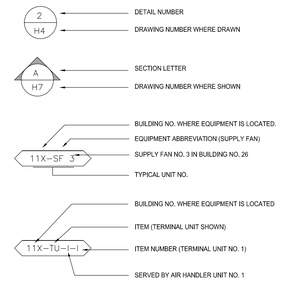
MECHANICAL SYMBOLS SCHEDULE

THIS IS A COMPREHENSIVE SYMBOLS SCHEDULE, NOT ALL SYMBOLS ARE APPLICABLE TO THESE DRAWINGS

SYMBOLS	DESCRIPTION
	PLUMBING
	CLEANOUT
	FIXTURE TRAP
	FLOOR DRAIN
	FLOOR SINK
	VENT THROUGH ROOF
	FIXTURE TRAP (ISOMETRIC DIAGRAM)
	FLOOR DRAIN (ISOMETRIC DIAGRAM)
	FLOOR SINK (ISOMETRIC DIAGRAM)
	PLUMBING PIPING
	SANITARY ABOVE GRADE
	SANITARY BELOW GRADE
	STORM DRAIN ABOVE GRADE
	STORM DRAIN BELOW GRADE
	VENT
AW	ACID SANITARY ABOVE GRADE
AW	ACID SANITARY BELOW GRADE
AW	ACID VENT
	COLD WATER
	HOT WATER
	CIRCULATING HOT WATER
RO	REVERSE OSMOSIS WATER
DE	DEIONIZED WATER
DI	DISTILLED WATER
	HOSE BIBB
	WATER HAMMER ARRESTOR
P-XXX	PLUMBING FIXTURE TYPE
X	KEY NOTE
1/8"=1'	PIPE SLOPE AS NOTED
	BACKFLOW PREVENTER
	CHECK VALVE
	BALANCING VALVE

SYMBOLS	DESCRIPTION
	GENERAL PIPING SYMBOLS
	UNION
	PIPE UP
	PIPE DOWN
	TEE OUTLET, UP
	TEE OUTLET, DOWN
	CAP ON END OF PIPE
	CROSS
	ELBOW
	TEE
	DIRECTION OF PIPE PITCH (DOWN)
	DIRECTION OF FLOW
	ANCHOR
	REDUCER OR INCREASER
	ECCENTRIC REDUCER
	INVERTED BUCKET TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
	FLOAT & THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
	THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
	TEST PLUG (PRESSURE/TEMPERATURE)
AV	AUTOMATIC AIR VENT
MV	MANUAL AIR VENT
	QUICK-COUPLE HOSE CONNECTOR
	PRESSURE GAUGE
	TEMPERATURE GAUGE
	VALVE SYMBOLS
	GATE VALVE - THREADED/FLANGED
	GLOBE VALVE - THREADED/FLANGED
	GATE VALVE WITH 3/4" HOSE ADAPTER
	CHECK VALVE
	WYE STRAINER (WITH BALL VALVE AND HOSE CONNECTOR)
	WYE STRAINER WITH VALVED DRAIN AND QUICK-COUPLE HOSE CONNECTOR)
	ANGLE GLOBE VALVE
	BUTTERFLY VALVE
	MODULATING CONTROL VALVE
	MODULATING CONTROL BUTTERFLY VALVE
	TWO POSITION CONTROL VALVE
	THREE-WAY MODULATING CONTROL VALVE
	THREE-WAY TWO POSITION CONTROL VALVE
	PRESSURE REGULATING VALVE
	PRESSURE SAFETY VALVE
	AUTOMATIC BALANCING CONTROL VALVE
	WATER BALANCE DEVICE
	CIRCUIT SETTER VALVE
	GATE VALVE WITH GLOBE-VALVED BYPASS
	PLUG VALVE
	CONTROL VALVE (CV) - FLOAT-OPERATED
	PRESSURE REDUCING VALVE (PRV)
LC	WATER LEVEL CONTROLLER
M	FLOW METER
	BALL VALVE
	GATE VALVE
	EXPANSION COMPENSATOR OR FLEXIBLE CONNECTOR
	PUMP
F	FLOW CONTROL VALVE
1.0	VALVE BUNDLE
P	PRESSURE SENSOR (AIR SIDE)
P.D.	PRESSURE DIFFERENTIAL SENSOR (HYDRONIC)

DRAWING SYMBOLS



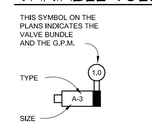
GENERAL NOTES:

DUCT SIZE IS THE SAME AS DIFFUSER NECK SIZE UNLESS OTEHRWISE NOTED.

DIFFUSER LEGEND

REFER TO REFLECTED CEILING PLAN FOR EXACT LOCATIONS OF ALL CEILING DIFFUSERS. ALL DIFFUSERS ARE 4-WAY THROW UNLESS INDICATED OTHERWISE ON PLANS BY A HATCHED AREA.

VARIABLE VOLUME BOX SCHEDULE



BOX SIZE	CFM RANGE
"A"	0-199
"B"	200-399
"C"	400-599
"D"	600-799
"E"	800-1199
"F"	1200-2400
"G"	2400 & UP

	BOX TYPE
1	33% MIN. AIR FLOW - 40" RISE @ LOW FLOW
2	CONSTANT VOLUME - 40" RISE @ HIGH FLOW
3	HIGH - LOW - HIGH - 40" RISE @ HIGH FLOW
4	33% MIN. AIR FLOW - NO REHEAT

NOTE: BOX SIZE "F" & "G" MAY BE TWO PARALLEL BOXES

SYMBOLS	DESCRIPTION
	H.V.A.C. SYMBOLS
	SUPPLY DIFFUSER
	RETURN DIFFUSER
	EXHAUST DIFFUSER
1.0 B-1	VARIABLE VOLUME BOX
S	SMOKE DAMPER
F	FIRE DAMPER
	BALANCING DAMPER
	TURNING VANES
	STANDARD RADIUS ELBOW
	OPPOSED BLADE DAMPER
T	THERMOSTAT
H	HUMIDISTAT
	IN-LINE FAN
12"~	ROUND DUCT
12" x 8" OVAL	OVAL DUCT
12" x 8"	RECTANGULAR DUCT, (FACE OF DUCT IS LISTED FIRST)
R	INCLINED RISE IN DIRECTION OF AIR FLOW
D	INCLINED DROP IN DIRECTION OF AIR FLOW

SYMBOLS	DESCRIPTION
	POWER ROOF VENTILATOR
	SUPPLY DUCT UP
	SUPPLY DUCT DOWN
	RETURN DUCT UP
	RETURN DUCT DOWN
	EXHAUST DUCT UP
	EXHAUST DUCT DOWN
	AIR CURTAIN
	FILTER BANK
	CABINET UNIT HEATER
	UNIT HEATER
	CEILING MOUNTED CABINET UNIT HEATER
	AIR COOLED CONDENSING UNIT
HPS	HIGH PRESSURE STEAM
PC	CONDENSATE PUMP DISCHARGE
LPS	LOW PRESSURE STEAM
LPR	LOW PRESSURE STEAM CONDENSATE RETURN
	HEAT PUMP SUPPLY
	HEAT PUMP RETURN
	STEAM SUPPLY
	CONDENSATE RETURN
S. M.	SNOW MELT SUPPLY
S. M.	SNOW MELT RETURN
G	GAS LINE
D	DRAIN LINE

SYMBOLS	DESCRIPTION
	CONTROLS SYMBOLS
T	ROOM THERMOSTAT/TRANSMITTER - WALL MOUNT
M	ROOM HUMIDISTAT (MOISTURE)/TRANSMITTER - WALL MOUNT
TT	TEMPERATURE TRANSMITTER
TT	TEMPERATURE TRANSMITTER, AVERAGING ELEMENT
MT	MOISTURE (HUMIDITY) TRANSMITTER
PT	PRESSURE TRANSMITTER
SPS	STATIC PRESSURE SENSOR
FT	FLOW TRANSMITTER
IT	CURRENT TRANSMITTER
CT	CONDUCTIVITY TRANSMITTER
SD	SMOKE DETECTOR
PDT	PRESSURE DIFFERENTIAL TRANSMITTER
PDS	PRESSURE DIFFERENTIAL SWITCH
HS	HAND SWITCH (HAND-OFF-AUTO SWITCH)
ZC	VALVE OR DAMPER POSITION CONTROLLER
KR	LOCAL RECORDING TIME CLOCK (RUNTIME)
TSL	TEMPERATURE SWITCH, LOW (FREEZESTAT)
TSH	TEMPERATURE SWITCH, HIGH (FREEZESTAT)
LC	LEVEL CONTROLLER
LT	LEVEL TRANSMITTER
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
EPT	ELECTRONIC TO PNEUMATIC TRANSDUCER
AT CO2	CARBON DIOXIDE TRANSMITTER
AT CO	CARBON MONOXIDE TRANSMITTER
AT OC	OCCUPANCY SENSOR
LTCP	LOCAL TEMPERATURE CONTROL PANEL
HVAC	HVAC CONTROL PANEL
VSMC	VARIABLE SPEED MOTOR CONTROLLER
ECC	INTEGRATE CONTROL POINT ON REMOTE GRAPHICS WORKSTATION AT ENERGY CONTROL CENTER
TC	TEMPERATURE CONTROLLER. SEE SEQUENCE OF OPERATION
PC	PRESSURE CONTROLLER. SEE SEQUENCE OF OPERATION
SC	SPEED CONTROLLER. SEE SEQUENCE OF OPERATION
FC	FLOW CONTROLLER. SEE SEQUENCE OF OPERATION
FSH	FLOW SWITCH HIGH
FSL	FLOW SWITCH LOW
KC	TIME CLOCK CONTROLLING EQUIPMENT ON A SCHEDULE
	TEMPERATURE SENSING ELEMENT FOR TRANSMITTING TEMPERATURE TO EMCS (PROVIDE 12 INCHES [200mm] MINIMUM LENGTH IN DUCT WHEN SPACE PERMITS.)
A	SENSOR WITH AVERAGING ELEMENT TO TRANSMIT TEMPERATURE TO EMCS
	MOTOR STARTER
M	ELECTRIC OPERATED CONTROL DAMPER/OR VALVE

No	REVISION	DATE

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James C. Elving License No. 12852

APPROVED: SERVICE LINE DIRECTOR	DATE:	APPROVED: INFECTION CONTROL NURSE	DATE:
APPROVED: GEMS COORDINATOR	DATE:	APPROVED: PATIENT SAFETY	DATE:
APPROVED: PROJECTS SECTION MANAGER	DATE:	APPROVED: CHIEF OF POLICE	DATE:
APPROVED: DIRECTOR FMS	DATE:	APPROVED: SAFETY MANAGER	DATE:

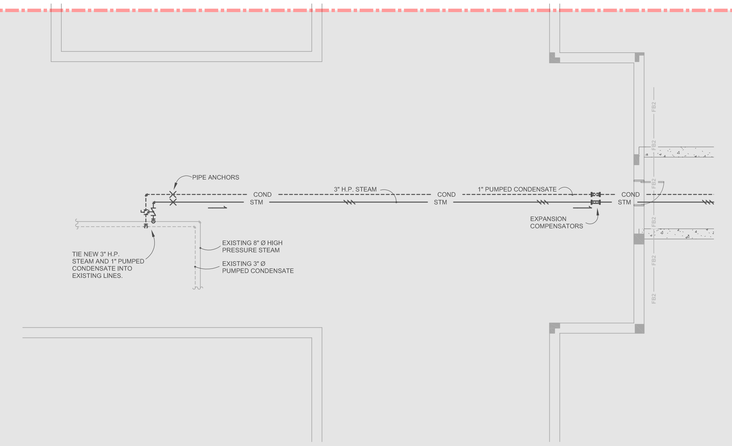
DRAWING TITLE
MECHANICAL SYMBOLS AND ABBREVIATIONS

APPROVED: CHIEF OF STAFF DATE:
APPROVED: MEDICAL CENTER DIRECTOR DATE:

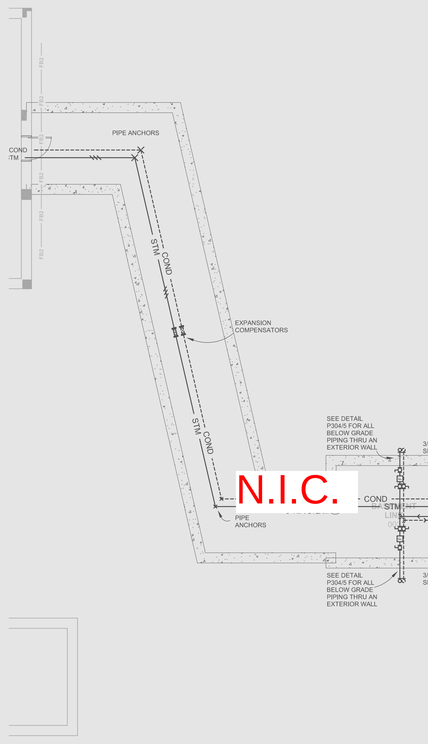
PROJECT TITLE
RELOCATE REHAB SERVICES 656-16-277
St. Cloud VA Health Care System

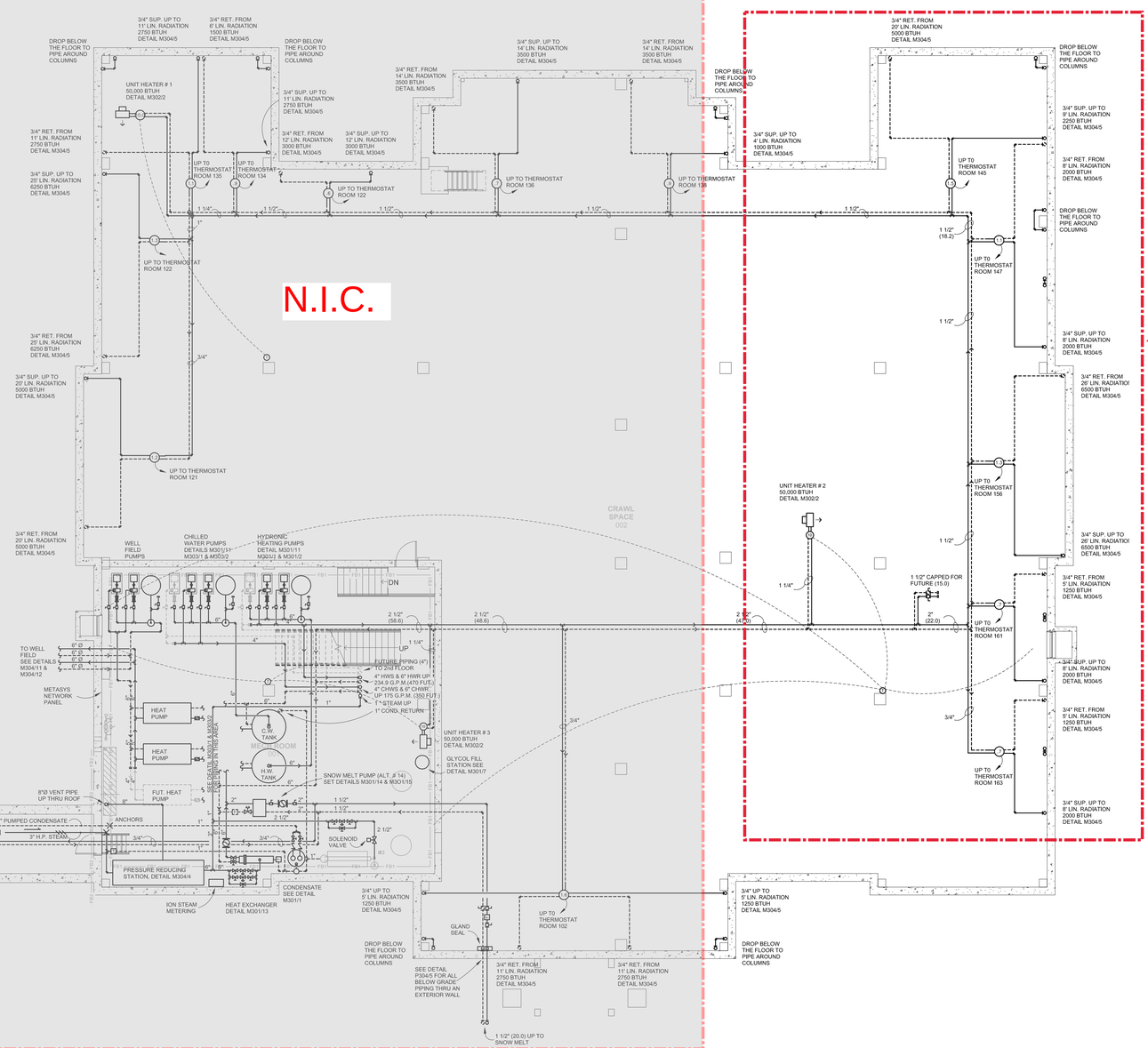
DATE: 12/03/2018
PLOT SCALE: NTS
PROJECT NO.: - - - -
BUILDING No: XX
CHECKED BY:
DRAWN: XXX
LOCATION: VA MEDICAL CENTER ST. CLOUD, MN 56303
DRAWING NO.: M001

St. Cloud VA Health Care System
Brainerd | Montevideo | Alexandria



M101 / 2 EXISTING BUILDING TIE IN
1/8" = 1'-0"





M101 / 1 LOWER LEVEL PLAN
1/8" = 1'-0"

ALTERNATES

REFER TO ARCHITECTUAL PLANS FOR DESCRIPTION OF ALTERNATES # 9, # 10, & # 11.

GENERAL NOTES:

DUCT SIZE IS THE SAME AS DIFFUSER NECK SIZE UNLESS OTEHRWISE NOTED.

DIFFUSER LEGEND

24|08
- INDICATES TYPE OF DIFFUSER: S = SURFACE; L = LAY-IN; E = EXISTING
- INDICATES NECK SIZE EITHER SQUARE DIMENSION OR THE DIAMETER.
- INDICATES DIFFUSER SIZE, INCHES SQUARE.

REFER TO REFLECTED CEILING PLAN FOR EXACT LOCATIONS OF ALL CEILING DIFFUSERS. ALL DIFFUSERS ARE 4-WAY THROW UNLESS INDICATED OTHERWISE ON PLANS BY A HATCHED AREA.

VARIABLE VOLUME BOX SCHEDULE

THIS SYMBOL ON THE PLANS INDICATES THE VALVE BUNDLE AND THE G.P.M.

TYPE — 10 — SIZE — A-3

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BOX SIZE	CFM RANGE
"A"	0-199
"B"	200-399
"C"	400-599
"D"	600-799
"E"	800-1199
"F"	1200-2400
"G"	2400 & UP

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4 33% MIN. AIR FLOW - NO REHEAT

NOTE: BOX SIZE "F" & "G" MAY BE TWO PARALLEL BOXES

No	REVISION	DATE

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APPROVED: PROJECTS SECTION MANAGER	DATE:	APPROVED: CHIEF OF POLICE	DATE:
APPROVED: DIRECTOR FMS	DATE:	APPROVED: SAFETY MANAGER	DATE:
APPROVED: CHIEF OF STAFF	DATE:		
APPROVED: MEDICAL CENTER DIRECTOR	DATE:		

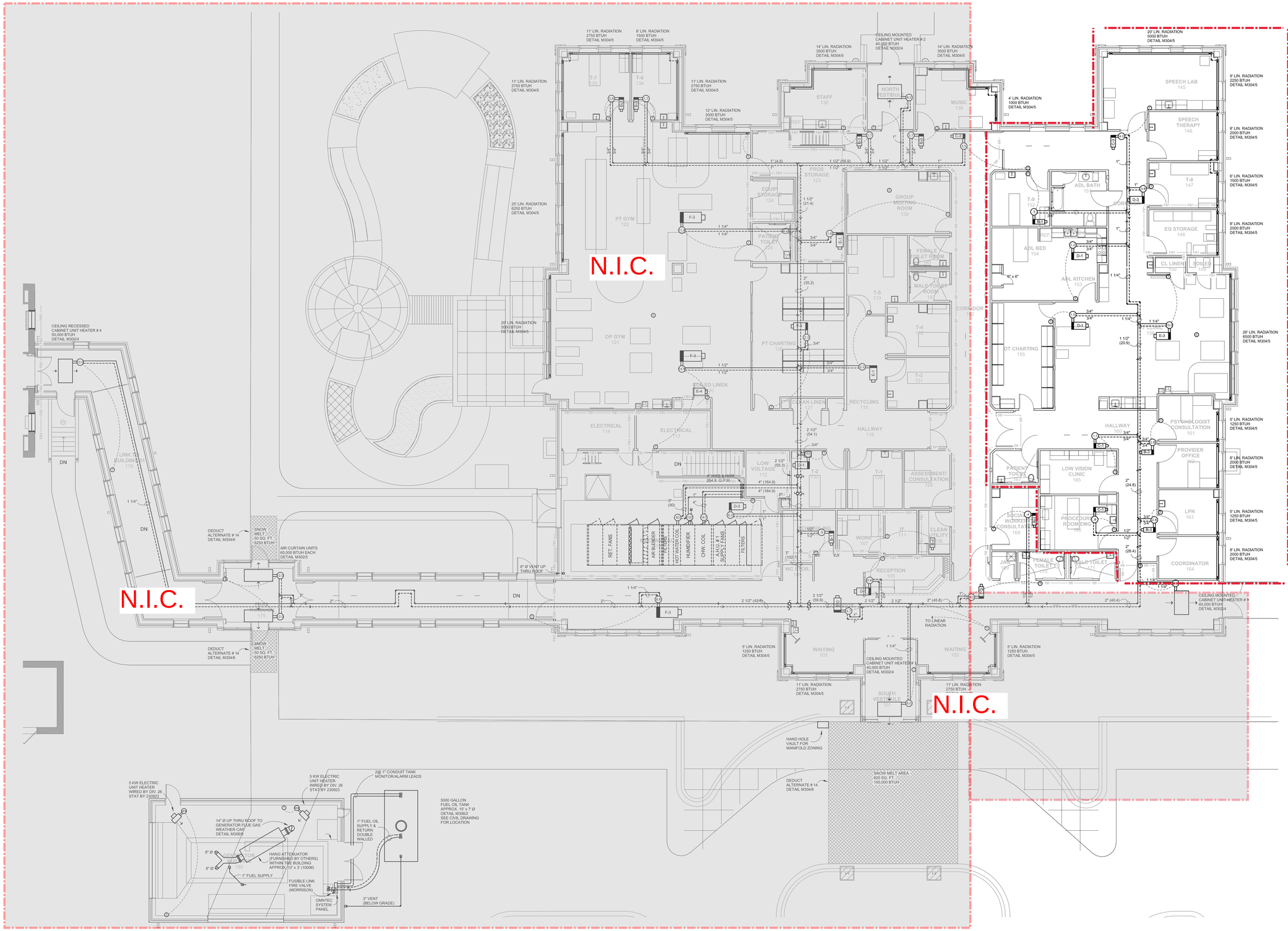
DRAWING TITLE
MECHANICAL HYDRONIC PIPING LOWER LEVEL

PROJECT TITLE
RELOCATE REHAB SERVICES 656-16-277
St. Cloud VA Health Care System

BUILDING No XX | CHECKED BY | DRAWN XXX
LOCATION VA MEDICAL CENTER ST. CLOUD, MN 56303

DATE 12/03/2018
PLOT SCALE 1/8"=1'-0"
PROJECT NO.
DRAWING NO. M101

St. Cloud VA Health Care System
Brainerd | Montevideo | Alexandria



M102/1 GENERATOR ROOM
1/8" = 1'-0"

M102/2 FIRST FLOOR PLAN
1/8" = 1'-0"

ALTERNATES

REFER TO ARCHITECTUAL PLANS FOR DESCRIPTION OF ALTERNATES # 9, # 10, & # 11.

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24/05

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VARIABLE VOLUME BOX SCHEDULE

THIS SYMBOL ON THE PLANS INDICATES THE VALVE BUNDLE AND THE G.P.M.

TYPE — 10 — A-3 — SIZE

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4 33% MIN. AIR FLOW - NO REHEAT

NOTE: BOX SIZE "F" & "G" MAY BE TWO PARALLEL BOXES

No	REVISION	DATE

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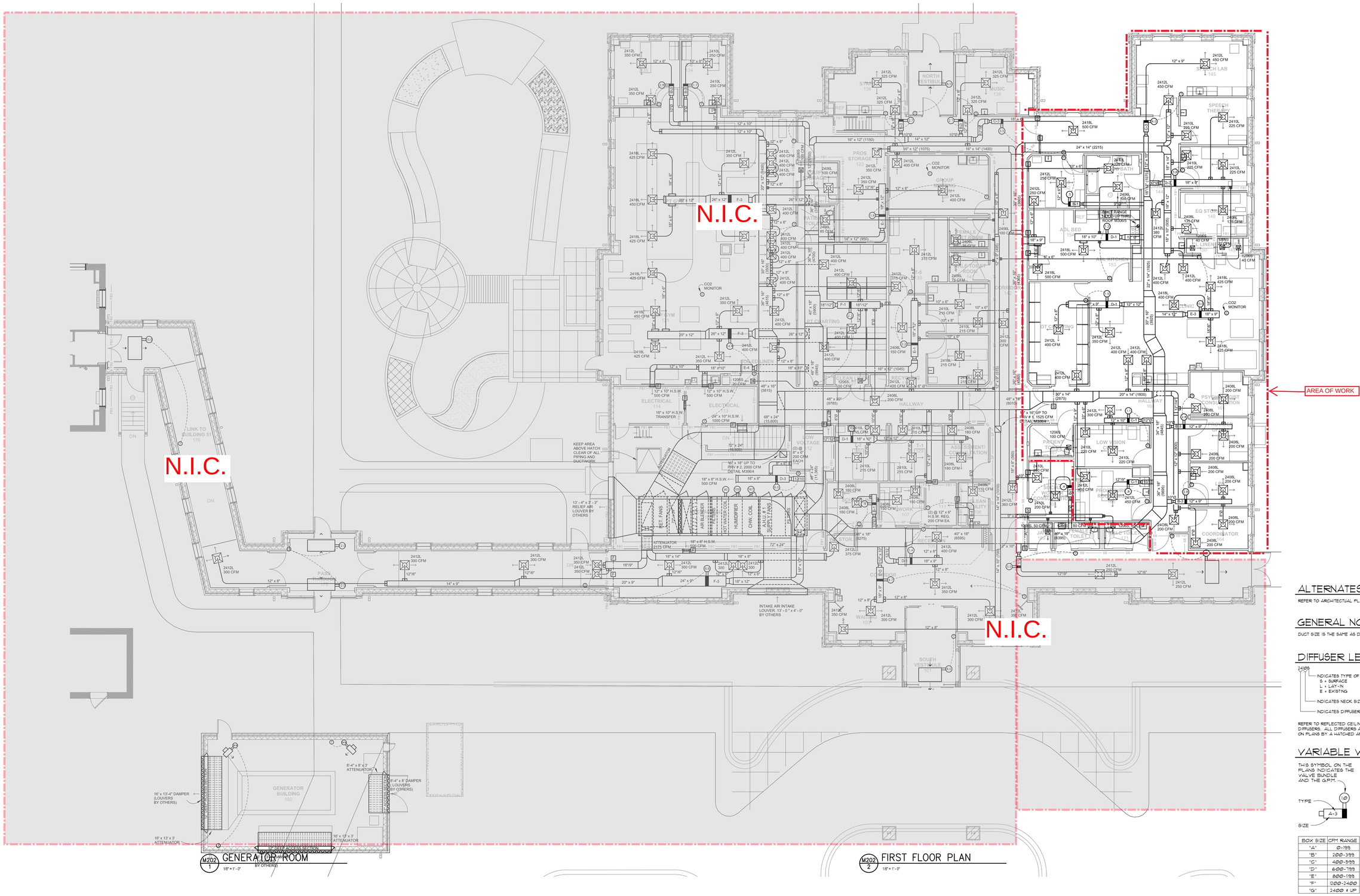
APPROVED: GEMS COORDINATOR	DATE:
APPROVED: PATIENT SAFETY	DATE:
APPROVED: PROJECTS SECTION MANAGER	DATE:
APPROVED: CHIEF OF POLICE	DATE:
APPROVED: DIRECTOR FMS	DATE:
APPROVED: SAFETY MANAGER	DATE:
APPROVED: CHIEF OF STAFF	DATE:
APPROVED: MEDICAL CENTER DIRECTOR	DATE:

DRAWING TITLE
MECHANICAL HYDRONIC PIPING FIRST FLOOR

PROJECT TITLE
RELOCATE REHAB SERVICES 656-16-277
St. Cloud VA Health Care System

DATE 12/03/2018
PLOT SCALE 1/8"=1'-0"
PROJECT NO.
BUILDING No. XX
CHECKED BY
DRAWN XXX
LOCATION VA MEDICAL CENTER ST. CLOUD, MN 56303
DRAWING NO. M102

St. Cloud VA Health Care System
Brainerd | Montevideo | Alexandria



ALTERNATES

REFER TO ARCHITECTUAL PLANS FOR DESCRIPTION OF ALTERNATES # 9, # 10, & # 11.

GENERAL NOTES:

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DIFFUSER LEGEND

2408

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VARIABLE VOLUME BOX SCHEDULE

THIS SYMBOL ON THE PLANS INDICATES THE VALVE BUNDLE AND THE G.P.M.

TYPE — 1@ — A-3 — SIZE

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NOTE: BOX SIZE "F" & "G" MAY BE TWO PARALLEL BOXES

No	REVISION	DATE

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APPROVED: PROJECTS SECTION MANAGER	DATE:	APPROVED: CHIEF OF POLICE	DATE:
APPROVED: DIRECTOR FMS	DATE:	APPROVED: SAFETY MANAGER	DATE:

DRAWING TITLE
MECHANICAL VENTILATION FIRST FLOOR

APPROVED: CHIEF OF STAFF DATE:

APPROVED: MEDICAL CENTER DIRECTOR DATE:

PROJECT TITLE
RELOCATE REHAB SERVICES 656-16-277
St. Cloud VA Health Care System

BUILDING No. XX | CHECKED BY | DRAWN XXX

LOCATION VA MEDICAL CENTER ST. CLOUD, MN 56303

DATE: 12/03/2018
PLOT SCALE: 1/8"=1'-0"
PROJECT NO.:
DRAWING NO. M202

St. Cloud VA Health Care System
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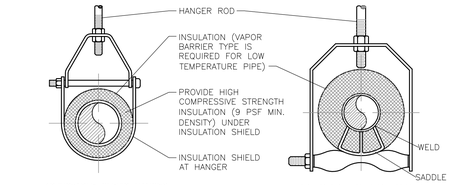
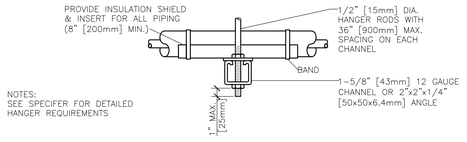


ADJUSTABLE CLEVIS HANGER
TYPE 1 – SEE SPECIFICATIONS

ADJUSTABLE CLEVIS HANGER
TYPE 43 – SEE SPECIFICATIONS



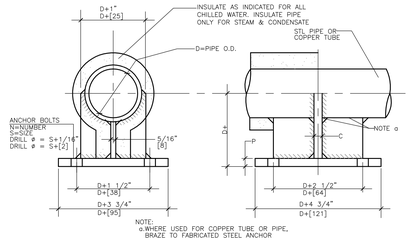
NOTES:
SEE SPECIFER FOR DETAILED HANGER REQUIREMENTS

SIDE VIEW TRAPEZE HANGER FOR UP TO 1000 LB. [453KG] UNIFORM LOAD

MAXIMUM PIPE/TUBING SUPPORT SPACING																				
NOM. SIZE	IN.	THRU 3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
	[mm]	THRU [20]	[25]	[32]	[40]	[50]	[65]	[75]	[100]	[125]	[150]	[200]	[250]	[300]	[350]	[400]	[450]	[500]	[600]
PIPE	FT.	9	10	11	12	13	14	15	16	17	19	22	23	25	27	28	30	32	
	[mm]	[2100]	[2100]	[2700]	[3000]	[3400]	[3700]	[4100]	[4900]	[5200]	[5800]	[6700]	[7000]	[7600]	[8200]	[8500]	[9100]	[9600]	
TUBING	FT.	5 1/2	6	7	8	8	9	10	12	13	14	16	–	–	–	–	–	–	–
	[mm]	[1600]	[1800]	[2100]	[2400]	[2400]	[2700]	[3000]	[3700]	[4000]	[4100]	[4900]	–	–	–	–	–	–	–
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.																				

M301 2B — PIPE HANGERS
NO SCALE

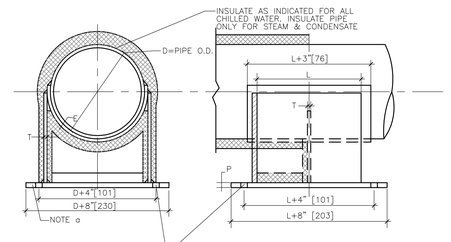
PIPE ANCHOR SCHEDULE										
D		P		C		N		S		BOLT PATTERN
IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	
4"	102	3/8"	16	3/4"	19	4"	102	1/2"	19	
3"	76	1/2"	13	1/2"	13	4"	102	5/8"	16	
2 1/2"	64	5/8"	10	5/8"	10	4"	102	5/8"	16	
2"	51	5/8"	10	5/8"	10	4"	102	5/8"	16	
1 1/2"	38	5/8"	10	1/2"	6	4"	102	1/2"	13	



NOTE:
a. WHERE USED FOR COPPER TUBE OR PIPE, BRAZE TO FABRICATED STEEL ANCHOR

M301 3 — SMALL PIPE ANCHOR 1 1/2" - 4"
NO SCALE

PIPE ANCHOR SCHEDULE																
D		E		F		T		F		N		S		BOLT PATTERN
IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	
6"	152	8 1/2"	216	3/4"	19	3/8"	10	1/4"	6	4"	102	3/8"	22	
8"	203	10"	254	3/4"	19	1/2"	13	1/4"	6	4"	102	3/8"	22	



NOTES:
a. INSTALL WALL PLATE FIRST THEN WELD ON REMAINING ASSEMBLY. ONE WALL PLATE FOR BOTH CHILLED WATER S.&R. IS OPTIONAL.

M310 4 — LARGE PIPE ANCHOR 6" - 8"
NO SCALE

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No	REVISION	DATE

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James C. Elving — License No. 12852

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APPROVED: GEMS COORDINATOR DATE:	APPROVED: PATIENT SAFETY DATE:	
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APPROVED: DIRECTOR FMS DATE:	APPROVED: SAFETY MANAGER DATE:	

DRAWING TITLE
MECHANICAL DETAILS

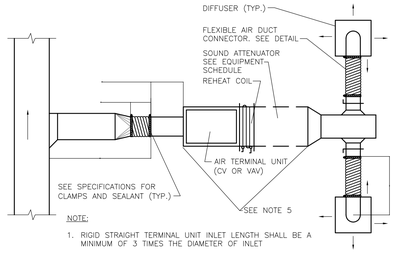
APPROVED: CHIEF OF STAFF DATE:
APPROVED: MEDICAL CENTER DIRECTOR DATE:

PROJECT TITLE
RELOCATE REHAB SERVICES 656-16-277
St. Cloud VA Health Care System

BUILDING No: XX | CHECKED BY: | DRAWN: XXX
LOCATION: VA MEDICAL CENTER ST. CLOUD, MN 56303

DATE: 12/03/2018
PLOT SCALE: NTS
PROJECT NO.:
DRAWING NO.: M301

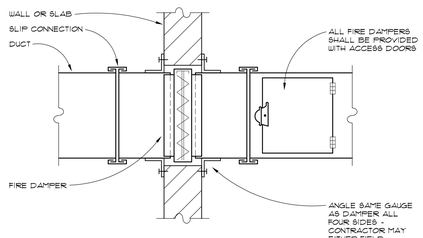
St. Cloud VA Health Care System
Brainerd | Montevideo | Alexandria



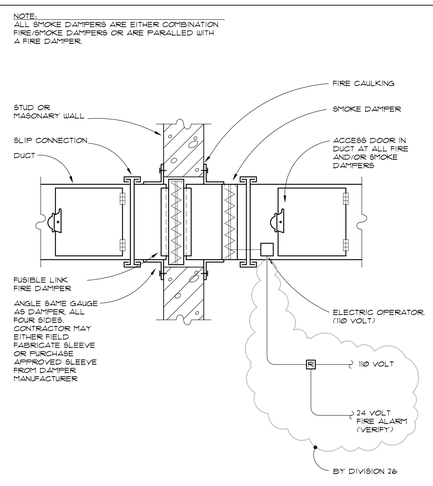
NOTE:

1. RIGID STRAIGHT TERMINAL UNIT INLET LENGTH SHALL BE A MINIMUM OF 3 TIMES THE DIAMETER OF INLET
2. A FLEXIBLE AIR DUCT CONNECTOR IS NOT MANDATORY FOR INLET TO THIS BOX, BUT ALLOWED TO ACCOMODATE MINOR OFFSETS. MAXIMUM LENGTH 3'-0" [900mm].
3. A BRANCH DUCT SERVING AN INDIVIDUAL BOX MAY BE THE SAME SIZE AS THE BOX INLET, PROVIDED THE EQUIVALENT LENGTH OF THE BRANCH DUCT, AS SHOWN, DOES NOT EXCEED 10 FEET (3 METERS). FOR LONGER LENGTHS, INCREASE THE DUCT SIZE AND PROVIDE A DUCT TRANSITION TO MAINTAIN THE DUCT STATIC PRESSURE DROP AT OR BELOW 0.2"/100' [1.64Pa/m].
4. FLEXIBLE AIR DUCT CONNECTORS, WHEN USED FROM TERMINAL UNIT SUPPLY AIR DUCT TO DIFFUSER, SHALL NOT EXCEED 5'-0" [1500mm]. USE RIGID ELBOWS FOR CHANGE OF DIRECTION GREATER THAN 45°.
5. COMPONENT ARRANGEMENT MAY VARY BY MANUFACTURER. PROVIDE INSULATION W/VAPOR BARRIER FOR CONNECTING DUCT SECTIONS.

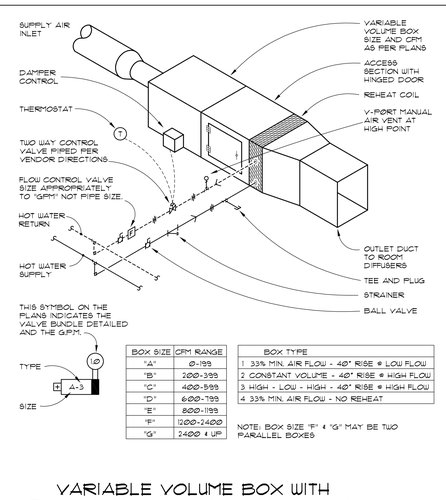
M302 11 DUCT CONNECTIONS - AIR TERMINAL UNITS
NO SCALE
B540-3



M302 12 TYPICAL FIRE DAMPER
NO SCALE



M302 13 SMOKE DAMPER
NO SCALE

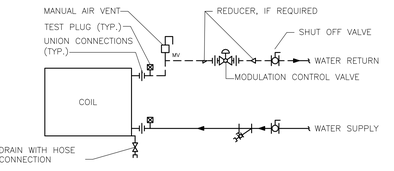


BOX SIZE	CFM RANGE
"A"	0-199
"B"	200-399
"C"	400-599
"D"	600-799
"E"	800-1199
"F"	1200-2400
"G"	2400 & UP

BOX TYPE
1 33% MIN. AIR FLOW - 40° RISE @ LOW FLOW
2 CONSTANT VOLUME - 40° RISE @ HIGH FLOW
3 HIGH - LOW - HIGH - 40° RISE @ HIGH FLOW
4 33% MIN. AIR FLOW - NO REHEAT

NOTE: BOX SIZE "F" & "G" MAY BE TWO PARALLEL BOXES

M302 14 VARIABLE VOLUME BOX WITH REHEAT COIL - TWO WAY VALVE
NO SCALE



M302 15 TERMINAL UNIT WATER COILS
NO SCALE

No	REVISION	DATE

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APPROVED: GEMS COORDINATOR DATE:	APPROVED: PATIENT SAFETY DATE:		
APPROVED: PROJECTS SECTION MANAGER DATE:	APPROVED: CHIEF OF POLICE DATE:		
APPROVED: DIRECTOR FMS DATE:	APPROVED: SAFETY MANAGER DATE:		

DRAWING TITLE
MECHANICAL DETAILS

APPROVED: CHIEF OF STAFF DATE:

APPROVED: MEDICAL CENTER DIRECTOR DATE:

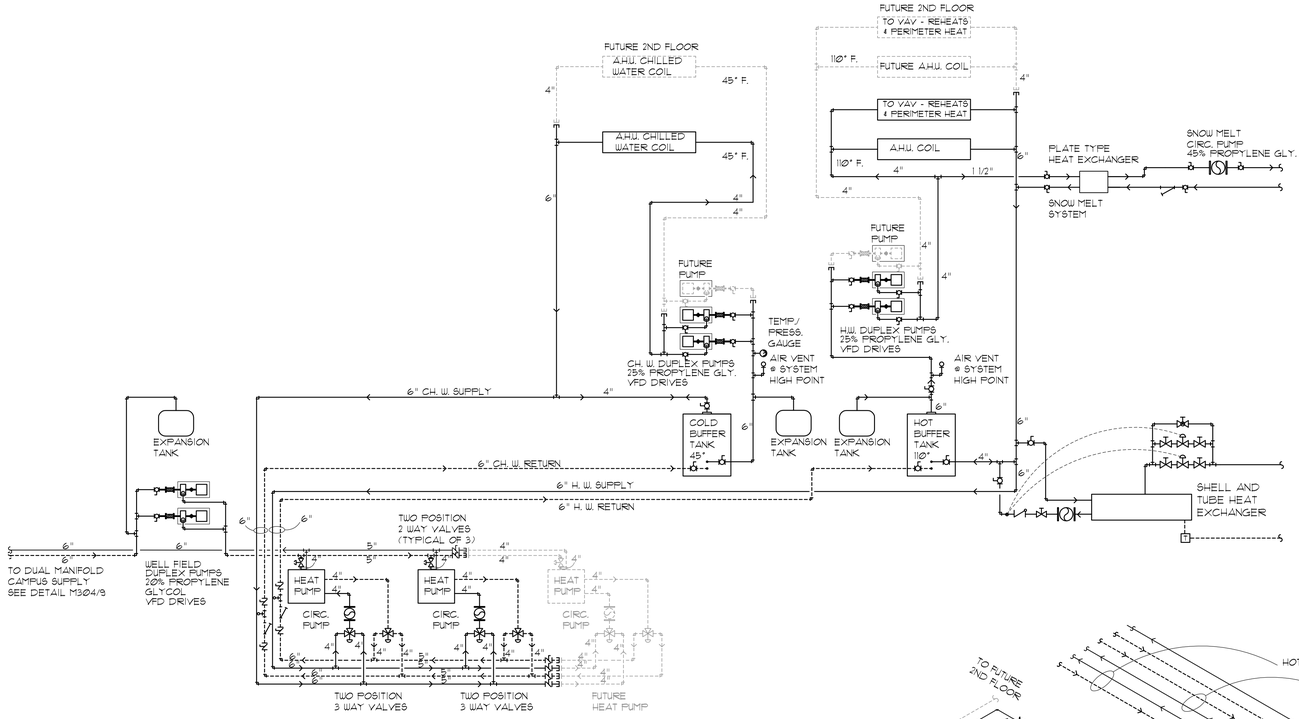
PROJECT TITLE
RELOCATE REHAB SERVICES 656-16-277
St. Cloud VA Health Care System

BUILDING No. XX | CHECKED BY | DRAWN XXX

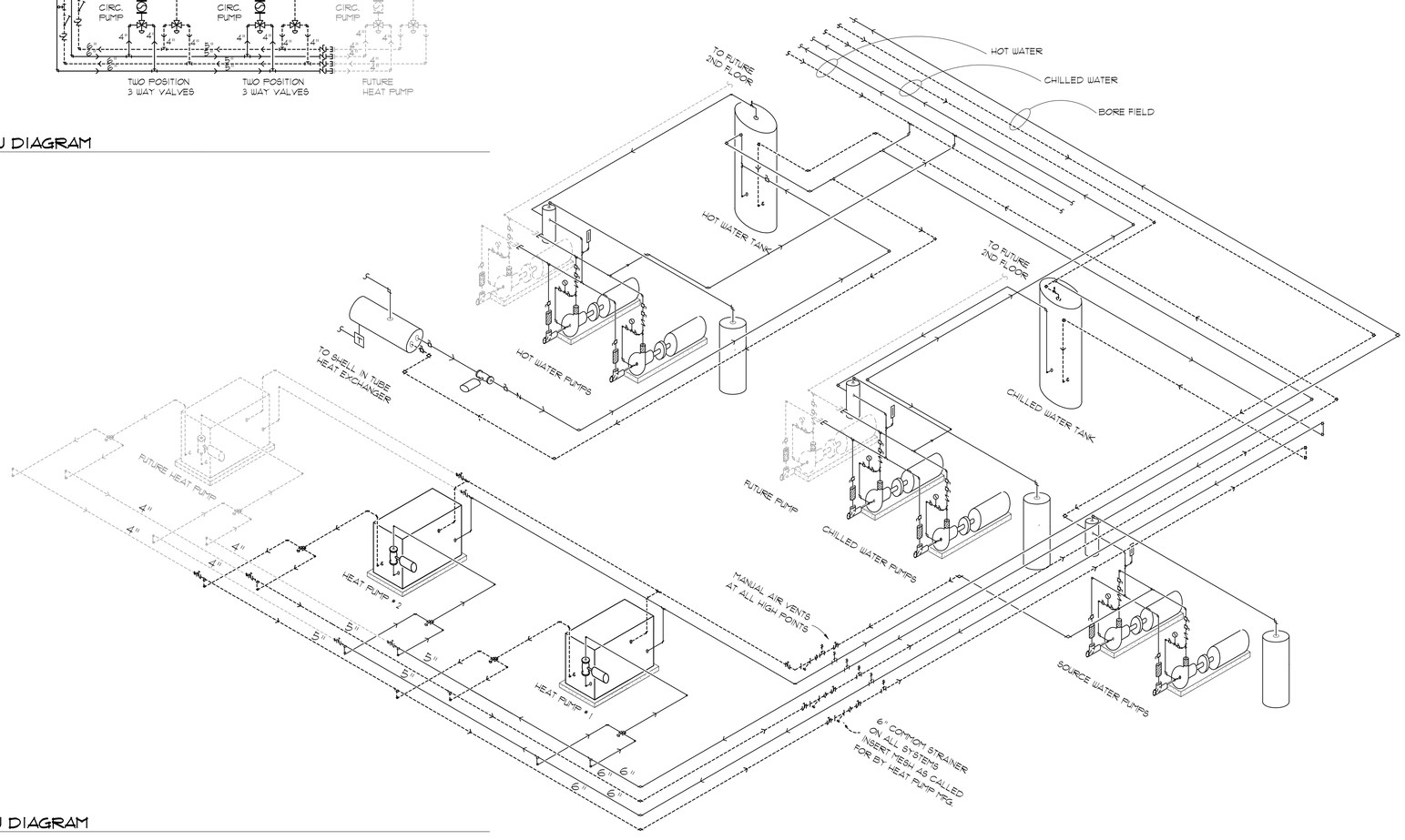
LOCATION VA MEDICAL CENTER ST. CLOUD, MN 56303

DATE 12/03/2018
PLOT SCALE NTS
PROJECT NO.
DRAWING NO. M302

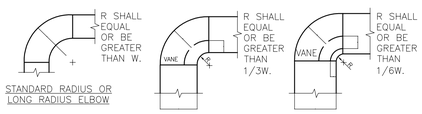
St. Cloud VA Health Care System
Brainerd | Montevideo | Alexandria



M303 1 HEAT PUMP FLOW DIAGRAM
NO SCALE



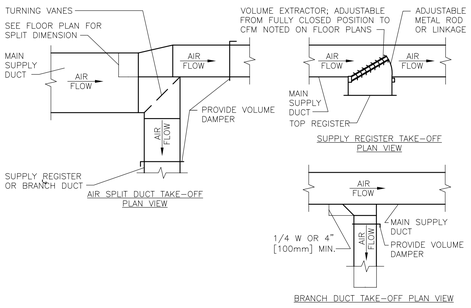
M303 2 ISOMETRIC FLOW DIAGRAM
NO SCALE



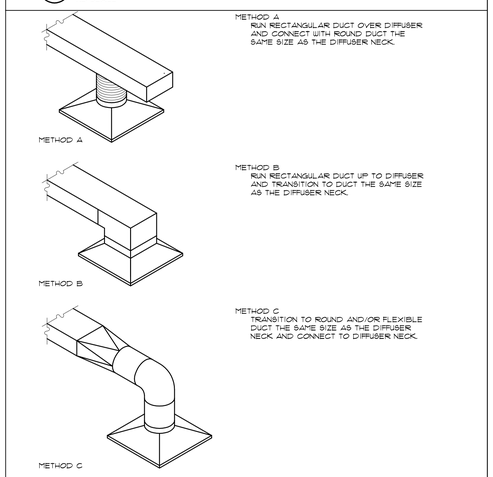
NOTE:

1. THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
2. NO TURNING VANES ON RETURN OR EXHAUST DUCTWORK.

M303 4 DUCTWORK RADIUS ELBOWS
NO SCALE



M303 5 SUPPLY DUCTWORK TAKE-OFFS
NO SCALE



M303 6 DIFFUSER CONNECTIONS
NO SCALE

No	REVISION	DATE

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APPROVED: DIRECTOR FMS	DATE:	APPROVED: SAFETY MANAGER	DATE:
APPROVED: CHIEF OF STAFF	DATE:		
APPROVED: MEDICAL CENTER DIRECTOR	DATE:		

DRAWING TITLE: MECHANICAL DETAILS

PROJECT TITLE: RELOCATE REHAB SERVICES 656-16-277
St. Cloud VA Health Care System

BUILDING No: XX | CHECKED BY: | DRAWN: XXX
LOCATION: VA MEDICAL CENTER ST. CLOUD, MN 56303

DATE: 12/03/2018
PILOT SCALE: NTS
PROJECT NO:
DRAWING NO: M303

St. Cloud VA Health Care System
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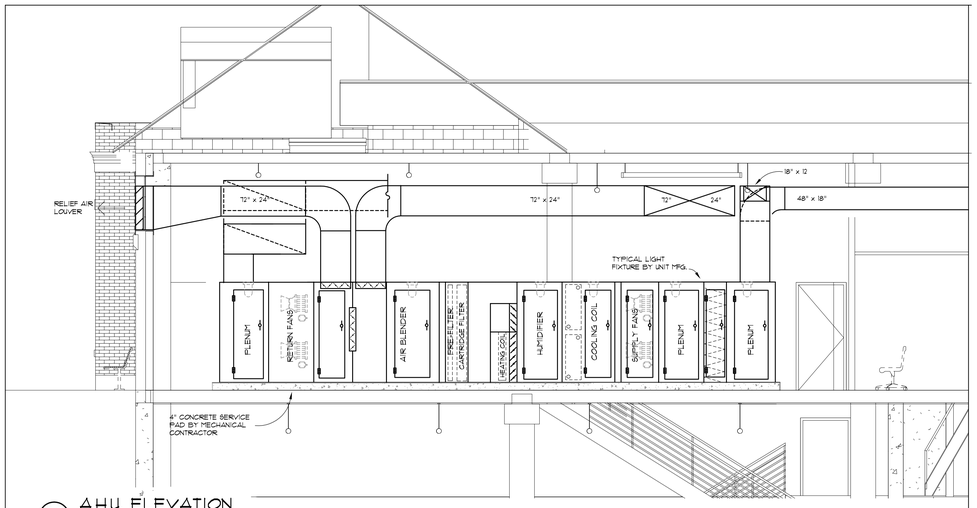
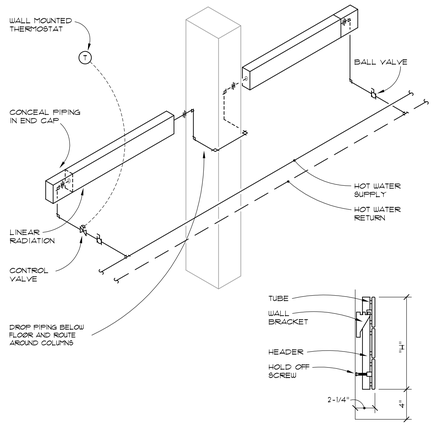


M304 / 1 A.H.U. ELEVATION

NO SCALE

15060-4

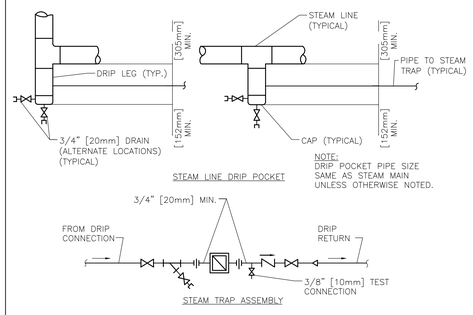
NOTE: ELECTRICAL LIGHTING, SWITCHES, OUTLETS AND DEVICES ARE BY THE UNIT MFG. WIRING AND ELECTRICAL WORK COMPLETION BY DIVISION 26



M304 / 5 LINEAR RADIATOR

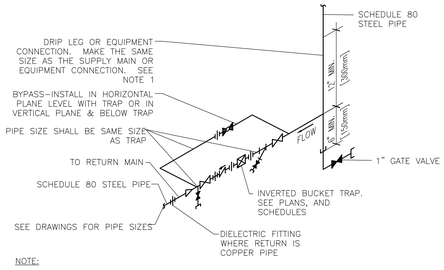
NO SCALE

15555-11



M304 / 7 STEAM LINE DRIP POCKET
STEAM TRAP ASSEMBLY

NO SCALE

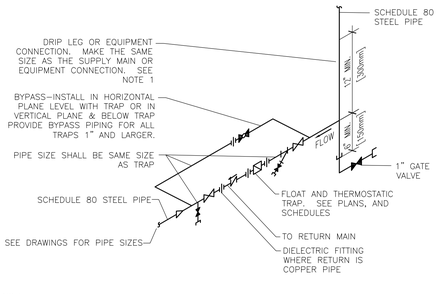


NOTE:

1. ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 12" MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 6" SCALE POCKET BELOW TRAP INLET.
2. PROVIDE BYPASS PIPING.

M304 / 8 INVERTED BUCKET STEAM TRAP ASSEMBLY

NO SCALE

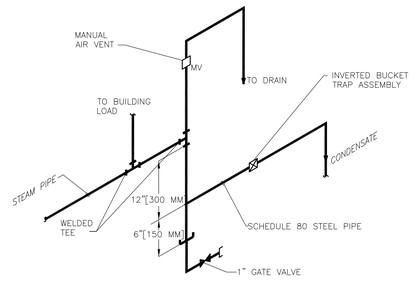


NOTE:

1. ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 12" MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 6" SCALE POCKET BELOW TRAP INLET.

M304 / 9 FLOAT AND THERMOSTATIC STEAM TRAP ASSEMBLY

NO SCALE



M304 / 13 END OF STEAM LINE DRIP TRAP

NO SCALE

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MECHANICAL DETAILS

APPROVED: CHIEF OF STAFF DATE:

APPROVED: MEDICAL CENTER DIRECTOR DATE:

PROJECT TITLE
RELOCATE REHAB SERVICES 656-16-277
St. Cloud VA Health Care System

BUILDING No. XX | CHECKED BY | DRAWN: XXX

LOCATION: VA MEDICAL CENTER ST. CLOUD, MN 56303

DATE: 12/03/2018
PLOT SCALE: NTS
PROJECT NO.:
DRAWING NO.: M304

St. Cloud VA Health Care System
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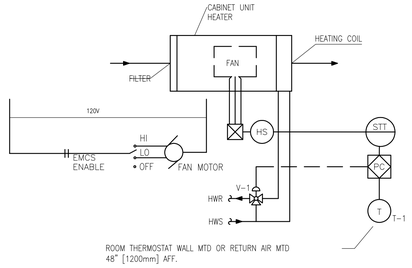
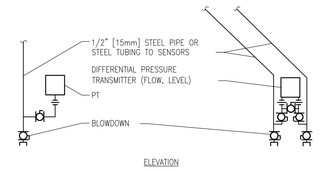
HOT WATER CABINET UNIT HEATER SEQUENCE

1. CABINET HEATER SHALL OPERATE ON A SCHEDULE AS SET BY THE ECC. FAN STATUS SHALL BE MONITORED AND AN ALARM MESSAGE GENERATED IN THE EVENT THE UNIT FAILS TO RUN. THE ROOM TEMP SETPOINT WILL BE 74° (ADJ). THE HOT WATER VALVE WILL BE ENABLED AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT. HI/LO/OFF SWITCH WILL ALLOW LOCAL FAN SPEED ADJUSTMENT.



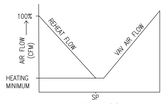
M305 3 HOT WATER CABINET UNIT CONTROLS
NO SCALE



NOTES:

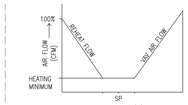
1. INSTALLATION OF SENSORS AND TRANSMITTERS SHALL CONFORM TO RECOMMENDATIONS OF MANUFACTURERS OF TRANSMITTERS.

M305 4 PRESSURE TRANSMITTER INSTALLATION
NO SCALE



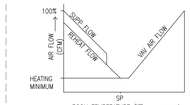
VAV BOX CONTROL SEQUENCE
NO DEADBAND

A. UPON FALL IN SPACE TEMPERATURE THE VAV DAMPER WILL MODULATE TO MINIMUM POSITION.
B. UPON FURTHER DROP IN SPACE TEMPERATURE VALVE V-1 WILL MODULATE TO MAINTAIN SET POINT ± .5° F. THE ADJUSTABLE TOLERANCE OF ± .5° F HAS BEEN SELECTED TO PREVENT VALVE HUNTING.
C. THE REVERSE SHALL OCCUR ON THE RISE IN SPACE TEMPERATURE.



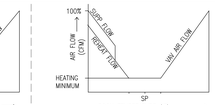
VAV BOX CONTROL SEQUENCE
W/DEADBAND

A. SET POINTS SHALL BE SET AS FOLLOWS:
COOLING 75°F (ADJ)
HEATING 70°F(ADJ)
DEADBAND OF 5° F BETWEEN HEATING AND COOLING SET POINTS WILL BE MAINTAINED.
B. UPON FALL IN SPACE TEMPERATURE, THE VAV DAMPER WILL MODULATE TO MINIMUM POSITION.
C. UPON FURTHER DROP IN SPACE TEMPERATURE VALVE V-1 WILL MODULATE TO MAINTAIN SET POINT ± .5° F. THE ADJUSTABLE TOLERANCE OF ± .5° F HAS BEEN SELECTED TO PREVENT VALVE HUNTING
D. THE REVERSE SHALL OCCUR ON THE RISE IN SPACE TEMPERATURE.



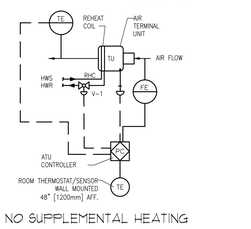
VAV BOX CONTROL SEQUENCE
NO DEADBAND

A. UPON FALL IN SPACE TEMPERATURE THE VAV DAMPER WILL MODULATE TO MINIMUM POSITION.
B. UPON FURTHER DROP IN SPACE TEMPERATURE VALVE V-1 WILL MODULATE TO MAINTAIN SET POINT ± .5° F. THE ADJUSTABLE TOLERANCE OF ± .5° F HAS BEEN SELECTED TO PREVENT VALVE HUNTING
C. VALVE V-2 SHALL BE ENABLED WHEN OUTSIDE AIR FALLS BELOW 40° F (ADJ) AND VALVE V-1 HAS BEEN MODULATED OPEN ABOVE 30% (ADJ). VALVE V-2 SHALL MAINTAIN SET POINT ± .5° F. THE ADJUSTABLE TOLERANCE OF ± .5°F HAS BEEN SELECTED TO PREVENT VALVE HUNTING. THE REVERSE SHALL OCCUR ON A RISE IN SPACE TEMPERATURE.



VAV BOX CONTROL SEQUENCE
W/DEADBAND

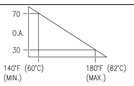
A. SET POINTS SHALL BE SET AS FOLLOWS:
COOLING 75°F (ADJ)
HEATING 70°F(ADJ)
DEADBAND OF 5° F BETWEEN HEATING AND COOLING SET POINTS WILL BE MAINTAINED.
B. UPON FALL IN SPACE TEMPERATURE THE VAV DAMPER WILL MODULATE TO MINIMUM POSITION.
C. UPON FURTHER DROP IN SPACE TEMPERATURE VALVE V-1 WILL MODULATE TO MAINTAIN SET POINT ± .5° F. THE ADJUSTABLE TOLERANCE OF ± .5° F HAS BEEN SELECTED TO PREVENT VALVE HUNTING
D. VALVE V-2 SHALL BE ENABLED WHEN OUTSIDE AIR FALLS BELOW 40° F (ADJ) AND VALVE V-1 HAS BEEN MODULATED OPEN ABOVE 30% (ADJ). VALVE V-2 SHALL MAINTAIN SET POINT ± .5° F. THE ADJUSTABLE TOLERANCE OF ± .5° F HAS BEEN SELECTED TO PREVENT VALVE HUNTING.
E. THE REVERSE SHALL OCCUR ON THE RISE IN SPACE TEMPERATURE.



M305 6 VARIABLE VOLUME AIR TERMINAL UNIT CONTROL DIAGRAM
NO SCALE

SEQUENCE OF OPERATION:

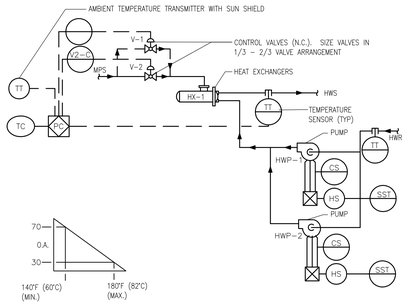
1. STEAM CONTROL VALVE SHALL MODULATE TO MAINTAIN THE LEAVING HOT WATER TEMPERATURE AT SET POINT.
2. THE LEAVING HOT WATER TEMPERATURE SHALL BE RESET INVERSELY WITH THE OUTDOOR TEMPERATURE AS SCHEDULED.
3. THE LEAD AND LAG PUMPS SHALL BE SEQUENTIAL BY THE OPERATOR CONTROLS AT THE PRE-DETERMINED INTERVAL (USUALLY 7 DAYS). IN THE EVENT THE PUMP FAILS TO START WITHIN 30 SECONDS, AN ALARM SHALL BE INITIATED AND THE SECOND PUMP SHALL START AUTOMATICALLY.



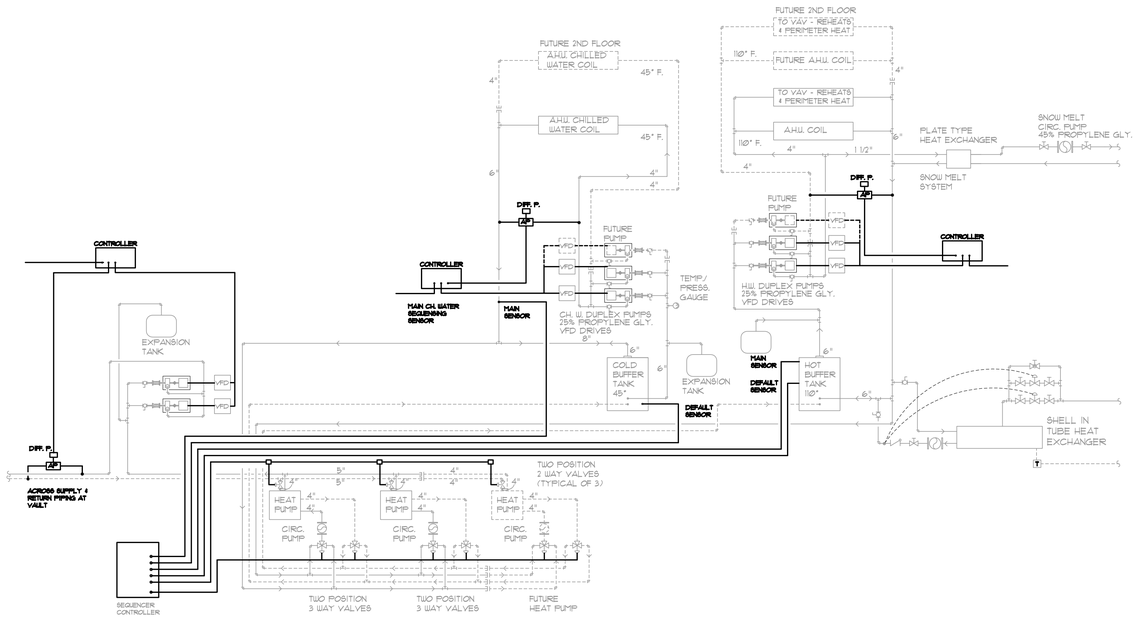
TYP OSA RESET SCHEDULE

VALVE SEQUENCE:

1. V1 (⅓ CAPACITY) MODULATING FULLY OPEN TO MAINTAIN SET POINT
2. V2 (⅔ CAPACITY) MODULATE FULLY OPEN TO MAINTAIN SET POINT.
3. BOTH V1 & V2 MODULATE TOGETHER TO MAINTAIN SET POINT.



M305 4 HEAT EXCHANGER CONTROLS (HEATING SYSTEM)
NO SCALE



M305 5 HEAT PUMP CONTROL
NO SCALE

JOB: 0555.09
BUILDING: VA SAMPLE POINTS LIST

POINT LEGEND | SYSTEM OUTPUTS: BINARY, ANALOG | SYSTEM INPUTS: BINARY, ANALOG | SYSTEM SOFTWARE/CONTROL: ALARM PROCESSING, APPLICATION/FUNCTION | PAGE:

SYSTEM: VAV AIR HANDLER

SYSTEM COMPONENT:	POINT ID	ABBREVIATION	REMARKS
Return air Temperature	AI-1	RAT	
Return Air Humidity	AI-2	RAH	
Return Air Flow (cfm)	AI-3	RAF	
Mixed Air Temperature	AI-4	MAT	
Pre-Heat Temperature	AI-5	PHT	
Cooling Coil Temperature	AI-6	CCT	
Discharge Air Temperature	AI-7	DAT	
Discharge Static Pressure	AI-8	DASP	
Discharge Air Humidity	AI-9	DAH	
Supply Air Flow (cfm)	AI-10	SAF	
OUTSIDE AIR TEMPERATURE	AI-11	OAT	
RETURN LOW PRESSURE	BI-1	RLP	
RETURN FAN STATUS	BI-2	RF-STS	
SUPPLY FAN STATUS	BI-3	SF-STS	
MIXED AIR LOW LIMIT	BI-4	TSL-1	
STATIC PRESSURE HIGH LIMIT	BI-5	SPS-2	
HUMIDITY HIGH LIMIT	BI-6	HHL	
SUPPLY FAN VSMC ALARM	BI-7	SF-ALA	
RETURN FAN VSMC ALARM	BI-8	RF-ALA	
RETURN FAN VSMC	AO-1	RF-SPD	FULL COMMUNICATION
SUPPLY FAN VSMC	AO-2	SF-SPD	FULL COMMUNICATION
OUTSIDE AIR DAMPER	AO-3	OAD	
RETURN AIR DAMPER	AO-4	RAD	
EXHAUST AIR DAMPER	AO-5	EAD	
MINIMUM OUTSIDE AIR DAMPER	AO-7	MIN-OAD	
PRE-HEAT VALVE V-2	AO-8	PHT-V1	
COOLING VALVE V-1	AO-9	CLG-V1	
STEAM HUMIDIFIER VALVE V-4	AO-10	HUM-V4	
RETURN FAN START/STOP	BO-1	RF-SST	
SUPPLY FAN START/STOP	BO-2	SF-SST	
STEAM ISOLATION VALVE V-3	BO-3	HUM-ISO-V3	

M305 4 POINTS LIST FOR VAV AIR HANDLING UNIT WITH MINIMUM OUTSIDE AIR
NO SCALE

No	REVISION	DATE

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James C. Elving — License No. 12852

APPROVED: SERVICE LINE DIRECTOR	DATE:	APPROVED: INFECTION CONTROL NURSE	DATE:
APPROVED: GEMS COORDINATOR	DATE:	APPROVED: PATIENT SAFETY	DATE:
APPROVED: PROJECTS SECTION MANAGER	DATE:	APPROVED: CHIEF OF POLICE	DATE:
APPROVED: DIRECTOR FMS	DATE:	APPROVED: SAFETY MANAGER	DATE:

DRAWING TITLE: **MECHANICAL CONTROL DETAILS**

APPROVED: CHIEF OF STAFF	DATE:		
APPROVED: MEDICAL CENTER DIRECTOR	DATE:		

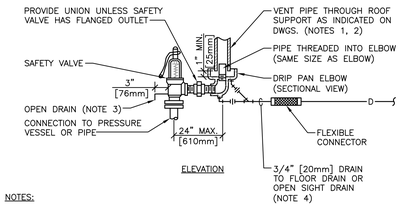
PROJECT TITLE: RELOCATE REHAB SERVICES 656-16-277
St. Cloud VA Health Care System

BUILDING No.	CHECKED BY	DRAWN
XX		XXX

LOCATION: VA MEDICAL CENTER ST. CLOUD, MN 56303

DATE: 12/03/2018
PLOT SCALE: NTS
PROJECT NO.:
DRAWING NO.: M305

St. Cloud VA Health Care System
Brainerd | Montevideo | Alexandria



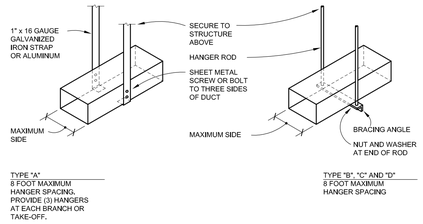
NOTES:

1. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, SIZE THE VENT PIPE SO THAT STEAM IS NOT BLOWN OUT AT THE VENT PIPE ENTRANCE. UTILIZE THE CALCULATION METHOD CONTAINED IN ANSI B31.1. POWER PIPING CODE, APPENDIX II.
2. VENT PIPE SHALL TERMINATE 6' [1829mm] MIN. ABOVE FINISHED ROOF.
3. DISCHARGE OF DRAIN MUST BE DIRECTED AWAY FROM PLATFORMS OR OTHER AREAS WHICH PERSONNEL MAY OCCUPY.
4. DO NOT CONNECT ANY OTHER DRAIN TO THE DRIP PAN ELBOW DRAIN PIPE.

M306 1 — STEAM SAFETY VALVE
NO SCALE

DUCT SCHEDULE	
DUCT DIMENSION	TYPE HANGER
UP TO 12"	A
13" TO 18"	A
19" TO 30"	A/B
31" TO 42"	B
43" TO 54"	B
55" TO 60"	B
61" TO 84"	C
85" TO 96"	C
OVER 96"	D

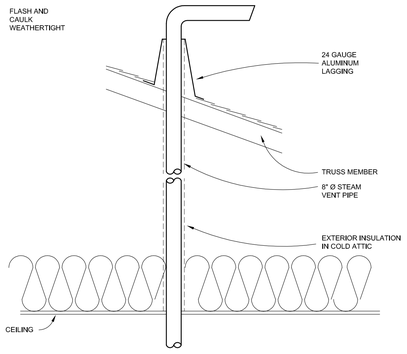
HANGER SCHEDULE		
HANGER TYPE	ROD DIAMETER	BRACING ANGLE
"A"	-	-
"B"	5/16"	1/8" L
"C"	3/8"	3/16" L
"D"	1/2"	1/4" L



TYPE "A"
8 FOOT MAXIMUM HANGER SPACING. PROVIDE (3) HANGERS AT EACH BRANCH OR TAKE-OFF.

TYPE "B", "C" AND "D"
8 FOOT MAXIMUM HANGER SPACING

M306 3 — DUCT HANGER
NO SCALE

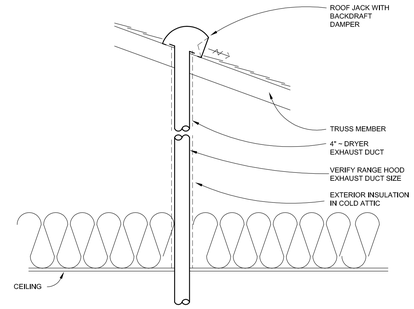


M306 7 — STEAM VENT PIPE THRU SLOPED ROOF
NO SCALE

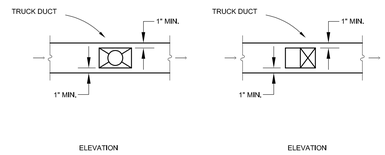
M306 8 — --
NO SCALE

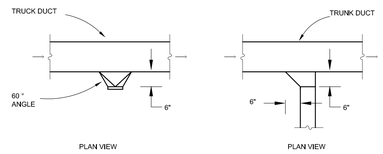
M306 12 — --
NO SCALE

M306 13 — --
NO SCALE



M306 5 — RANGE HOOD EXHAUST
NO SCALE





M306 10 — TYPICAL DUCT TAKE-OFF DETAILS
NO SCALE

M306 14 — --
NO SCALE

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APPROVED: CHIEF OF STAFF	DATE:		
APPROVED: MEDICAL CENTER DIRECTOR	DATE:		

DRAWING TITLE
MECHANICAL DETAILS

PROJECT TITLE
RELOCATE REHAB SERVICES 656-16-277
St. Cloud VA Health Care System

BUILDING No: XX | CHECKED BY: | DRAWN: XXX

LOCATION: VA MEDICAL CENTER ST. CLOUD, MN 56303

DATE: 12/03/2018
PLOT SCALE: NTS
PROJECT NO.
DRAWING NO.: M306

St. Cloud VA Health Care System
Brainerd | Montevideo | Alexandria

AIR HANDLING UNIT SCHEDULE

UNIT NUMBER	A.H.U. # 1
LOCATION	MECH. 132
SERVES	ENTIRE BUILDING
MODEL NUMBER	CAH050GDGC
SUPPLY FAN	36 1/2" AIRFOIL
CFM	20,840 CFM
TOTAL STATIC PRESSURE	4 1/2"
H.P.	25 H.P.
R.P.M.	1401
VOLTAGE	480/60/3
FILTER BOX	2" PRE-FILTER
	DISCHARGE FILTER
RETURN FAN	40 1/4" AIRFOIL
H.P.	15 H.P.
R.P.M.	1264
HEATING COIL	20° AIR TEMP. RISE
	90 G.P.M. HOT WATER
COOLING COIL	CH. WATER - 175 G.P.M
NOTES	80°/67° TO 54.3°/53.5°
	105° F. M.W.T.
	AIR BLENDER
	STEAM HUMIDIFIER

HEAT EXCHANGERS

SYSTEM	HYDRONIC HEATING	SNOW MELTING
LOCATION	MECH.001	MECH.001
LENGTH	6'-0"	PLATE TYPE
DIAMETER	14"	--
MODEL NUMBER	SU-146-2	--
PRIMARY MEDIA	STEAM	25% PROP. GYLCOL
STEAM OR GPM (10 psig)	29808/HR - 1555° START UP	25 GPM
TEMPERATURE IN/OUT	--	110°/100°
PRESSURE DROP	5'	-5'
SECONDARY PRODUCT	25% PROP. GYLCOL	45 % PROP. GLYCOL
GPM	320 GPM	25 GPM
TEMPERATURE IN/OUT	110°/120Ø	95°/105°
PRESSURE DROP	5'	5'

SIZE HEAT EXCHANGER FOR FUTURE LOAD

HEAT PUMP SCHEDULE

UNIT NUMBER	1	2	FUTURE PUMP # 3
RATING	70 TONS	70 TONS	70 TONS
WELL FIELD G.P.M.	210 G.P.M.	210 G.P.M.	210 G.P.M.
WELL FIELD P.D.	5'	5'	5'
SYSTEM G.P.M.	210 G.P.M.	210 G.P.M.	210 G.P.M.
SYSTEM P.D.	4'	4'	4'
HEATING OUTPUT	836 MBH @ MAX. 70 KW	836 MBH @ MAX. 70 KW	836 MBH @ MAX. 70 KW
	(3.5) COP MIN.	(3.5) COP MIN.	(3.5) COP MIN.
COOLING OUTPUT	70 TONS @ 45° F. (14.0) E.E.R. MIN.	70 TONS @ 45° F. (14.0) E.E.R. MIN.	70 TONS @ 45° F. (14.0) E.E.R. MIN.

VARIABLE AIR VOLUME SCHEDULE — VAV

V.A.V. BOX	LOCATION	REHEAT BTUH	CFM MINIMUM	CFM MAXIMUM	DELTA T	GPM
D-3 H-L-H	102 & 103	22,500	200	600	40°	4.7
D-1	105	7000	250	750	30°	1.4
B-1	107 & 108	4500	170	510	30°	.9
D-3 H-L-H	110 & 112	30,000	215	650	40°	6.0
B-4	111	0	65	200	0°	0
E-4	113 & 114	0	330	1000	0°	0
F-1	115, 126, 127	11,500	400	1200	30°	2.3
F-3 H-L-H	121	77,000	660	2000	40°	14.4
F-3 H-L-H	122	66,000	660	2000	40°	11.9
E-1	123, 124, 125, 139	9400	315	950	30°	1.9
D-1	106, 128, 129, 130	6500	240	740	30°	1.3
E-1	131, 132, 133, 142	10,700	345	1045	30°	2.2
C-3 H-L-H	144	17,600	165	500	40°	3.5
B-3 H-L-H	134	12,400	85	250	40°	1.7
B-3 H-L-H	135	13,900	115	350	40°	2.8
B-3 H-L-H	136	13,100	110	325	40°	2.7
B-3 H-L-H	138	12,100	110	325	40°	2.5
C-3 H-L-H	145	20,100	165	500	40°	4.0
D-3 H-L-H	146, 147, 148, 150	18,100	210	625	40°	3.8
E-1	151, 152, 153	7,800	280	850	30°	1.6
D-1	155, 156	7,200	250	750	30°	1.5
E-3 H-L-H	156	49,700	415	1250	40°	10.0
C-1	160,165	5400	170	520	40°	1.1
B-3 H-L-H	161, 162	13,700	135	400	40°	2.8
B-3 H-L-H	163, 164	14,200	135	400	40°	2.9
C-3 H-L-H	104	25,000	165	500	40°	5.0
C-1	166	3800	150	450	30°	.8
B-1	168	1700	65	200	30°	.4
F-3 H-L-H	175 & 176	44,000	400	1200	40°	8.8

NOTE: 105° F. MEAN WATER TEMP.

POWER ROOF VENTILATOR SCHEDULE

PRV NUMBER	P.R.V. # 1	P.R.V. # 2	PROP. FAN
SYSTEM	GEN EXHAUST	MECH. ROOM 001	CRAWL SPACE VENT.
CFM	1525 CFM	2000 CFM	2500 CFM
S.P.	1 1/4"	3/4"	3/4"
H.P.	1/2 H.P.	1/2 H.P.	1/4 H.P.
CURRENT	110/60/1	110/60/1	110/60/1
MODEL	161HP-5	GB-141-5	--

UNIT HEATER SCHEDULE

UNIT NUMBER	UNIT HEATER # 1	UNIT HEATER # 2	UNIT HEATER # 3
LOCATION	CRAWL SPACE	CRAWL SPACE	MECH ROOM 001
MODE	HOT WATER	HOT WATER	HOT WATER
BTUH	50,000	50,000	50,000
CFM	1000	1000	1000
RPM	1150	1150	1150
H.P.	1/12	1/12	1/12
CURRENT	110/60/1	110/60/1	110/60/1
MODEL	HORIZONTAL	HORIZONTAL	HORIZONTAL
NOTES	105° M.W.T.	105° M.W.T.	105° M.W.T.

HYDRONIC ACCESSORIES

SYSTEM	WELL FIELD	HYDRONIC HEATING	CHILLED WATER	SNOW MELT (ALT.)
EXPANSION TANK NUMBER	1	1	1	1
EXPANSION TANK SIZE	100 GALLON	200 GALLON	100 GALLON	15
TANK FITTING	YES	YES	YES	YES
AIR PURGE	R-6	R-6	R-6	R-2
TANK DRAIN	YES	YES	YES	YES
GAUGE GLASS SETS	--	--	--	--
RELIEF VALVES	1	1	1	1
RELIEF VALVE PRESSURE SETTING	30 #	30 #	30 #	30 #
COLD WATER SUPPLY	3/4"	3/4"	3/4"	3/4"

CABINET UNIT HEATER SCHEDULE

UNIT NUMBER	C.U.H. # 1	C.U.H. # 2	C.U.H. # 3	C.U.H. # 4
LOCATION	VEST. 101	VEST. 137	CORR. 104	CORR. 176
MODE	HOT WATER	HOT WATER	HOT WATER	HOT WATER
BTUH	40,000 BTUH	40,000 BTUH	60,000 BTUH	50,000 BTUH
CFM	600 CFM	600 CFM	800 CFM	750 CFM
RPM	1150	1150	1150	1150
H.P.	1/20	1/20	1/20	1/20
CURRENT	110/60/1	110/60/1	110/60/1	110/60/1
MODEL	CEILING RECESSED	CEILING RECESSED	CEILING RECESSED	CEILING RECESSED
NOTES	105° M.W.T.	105° M.W.T.	105° M.W.T.	105° M.W.T.

CIRCULATING PUMP SCHEDULE

PUMP NUMBER	PUMP # 1	PUMP # 2	PUMP # 3	PUMP # 4	FUTURE PUMP # 5	PUMP # 6	PUMP # 7	FUTURE PUMP # 8	PUMP # 9	PUMP # 10	FUTURE PUMP # 11	PUMP # 12	PUMP # 13	PUMP # 14
LOCATION	MECH. 001	MECH. 001	MECH. 001	MECH. 001	MECH. 001	MECH. 001	MECH. 001	MECH. 001	MECH. 001	MECH. 001	MECH. 001	MECH. 001	MECH. 001	MECH. 001
SYSTEM	WELL FIELD	WELL FIELD	HYDRONIC HEATING	HYDRONIC HEATING	HYDRONIC HEATING	CH. WATER	CH. WATER	CH. WATER	HEAT PUMP	HEAT PUMP	HEAT PUMP	HEAT EXCHANGER	SNOW MELT	CONDENSATE
STYLE	BASE MOUNT	BASE MOUNT	BASE MOUNT	BASE MOUNT	BASE MOUNT	BASE MOUNT	BASE MOUNT	BASE MOUNT	IN-LINE	IN-LINE	IN-LINE	IN-LINE	IN-LINE	DUPLEX PUMPS
GPM	660 GPM	660 GPM	310	310	310	175 G.P.M.	175 G.P.M.	175	220 G.P.M.	220 G.P.M.	220 G.P.M.	329	25	10 G.P.M.
HEAD	60'	60'	50'	50'	50'	65'	65'	65'	58'	58'	58'	25'	50'	20 P.S.I.G.
RPM	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
MEDIA	20% PROPYLENE	20% PROPYLENE	25% PROPYLENE	25% PROPYLENE	25% PROPYLENE	25% PROPYLENE	25% PROPYLENE	25% PROPYLENE	25% PROPYLENE	25% PROPYLENE	25% PROPYLENE	25% PROPYLENE	45% PROPYLENE	COND.
H.P.	15 H.P.	15 H.P.	7 1/2 H.P.	7 1/2 H.P.	7 1/2 H.P.	5 H.P.	5 H.P.	5 H.P.	5 H.P.	5 H.P.	5 H.P.	3 H.P.	1 H.P.	2 @ 3/4 H.P.
CURRENT	480/60/3	480/60/3	480/60/3	480/60/3	480/60/3	480/60/3	480/60/3	480/60/3	480/60/3	480/60/3	480/60/3	480/60/3	480/60/3	480/60/3
MODEL	B & G 1510 - 4BC	B & G 1510 - 4BC	B & G 1510 - 2 1/2 BB	B & G 1510 - 2 1/2 BB	B & G 1510 - 2 1/2 BB	B & G 1510 - 2 BC	B & G 1510 - 2 BC	B & G 1510 - 2 1/2BB	B & G SERIES 80 - 3x3x9-1/2B	B & G SERIES 80 - 3x3x9-1/2B	B & G SERIES 80SC - 2X3X9-1/2B	B & G SERIES 80SC - 4x4x7	IN-LINE	COND. SET
NOTES	DUPLEX VAR. FREQ. DRIVE	DUPLEX VAR. FREQ. DRIVE	VARIABLE FREQ. DRIVE	VARIABLE FREQ. DRIVE	VARIABLE FREQ. DRIVE	VARIABLE FREQ. DRIVE	VARIABLE FREQ. DRIVE	VARIABLE FREQ. DRIVE				IN-LINE	B & G SERIES 80 1 1/2x1 1/2x7B	40 GALLON RECEIVER

AUXILIARY HEATING UNIT SCHEDULE

LOCATION	175	175
HEATING DEVICE	AIR CURTAIN	AIR CURTAIN
SIZE	1CA2072	1CA2072
BTUH	60,000 BTUH	60,000 BTUH
GPM	12	12
CONTROL	THERMOSTAT	THERMOSTAT
NOTES	4500 CFM - 78" WIDE TWO MOTORS @ 1/2 H.P.	4500 CFM - 78" WIDE TWO MOTORS @ 1/2 H.P.

NOTE: 105° F. MEAN WATER TEMP.

ATTENUATORS

SYSTEM	RETURN AIR	RETURN AIR	GENERATOR INTAKE	GENERATOR EXHAUST
CFM	16,600 CFM	2175 CFM	77,500 CFM	73,500 CFM
OCTAVE BAND CENTER FREQUENCY (HZ)	FOURTH	FOURTH	FOURTH	FOURTH
MINIMUM DYNAMIC INSERTION LOSS (DB)	11 dba	11 dba	27 dba	27 dba
FACE VELOCITY FPM	1383 F.P.M.	750 F.P.M.	480 F.P.M.	480 F.P.M.
APPROXIMATE SIZE	72" x 24"	30" x 14"	10' x 15'	10' x 15'
LENGTH	5'-0"	3'-0"	3'-0"	3'-0"

HUMIDIFIER SCHEDULE

ROOM NUMBER	A.H.U. # 1
CFM	20,000 CFM
# STEAM	150 #/HR
REL. HUMIDITY	20 %
GPM	--
PROBE LENGTH	--
NOTES	VERIFY LENGTH WITH UNIT MFG.

FUEL OIL TANK

TYPE	BELOW GRADE
CAPACITY	5000 GALLON
APPROX. DIMENSIONS	15' x 7'
MATERIAL	DOUBLE WALLED
	ASTM A36 STEEL
NOTES	

STEEL FLAT PLATE BASEBOARD

TYPE	LINEAR RADIATION
CAPACITY	250 BTUH/ LIN. FT.
LENGHT	SEE PLANS
SIZE	SEE SPECIFICATIONS
NOTES	105° F. M.W.T.

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No	REVISION	DATE

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James C. Elving License No. 12852

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DRAWING TITLE
MECHANICAL SCHEDULES

PROJECT TITLE
RELOCATE REHAB
SERVICES 656-16-277
St. Cloud VA Health Care System

BUILDING No. XX | CHECKED BY | DRAWN XXX
LOCATION: VA MEDICAL CENTER ST. CLOUD, MN 56303

DATE: 12/03/2018
PLOT SCALE: NTS
PROJECT NO.:
DRAWING NO.: M307

St. Cloud VA Health Care System
Brainerd | Montevideo | Alexandria