

&	AND
AAP	ALARM ANNUNCIATOR PANEL
AAV	AUTOMATIC AIR VENT
AB	ANCHOR BOLT
ABV	ABOVE
ACC-DR	ACCESS DOOR
ACTL	ACCESS
ACOUS	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
ADA	AREA DRAIN
ADA	AMERICAN DISABILITIES ACT
ADD	ADDENDUM
ADOL	ADDITIONAL
ADJ	ADJUSTABLE
ADMIN	ADMINISTRATION
AFT	ABOVE FINISH FLOOR
AFG	ABOVE FINISHED GRADE
AFMD	AIR FLOW MEASURING DEVICE
AHU	AIR HANDLING UNIT
AL	ALONG
ALT	ALTERNATE
ALUM	ALUMINUM
AMP	AMPERE
AP	ACCESS PANEL
APC	ARCHITECTURAL PRECAST CONCRETE
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASY	ASYMMETRIC
ATC	AUTOMATIC TEMPERATURE CONTROL
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AVT	AVERAGE WATER TEMPERATURE
BAT	BATTERY
BC	BALANCING COCK OR BARE CORNER
BDD	BACKDRAFT DAMPER
BFC	BELOW FINISH CEILING
BFE	BOTTOM FOOTING ELEVATION
BFG	BELOW FINISHED GRADE
BG	BUMPER GUARD
BLDG	BUILDING
BLUG	BLOCKING
BLT	BORROWED LIGHT
BLW	BELOW
BM	BEAM
BO	BY OWNER
BOF	BY OWNER FUTURE
BOI	BOTTOM
BR	BROCK
BRG	BEARING
BRKR	BREAKER
BSMT	BASEMENT
BTWN	BETWEEN
BUR	BUILT UP ROOFING
C	CONDUIT
CAB	CABINET
CANTVL	CANTILEVER
CAP	CAPACITY
CATV	CABLE TELEVISION
CCT	CUBICLE CURTAIN TRACK
CDTV	CLOSED CIRCUIT TELEVISION
CFH	CUBIC FEET / HOUR
CFM	CUBIC FEET / MINUTE
CH	CHANNEL
CHK-V	CHECK VALVE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CHWS&R	CHILLED WATER SUPPLY AND RETURN
CJ	CONTROL JOINT
CKT	CIRCUIT
CKT BRKR	CIRCUIT BREAKER
CL	CENTERLINE
CLB	CEILING
CLD MTD	CEILING MOUNTED
CLR	CLR
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
COMM	COMMUNICATION
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUE / CONTINUOUS
CONTR	CONTRACTOR
CONV	CONVECTOR
COORD	COORDINATE
CORR	CORRIDOR
CP	CARPET OR CONTROL POWER TRANSFORMER
CT	CERAMIC TILE
CTR	CENTER
CJ	CORNER
CV	CONTROL VALVE
CW	COLD WATER
D	DEPTH OR DEEP
DB	DRY BULB
dB	DECIBEL
DCW	DOMESTIC COLD WATER
DEMO	DEMOLITION
DEPT	DEPARTMENT
DET	DETAILS
DF	DRINKING FOUNTAIN
DHW	DOMESTIC HOT WATER
DA	DIAMETER
DAG	DIAGONAL OR DIAGRAM
DFF	DIFFUSER
DI	DIMENSION
DISC	DISCONNECT
DISCH	DISCHARGE
DISP	DISPENSER
DIST	DISTRIBUTION
DIV	DIVISION
DL	DOWN LIGHT
DN	DOWN
DP	DISTRIBUTION PANEL
DPR	DAMPER
DR	DRAIN
DS	DOWNSPOUT
DWG	DRAWING
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
EFS	EXTERIOR INSULATION AND FINISHING SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEC CAB	ELECTRICAL CABINET

ELEV	ELEVATOR
EMER	EMERGENCY
ENCLOSURE	ENCLOSURE
ENTR	ENTRANCE
EO	ELECTRICAL OUTLET
EQ	EQUAL
EQUIP	EQUIPMENT
ETR	EXISTING TO REMAIN
EWB	ENTERING WET BULB
EW	ELECTRIC WATER COOLER
EWC	ENTERING WATER TEMPERATURE
EXA	EXHAUST AIR
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
XP	EXPLOSION PROOF
FIS	FIRE / SMOKE DAMPER
FA	FIRE ALARM
FAA	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FAT	FINAL AIR TEMPERATURE
FB	FIRE BLANKET
FC	FLEXIBLE CONNECTION OR FOOTCANDLE
FD	FLOOR DRAIN OR FIRE DAMPER
FDN	FOUNDATION
FDV	FIRE DEPARTMENT VALVE
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FI	FIRE HOSE
FHC	FIRE HOSE CABINET
FHP	FULL HEIGHT PARTITION
FHV	FIRE HOSE VALVE
FIN	FINISH
FIXT	FIXTURE
FL	FULL FLOOR LINE
FLA	FULL LOAD AMPERES
FLASH	FLASHING
FLEX	FLEXIBLE
FLG	FLANGE
FLG C	FLANGE CONNECTION
FLH	FLOOR
FLUOR	FLUORESCENT
FP	FIRE PROOFING
FRMG	FRAMING
FS	FLOOR SINK
FSTOP	FIRE STOPPING
FT	FOOT / FEET
FT HD	FEET OF HEAD
FTC	FOOTCANDLES
FTG	FOOTING
FUR	FURRING
G	GAS OR ELECTRICAL GROUND
GA	GAUGE
GAL	GALLONS
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GENL	GENERAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTOR
GL	GLASS
GLV	GLOBE VALVE
GRD	GROUND
GPM	GALLONS PER MINUTE
GR	GRADE
GRV	GRAVITY
GRD BM	GRADE BEAM
GV	GATE VALVE
GWB	GYPSUM BOARD
H	HIGH
HB	HOSE BIB
HCB	HEATING CONTRACTOR
HDCP	HANDICAP
HR	HEADER
HW	HANDWARE
HID	HIGH INTENSITY DISCHARGE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HORSE POWER
HPD	HIGH PRESSURE DRIP
HPF	HIGH POWER FACTOR
HR	HANDRAIL
HSPK	HOUSEKEEPING
HGT	HEIGHT
HVS	HIGH VELOCITY
HVAC	HEATING, VENTILATING, AIR CONDITIONING
HW	HOT WATER
HWD	HARD WOOD
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HWS&R	HOT WATER SUPPLY AND RETURN
HZ	HERTZ
ID	INSIDE DIAMETER
IER	INVERTED ECCENTRIC REDUCER
IG	ISOLATED GROUND
IME	INSULATED METAL ENCLOSURE
IN	INCH
INCANDESCENT	INCANDESCENT
INCL	INCLUDED
INSUL	INSULATION
INT	INTERIOR
INTERL	INTERLOCK
INT	INTERIOR
ISO	ISOLATION
ISV	ISOLATED VALVE STATION
J	JOINT
JBOX	JUNCTION BOX
JST	JOIST
JT	JOINT
KO	KNOCK OUT
KVA	KILOVOLT AMPERE
KVAR	KILOVOLT REACTANCE
KW	KILOWATT
KWH	KILOWATT HOUR METER
LAV	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LB	POUND
LD	LEAVING DRY BULB
LED	LIGHT EMITTING DIODE
LF	LINEAR FEET
LN	LINEAR
LOC	LOCATION OR LOCATE
LPT	LOW POINT
LSDC	LINEAR SUPPLY DIFFUSER CEILING
LT	LIGHT
LWG	LIGHTING

LV	LOW VOLTAGE
LVR	LOW VOLT
LWB	LEAVING WET BULB
LWC	LEAVING WOOD CEILING
LWT	LEAVING WATER TEMPERATURE
MAN	MANUAL
MAT	MIXED AIR TEMPERATURE
MATL	MATERIAL
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MBA	ONE THOUSAND BTU / HOUR
MCP	METAL CLAD CABLE
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDD	MANUAL DISTRIBUTION PANEL
MECH	MECHANICAL
MEMB	MEMBRANE
MET	METAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LOSS ONLY
MO	MOISTURE
MOD	MOTOR OPERATED DAMPER
MONO	MONOLITHIC
MTD	MOUNTED
MTG HT	MOUNTING HEIGHT
MTL	METAL
MTLH	METAL HALIDE
MTR	MOTOR
MTS	METAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
NIA	NOT APPLICABLE
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NUMBER OR NORMALLY OPEN
NOM	NOMINAL
NTS	NOT TO SCALE
O	OXYGEN
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPER	OPERATED
OPNG	OPENING
OPP	OPPOSITE
ORD	OVER/LOW ROOF DRAIN
PB	PULL BOX
PC	PUMPING CONTRACTOR
PD	PUMP DISCHARGE
PG	PRESSURE GAUGE WITH COCK
PL	PROPERTY LINE
PLM	PLASTIC LAMINATE
PLBS	PUMPING
PNL	PANEL
PR	PAIR
PRD	PRESSURE DIFFERENTIAL VALVE
PRELIM	PRELIMINARY
PRV	PRESSURE REDUCING VALVE
PT	PANT OR POTENTIAL TRANSFORMER
RO	ROUGH OPENING
QT	QUARRY TILE
R	RADIUS
RA	RETURN AIR / RELIEF AIR
RB	RUBBER BASE
RC	REMOVE COMPLETELY
RD	ROOM DRAIN
RE	RELOCATE EXISTING
REC	RECEIVED
RECPT	RECEPTACLE
REF	REFERENCE
REFLECTOR	REFLECTOR
REG	REGISTER
REINF	REINFORCING
REM	REMOVE
REQD	REQUIRED
RET	RETURN
REV	REVERSE
REX	REMOVE EXISTING
RF	RESILIENT FLOOR
RFI	REQUEST FOR INFORMATION
RGS	RIGID GALVANIZED STEEL CONDUIT
RM	ROOM HATCH
RM	ROOM
RN	REMOVE AND REPLACE WITH NEW
RR	REMOVE AND REPLACE
RS	RAPID START
RV	RELIEF VALVE
RWC	RAIN WATER CONDUCTOR
SA	SUPPLY AIR
SAN	SANITARY SEWER ABOVE GROUND
SAN-BOR	SANITARY SEWER - BURIED EXISTING TO REMAIN
SAN-XR	SANITARY SEWER ABOVE GROUND - EXISTING TO REMAIN
SCHED	SCHEDULE
SD	SMOKE DAMPER OR SMOKE DETECTOR
SODSP	SOAP DISPENSER
SF	SQUARE FOOT
SHT	SHEET
SHT MTL	SHEET METAL
SHTG	SHEATHING
SIM	SIMILAR
SM	SURFACE MOUNTED
SNC	SANITARY NAPKIN CABINET
SND	SANITARY NAPKIN DISPOSER
SP	STANDPIPE OR STATIC PRESSURE
SPEC	SPECIMEN PASS-THRU CABINET
SPEC	SPECIFICATIONS
SPS	STATIC PRESSURE SENSOR
SR	SERVICE RECEPTOR
SS	SOL STACK
ST FR	STATIC PRESSURE
ST STL	STAINLESS STEEL
STD	STANDARD
STER	STERILIZER
STL	STEEL
STOR	STORAGE
STR	STRAINER
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SW	SWITCH
SWBD	SWITCHBOARD

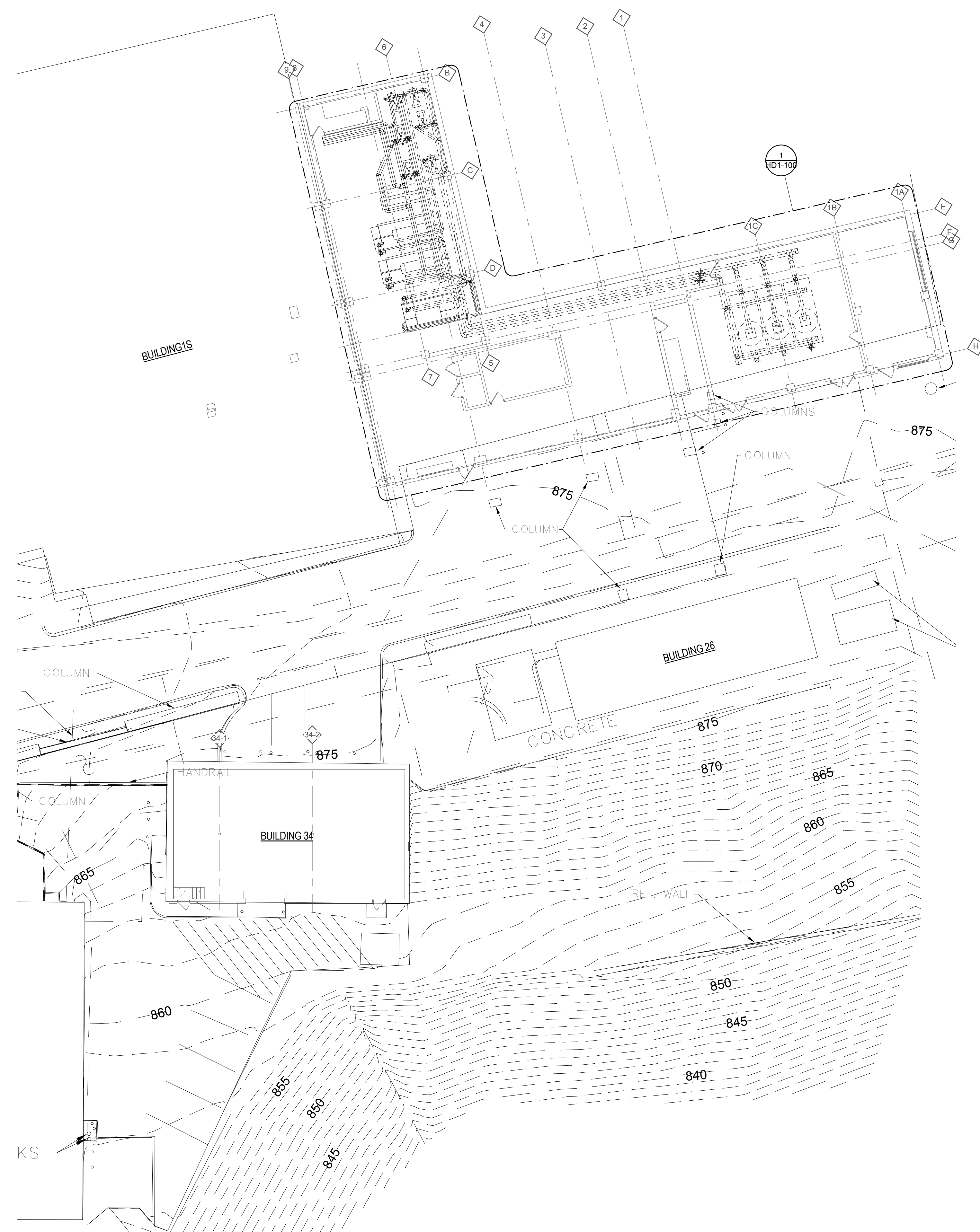
SWGR	SWITCHGEAR
SYM	SYMMETRICAL TOP
T	TOP
TA	THROWAWAY
TAN	TANGENT
TC	TELECOMMUNICATIONS CONTRACTOR
TCV	TEMPERATURE CONTROL VALVE
TDV	TRIPLE DUTY VALVE
TEL	TELEPHONE
TEMP	TEMPERATURE
TER	TERRAZZO
THRES	THRESHOLD
TR	TEMPERATURE RISE
TRANS	TRANSITION
TRANSR	TRANSFORMER
TSTAT	THERMOSTAT
TV	TURNING VANES OR TELEVISION
TYP	TYPICAL
UC	UNDER CABINET OR UNDER CUT
UFD	UNDER FLOOR DUCT
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITER'S LABORATORIES
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UNON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTIL	UTILITY
V	VOLT
VAL	VALVE
VAL	VOLUME DAMPER
VENT	VENTILATION
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
VL	VENT LINE
VLR	VAPOR RETARDER
VND	WOOD
WF	WIDE FLANGE
WFMD	WATER FLOW MEASURING DEVICE
WG	WALL GUARD OR WATER GAUGE
WHCH	WHEEL CHAIR
WIN	WINDOW
WMS	WIRE MESH SCREEN
WP	WEATHERPROOF
WPS	WALL PROTECTION SYSTEM
WSCST	WAINSCOT
WT	WINDOW TREATMENT
WTD	WATER TEMPERATURE DROP
WWF	WELDED WIRE FABRIC
ZVB	ZONE VALVE BOX
ZVC	ZONE VALVE CABINET

PIPELINE ABBREVIATIONS	
SYMBOLS	DESCRIPTION
— CD —	CONDENSATE DRAIN LINE
— CTD —	COOLING TOWER DRAIN LINE
— DTS —	DUAL TEMPERATURE WATER SUPPLY
— DTR —	DUAL TEMPERATURE WATER RETURN
— CWS —	CONDENSER WATER SUPPLY
— CWR —	CONDENSER WATER RETURN
— HWS —	HOT WATER HEATING SUPPLY
— HWR —	HOT WATER HEATING RETURN
— LPS —	LOW PRESSURE STEAM SUPPLY
— LPR —	LOW PRESSURE CONDENSATE RETURN
— MPS —	MEDIUM PRESSURE STEAM SUPPLY
— MPR —	MEDIUM PRESSURE CONDENSATE RETURN
— HPS —	HIGH PRESSURE STEAM SUPPLY
— HPR —	HIGH PRESSURE CONDENSATE RETURN
— PC —	PUMPED CONDENSATE
— HRS —	ENERGY (HEAT) RECOVERY SUPPLY
— HRR —	ENERGY (HEAT) RECOVERY RETURN
— RL —	REFRIGERANT LINE
— RS —	REFRIGERANT SUCTION
— NAME —	PIPE TO BE REMOVED
— NAME —	EXISTING PIPING TO REMAIN
PIPELINE SYMBOLS	
	BALL VALVE
	GATE VALVE
	BUTTERFLY VALVE
	GLOBE VALVE
	PLUG VALVE
	RELIEF VALVE
	ECCENTRIC REDUCER
	INVERTED ECCENTRIC REDUCER
	STRAINER
	UNION
	THERMOMETER
	PRESSURE GAUGE
	WATER FLOW MEASURING DEVICE (WINGED & GASKETED)
	PRESSURE TAP
	PRESSURE REDUCING VALVE
	TWO-WAY MODULATING CONTROL VALVE
	THREE-WAY MODULATING CONTROL VALVE
	SAFETY VALVE OR PRESSURE RELIEF
	AUTOMATIC AIR VENT
	MANUAL AIR VENT
	TWO-WAY CONTROL VALVE (TWO POSITION TYPE)
	MOTORIZED VALVE
	AQUASTAT
	FUNNEL DRAIN
	PIPING TURNED UP
	PIPING TURNED DOWN
	TEE - OUTLET UP
	TEE - OUTLET
	SIDE CONNECTION
	CAPPED OUTLET
	DIRECTION OF FLOW
	PIPE BREAK (SINGLE LINE)
	FLEXIBLE CONNECTION
	BACKFLOW PREVENTION DEVICE

HVAC SYMBOLS	
DOUBLE LINE SHEETMETAL	
SYMBOLS	DESCRIPTION
	RECTANGULAR SUPPLY, RETURN OR RELIEF DUCT (WIDTH (SHOW)XDEPTH (SHOW))
	ROUND SUPPLY, RETURN OR RELIEF DUCT (WIDTH (SHOW)XDEPTH (SHOW))
	STAINLESS STEEL DUCTWORK
	DUCT WITH TURNING VANES
	DUCT WITH TWO TURNING VANES
	RADIUS ELBOW (DUCT WIDTH 1" AND LOWER)
	LOW LOSS TAKE OFF (ARROW INDICATES DIRECTION OF AIR FLOW)
	CONICAL SPIN-IN FITTING
	BOOT CONNECTION WITH MANUAL V-D (ARROW INDICATES AIR FLOW DIRECTION)
	RETURN AIR DUCT UP
	SUPPLY DUCT UP
	EXHAUST AIR DUCT UP
	RETURN AIR DUCT DOWN
	SUPPLY DUCT DOWN
	EXHAUST AIR DUCT DOWN
	MANUAL VOLUME CONTROL DAMPER (V) (ARROW SHOWS DIRECTION OF DROP)
	RISE/DROP IN DUCTWORK (ARROW SHOWS DIRECTION OF DROP)
	WALL SWITCH STATIC PRESSURE SENSOR
	DUCTWALL TEMPERATURE SENSOR, ELECTRIC
	DUCTWALL TEMPERATURE SENSOR, ELECTRIC
	DUCT MOUNTED SMOKE DETECTOR PROVIDED BY EC, INSTALLED BY HC
	MOTORIZED DAMPER
	BACKDRAFT DAMPER
	FIRE DAMPER AT FIRE WALL (PROVIDE ACCESS PANEL IN DUCT AND CEILING)
	SMOKE DAMPER/DETECTOR CHIEFED BY E.C. DAMPER BY H.C.
	COMBINATION FIRE/SMOKE DAMPER
	FIRE DAMPER AT FIRE WALL THRU FLOOR OR HORIZONTAL DUCT ABOVE CEILING (PROVIDE ACCESS PANEL IN DUCT AND WALL OR CEILING)
	ACCESS DOOR ON BOTTOM OF DUCT (WINGED & GASKETED)
	ACCESS DOOR ON SIDE OF DUCT (WINGED & GASKETED)
	SUPPLY AIR DIFFUSER
	THERMAL VAV DIFFUSER
	RETURN AIR REGISTER
	EXHAUST REGISTER
	EXHAUST RETURN AIR REGISTER (DUCT OR WALL)
	SUPPLY AIR REGISTER (DUCT OR WALL)
SINGLE LINE - SHEET METAL	
SYMBOLS	DESCRIPTION
	DUCT SIZE (WIDTH X DEPTH)
	ROUND DUCT SIZE (DIAMETER)
	FLEXIBLE DUCT (DIAMETER SIZE)
	SUPPLY DUCT CROSS SECTION UP
	SUPPLY DUCT CROSS SECTION DOWN
	RETURN CROSS SECTION UP
	RETURN CROSS SECTION DOWN
	EXHAUST CROSS SECTION UP
	SQUARE ELBOW WITH TURNING VANES
	RADIUS TURN ELBOW
	DUCT END CAP

HVAC GENERAL NOTES

- NOT ALL SYMBOLS ARE NECESSARILY USED.
- COORDINATE FINAL LOCATIONS OF DIFFUSERS AND GRILLES WITH ARCHITECTURAL REFLECTED CEILING PLANS.
- DRAWINGS ARE DIAGRAMMATIC. CONTRACTOR TO FIELD VERIFY DUCT AND PIPE ROUTING AND COORDINATE INTERFERENCE BETWEEN TRADES PRIOR TO INSTALLATION.
- ROOF OPENINGS, FLASHING, AND COUNTER FLASHING BY GENERAL CONTRACTOR. LOCATION OF OPENINGS BY TRIPLE CHECK.
- DUCTWORK TO BE INSTALLED TIGHT TO UNDERSIDE OF STRUCTURE ABOVE UNLESS NOTED OTHERWISE.
- PROVIDE ALL MATERIALS, EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE.
- CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY. CONTRACTOR SHALL BE RESPONSIBLE TO FIELD SURVEY ACTUAL SITE CONDITIONS AND ACCOMMODATE ACTUAL SITE CONDITIONS AS PART OF SCOPE OF WORK AT NO COST TO OWNER.
- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, APPLICABLE BUILDING, STATE, AND LOCAL CODES, SEISMIC REQUIREMENTS, ENERGY CODES, AND INSURANCE UNDERWRITER REQUIREMENTS.
- COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, AND ELECTRICAL WORK, ETC. SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
- MAINTAIN A MINIMUM OF 6" CLEARANCE TO UNDERSIDE OF PIPES, DUCTS, CONDUITS, SUSPENDED



three inches = one foot

one and one half inch = one foot

one inch = one foot

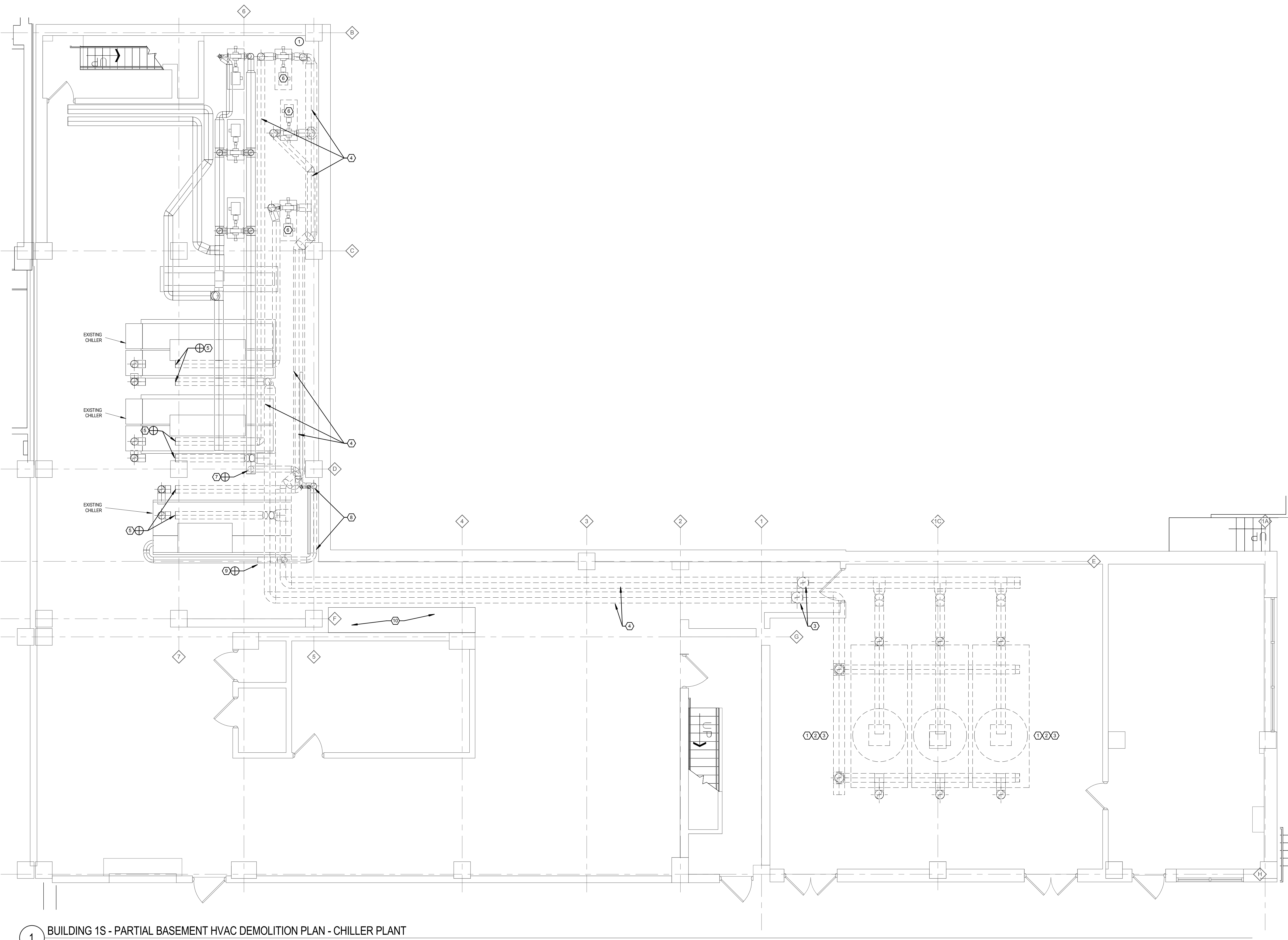
three quarters inch = one foot

one half inch = one foot

three eighths inch = one foot

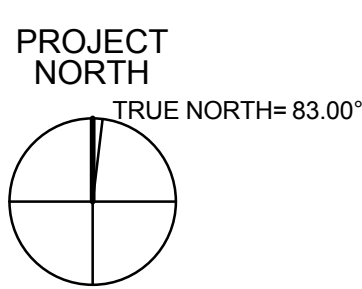
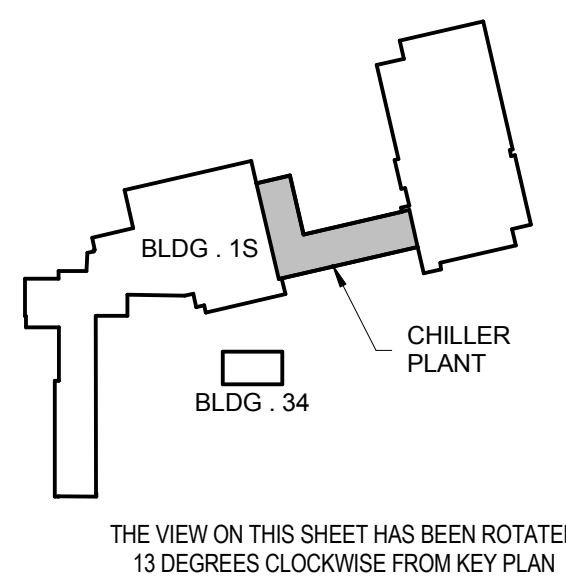
one quarter inch = one foot

one eighth inch = one foot



1 BUILDING 1S - PARTIAL BASEMENT HVAC DEMOLITION PLAN - CHILLER PLANT
3/16" = 1'-0"

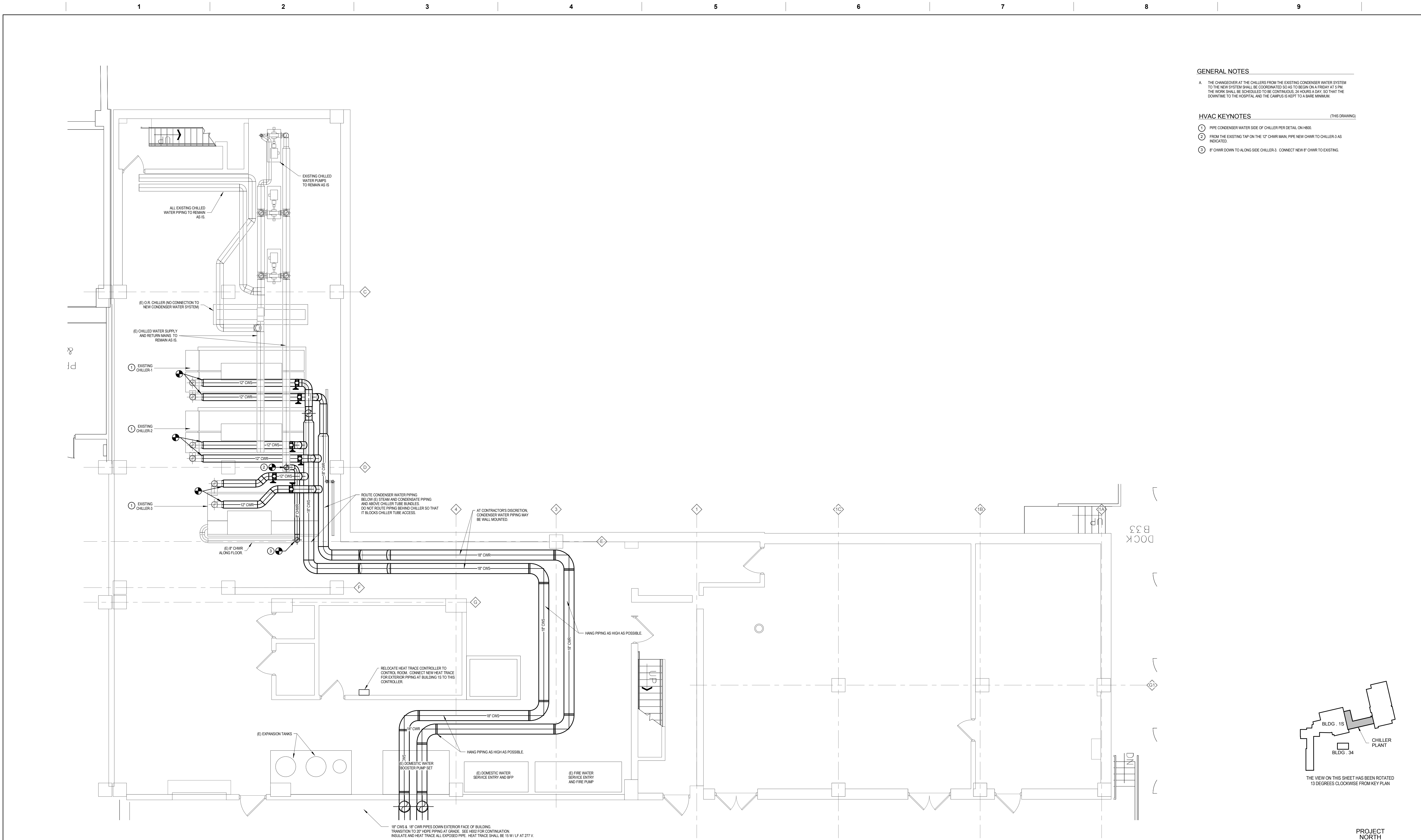
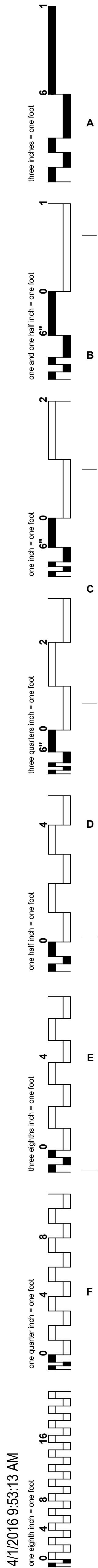
- HVAC GENERAL DEMOLITION NOTES** (THIS DRAWING)
- A. ALL DEMOLITION SHALL BE PHASED SO THAT THE CHILLER PLANT IS NOT WITHOUT THE CONDENSER WATER SYSTEM DURING TIMES OF CHILLER OPERATION.
- HVAC DEMOLITION KEYNOTES** (THIS DRAWING)
- 1 DEMOLISH COOLING TOWERS AND ALL ASSOCIATED PIPING, VALVING, AND CONTROLS.
 - 2 DEMOLISH COOLING TOWER DRAINAGE. PATCH ROOF WATER TIGHT. REFER TO ARCHITECTURAL DRAWINGS FOR MORE INFORMATION.
 - 3 ALL PIPE AND WIRING PENETRATIONS THROUGH ROOF TO BE PATCHED WEATHERTIGHT.
 - 4 DEMOLISH ALL EXISTING CONDENSER WATER PIPING. RETAIN EXISTING HEAT TRACE CONTROLLER AND RELOCATE TO CENTRAL PLANT. SEE H-100.
 - 5 MAKE POINT OF DISCONNECT IN CHWR PIPING AT CHILLERS AS INDICATED.
 - 6 DEMOLISH EXISTING CONDENSER WATER PUMPS AND ALL ASSOCIATED PIPING, VALVING, AND CONTROLS. DEMOLISH ASSOCIATED HOUSEKEEPING PADS.
 - 7 FROM ITS TAKE-OFF POINT AT THE 12" CHWR MAIN, DEMOLISH 8" CHWR DOWN TO FLOOR.
 - 8 DEMOLISH ALL 8" CHWR ROUTED BEHIND CHILLER 3.
 - 9 MAKE POINT OF DISCONNECT IN 6" 8" CHWR ALONG THE SIDE OF CHILLER 3.
 - 10 EXISTING CONDENSER WATER CHEMICAL TREATMENT SYSTEM TO BE REMOVED AS PART OF THIS PROJECT BY THE WAS CHEMICAL WATER TREATMENT VENDOR.



FULLY SPRINKLERED
100% CONSTRUCTION DOCUMENTS

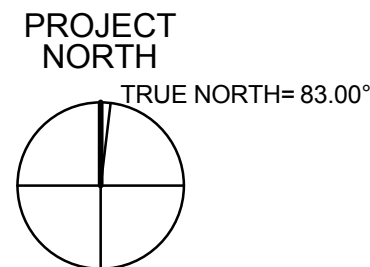
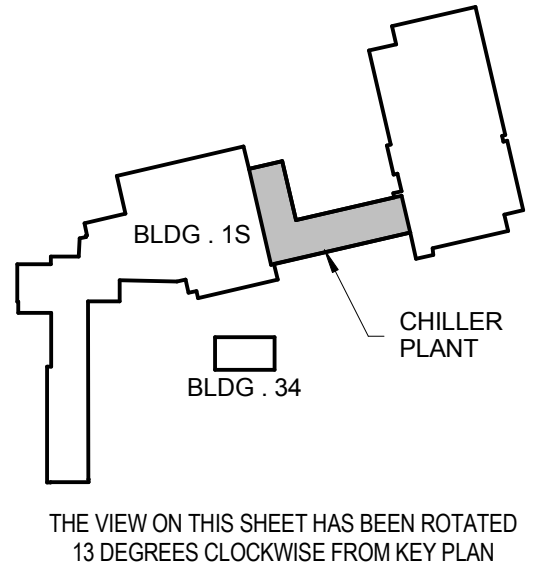
#	Revision	Date	CONSULTANTS: BARBER AND HOFFMAN CONSULTING ENGINEERS 215 EXECUTIVE DRIVE #602 CRANBERRY TWP, PA 15066 PALMER ENGINEERING 301 EAST MAIN STREET, SUITE 900 LEXINGTON, KY 40507	SEAL 	ARCHITECTS/ENGINEERS: AE WORKS 6587 Hamilton Avenue Pittsburgh, Pennsylvania 15206 Ph: 412.287.7333 Fax: 412.287.7334 www.ae-works.com AE Works Project Number: 15010	Drawing Title BUILDING 1S - PARTIAL BASEMENT HVAC DEMOLITION PLAN	Project Title: REPLACE COOLING TOWERS	Project Number 581-15-105	Office of Construction and Facilities Management
						Approved: Project Director	Location: HUNTINGTON VAMC, HUNTINGTON WV	Building Number 1S	
						Date: 03/31/2016	Checked: JKG	Drawn: JKG	Dwg. of

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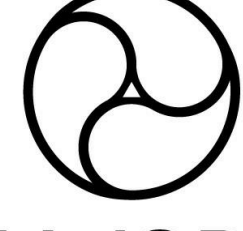



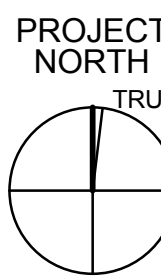
- GENERAL NOTES**
- A. THE CHANGEOVER AT THE CHILLERS FROM THE EXISTING CONDENSER WATER SYSTEM TO THE NEW SYSTEM SHALL BE COORDINATED SO AS TO BEGIN ON A FRIDAY AT 5 PM. THE WORK SHALL BE SCHEDULED TO BE CONTINUOUS, 24 HOURS A DAY, SO THAT THE DOWNTIME TO THE HOSPITAL AND THE CAMPUS IS KEPT TO A BARE MINIMUM.
- HVAC KEYNOTES** (THIS DRAWING)
- ① PIPE CONDENSER WATER SIDE OF CHILLER PER DETAIL ON H800.
- ② FROM THE EXISTING TAP ON THE 12\"/>

1 BUILDING 1S - PARTIAL BASEMENT HVAC PLAN - CHILLER PLANT
3/16\"/>



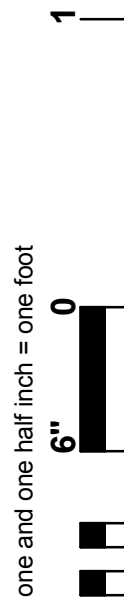
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CONSULTANTS: BARBER AND HOFFMAN CONSULTING ENGINEERS 215 EXECUTIVE DRIVE #602 CRANBERRY TWP, PA 15066 PALMER ENGINEERING 301 EAST MAIN STREET, SUITE 900 LEXINGTON, KY 40507		SEAL 	ARCHITECTS/ENGINEERS:  AE WORKS 6587 Hamilton Avenue Pittsburgh, Pennsylvania 15206 Ph: 412.287.7333 Fax: 412.287.7334 www.ae-works.com AE Works Project Number: 15010	Drawing Title BUILDING 1S - PARTIAL BASEMENT HVAC PLAN Approved: Project Director	Project Title: REPLACE COOLING TOWERS Location: HUNTINGTON VAMC, HUNTINGTON WV Date: 03/31/2016 Checked: JKG Drawn: JKG	Project Number 581-15-105 Building Number 1S Drawing Number H1-100 Dwg. of	Office of Construction and Facilities Management  Department of Veterans Affairs
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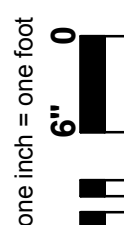




A



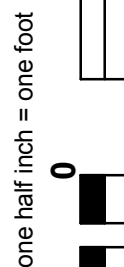
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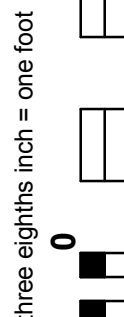
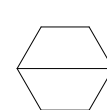
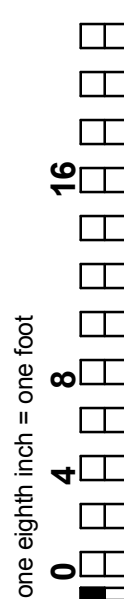
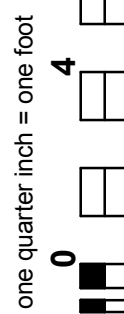
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D



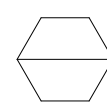
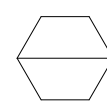
E

**F**

MARK	BASIS OF DESIGN MANUFACTURER & MODEL NO.	LOCATION	SERVICE	TYPE	# OF CELLS	NOMINAL TONS/ CELL	FLOW RATE/ CELL (GPM)	WATER PO (FT)	TEMPERATURE				FAN DATA				BASIN HEATER			MAXIMUM DIMENSIONS			MAX OPER WT (LBS)	
									AMBIENT WB (°F)	EWI (°F)	LWT (°F)	NO OF FANS	HP	V	PHASE	RPM	SPEED CONTROL	TYPE	NO.	KW PER HEATER	LENGTH (FT-IN)	WIDTH (FT-IN)		HEIGHT (FT-IN)
CT-1	BAC S3E-1222-060	AT-GRADE SOUTH OF BUILDING 34	CONDENSER WATER	CROSS FLOW	1	600	1,800	14.0	76	93	85	1	30	460	3	1,750	VFD	ELECTRIC	2	14	11'-10"	21'-6"	14'-0"	24,600
CT-2	BAC S3E-1222-060	AT-GRADE SOUTH OF BUILDING 34	CONDENSER WATER	CROSS FLOW	1	600	1,800	14.0	76	93	85	1	30	460	3	1,750	VFD	ELECTRIC	2	14	11'-10"	21'-6"	14'-0"	24,600
CT-3	BAC S3E-1222-060	AT-GRADE SOUTH OF BUILDING 34	CONDENSER WATER	CROSS FLOW	1	600	1,800	14.0	76	93	85	1	30	460	3	1,750	VFD	ELECTRIC	2	14	11'-10"	21'-6"	14'-0"	24,600

NOTES:

1. PROVIDE VFD FOR TOWER FAN.
2. PROVIDE NEMA 4X ENCLOSURE FOR NON-FUSED DISCONNECT AT COOLING WATER AND BASIN HEATER.
3. PROVIDE WITH 50% FLOW WEIRS.
4. PROVIDE MANUFACTURER'S BASIN SWEEPER PIPING.
5. PROVIDE WITH ALL BOTTOM CONNECTIONS FOR SUPPLY, RETURN, EQUALIZER LINE, AND SYSTEM FILTER PIPING.
6. MANUFACTURER SHALL PROVIDE INTEGRAL, INTERNAL, SELF BALANCING PIPING TO THE HOT WATER BASINS.
7. PROVIDE ACCESS DOOR FOR WATER BASIN COOLING TOWER GT-1.
8. PROVIDE MOTOR HOISTING DAVITS FOR ALL CELLS.
9. PROVIDE MANUFACTURER'S COLD WATER BASIN COVERS TO PREVENT DEBRIS FROM ENTERING BASINS.
10. PROVIDE ELECTRONIC WATER LEVEL CONTROL.
11. SEE SPECIFICATIONS FOR ALL ADDITIONAL ACCESSORIES.

[illegible][illegible]

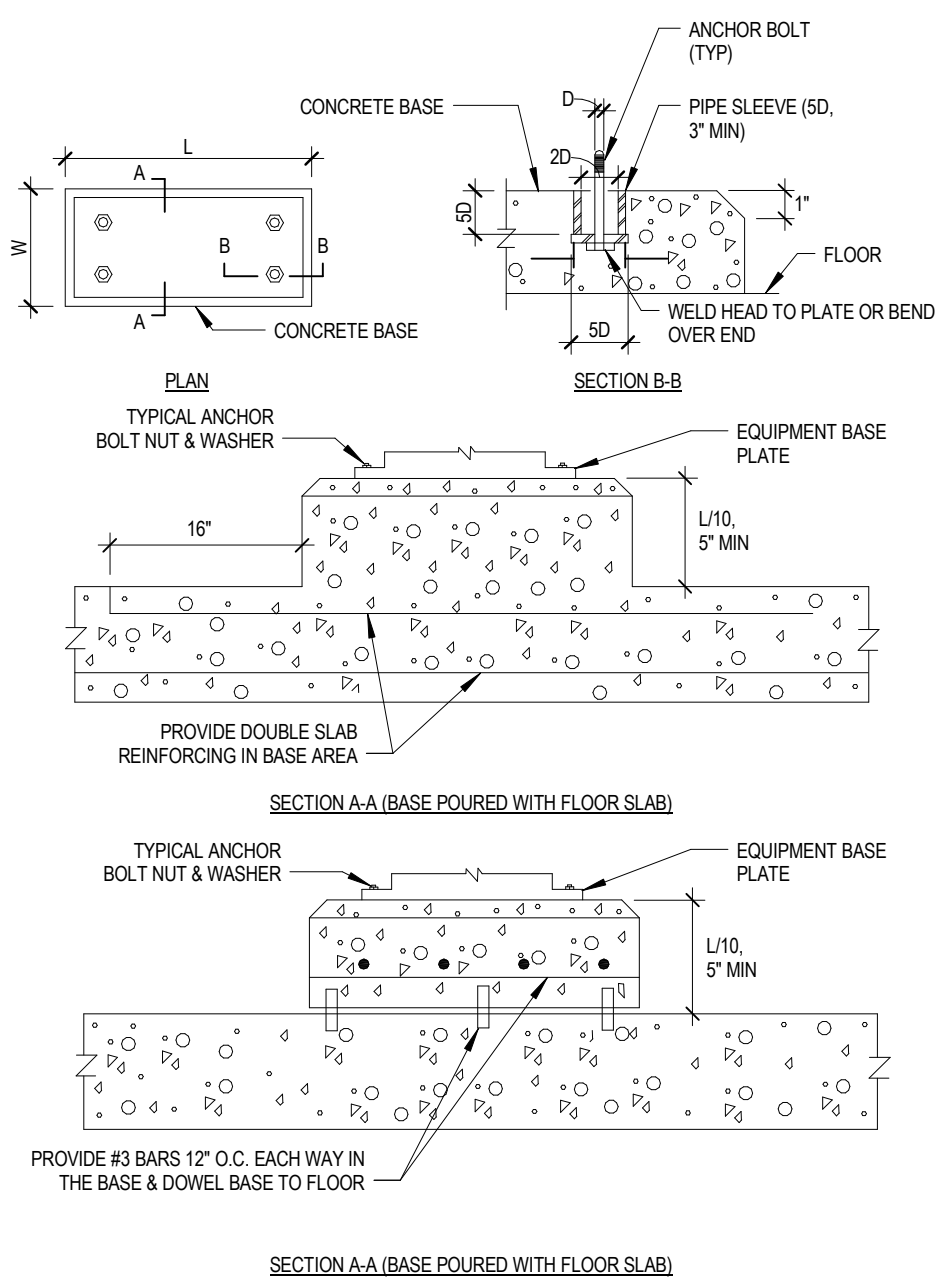
NOTES:

1. PROVIDE AS PACKAGED SYSTEM WITH SOLIDS SEPARATOR VESSEL, STRAINER, SOLIDS RECOVERY VESSEL, AND SYSTEM PUMP
2. UNDER BID ITEM 2: PROVIDE LAKOS TCI-0400-SRV FOR 400 GPM. ALL SYSTEM ACCESSORIES SHALL REMAIN THE SAME.

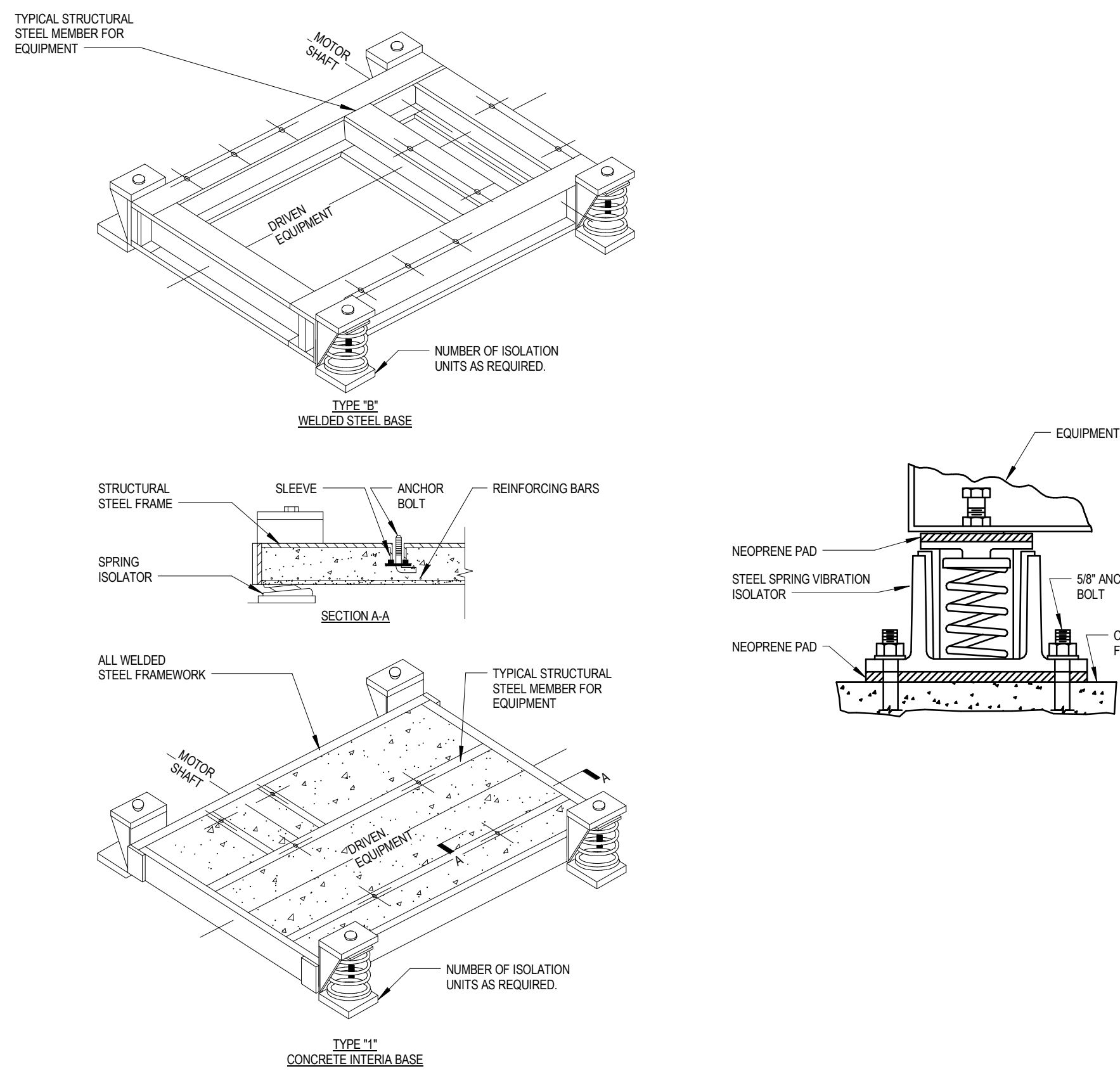
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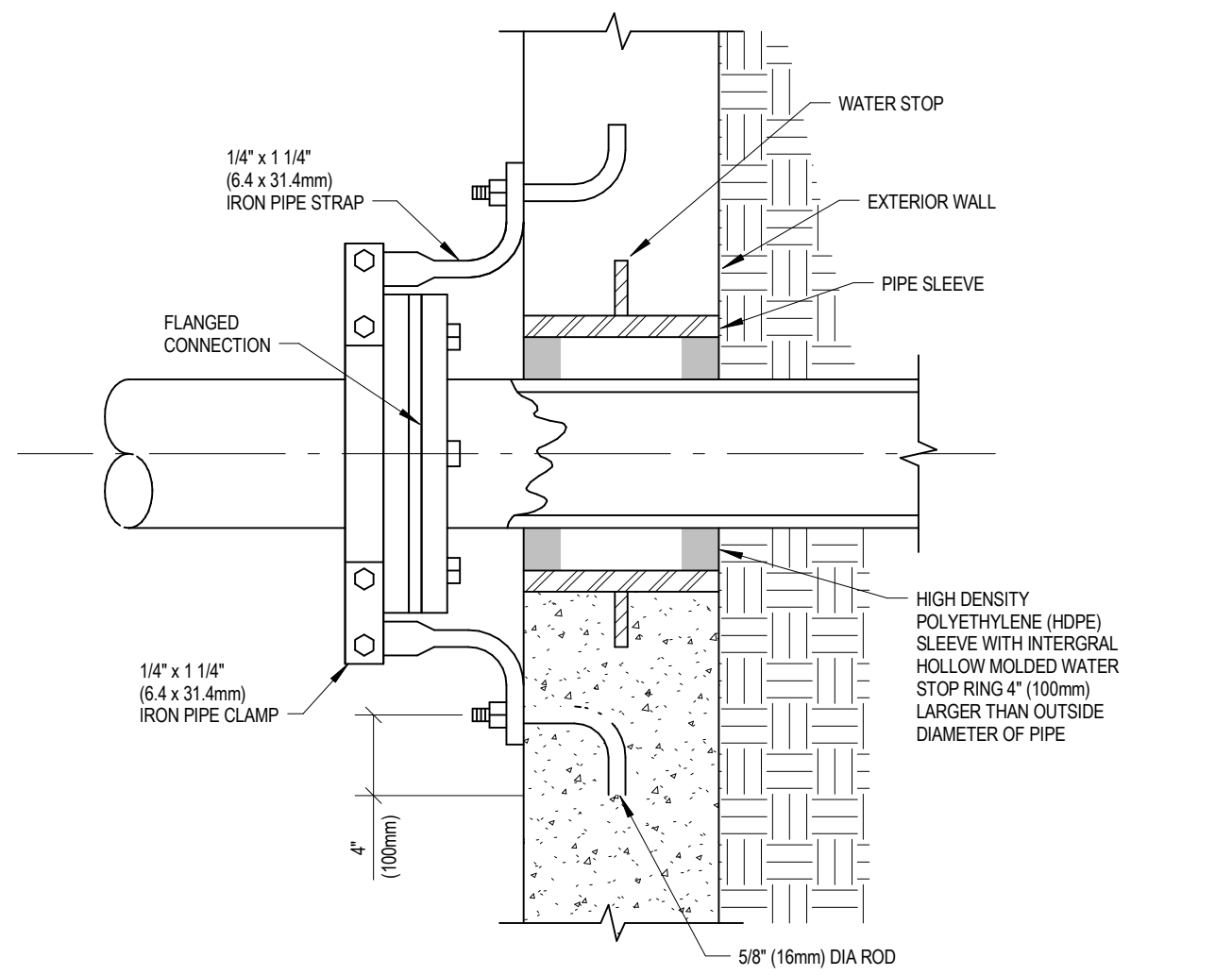
three inches = one foot
one and one half inch = one foot
one inch = one foot
one quarter inch = one foot
one eighth inch = one foot



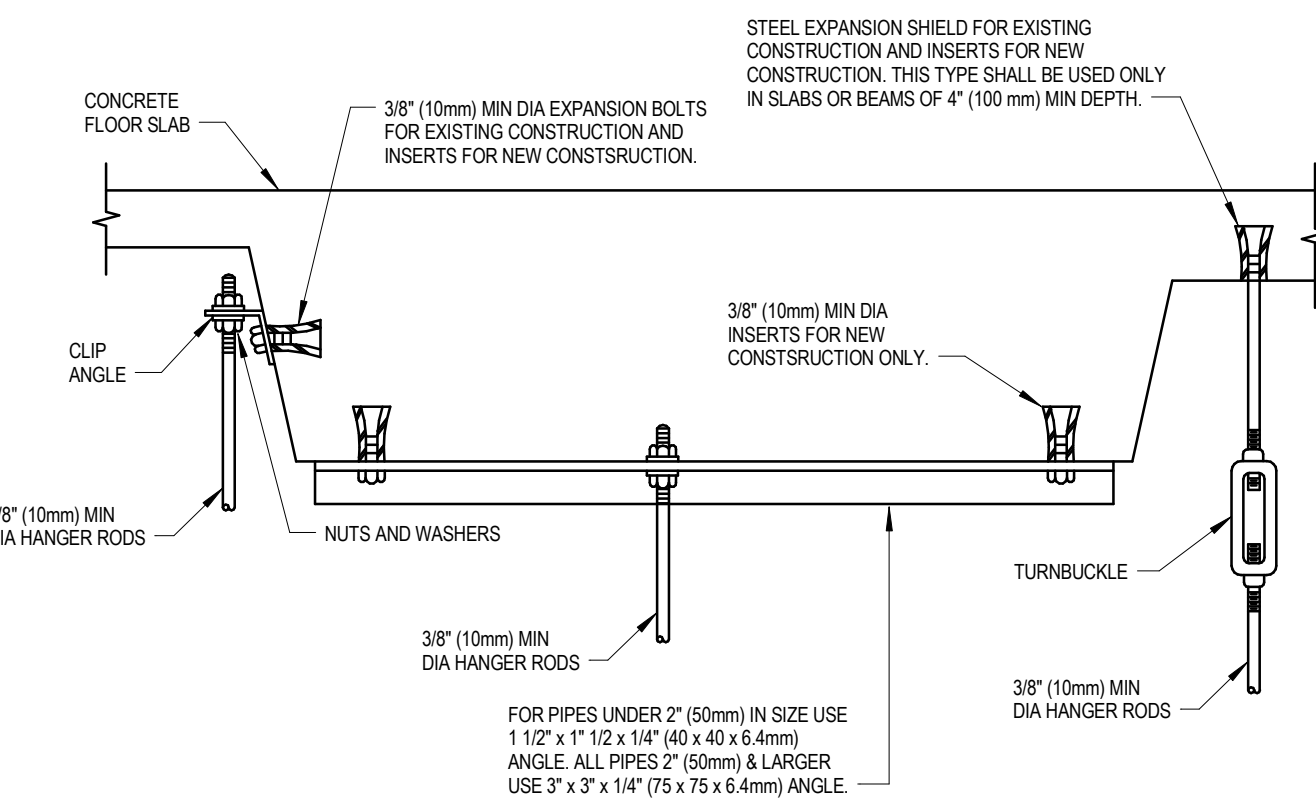
6 CONCRETE EQUIPMENT BASES
NOT TO SCALE



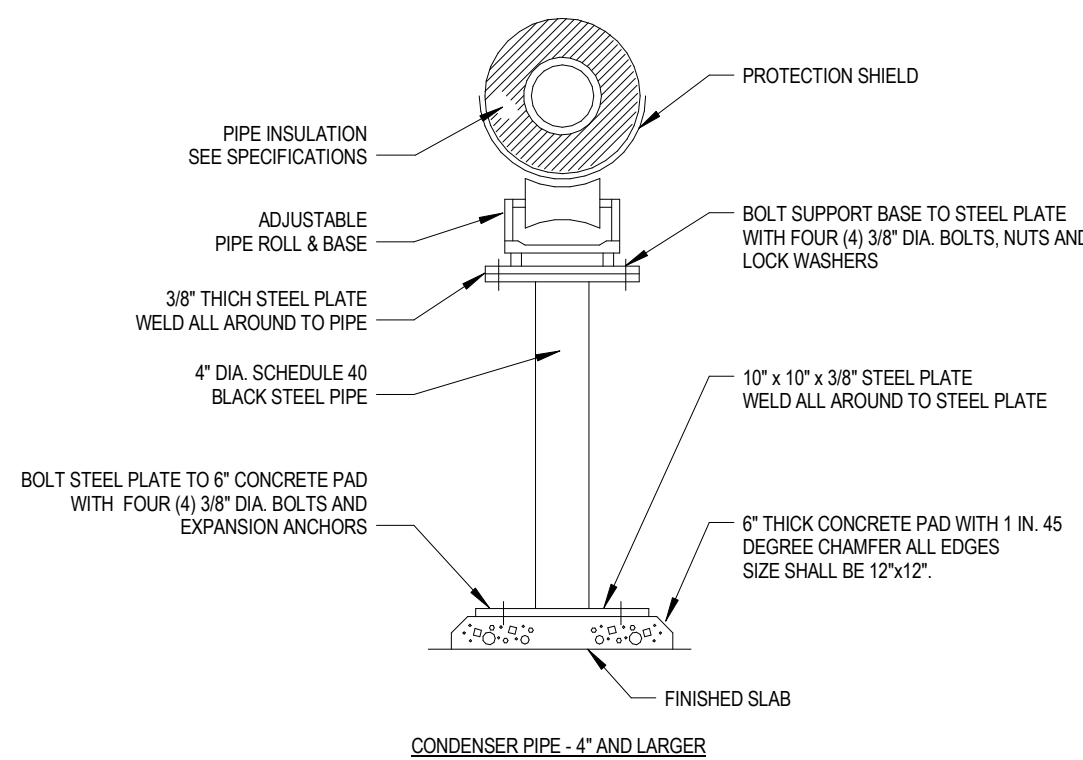
7 (VA) VIBRATION ISOLATION BASES
NOT TO SCALE



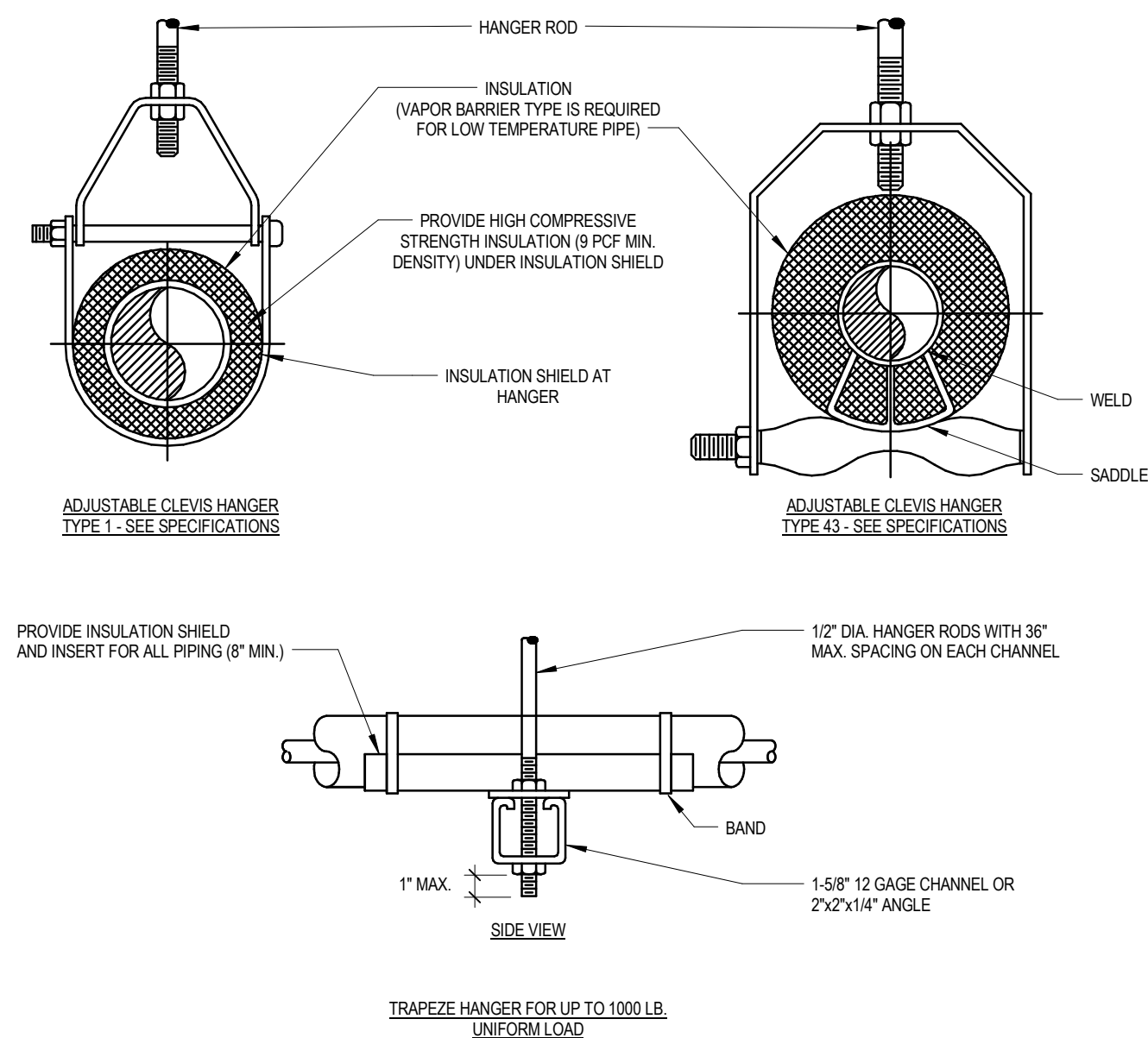
3 SUPPORT ANCHOR (CONDENSER WATER OR CHILLED WATER)
NOT TO SCALE



4 SECURING HANGER RODS IN CONCRETE
NOT TO SCALE

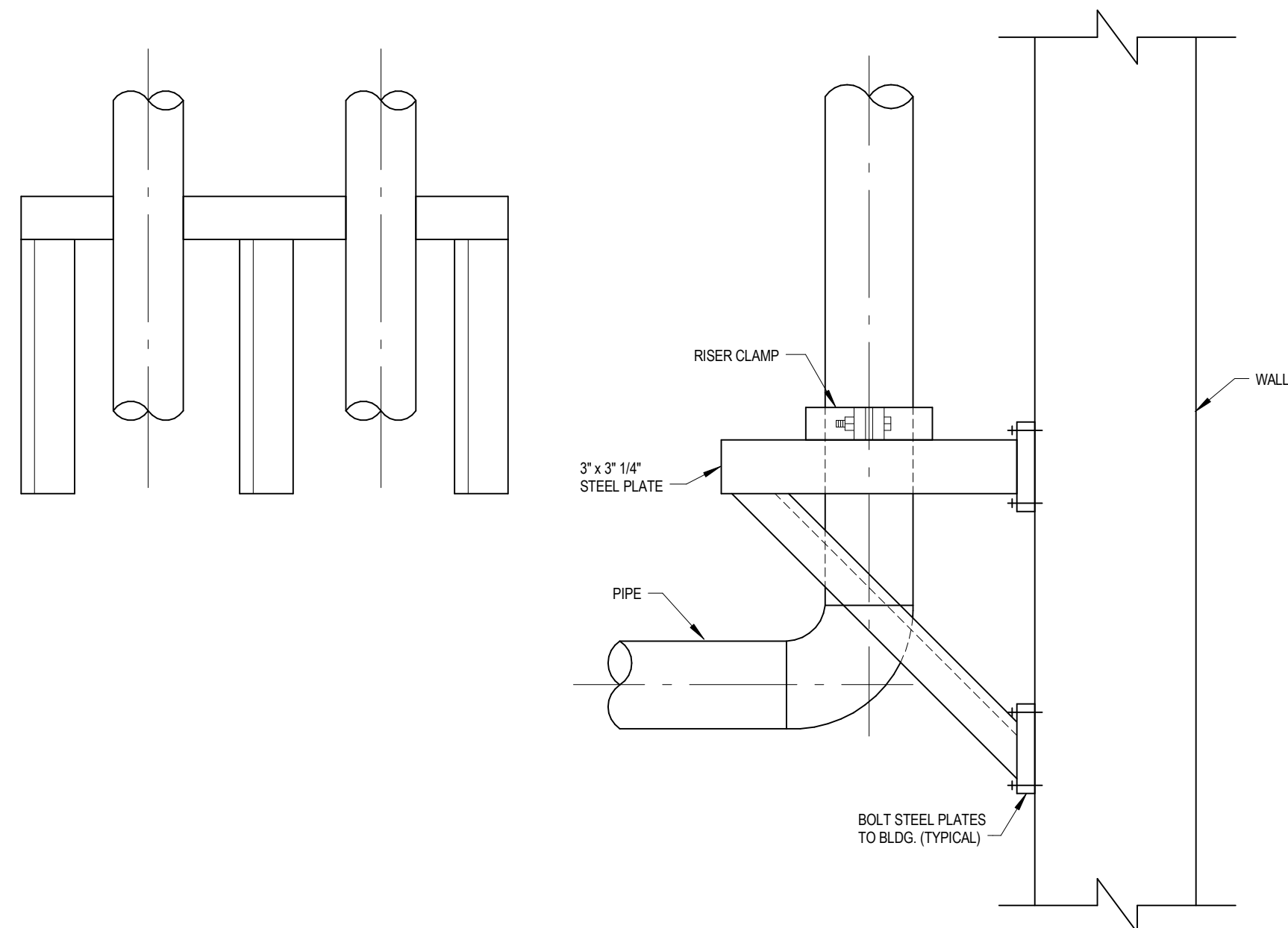


5 DETAIL FOR SUPPORTING FLOOR MOUNTED PIPE
NOT TO SCALE



MAXIMUM PIPE/TUBING SUPPORT SPACING																				
NOM. SIZE	IN. (MM)	THRU 3/4 THRU (20)	1 (25)	1 1/4 (32)	1 1/2 (40)	2 (50)	2 1/2 (65)	3 (75)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)	14 (350)	16 (400)	18 (450)	20 (500)	24 (600)	
PIPE	FT. (M)	(2.1)	7 (2.1)	7 (2.1)	(2.7)	(3.0)	(3.4)	(3.7)	(4.1)	(4.9)	(5.2)	(5.8)	(6.7)	(7.6)	(8.2)	(9.1)	(9.8)	32 (9.8)	36 (11.0)	
TUBING	FT. (M)	5 FT (1.5)	6 (1.8)	7 (2.1)	(2.4)	(2.7)	(3.0)	(3.7)	(4.0)	(4.1)	(4.9)	-	-	-	-	-	-	-	-	
NOTE: FOR TRAPEZE HANGER TIE SPACING OF SMALLEST SIZE ON TRAPEZE.																				

1 (VA) PIPE HANGERS
NOT TO SCALE



2 EXTERIOR PIPE RISER SUPPORT DETAIL
NOT TO SCALE

#

Revision

Date

CONSULTANTS:

BARBER AND HOFFMAN CONSULTING ENGINEERS
215 EXECUTIVE DRIVE #202
CRANBERRY TWP, PA 15066

PALMER ENGINEERING
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SEAL

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STATE OF
PENNSYLVANIA
PROFESSIONAL ENGINEER

ARCHITECTS/ENGINEERS:

AE WORKS

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Ph: 412.287.7333 Fax: 412.287.7334
www.ae-works.com

AE Works Project Number: 15010

Drawing Title

HVAC DETAILS

Approved: Project Director

Project Title:

REPLACE COOLING TOWERS

Location:

HUNTINGTON VAMC, HUNTINGTON WV

Date:

03/31/2016

Checked:

JKG

Drawn:

RN

Project Number

581-15-105

Building Number

1S

Drawing Number

H-800

Dwg. of

Office of Construction and Facilities Management

Department of Veterans Affairs

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A

B

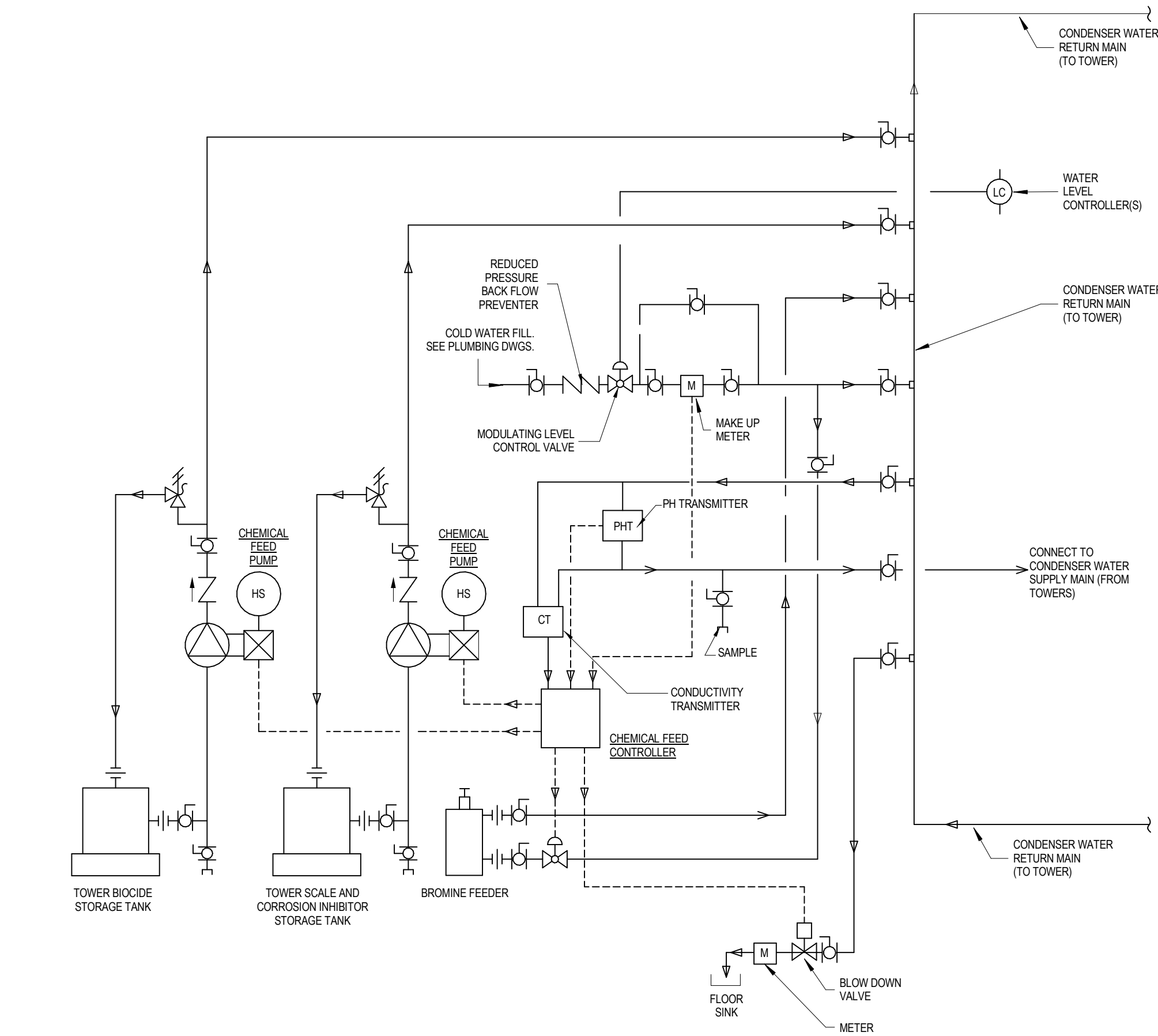
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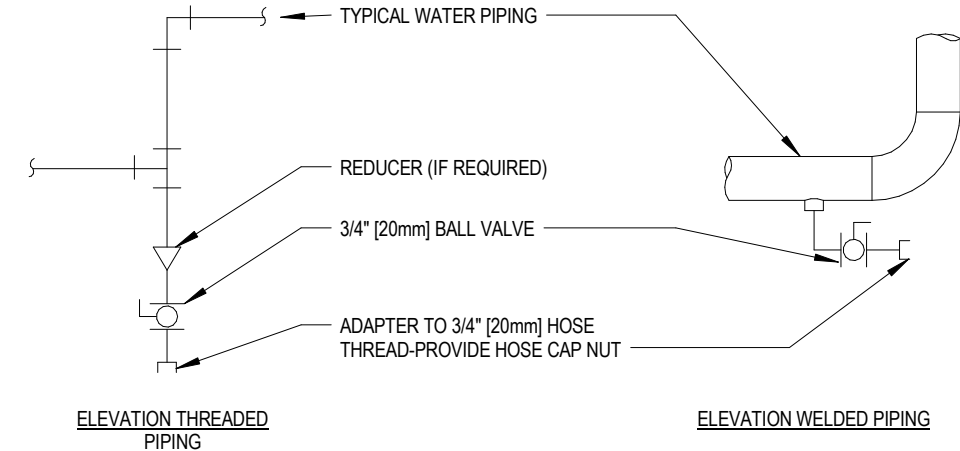
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16
8
4
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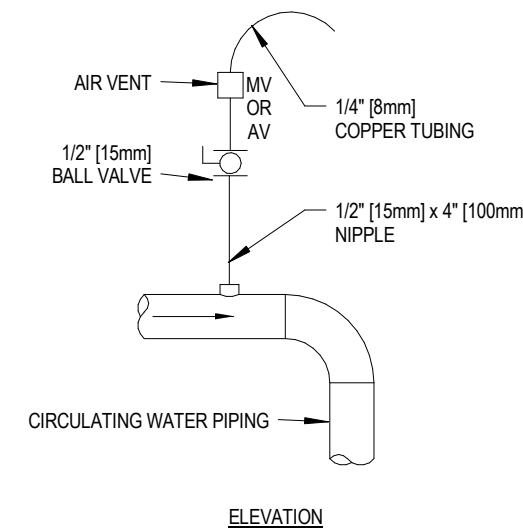


5 CHEMICAL WATER TREATMENT SYSTEM
NOT TO SCALE



TYPICAL CHILLED AND HOT WATER
PIPING DRAIN VALVE CONNECTIONS

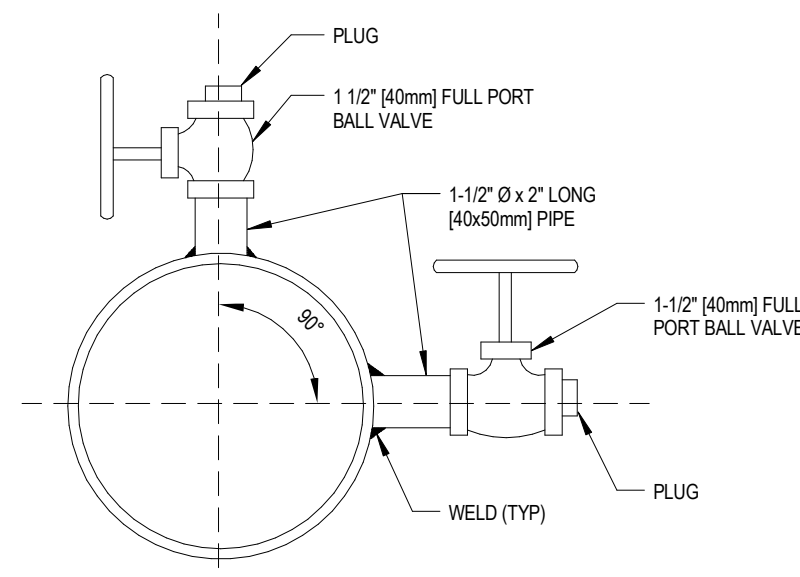
NOTES:
1. DRAIN ALL LOW POINTS AS INDICATED ABOVE.
2. WHERE SCALE POCKETS ARE SHOWN ON PIPE RISER DIAGRAMS AND/OR PLANS LOCATE DRAIN AT BOTTOM OF SCALE POCKET.



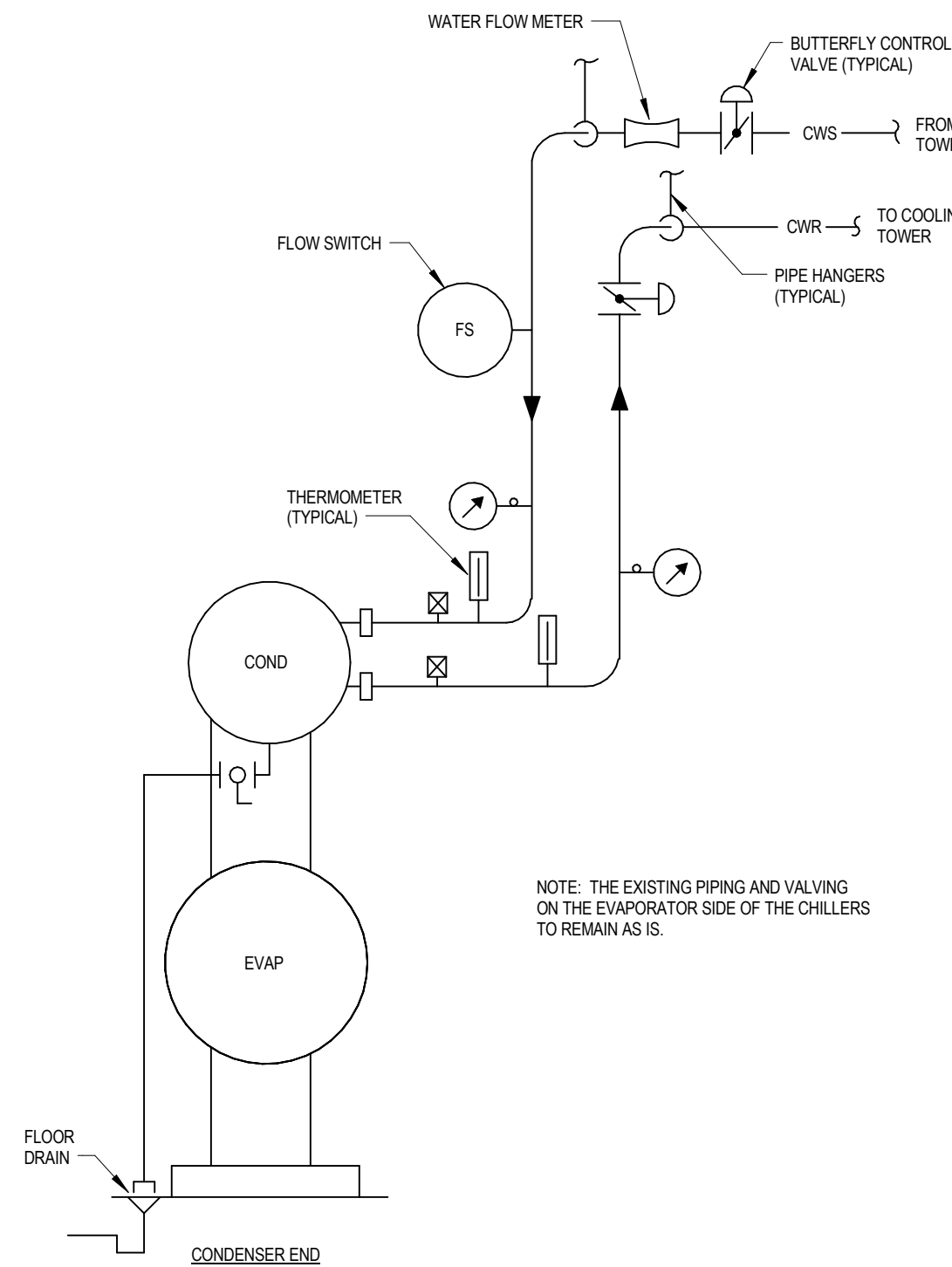
TYPICAL MANUAL AIR VENT

NOTES:
1. VENT ALL HIGH POINTS INDICATED ABOVE.
2. IF AUTOMATIC AIR VENTS ARE USED, PIPE DISCHARGE TO DRAIN.

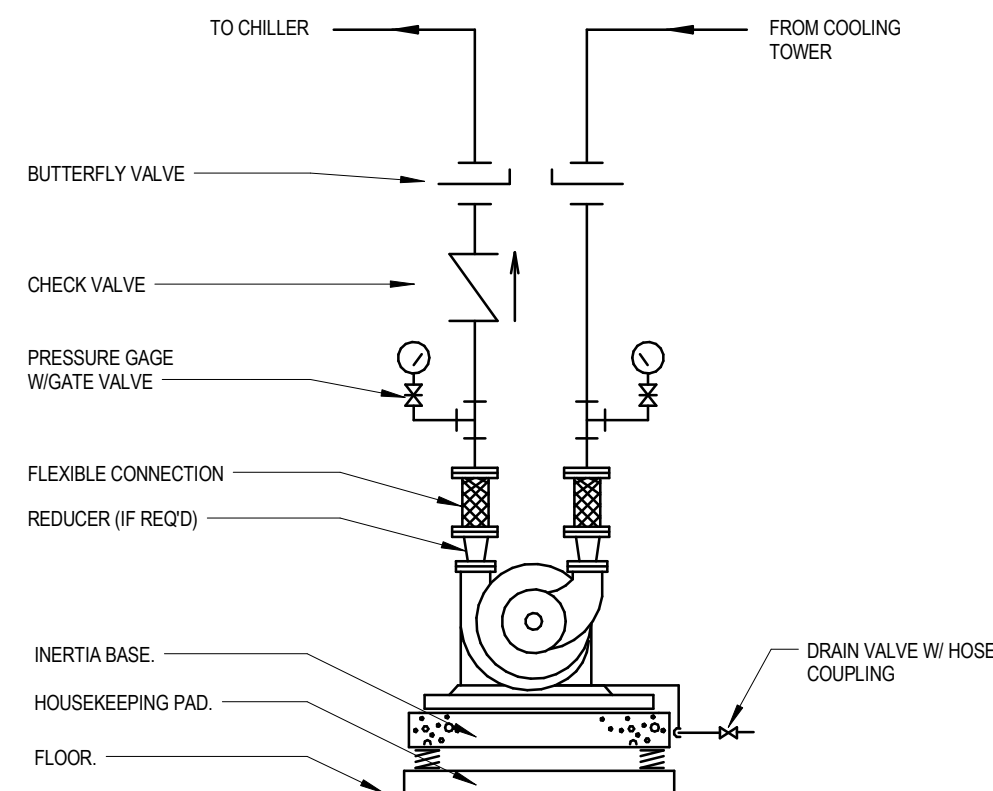
3 (VA) DRAIN VALVE & AIR VENT CONNECTIONS (HYDRONIC SYSTEMS)
NOT TO SCALE



4 (VA) PITOT TEST CONNECTIONS
NOT TO SCALE


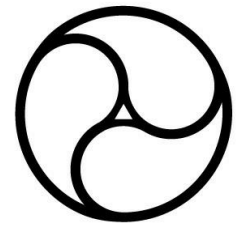



1 WATER COOLED CHILLER - CONDENSER PIPING CONNECTIONS
NOT TO SCALE



2 VERTICAL SPLIT CASE PUMP
NOT TO SCALE

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