARE DELIVERING AIR FLOWS WITHIN ALLOWABLE LIMITS AS SPECIFIED; SUBMIT RESULTS ON APPROVED FORMS.

d) THE APPROVED FORMS MUST BE COMPLETE WITH REGARD TO ALL DATA REQUIREMENTS.

T. PERIODIC INSPECTIONS OF THE PROJECT DURING CONSTRUCTION

a) PRIOR TO COMMENCEMENT OF BALANCING, THE T&B CONTRACTOR SHALL MAKE PERIODIC INSPECTIONS OF THE PROJECT DURING CONSTRUCTION (NOT LESS THAN ONE PER WEEK) AND SHALL REPORT IN WRITING TO THE ARCHITECT ANY DEVIATIONS FROM CONTRACT DOCUMENTS RELATING TO TESTING, BALANCING, AND ADJUSTMENT WORK CONCERNING:

- o EQUIPMENT
- o INSTALLATION
- o PLACEMENT
- o INACCESSIBLE INSTALLATION OF THE FOLLOWING BALANCING HARDWARE:
 - PORTS
 - PLUGS
 - BALANCE DAMPER HANDLES
 - OTHER SUCH ITEMS.

U. FINAL APPROVAL: THIS CONTRACT SHALL INCLUDE AN EXTENDED PERIOD OF 120 DAYS AFTER SUBMITTAL OF THE FINAL CERTIFIED TEST REPORT (APPROVED BY THE ENGINEER) FOR A GIVEN SYSTEM, DURING WHICH TIME THE OWNER MAY REQUEST A SPOT CHECK, RETEST AND/OR RESETING OF ANY OUTLET OR OTHER ITEM AS LISTED IN THE CERTIFIED TEST REPORT; HOWEVER, THIS REQUEST MAY NOT EXCEED 10% OF THE OUTLETS OR DEVICES ON EACH CENTRAL SYSTEM.

V. IF MORE THAN 5% OF THE TOTAL DEVICES ON A GIVEN CENTRAL SYSTEM TESTS OUTSIDE THE PRESCRIBED LIMITS SET FOR AIR BALANCE, THE OWNER SHALL HAVE THE OPTION OF REVOKING THE TEST REPORT AND REQUIRING A COMPLETE REBALANCE OF THE SYSTEM IN QUESTION.

W. IF A RETEST OR SPOT CHECK IS REQUESTED, THE T&B CONTRACTOR SHALL PROVIDE TECHNICIANS AND INSTRUMENTS IN MAKING ANY TESTS REQUIRED DURING THIS PERIOD.

X. FINAL ACCEPTANCE WILL NOT BE ACCORDED THE CERTIFIED TEST REPORT UNTIL THE EXTENDED PERIOD OF 120 DAYS HAS EXPIRED.

Y. EQUIPMENT AND SYSTEM OPERATION AND PERFORMANCE TESTING

a) NOTIFY THE OWNER IN ADVANCE OF BEGINNING THE TEST OPERATION, (MINIMUM NOTICE – 72 HOURS).

b) OPERATE EACH PIECE OF EQUIPMENT IN CONYUNCTION WITH ITS SYSTEM, AS LONG AS REQUIRED TO PROVIDE PROPER FUNCTION AND PERFORMANCE.

c) PERFORM AN OPERATING TEST OF EACH COMPLETE SYSTEM FOR TWENTY-FOUR HOURS CONTINUOUS OPERATION AS A MINIMUM, OR AS LONG AS REQUIRED TO DEMONSTRATE COORDINATION AND PROPER FUNCTIONING OF ALL RELATED SYSTEMS AND CONTROLS.

d) THE OPERATING CRITERIA FOR EACH TEST ARE TO BE DETERMINED IN ADVANCE AND SUBMITTED FOR APPROVAL. WHENEVER SEASONAL CONDITIONS WILL NOT PRODUCE A FULL DESIGN LOAD ON ANY EQUIPMENT OR SYSTEM, SUBMIT CRITERIA AT LEAST 4 MONTHS IN ADVANCE.

e) IF A SPECIFIED TIME DURATION IS INDICATED FOR A TEST THAT IS AT VARIANCE FROM THAT STATED ABOVE, THE SPECIFIED TIME PERIOD OR FRAME GOVERNS.

Z. SYSTEM BALANCING

a) PRIOR TO ARRIVAL ON PROJECT, THE CONTRACTOR SHALL ADJUST ALL BALANCING DAMPERS OPEN, PLACE ALL EQUIPMENT IN OPERATING CONDITION, REMOVE ALL TEMPORARY AIR FILTERS AND INSTALL DESIGN FILTERS.

b) FOR THE DURATION OF THE BALANCING WORK, THE CONTRACTOR SHALL:

- o MAINTAIN MECHANICS AT PROJECT AT ALL TIMES FOR SYSTEM OPERATION, TROUBLE SHOOTING, ASSISTANCE, ETC.
- o ADJUST FAN DRIVES PITCH AS REQUIRED TO MEET SYSTEM PERFORMANCE REQUIREMENTS.
- o PROVIDE NECESSARY MECHANICAL ADJUSTMENTS IN CONYUNCTION WITH BALANCING PROCEDURE.
- o REPLACE ALL BALANCING DAMPERS IN SYSTEMS THAT CANNOT BE MANIPULATED TO SATISFY BALANCING REQUIREMENTS.

c) BALANCE ALL SYSTEMS AND ALL SYSTEM ELEMENTS IN ACCORDANCE WITH EITHER:

- TOTAL SYSTEM BALANCE SPECIFICATIONS OF NATIONAL STANDARDS FOR FIELD MEASUREMENTS AND INSTRUMENTATION – TOTAL SYSTEM BALANCE, VOLUME II, NO. 12173, ASSOCIATED AIR BALANCE COUNCIL, LATEST EDITION,

OR

– PROCEDURAL STANDARDS FOR TESTING-BALANCING-ADJUSTING OF ENVIRONMENTAL SYSTEMS, SECTIONS II, III, AND IV, PUBLISHED BY THE NATIONAL ENVIRONMENTAL BALANCING BUREAU, 1611 NORTH KENT STREET, ARLINGTON, VIRGINIA 22209, SUPPLEMENTED BY SMACNA'S "HVAC SYSTEMS – TESTING, ADJUSTING AND BALANCING".

AA. IF THE T&B CONTRACTOR ELECTS TO USE BALANCING PROCEDURES FROM TWO OR MORE OF THE ABOVE PROCEDURES, AND IF THEY DIFFER, THIS CONTRACTOR WILL NOTE THE PROCEDURE HE HAS USED ON HIS REPORTING FORMS.

BB. WHEN OUTSIDE AIR VELOCITIES ARE ABOVE 20 MPH AND WILL IMPACT OR ALTER AIR BALANCE READINGS, OR WHEN OTHER SUCH DETRIMENTAL CONDITIONS EXIST THAT WILL ADVERSELY IMPACT AIR BALANCE READINGS, THE T&B CONTRACTOR SHALL REFRAIN FROM TAKING SUCH DATA ON THE AFFECTED SYSTEM.

CC. THE T&B CONTRACTOR SHALL MARK FINAL POSITION OF ALL AIR DAMPERS, AIR BALANCING DEVICES.

DD. IF REQUESTED, THE T&B CONTRACTOR SHALL CONDUCT BALANCING OR TESTING OPERATIONS IN THE PRESENCE OF THE OWNER OR HIS AUTHORIZED REPRESENTATIVE.

EE. IF REQUESTED, THE T&B CONTRACTOR SHALL RETAKE DATA IF THE ACCURACY OF READINGS, DUE TO METER MALFUNCTION OR DAMAGE, IS SUSPECTED OR IF THE DATA HAS BEEN IMPROPERLY TAKEN.

FF. AFTER EACH SYSTEM HAS BEEN BALANCED AND TESTED, THE T&B CONTRACTOR WILL PERMANENTLY ATTACH TO EACH FAN A "CHECKOUT CARD" THAT INDICATES:

a) FOR FANS:

- STATIC PRESSURE READING ACROSS (CLEAN SERVICE)FILTERS, COILS, FANS
- FLOWS CORRESPONDING TO THE ABOVE.
- FAN RPM.
- MOTOR CURRENT AND VOLTAGE READING FOR EACH LEG.
- MEASURED AIR FLOW.

GG. ADJUSTMENTS

a) THE T&B CONTRACTOR SHALL PERFORM TESTS AND MAKE ADJUSTMENTS TO DAMPERS, FANS, AND RELATED ACCESSORIES, TO YIELD FLOW AND DISTRIBUTION OF AIR REQUIRED TO PRODUCE OPERATING CRITERIA AND FLOW RATES REQUIRED BY THE CONTRACT DOCUMENTS. ALLOWABLE TOLERANCES FOLLOW:

- AIR SIDE
 - q. AIR OUTLETS: ±5% OF DESIGN AIR FLOW.
 - ii. FANS: ±5% OF DESIGN AIR FLOW.

STATE OF NEW YORK WARNING STATEMENT
NEW YORK EDUCATION LAW – ARTICLE 145 §7209. SPECIAL PROVISIONS

IT IS A VIOLATION OF THIS ARTICLE FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS OR HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.



KOWIDGE ARCHITECTURE & DESIGN
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(845)342-4080 - mail@kad.group

PRELIMINARY NOT FOR
CONSTRUCTION
DATE:01/25/23

CONSULTANTS

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CIVIL•SURVEYING•TRAFFIC•STRUCTURAL
ENVIRONMENTAL•MECHANICAL•LANDSCAPE

A	XX/XX/XXXX	ISSUED FOR XX	XX
NO.	DATE	ISSUANCE	BY

CLIENT

**1540 GENESSEE STREET
KANSAS CITY, MO 64102**
816.245.6000 BLUESCOPECONSTRUCTION.COM
PROJECT



**TOWN OF HAVERSTRAW
RECREATION COMPLEX**
**70 CHAPEL STREET
HAVERSTRAW, NY 10923**

**MECHANICAL
SPECIFICATIONS
SHEET 3 OF 3**

GREGORY GIORDANO	PROJECT #: 22-286
	M-303

1. THESE GENERAL NOTES APPLY TO ALL DRAWINGS UNDER THIS CONTRACT. REFER TO INDIVIDUAL DRAWINGS FOR ADDITIONAL NOTES.
2. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. FOLLOW DRAWINGS IN LAYING OUT WORK AND CHECK DRAWINGS OF OTHER TRADES TO VERIFY SPACE CONDITIONS, MAINTAIN HEADROOM AND SPACE CONDITIONING CONSISTENT WITH PROJECT CRITERIA.
3. EXACT LOCATION OF ALL EQUIPMENT TO BE COORDINATED IN THE FIELD.
4. JUNCTION AND PULL BOXES SHALL BE GENERALLY FLUSH MOUNTED FINISHED SPACES. WHERE NECESSARY, CONDUITS SHALL BE REROUTE OR OTHER ARRANGEMENTS MADE FOR CONCEALMENT. PULL BOXES SHALL BE PROVIDED AS INDICATED AND WHEREVER NECESSARY, TO FACILITATE PULLING OF WIRE. FOR EMPTY RACEWAY RUNS, PULL BOXES SHALL BE PROVIDED EVERY 100 FEET AND AS INDICATED. MAXIMUM OF 4-90° CONDUIT BENDS SHALL NOT BE EXCEEDED. COVERS OF JUNCTION AND PULL BOXES SHALL BE ACCESSIBLE.
5. BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. WALL AND SWITCH OUTLETS SHALL BE ERECTED IN ADVANCE OF FURRING AND FIREPROOFING. BOXES SHALL BE SECURED TO BUILDING STRUCTURE BY ADJUSTABLE STRAP IRONS.
6. ALL SUPPORTS TO BUILDING STRUCTURES SHALL BE SECURED BY MEANS OF TOGGLE BOLTS ON HOLLOW MASONRY WALLS, EXPANSION SHIELD OR INSERTS IN CONCRETE OR BRICK, MACHINE SCREWS ON METAL SURFACE, AND WOOD SCREWS ON WOOD CONSTRUCTION.
7. HORIZONTAL RUNS OF METALLIC CONDUIT SHALL BE SUPPORTED AT INTERVALS OF NOT MORE THAN 10 FEET APART. RACEWAY RISERS SHALL BE SUPPORTED AT EACH FLOOR LEVEL. EXPOSED RACEWAYS SHALL RUN PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.
8. PANELS, JUNCTION BOXES AND PULL BOXES SHALL BE SUPPORTED INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON CONDUITS.
9. MOUNTING HEIGHTS OF DEVICES AND OUTLET BOXES SHALL BE SUBMITTED AND APPROVED AND SHALL BE DESCRIBED IN THE SPECIFICATIONS OR SHALL BE AS SPECIFIED BY THE ARCHITECT OR OWNER.
10. ALL DISCONNECT SWITCHES AND CIRCUIT BREAKERS IN ALL AREAS SHALL BE SURFACE MOUNTED AS INDICATED ON DRAWINGS.
11. NO ELECTRICAL RACEWAY SHALL BE INSTALLED WITHIN 6" OF STEAM OR HOT WATER PIPES, OR APPLIANCES, EXCEPT FOR CROSSINGS WHERE RACEWAYS SHALL BE AT LEAST 1" FROM PIPE COVER. WHERE 6" MINIMUM SEPARATION CANNOT BE MAINTAINED, APPROVAL THERMAL INSULATION SHALL BE PROVIDED FOR RACEWAYS.
12. HORIZONTAL OR CROSS RUNS IN PARTITIONS OR WALLS ARE NOT PERMITTED.
13. CONDUIT ENDS SHALL BE CUT SQUARE AND REAMED SMOOTH. PAINT MALL THREADS OR FIELD THREADED CONDUIT WITH HOMOGENIZED BLEND OF COLORED COPPER AND RUST AND CORROSION INHIBITANT POLY COMPOUND SIMILAR TO "T & B" COPPERSHIELD. BUTT CONDUIT ENDS.
14. FINAL CONNECTIONS TO MOTOR TERMINAL BOXES, TRANSFORMERS AND OTHER VIBRATING EQUIPMENT SHALL BE MADE WITH "SEALUTE" FLEXIBLE CONDUIT; MINIMUM 18" IN LENGTH WITH 50 PERCENT SLACK DO NOT FASTEN RACEWAYS TO MOTOR FOUNDATION.
15. SUFFICIENTLY LONG WIRE SLACK SHALL BE LEFT IN RUNS TO MAKE FINAL CONNECTIONS. ALL EMPTY CONDUITS OVER 10 FEET LONG SHALL BE PROVIDED WITH NYLON DRAG LINE.
16. THE ELECTRICAL CONTRACTOR SHALL NOT INSTALL MORE THAN THE NUMBER OF CIRCUITS SHOWN IN ANY HOMERUN.
17. WIRE COLOR CODING SHALL CONFORM TO CODE REQUIREMENTS. MULTIPLE CONDUCTORS OF CONTROL AND SIGNAL CABLE SHALL BE COLOR CODED PER IPCEA. COLOR CODING, ONCE ESTABLISHED, MUST BE INSTALLED ACCORDINGLY.
18. WHERE APPLICABLE, INDIVIDUAL SINGLE-PHASE, TWO-WIRE RECEPTACLE HOMERUNS SHALL BE COMBINED INTO 3-PHASE, 4-WIRE HOMERUN TO REDUCE THE QUANTITY OF CONDUITS ENTERING THE RESPECTIVE PANELS TO A MINIMUM. HOMERUN SHALL NOT CONTAIN MORE THAN ONE SUCH 3-PHASE, 4-WIRE CIRCUIT, UNLESS SPECIFICALLY INDICATED ON DRAWINGS.
19. COMPLETE ELECTRICAL INSTALLATION SHALL BE PERMANENTLY AND EFFECTIVELY GROUNDED TO COLD WATER MAIN AHEAD OF METER FOR MAIN SERVICE EQUIPMENT OR BUILDING STEEL FOR DISTRIBUTION AND SEPARATELY DERIVED SYSTEM AND IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE 2017 REQUIREMENTS, WHETHER OR NOT SUCH CONNECTIONS ARE SPECIFICALLY IDENTIFIED. MEASURED RESISTANCE TO GROUND SHALL NOT EXCEED 10 OHMS.
20. ALL WIRING METHODS SHALL CONFORM TO ARTICLE 300-22 OF THE LATEST REQUIREMENTS 2017 NATIONAL ELECTRICAL CODE.
21. ALL LOW VOLTAGE WIRING IN CEILING SHALL BE "PLENUM RATED CABLES" AS PER REQUIREMENTS OF 2017 NATIONAL ELECTRICAL CODE.
22. ALL WORK SHALL CONFORM TO THE LATEST REQUIREMENT OF NATIONAL ELECTRICAL CODES, NFPA, UL, AND ALL OTHER GOVERNING AGENCIES HAVING JURISDICTION.
23. USE GROUND FAULT (GFC) TYPE DEVICES IN WET AND DAMP LOCATIONS AND WHERE LOCATED WITHIN 6 FEET OF SINK OR FAUCET OR AS REQUIRED.
24. USE ARC FAULT (AFCI) TYPE CIRCUIT BREAKERS FOR BRANCH CIRCUITS SERVING BEDROOMS AND LIVING SPACES AS REQUIRED.
25. POWER DISCONNECTING MEANS RELATED FIRE ALARM SYSTEMS SHALL BE ACCESSIBLE ONLY TO AUTHORIZED PERSONNEL.
26. AC POWER FOR FIRE ALARM EQUIPMENT SHALL BE FED FROM DEDICATED CIRCUIT BREAKERS EQUIPPED WITH SET OF SCREW BREAKER LOCKS TO PREVENT INADVERTENT SHUT OFF.
27. INSTALLATION OF DEVICES AND OUTLET BOXES WHERE APPLICABLE SHALL BE ACCESSIBLE AND IN ACCORDANCE WITH BARRIER FREE REQUIREMENTS OF NJBC CHAPTER 11(ACCESSIBILITY) AND ICC A117.1.

1. SECURE AND PAY FOR PERMITS AND INSPECTIONS REQUIRED BY GOVERNMENT AGENCIES.

2. PRIOR TO SUBMITTING A BID, VISIT THE JOB SITE AND BECOME FAMILIAR WITH THE CONDITIONS EFFECTING THE ELECTRICAL INSTALLATION.

3. ELECTRICAL INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE 2017 EDITION AND SHALL BE PERFORMED BY INDIVIDUALS SKILLED IN THE TRADE. WORKSMANSHIP SHALL BE FIRST CLASS. THE ELECTRICAL SYSTEMS SHALL BE COMPLETE IN ALL RESPECTS, TESTED, APPROVED AND READY TO OPERATE.

4. MATERIALS SHALL BE NEW, BEAR THE U.L. STAMP AND MANUFACTURERS IDENTIFICATION.

5. VERIFY THAT ALL EXISTING CONDITIONS ARE AS INDICATED OR NOTED ON THE DRAWINGS. ANY DISCREPANCIES OBSERVED IN THE FIELD BETWEEN ACTUAL FIELD CONDITIONS AND THAT INDICATED OR NOTED ON THE DRAWINGS, SHALL BE GIVEN TO THE OWNER IN WRITING.

6. SUBMIT ELECTRONIC COPIES (PDF) OF MANUFACTURER'S SHOP DRAWINGS FOR APPROVAL PRIOR TO ORDERING THE FOLLOWING:

PANELBOARDS
DISTRIBUTION EQUIPMENT
LIGHTING FIXTURES
WIRING DEVICES

7. INSTALLATION SHALL BE INSTALLED NEAT, PLUMB, STRAIGHT AND LEVEL TO BUILDING AND TO OTHER SYSTEM COMPONENTS.

8. PROVIDE A ONE (1) YEAR GUARANTEE COVERING THE ELECTRICAL INSTALLATION FOR DEFECTIVE MATERIALS AND WORKSMANSHIP.

9. REMOVE ALL DEBRIS FROM BUILDING ON A DAILY BASIS TO INSURE SAFETY OF PERSONNEL.

10. WORK PROVIDED UNDER OTHER SPECIFICATION SECTIONS:

CONTROL WIRING FOR HVAC SYSTEM INCLUDING DAMPER WIRING

11. RACEWAYS TO BE AS FOLLOWS:

UNDERGROUND: SCHEDULE 40 PVC
EXPOSED EXTERIOR: RIGID GALVANIZED STEEL
EXPOSED INTERIOR: ELECTRICAL METALLIC TUBING

12. WIRE SHALL BE COPPER, STRANDED, WITH TYPE THHN – THWN THERMOPLASTIC INSULATION. TYPE "MC" CABLE MAY BE SUBSTITUTED FOR INDOOR CONCEALED LOCATIONS ONLY.

13. OUTLET BOXES SHALL BE STAMPED GALVANIZED STEEL OF THE TYPE AND SIZE FOR THE LOCATION AND USE INTENDED.

14. WIRING DEVICES SHALL BE AS FOLLOWS:

QUAD RECEPTACLE: HUBBELL 420
TAMPER RESISTANT DUPLEX RECEPTABLES: HUBBELL BR20
TAMPER RESISTANT DUPLEX GFI RECEPTABLES: HUBBELL GTR5362
FLOOR POKE THRU: HUBBELL S1PT
FLOOR BOXES : LEGRAND EVOLUTION SERIES

PLATES SHALL BE SPECIFICATION GRADE CONSTRUCTION, COLOR, MATERIAL AND STYLE BY ARCHITECT.

15. LIGHTING FIXTURES SHALL BE AS SCHEDULED AND SHALL BE PROVIDED WITH PROPER TYPE MOUNTING HARDWARE. PROVIDE LAMPS AS MANUFACTURED BY SYLVANIA OR EQUAL BY GENERAL ELECTRIC OR WESTINGHOUSE.

16. ELECTRICAL SERVICE EQUIPMENT SHALL BE MANUFACTURED BY SIEMENS/SQUARE D OR APPROVED EQUAL:

REFER TO PANEL SCHEDULES FOR PANEL AND LOAD CENTER SPECIFICATIONS.

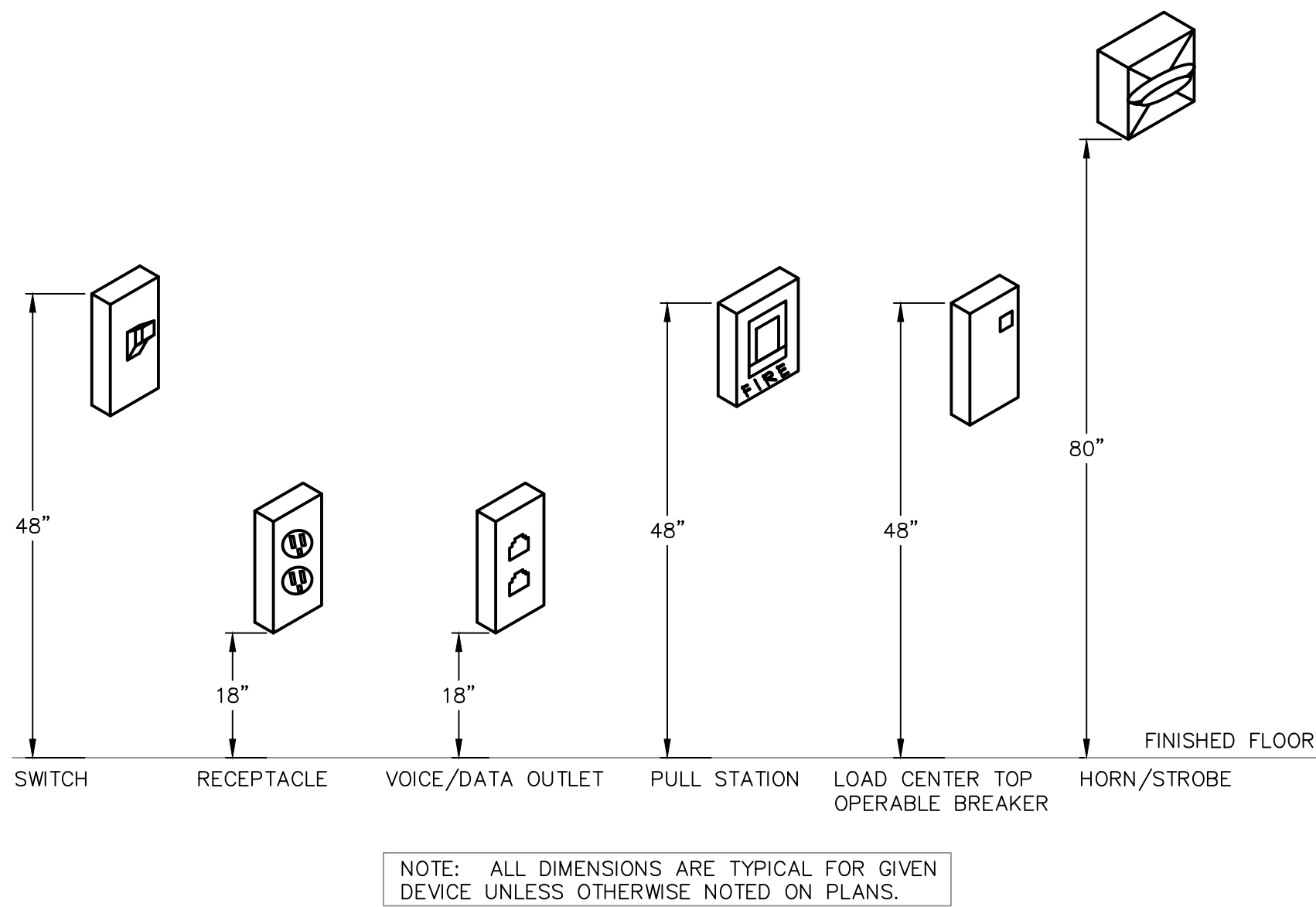
A	AMPS
AC	AIR CONDITIONER
AF	AMPS FUSED
AFC	ABOVE FINISHED COUNTER
AFB	ABOVE FINISHED FLOOR
ABC	BELOW FINISHED COUNTER
CH	CABINET HEATER
CU	COPPER
DJ	DWELLING UNIT
EC	EMPTY CONDUIT WITH DRAG LINE
EF	EXHAUST FAN
EM	EMERGENCY
ENT	ELECTRIC METALLIC TUBING
EXP	EXPLOSION PROOF (SEAL)
GXP	GROUNDING ELECTRODE CONDUCTOR
GFI	GROUND FAULT INTERRUPTER
GRD	GROUND
HP	HORSEPOWER
ISHP	INSIDE HEAT PUMP
KW	KILOWATTS
KVA	KILOVOLT AMPERES
LC	LOAD CENTER
MB	MAIN BREAKER
ML	MAIN LUGS
NF	NONFUSED
NL	NIGHT LIGHT
OSHP	OUTSIDE HEAT PUMP
P	POLE
PH	PHASE
PM	PLUG MOLD
PS	PHOTO SENSOR
PGS	RIGID GALVANIZED STEEL
RPVC	RIGID PVC (SCHEDULE 40)
SCA	SHORT CIRCUIT AMPERES
TC	TIME CLOCK
TR	TAMPER RESISTANT
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
V	VOLTS
W	WIRE
WP	WEATHER PROOF
XFM	TRANSFORMER
XP	EXPLOSION PROOF

	NEW CONCEALED CONDUIT
	NEW EXPOSED CONDUIT
	NEW UNDERGROUND CONDUIT
	ELECTRIC MOTOR, SIZE AS INDICATED ON THE PLAN
	WALL MOUNTED "OCCUPANCY SENSOR" 120V.
	CEILING MOUNTED "OCCUPANCY SENSOR" 24V
	SINGLE POLE 20A LIGHT SWITCH
	THREE WAY 20A LIGHT SWITCH
	LOW VOLTAGE 120V/24V TRANSFORMER
	GROUND ELECTRODE CONDUCTOR
	HARDWIRED LOCAL CARBON MONOXIDE DETECTOR WITH BATTERY BACKUP
	DISCONNECT SWITCH
	JUNCTION BOX WALL OR CEILING MOUNTED JUNCTION BOX
	ELECTRICAL PANEL
	HOMERUN BRANCH CIRCUIT (TWO CONDUCTORS UON)
	2 PORT CABLE/VOICE OUTLET WITH RG6/CAT.6 CABLE
	WALL MOUNTED DUPLEX RECEPTACLE RATED FOR 20A-120V GROUND FAULT INTERRUPTER TYPE.
	WALL MOUNTED DUPLEX RECEPTACLE RATED FOR 20A-120V
	WALL MOUNTED SINGLE RECEPTACLE RATED FOR 20A-120V OR AS INDICATED ON DRAWINGS.
	WALL MOUNTED QUAD RECEPTACLE RATED FOR 20A-120V

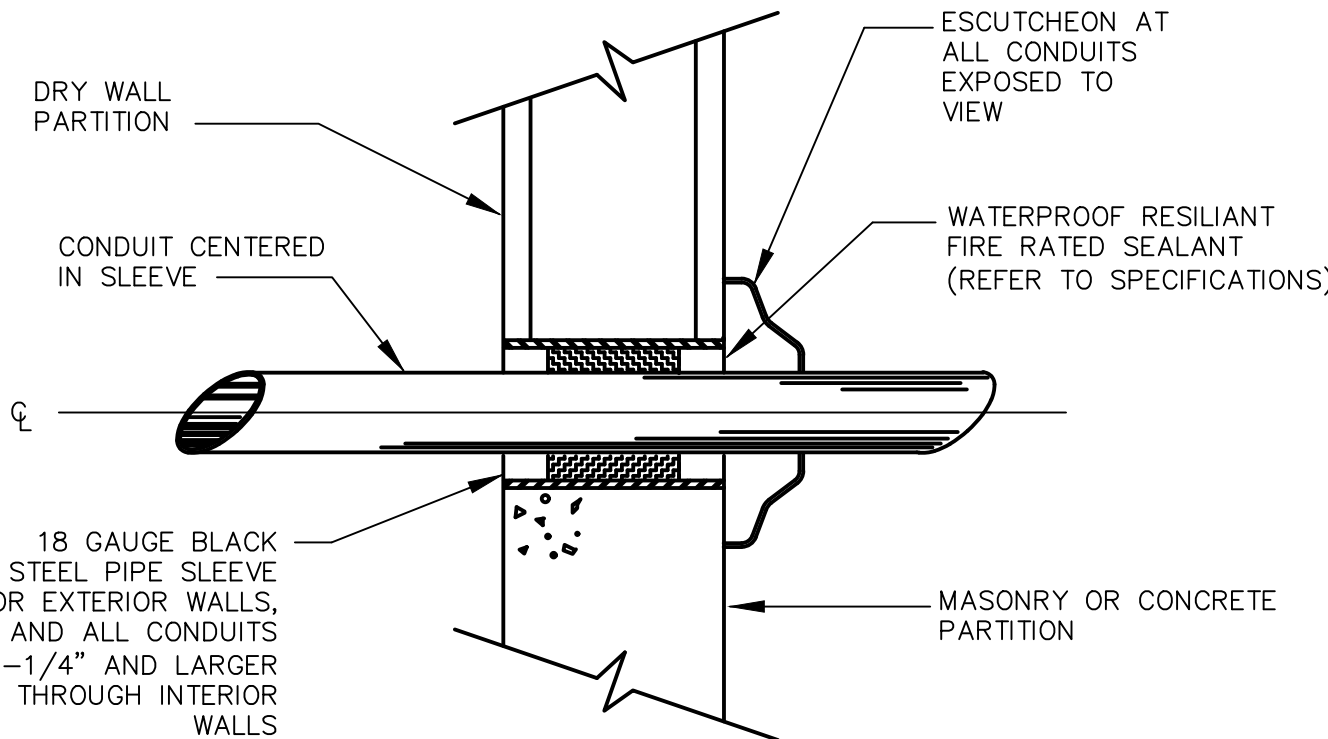
NOTE: ELECTRICAL CONTRACTOR TO MATCH RECEPTABLES WITH EQUIPMENT'S LABEL AND PROVIDE THE PROPER RECEPTACLE FOR A FUNCTIONAL EQUIPMENT. FOR HEIGHT REQUIREMENTS, REFER TO EQUIPMENT DRAWINGS OR ARCHITECTURAL DRAWINGS.

NOTE:

ALL ABBREVIATIONS AND SYMBOLS MAY NOT APPEAR ON THE DRAWINGS FOR THIS PROJECT.



1 OPERABLE DEVICE MOUNTING HEIGHT DETAIL



2 CONDUIT THROUGH EXTERIOR/INTERIOR WALLS ABOVE GRADE
SCALE: NONE

Load Calculations				11/11/2023
Haverstraw Maintenance Building				page 1
Reference NEC 220				
Maintenance Building #3	1750	SF		
Non-Continuous Loads				
Receptacles	180VA each	3240	VA	General Receptacles
Hand Dryer		1500	VA	
Miscellaneous		2000	VA	
Demand Factor		0	VA	Recepts first 10kVA @ 100%, remainder at 50%
Non-Continuous Sub-Total		6740	VA	
Continuous Loads				
General Lighting	3VA / S.F.	5250	VA	
Electric Water Heater		4100	VA	Nameplate Rating
HVAC - Cooling		0	VA	Less than Heating
HVAC - Electric Heat		5980	VA	Electric Heaters
Equipment		9600	VA	Lighting Receptacle
Demand Factor	125%	1313	VA	Welding Loads
Continuous Sub-Total		26243	VA	
Net Calculated Load		32983	VA	
Total Amps	VA / Volts = Amps	92	Amps	208 Volt Three Phase Service New 45kVA Transformer Sufficient

Calculated by Bertin Engineering

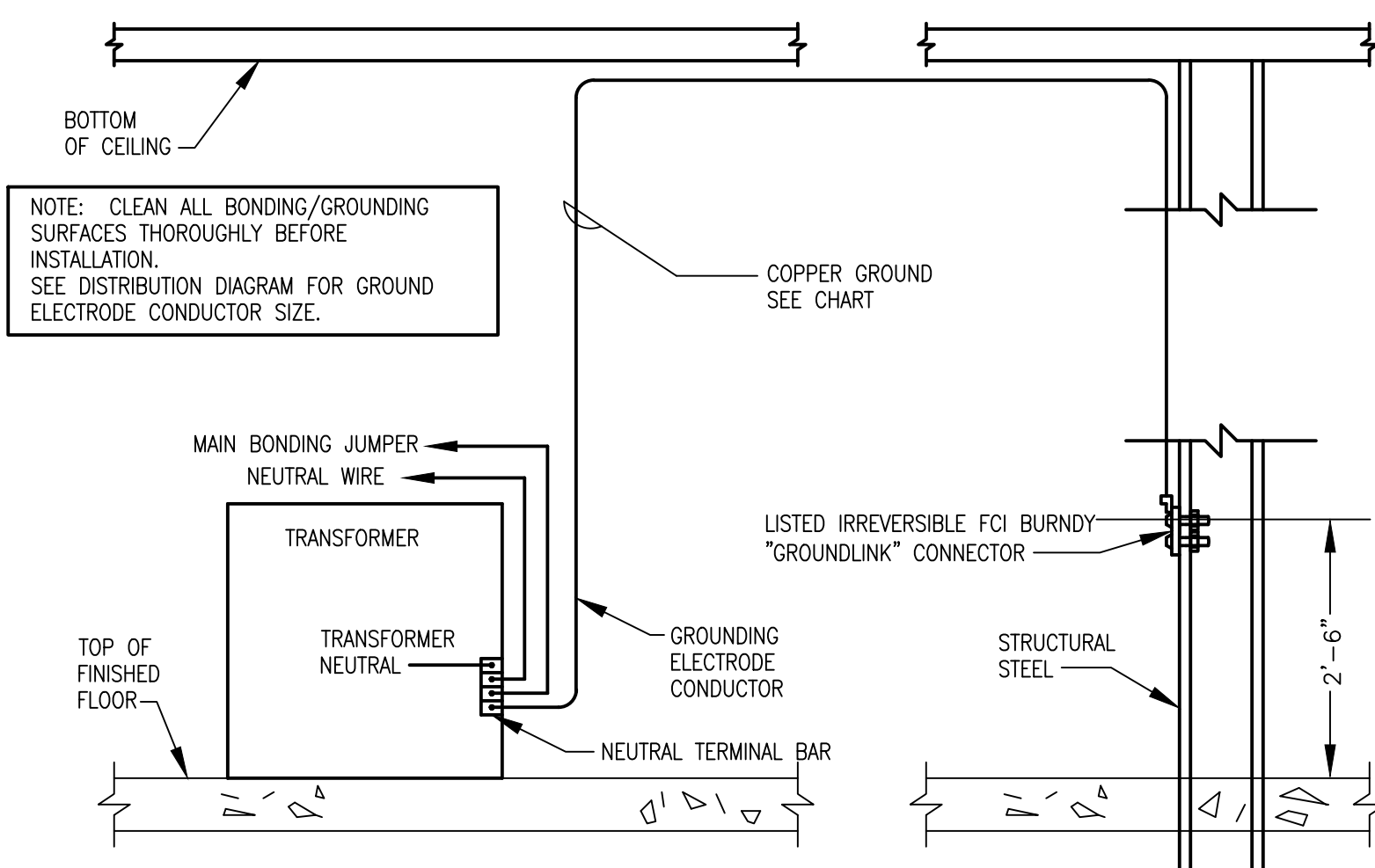
UTILITY TRANSFORMER TO SWITCHBOARD 'MSB'
APPROXIMATE LENGTH OF RUN: 75'
CONDUCTORS PER PHASE: 3 (#300CMC)
SHORT CIRCUIT AT START OF RUN: 35,280 AMPS
LINE TO LINE VOLTAGE: 480 VOLTS

FAULT CURRENT (L-L): 34,042 AMPS

'MSB' TO PANEL '100A D.S.' 45KV4 XFMR.'HA'
APPROXIMATE LENGTH OF RUN: 75'
CONDUCTORS PER PHASE: 1 (#4)
SHORT CIRCUIT AT START OF RUN: 34,042 AMPS
LINE TO LINE VOLTAGE: 480 VOLTS

FAULT CURRENT (L-L): 9,950 AMPS

CALCULATION ASSUMES A STANDARD 1000KVA
UTILITY TRANSFORMER WITH INFINITE PRIMARY
CURRENT. CONDUCTORS ARE OF APPROPRIATE EXACT
SHORT CIRCUIT RATING AVAILABLE AT THE UTILITY
TRANSFORMER AND FEEDER LENGTH WITH THE
UTILITY COMPANY. ALL PANEL FEEDER CONDUCTOR
LENGTHS SHALL MATCH SHORT CIRCUIT
CALCULATIONS LENGTH AT A MINIMUM, LONGER
CONDUCTORS ARE ACCEPTABLE.



3 TRANSFORMER GROUNDING DETAIL

STATE OF NEW YORK WARNING STATEMENT
NEW YORK EDUCATION LAW — ARTICLE 145 §7209. SPECIAL PROVISIONS

IT IS A VIOLATION OF THIS ARTICLE FOR ANY PERSON, UNLESS HE OR SHE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY, IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED. THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS OR HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

KOWIDGE ARCHITECTURE & DESIGN
12 HEIDT AVE, MIDDLETOWN, NY 10940
(845)342-4080 - mail@kad.group

PRELIMINARY NOT FOR
CONSTRUCTION
DATE:01/25/23

CONSULTANTS



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WWW.BROOKERENGINEERING.COM



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NO.	DATE	ISSUANCE	BY

CLIENT



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KANSAS CITY, MO 64102
816.245.6000 BLUESCOPECONSTRUCTION.COM



**TOWN OF HAVERSTRAW
RECREATION COMPLEX
70 CHAPEL STREET
HAVERSTRAW, NY 10923**

ELECTRICAL SYMBOLS, ABBREVIATIONS, AND NOTES

GREGORY GIORDANO

PROJECT #:

22-286

E-100



- ① PROVIDE NEMA 6-50R RECEPTACLES FOR WELDING PURPOSES. CONFIRM FINAL RECEPTACLE LOCATION WITH OWNER PRIOR TO INSTALLATION.
- ② PROVIDE 15A/2P N.F. D.S.
- ③ PROVIDE 15A/2P N.F. D.S.
- ④ PROVIDE 30A/2P N.F. D.S.

NOTE: EMERGENCY AND EXIT LIGHTING FIXTURES SHALL BE WIRED TO UNSWITCHED LEG OF CIRCUIT, ALWAYS "ON".



+ DENOTES HACR RATED BREAKER
* DENOTES GROUND FAULT CIRCUIT INTERRUPTER (GFCI) RATED BREAKER

E-200

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GREGORY GIORDANO

PROJECT #:

22-286

E-200