A. GENERAL

[1] THE STRUCTURAL ENGINEERS OF RECORD ARE RESPONSIBLE FOR THE ADEQUACY OF THE STRUCTURAL DESIGN AS SHOWN IN THE CONTRACT DOCUMENTS WHICH DEPICT THE STRUCTURE IN ITS COMPLETED FORM. THE STRUCTURE IS DESIGNED TO BE CAPABLE OF WITHSTANDING CODE PRESCRIBED DESIGN FORCES AND FULLY STABLE WHEN THE STRUCTURE IS FULLY CONSTRUCTED (I.E., FULLY BUILT). IT IS SOLELY THE RESPONSIBILITY OF OTHERS TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AS WELL AS TO PROVIDE FOR THE SAFETY OF THE STRUCTURE AND ITS COMPONENTS PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF SHORING, SHEETING, TEMPORARY BRACING, GUYS, TIE DOWNS, OR DEWATERING WHICH MIGHT BE NECESSARY. SUCH MATERIAL SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER THE COMPLETION OF THE PROJECT.

[2] IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION.

[3] SHOULD ANY OF THE DETAILED INSTRUCTIONS SHOWN ON THE PLANS CONFLICT WITH THE GENERAL STRUCTURAL NOTES, THE SPECIFICATIONS, OR WITH EACH OTHER, IT SHALL BE ASSUMED THAT THE STRICTEST PROVISION SHALL GOVERN AND A WRITTEN REQUEST FOR INFORMATION (RFI) SHALL BE SUBMITTED TO THE CONTRACTING OFFICER AND A/E. ADDITIONALLY, ALL ITEMS WHICH, IN THE OPINION OF THE CONTRACTOR, APPEAR TO BE DEFICIENCIES, OMISSIONS, OR AMBIGUITIES IN THE PLANS AND/OR SPECIFICATIONS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE A/E. CONTRACTOR SHALL SUBMIT RFI PRIOR TO COMMENCING WITH AFFECTED WORK AND SHALL AWAIT THE A/E'S APPROVAL-TO-PROCEED PRIOR TO PERFORMING WORK.

[4] ALL CONSTRUCTION ERRORS THAT CANNOT BE REMOVED AND REBUILT MAY BE SAVED AS FOLLOWS: THE CONTRACTOR MAY ARRANGE, AT THE CONTRACTOR'S EXPENSE, DESIGN CALCULATIONS SEALED BY A LICENSED SOUTH DAKOTA STRUCTURAL ENGINEER THAT CERTIFY AND APPROVE ANY CONSTRUCTION REPAIR IN COMPLIANCE WITH ALL APPLICABLE CODES AND GENERAL DESIGN INTENT.

[5] STRUCTURAL DRAWINGS ARE INTENDED TO BE USED WITH THE OTHER DRAWINGS RELEASED FOR THE PROJECT. CONTRACTOR TO COORDINATE, TO THE EXTENT POSSIBLE, SUCH INTERRELATIONSHIPS IN PROJECT SHOP DRAWINGS AND FIELD WORK.

[6] DO NOT SCALE THESE DRAWINGS, USE DIMENSIONAL DATA PROVIDED.

[7] REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR FIRE RATING REQUIREMENTS, FIRE-PROOFING METHODS, AND FIRE-PROOFING MATERIALS FOR STRUCTURAL MEMBERS.

B. DESIGN LOADS: (VUSBC 2012/ASCE 7-10)

[1] LIVE LOADS	DISTRIBUTED LOAD
ROOF LIVE LOAD:	
MINIMUM DESIGN ROOF LIVE LOAD	20 PSF
ROOF SNOW LOAD:	
GROUND SNOW LOAD, Pg	40 PSF
FLAT-ROOF SNOW LOAD, Pf	31 PSF
SLOPED ROOF SNOW LOAD, Ps	31 PSF
SNOW EXPOSURE FACTOR, Ce	1.0
SNOW THERMAL FACTOR, Ct	1.0
SNOW LOAD IMPORTANCE FACTOR, I	1.1

[3] WIND DESIGN PARAMETERS

a. BASIC WIND SPEED = 120 MPH
b. WIND EXPOSURE = EXPOSURE C

[4] SEISMIC DESIGN PARAMETERS

a. RISK CATEGORY	III
b. DESIGN CATEGORY	B
c. IMPORTANCE FACTOR	1.25
d. SITE CLASS	D
e. 0.2 SECOND MAPPED SPECTRAL ACCELERATION, Ss	0.089 g
f. 1.0 SECOND MAPPED SPECTRAL ACCELERATION, S1	0.035 g
g. 0.2 SECOND DESIGN SPECTRAL RESPONSE, Sds	0.095 g
h. 1.0 SECOND DESIGN SPECTRAL RESPONSE, Sd1	0.056 g

i. ANALYSIS PROCEDURE - EQUIVALENT LATERAL FORCE PROCEDURE
j. SEISMIC BASE SHEAR: V = Cs x WEIGHT

C. DESIGN SPECIFICATIONS

CODE REFERENCES:
ASCE 7-10, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY, ACI 318 - 2011
BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES AND SPECIFICATIONS FOR MASONRY STRUCTURES AND COMMENTARIES, ACI 530 - 2011
COLD-FORMED STEEL DESIGN MANUAL, AISI - 2007
SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS, AISI - 2007
STEEL DECK INSTITUTE DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS AND ROOF DECKS - NOVEMBER 2007
STEEL DECK INSTITUTE ROOF DECK CONSTRUCTION HANDBOOK - 2000
STEEL DECK INSTITUTE DIAPHRAGM DESIGN MANUAL - SEPTEMBER 2004C. CODE
STEEL DECK INSTITUTE DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS AND ROOF DECKS - NOVEMBER 2007
STEEL DECK INSTITUTE MANUAL OF CONSTRUCTION WITH STEEL DECK - AUGUST 2006
STEEL DECK INSTITUTE STANDARD PRACTICE DETAILS - MAY 2001
AISC-360-10-MANUAL OF STEEL CONSTRUCTION - AISC, 13TH EDITION
AISC 341-10 SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS
SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OF A490 BOLTS - 30 JUNE 2004
STRUCTURAL WELDING CODE - STEEL, ANSI/AWS D1.1 - 2006

D. STRUCTURAL STEEL

[1] MATERIALS:

a. W-SHAPE MEMBERS: ASTM A992, Fy=50KSI
b. CHANNELS, M-SHAPES, S-SHAPES: ASTM A572, Fy=50KSI, AND ASTM 6
c. HOLLOW STRUCTURAL SHAPES (DESIGNATED AS HSS OR TS): ASTM 500, GRADE B, (ROUND HSS -> Fy=42KSI) (SQUARE & RECTANGULAR HSS -> Fy=46KSI)
d. TEES: SAME MATERIAL OF THE FULL SECTIONS THAT WERE SPLIT TO MAKE THE TEE SECTION
e. MISC. STEEL, PLATES, AND ANGLES: ASTM A36 Fy=36 KSI, OR ASTM A572, GRADE 50 WHERE NOTED ON THE DRAWINGS, AND ASTM A6.
f. HIGH STRENGTH BOLTS: ASTM A325 OR A490
g. ELECTRODES: E70XX
h. SHOP DRAWINGS SHALL INDICATE MATERIAL STRENGTH ON DRAWINGS.

[2] SPECIFICATIONS:
WELDING PERSONNEL AND PROCEDURES ARE TO BE QUALIFIED PER AWS D1.1 UNLESS SPECIFICALLY SHOWN OTHERWISE. DESIGN, FABRICATION, AND ERECTION TO BE GOVERNED BY THE LATEST REVISIONS OF:
a. AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.
b. AISC CODE OF STANDARD PRACTICE.
c. STRUCTURAL WELDING CODE, CURRENT AWS D1.1 OF THE AMERICAN WELDING SOCIETY.
d. SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR 490 BOLTS.
e. SEE ALSO GENERAL SPECIFICATIONS.

[3] CONNECTIONS:
a. IT IS THE RESPONSIBILITY OF THE FABRICATOR TO PROVIDE ALL STIFFENER PLATES, ETC., THAT MAY BE REQUIRED IN ADDITION TO THOSE SHOWN ON THE STRUCTURAL SCHEMATIC DETAILS TO ENSURE THAT THE MEMBERS CONNECTED TOGETHER HAVE ADEQUATE STRENGTH AT THE CONNECTION. COMPLETELY DETAILED INCLUDES PROVIDING THE FOLLOWING INFORMATION ON THE DETAIL.

[1] ALL PLATE DIMENSIONS AND GRADES
[2] ALL WELD SIZES, LENGTHS, PITCHES AND RETURNS
[3] ALL HOLE SIZES AND SPACINGS.
[4] NUMBER AND TYPES OF BOLTS

b. THE MINIMUM BEARING PLATE THICKNESS SHALL BE 1/2", THE MINIMUM BOLT DIAMETER SHALL BE 3/4", THE MINIMUM FIELD WELD SHALL BE 1/4", THE MINIMUM SHOP WELD SHALL BE 3/16" AND THE MINIMUM LOAD ON ANY CONNECTION SHALL BE 10 KIPS (UNO).
c. ALL OTHER BOLTED CONNECTIONS SHALL BE BEARING TYPE USING A325N OR A490N BOLTS. OVERSIZED HOLES AND LONG-SLOTTED HOLES ARE NOT ALLOWED UNLESS SHOWN ON THE DRAWINGS.
d. SHOP DRAWINGS SHALL INDICATE THE TYPE OF BOLT USED IN EACH CONNECTION AND THE ALLOWABLE VALUES USED FOR THE VARIOUS BOLT TYPES.
e. SPLICING OF STEEL MEMBERS, UNLESS SHOWN ON THE DRAWINGS, IS PROHIBITED WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.

[4] MISCELLANEOUS:
a. NO CHANGE IN SIZE OR POSITION OF THE STRUCTURAL ELEMENTS SHALL BE MADE AND HOLES, SLOTS, CUTS, ETC., ARE NOT PERMITTED THROUGH ANY MEMBER UNLESS THEY
ARE DETAILED ON THE APPROVED SHOP DRAWINGS.
b. FABRICATE ALL BEAMS AND MEMBERS WITH THE MILL CAMBER UP.
c. ALL COLUMNS TO HAVE 1/2" THICK CAP PLATES, UNLESS OTHERWISE NOTED.
d. ALL STEEL EXPOSED TO WEATHER, INCLUDING VENEER LINTEL ANGLES AND SUPPORTS, SHALL BE HOT-DIPPED GALVANIZED PER PLANS AND SPECIFICATIONS.

[5] PAINT:
a. SHOP PAINT ALL NEW STRUCTURAL AND MISCELLANEOUS STEEL TO MATCH EXISTING ROOF STRUCTURE.
b. ANY SCARRED AREAS SHALL BE TOUCHED UP WITH THE SAME PAINT AFTER ERECTION. PAINT COLOR SHALL BE BLACK.

E. MASONRY

[1] ANCHORS
a. ALL POST INSTALLED ANCHORS SHALL BE INSTALLED INTO SOLID-GROUTED MASONRY CELLS PER MANUFACTURER'S RECOMMENDATIONS.
b. EXPANSION AND EPOXY ANCHORS SHALL BE THE SIZE AND EMBEDMENT LENGTH AS SPECIFIED ON THE DRAWINGS. PROVIDE ANCHORS WITH THE FOLLOW MINIMUM ALLOWABLE STRESS DESIGN CAPACITIES: TENSION = 1500 POUNDS; SHEAR = 1000 POUNDS
c. CAST ANCHORS AND BOLTS SHALL BE INSERTED INTO WALL FOR THE EMBEDMENT DEPTH SHOWN IN THE DRAWING DETAILS, 5" MINIMUM, AND SURROUNDING CELLS WITHIN 1.5 TIMES THE EMBEDMENT DEPTH SHALL BE GROUTED SOLID TO ENCAPSULATE THE ANCHOR.

ABBREVIATIONS & NOTATION

AB - ANCHOR BOLT
ARCH. - ARCHITECTURE
BM. - BEAM
BRG. - BEARING
BLK. - BLOCK
B/ - BOTTOM
B.O.M.D. - BOTTOM OF METAL DECK
B.O.M. - BOTTOM OF MASONRY
B.O.P.S. - BOTTOM OF PRECAST SLABS
B.O.S.B. - BOTTOM OF STEEL BEAM
C - CENTERLINE
CLR. - CLEAR
COL. - COLUMN
CONT. - CONTINUOUS
CONC. - CONCRETE
CMU - CONCRETE MASONRY UNIT
CONNS. - CONNECTIONS
CJ - CONTROL JOINT
DBA - DEFORMED BAR ANCHOR
DIA. - DIAMETER
DIM. - DIMENSION
DWG. - DRAWING
EA. - EACH
EF. - EACH FACE
EW. - EACH WAY
ELEV, EL. - ELEVATION
EMBED. - EMBEDMENT
EQUIP. - EQUIPMENT
EQ. SPA. - EQUALLY SPACED
EXP. - EXPANSION
FF. - FINISHED FLOOR
FTG. - FOOTING
GALV. - GALVANIZED
GEN. - GENERAL
G.L. - GRADE LINE
HORIZ. - HORIZONTAL
HR. - HANDRAIL
H.S.S. - HOLLOW STRUCTURAL SHAPE
I.J. - ISOLATION JOINT
K - KIPS (1000 lbs.)
L - ANGLE
LG. - LONG
LLV. - LONG LEG VERTICAL
MAX - MAXIMUM
MECH. - MECHANICAL
MEZZ. - MEZZANINE
MPH - MILES PER HOUR
MIN. - MINIMUM
NF. - NEAR FACE
O.C. - ON CENTER
OPP. - OPPOSITE
P - PLATE
PEMB - PRE-ENGINEERED METAL BUILDING SYSTEM
PSF - POUNDS PER SQUARE FOOT
PSI - POUNDS PER SQUARE INCH
RD - ROOF DRAIN
REF. - REFERENCE
REINF. - REINFORCING
REQ'D. - REQUIRED
SIM. - SIMILAR
T/C - TOP OF CONCRETE
T&B. - TOP AND BOTTOM
TYP. - TYPICAL
T/FTG. - TOP OF FOOTING
T.O.W. - TOP OF WALL
T.O.B.L - TOP OF BRICK LEDGE
T.O.F.W- TOP OF FOUNDATION WALL
T.O.C.W. - TOP OF CONCRETE WALL
T.O.M. - TOP OF MASONRY
T.O.S.B. - TOP OF STEEL BEAM
UNO. - UNLESS NOTED OTHERWISE
VERT. - VERTICAL
WS. - WATERSTOP

Revisions: | Date

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Drawing Title: **GENERAL NOTES**

Approved: Project Director
Approver

Project Title: VA HEALTH CARE SYSTEM

Project Number: 438-16-104 2016.052

Building Number: 5

Location: VAS 438-16-104 BLDG. 5 CHAPEL SIOUX FALLS, SD 57105

Date: 2017.03.13 | Checked: SY | Drawn: LB

Drawing Number: S001

Scale:

OWNER

Department of Veterans Affairs

VA FORM 08-6231

three inches = one foot 6"
one and one half inches = one foot 1 0 6"
one inch = one foot 2 0 6"
three quarters inch = one foot 2 0 6"
one half inch = one foot 4 0
three eighths inch = one foot 4 0
one quarter inch = one foot 8 4 0
one eighth inch = one foot 16 8 4 0

C:_Revit Local Files\076966_Sioux Falls VA Chapel 2016 - Chicodini76966_Sioux Falls VA Chapel_STR_Central_2016_sfaster.rvt
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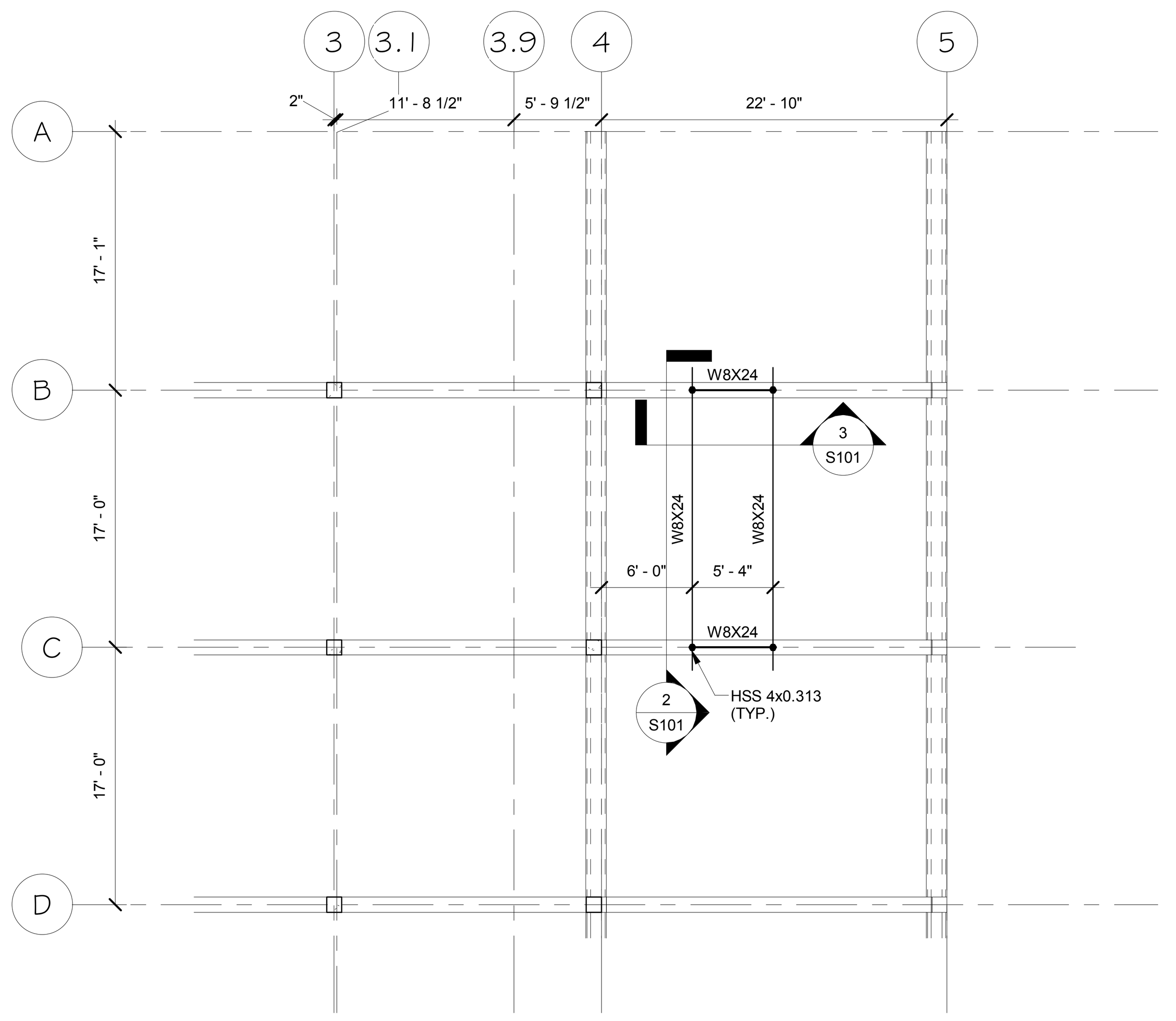
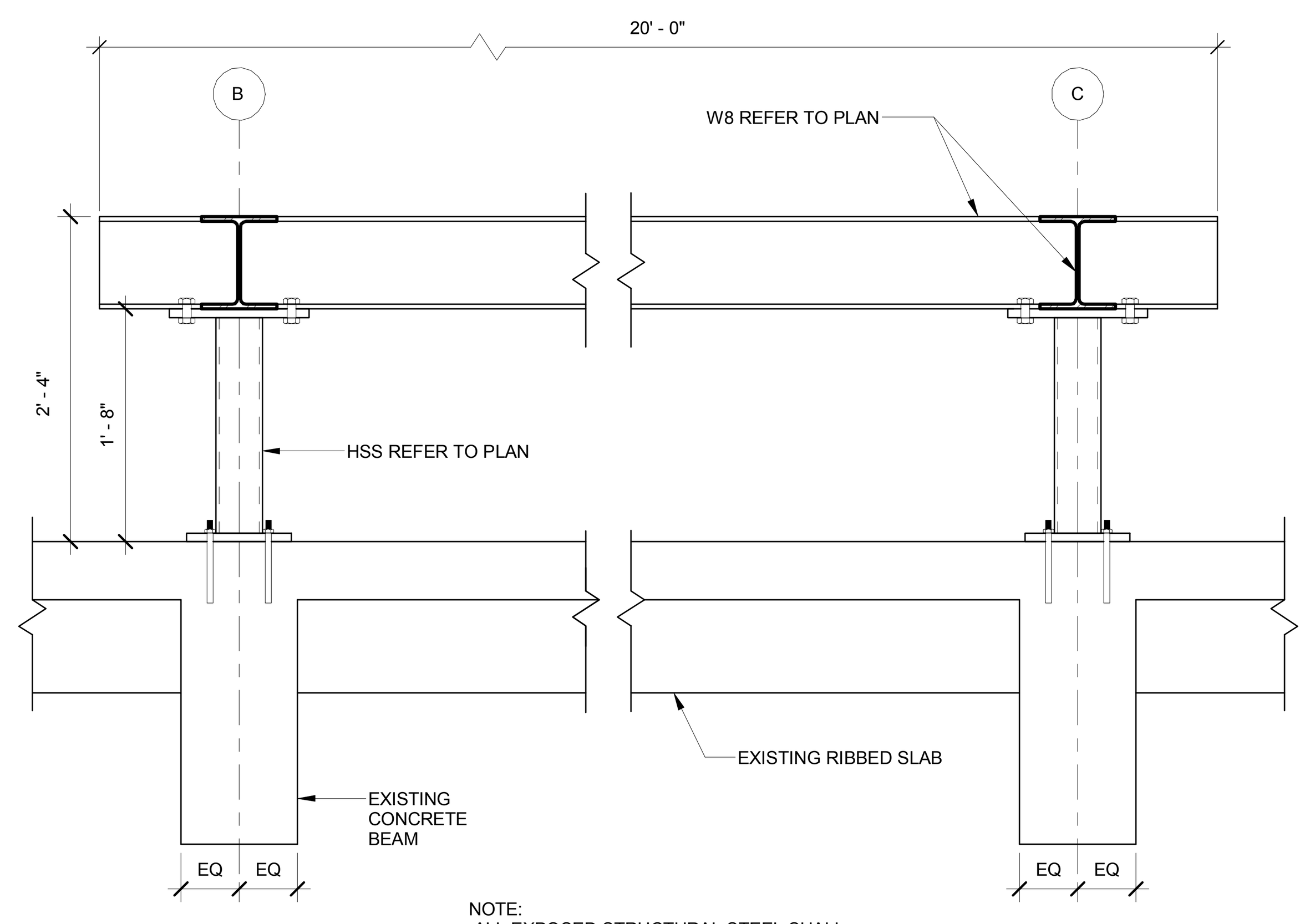
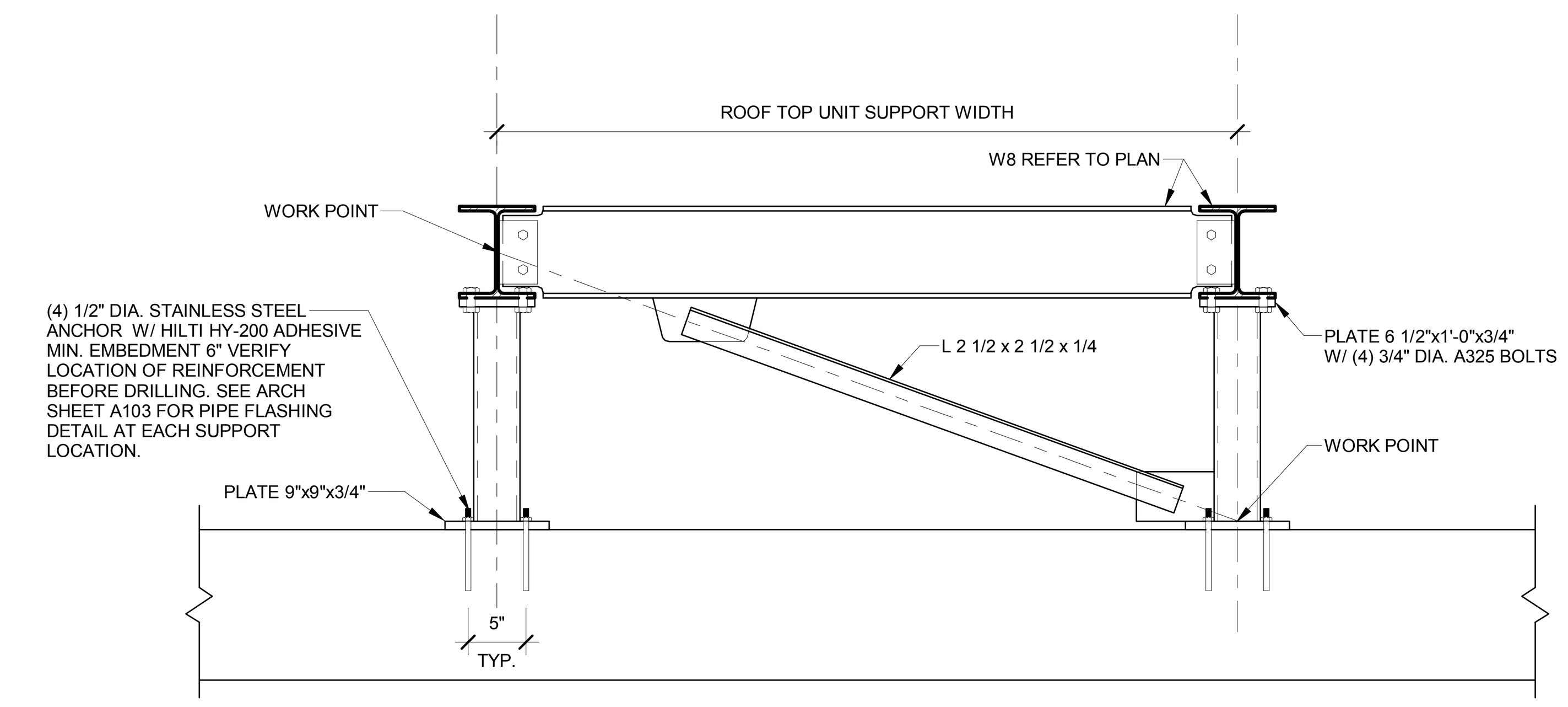


1 S101 THIRD FLOOR
1/8" = 1'-0"



NOTE:
ALL EXPOSED STRUCTURAL STEEL SHALL BE HOT-DIPPED GALVANIZED PER ASTM A123

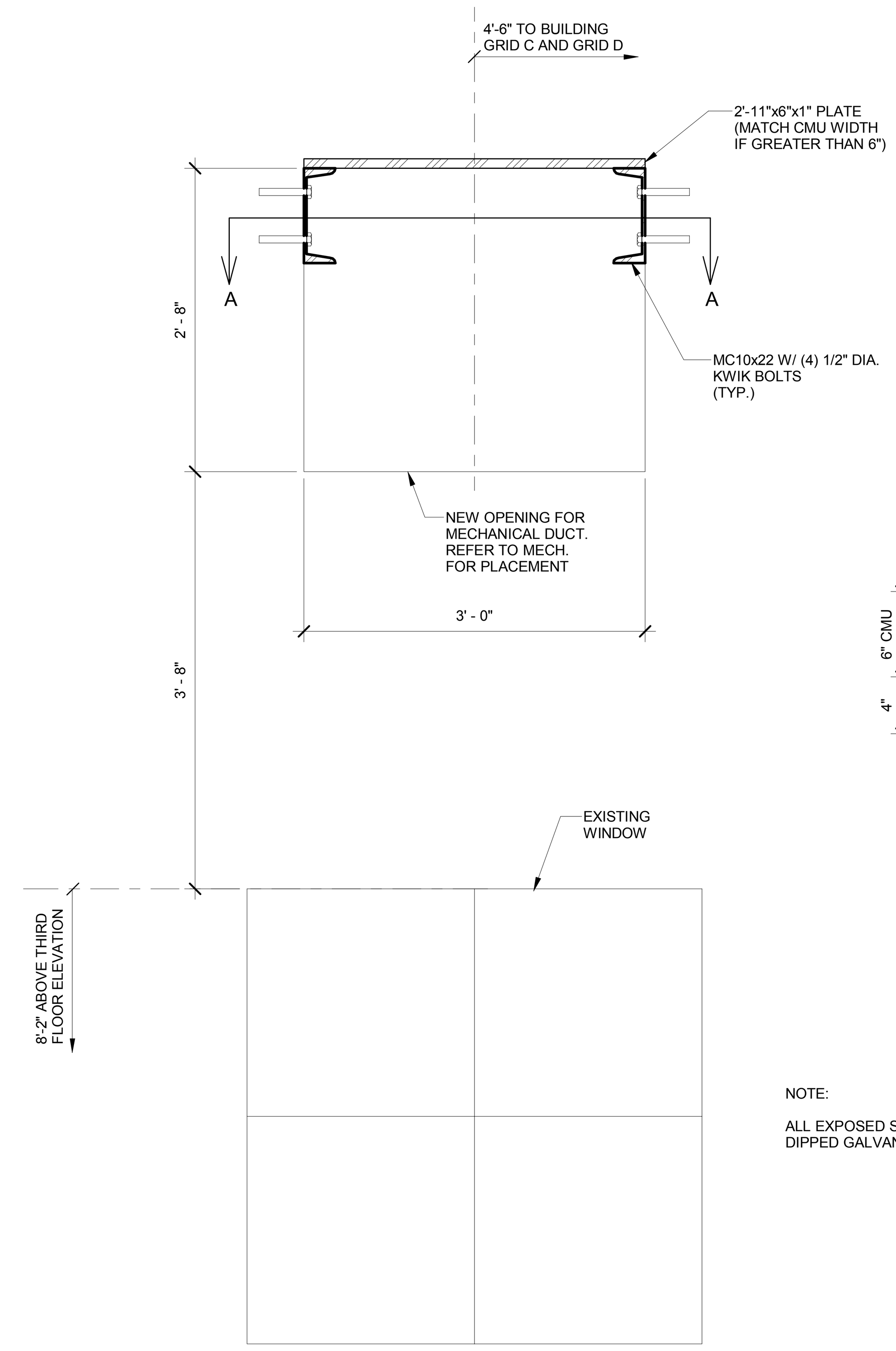
2 S101 SECTION
1" = 1'-0"

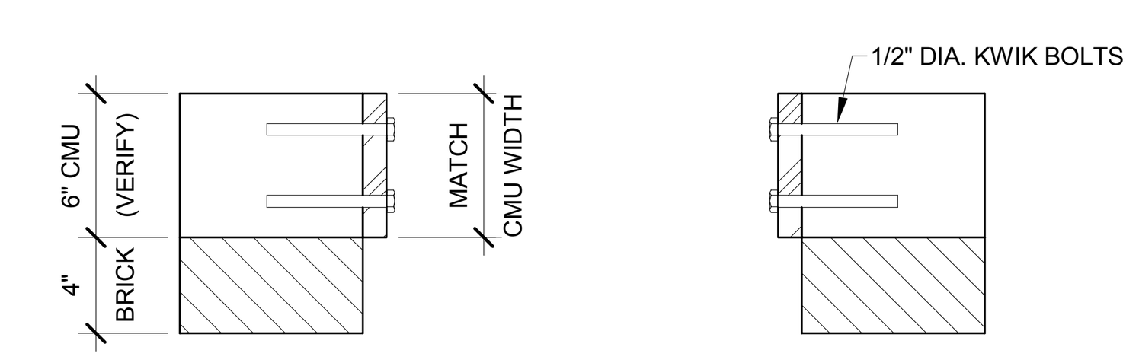


ROOF TOP UNIT SUPPORT WIDTH
W8 REFER TO PLAN
WORK POINT
(4) 1/2" DIA. STAINLESS STEEL ANCHOR W/ HILTI HY-200 ADHESIVE MIN. EMBEDMENT 6" VERIFY LOCATION OF REINFORCEMENT BEFORE DRILLING. SEE ARCH SHEET A103 FOR PIPE FLASHING DETAIL AT EACH SUPPORT LOCATION.
L 2 1/2 x 2 1/2 x 1/4
PLATE 6 1/2"x1'-0"x3/4"
W/ (4) 3/4" DIA. A325 BOLTS
WORK POINT
PLATE 9"x9"x3/4"
5"
TYP.

NOTE:
ALL EXPOSED STRUCTURAL STEEL SHALL BE HOT-DIPPED GALVANIZED PER ASTM A123

3 S101 SECTION
1" = 1'-0"





SECTION A-A

NOTE:

ALL EXPOSED STRUCTURAL STEEL SHALL BE HOT-DIPPED GALVANIZED PER ASTM A123

4 S101 NEW OPENING FOR MECHANICAL DUCT
1" = 1'-0"

Scale:As indicated

Revisions: | Date

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Drawing Title
MECHANICAL SUPPORT FRAMING AND DETAILS

Approved: Project Director
Approver

Project Title
VA HEALTH CARE SYSTEM

Location
VAS 438-16-104 BLDG. 5 CHAPEL
SIOUX FALLS, SD 57105

Date	Checked	Drawn
2017.03.13	SY	LB

Project Number
438-16-104 2016.052

Building Number
5

Drawing Number
S101

OWNER
Department of Veterans Affairs

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HVAC ABBREVIATION LEGEND

A	AMPS	MC	MECHANICAL CONTRACTOR
AC	AIR-CONDITIONING UNIT	MCA	MINIMUM CIRCUIT AMPS
ACR	ACR COPPER REFRIG PIPE	MD	MANULA DAMPER
AFF	ABOVE FINISHED FLOOR	MFF	MATT FACED FIBERGLASS
ALUM	ALUMINUM	MI	MALLEABLE IRON
APD	AIR PRESSURE DROP	MUA	MAKE UP AIR
ASJ	ALL SERVICE INSULATION JACKET	NC	NOISE CRITERIA LEVEL
B	STEAM BOILER	OA	OUTSIDE AIR
BAS	BUILDING AUTOMATION SYSTEM	OBD	OPPOSED BLADE DAMPER
BDD	BACKDRAFT DAMPER	O.C.	ON CENTER
BHP	BRAKE HORSE POWER	OAU	OUTDOOR AIR UNIT
BOD	BOTTOM OF DUCT	PC	PLUMBING CONTRACTOR
BOP	BOTTOM OF PIPE	PD	PRESSURE DROP
BR	BRAZED	PGGS	PRESSURE GRIP GALVANIZED STEEL
C-AL	CORRUGATED ALUMINUM	PP	POLYPROPYLENE
CAL	CALCIUM SILICATE INSULATION	PPM	PARTS PER MILLION
CCP	CALCIUM CARBONATE POWDER	PRESS.	PRESSURE
CF	CUBIC FEET	PRV	PRESSURE REGULATING VALVE
CFM	CUBIC FEET PER MINUTE	PS	PRESSURE SENSOR
CH	CHILLER	PVC	POLYVINYL CHLORIDE
CHP	CHILLED WATER PUMP	PVCGS	PVC COATED GALVANIZED STEEL
CHW	CHILLED WATER	RA	RETURN AIR
CHWR	CHILLED WATER RETURN	RC	ROOM CRITERIA LEVEL
CHWS	CHILLED WATER SUPPLY	RECT	RECTANGULAR
CI	CAST IRON	REFRIG.	REFRIGERANT
CL	CENTERLINE	RL	REFRIGERANT LIQUID
CLP	CENTERLINE OF PIPE	RF	RETURN OR RELIEF FAN
CMC	CELING MOUNTED CENTRIFUGAL FAN	RMC	ROOF MOUNTED CENTRIFUGAL FAN
CONC.	CONCRETE	RMP	ROOF MOUNTED PROPELLER FAN
CPVC	CHLORINATED PVC	RTU	ROOF TOP UNIT
CR	STEAM CONDENSATE RETURN	RV	RELIEF VALVE
CRP	CONDENSATE RETURN PIPE	S	SWITCH
CS	CARBON STEEL	SA	SUPPLY AIR
CU	CONDENSING UNIT	SC	SENSIBLE CAPACITY
CU	COPPER	SCH	SCHEDULE
CW	CONDENSER WATER	SCR	SCREWED (THREADED)
CWP	CONDENSER WATER PUMP	SF	SUPPLY FAN
D	DRAIN	SO	SHUT OFF VALVE TERMINAL
DB	DECIBELS	SQ	SQUARE
DCW	DOMESTIC COLD WATER	SS	STAINLESS STEEL
DDC	DIRECT DIGITAL CONTROLS	SW	SWEAT CONNECTION
DHW	DOMESTIC HOT WATER	SWLD	SOLVENT WELD
DMPR	DAMPER	T	THERMOSTAT
DS	DUCT SILENCER (SOUND ATTENUATOR)	TC	TOTLA CAPACITY
DT	DUAL TEMPERATURE	TEMP.	TEMPERATURE
DTP	DUAL TEMPERATURE PUMP	TH	THICKNESS
DTR	DUAL TEMPERATURE RETURN	THRD	THREADED
DTS	DUAL TEMPERATURE SUPPLY	TOD	TOP OF DUCT
EA	EXHAUST AIR	TOJ	TOP OF JOIST
EAT	ENTERING AIR TEMPERATURE	TOS	TOP OF STEEL
EC	ELECTRICAL CONTRACTOR	TS	TEMPERATURE SENSOR
EDB	ENTERING DRY BULB TEMERATURE	T/S	PIPE TYPE OR SCHEDULE
EF	EXHAUST FAN	UBC	UPBLAST CENTRIFUGAL FAN
EH	ELECTRIC HEATER	UC	FLEXIBLE UNICELLULAR
EWB	ENTERING WET BULB TEMPERATURE	UH	UNIT HEATER
EWT	ENTERING WATER TEMPERATURE	UV	UNIT VENTILATOR
EXH	EXHAUST	V	VOLTS
Ex	EXISTING	VAV	VARIABLE AIR FLOW
FCU	FANCOIL UNIT	VC	VENTILATING CONTRACTOR
FD	FIRE DAMPER	WCS	WROUGHT CARBON STEEL
FFJ	FOIL FACED JACKET	WCU	WROUGHT COPPER
FG	FIBERGLASS	WLD	WELDED CONNECTION
FGB	FIBERGLASS BOARD INSULATION	WMP	WALL MOUNTED PROPELLER FAN
FGW	FIBERGLASS WRAP	WPD	WATER PRESSURE DROP
FLA	FULL LOAD AMPS	WT	WEIGHT (OR DENSITY)
FLG	FLANGE		
FLGD	FLANGED		
FMG	FOAM GLASS		
FPM	FEET PER MINUTE		
FPP	FAN POWERED PARALLEL VAV		
FPS	FAN POWERED SERIES VAV		
FS	FLOW SWITCH		
FW	FEED WATER		
G	NATURAL GAS		
GA	GAGE (GUAGE)		
GALV	GALVANIZED		
GC	GENERAL CONTRACTOR		
GPH	GALLONS PER HOUR		
GPM	GALLONS PER MINUTE		
GRV	GROOVED PIPE		
GS	GALVANIZED STEEL		
H	HUMIDIFIER (HUMIDITY)		
HC	HEATING CONTRACTOR		
HF	HEAT FUSION		
HG	HOT GAS (REFRIGERANT)		
HP	HORSE POWER		
HPS	HIGH PRESSURE STEAM		
HRC	HEAT RECLAIM WATER		
HS	HUMIDITY SENSOR		
HV	HEATING/VENTILATING UNIT		
HW	HOT WATER		
HWB	HOT WATER BOILER		
HWP	HOT WATER PUMP		
HWR	HOT WATER RETURN		
HWS	HOT WATER SUPPLY		
ILC	INLINE CENTRIFUGAL FAN		
LAT	LEAVING AIR TEMPERATURE		
LDB	LEAVING DRY BULB TEMPERATURE		
LP	LIQUID PROPANE		
LPS	LOW PRESSURE STEAM		
LVR	LOUVER		
LWB	LEAVING WET BULB TEMPERATURE		
LWT	LEAVING WATER TEMPERATURE		
M	MOTORIZED		
MAT.	MATERIAL		
MBH	1000 BTUH		

PIPE SYMBOL LEGEND

CHWS	CHILLED WATER SUPPLY PIPE		PIPE DOWN
CHWR	CHILLED WATER RETURN PIPE		PIPE UP
CWS	CONDENSER WATER SUPPLY PIPE		TEE DOWN
CWR	CONDENSER WATER SUPPLY PIPE		TEE UP
DCW	DOMESTIC COLD WATER PIPE		PIPE BREAK (FOR CLARITY)
HWS	HEATING HOT WATER SUPPLY PIPE		CAPPED PIPE
HWR	HEATING HOT WATER RETURN PIPE		GAS SHUT-OFF VALVE
DTS	DUAL TEMPERATURE WATER SUPPLY PIPE		BALL VALVE
DTR	DUAL TEMPERATURE WATER RETURN PIPE		BUTTERFLY VALVE
DHW	DOMESTIC HOT WATER PIPE		UNION
V	VENT PIPE		CALIBRATED BALANCE VALVE
G	NATURAL GAS PIPE		PRESSURE REGULATING VALVE
LPG	LIQUID PROPANE GAS PIPE		GLOBE VALVE
FOS	FUEL OIL SUPPLY PIPE		GATE VALVE
FOR	FUEL OIL RETURN PIPE		STRAINER WITH BLOW DOWN VALVE
RL	REFRIGERANT LIQUID PIPE		STRAINER
RS	REFRIGERANT SUCTION PIPE		BLIND FLANGE
RHG	REFRIGERANT HOT GAS PIPE		MOTORIZED 2-WAY VALVE
LPS	LOW PRESSURE STEAM PIPE		MOTORIZED 3-WAY VALVE
MPS	MEDIUM PRESSURE STEAM PIPE		
HPS	HIGH PRESSURE STEAM PIPE		PRESSURE RELIEF VALVE
CDR	CONDENSATE RETURN PIPE		
FW	FEED WATER PIPE	PRESSURE GAGE	THERMOMETER

DUCTWORK SYMBOL LEGEND

SUPPLY AIR DUCT UP	RECTANGULAR TO ROUND TRANSITION
RETURN AIR DUCT UP	RECTANGULAR TRANSITION
EXHAUST AIR DUCT UP	STANDARD RECTANGULAT ELBOW
SUPPLY AIR DUCT DOWN	RADIUS RECTANGULAR ELBOW
RETURN AIR DUCT DOWN	ROUND DUCT UP
EXHAUST AIR DOWN	ROUND DUCT DOWN
SUPPLY AIR DUCT OFFSET	ROUND OFFSET
RETURN AIR DUCT OFFSET	ROUND ELBOW
EXHAUST AIR DUCT OFFSET	ROUND WYE
MANUAL BALANCING DAMPER	RECTANGULAR BRANCH TAKEOFF
MOTORIZED DAMPER	RECTANGULAR DUCT TERMINATION
FIRE DAMPER	ROUND DUCT TERMINATION

ANNOTATION SYMBOL LEGEND

T	THERMOSTAT	4 / M-10	SECTION SYMBOL
H	HUMIDSTAT		
S	SWITCH		
C	CARBON DIOXIDE SENSOR	RTU / 12	EQUIPMENT PLAN MARK
	EXISTING INTERFACE		
A220	VAV TERMINAL PLAN MARK		
A-250	AIR DEVICE MARK - CFM	4 / M-7	DETAIL SYMBOL
8"Ø	ROUND DUCT SIZE		
24X12	RECTANGULAR DUCT SIZE	10	KEYED NOTE SYMBOL

AIR DEVICE AND DUCT ACCESS. LEGEND

RETURN AIR GRILLE	SUPPLY AIR DIFFUSER (HARD CONNECTION)
SUPPLY AIR DIFFUSER WITH FLEXIBLE RUNOUT AND DAMPER	RETURN OR EXH. GRILLE (HARD CONNECTION)
SIDEWALL DIFFUSER IN DUCT	14X14 TRANSFER OPENING IN WALL
SUPPLY GRILLE (HARD CONNNECTION)	TRANSFER OPENING IN WALL
RETURN GRILLE (HARD CONNECTION)	
MANUAL BALANCE DAMPER	

GENERAL PROJECT NOTES

GENERAL:

1. INSTALL THE H.V.A.C. SYSTEM AS INDICATED IN ACCORDANCE WITH ALL STATE AND LOCAL CODES.
2. COORDINATE ALL WORK WITH OTHER TRADES. REWORK OF PIPING, DUCTWORK, EQUIPMENT LOCATION, CONDUIT, ETC. AS A RESULT OF POOR PLANNING. COORDINATION OR SCHEDULING SHALL BE THE RESPONSIBILITY OF THE INVOLVED CONTRACTORS. NOTIFY THE CONTRACTING OFFICER OF ANY CONFLICTS PRIOR TO START OF WORK.
3. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ANY FRAMING REVISIONS, EQUIPMENT LOCATIONS, ADDITION OF CONTROLS, ELECTRICAL CIRCUITING REVISIONS, ETC. THAT RESULT FROM USING EQUIPMENT OTHER THAN THOSE INDICATED ON THE DRAWINGS. APPROVAL OF THE SHOP DRAWINGS BY THE ARCHITECT/ENGINEER WILL NOT WAIVE THE CONTRACTOR OF THIS RESPONSIBILITY.
4. THE MECHANICAL CONTRACTOR SHALL HAVE THE FINAL RESPONSIBILITY FOR SYSTEM START UP, TRAINING, WARRANTY AND TURN OVER TO THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTRUCTING THE OWNER ON ANY ROUTINE MAINTENANCE REQUIRED DURING THE WARRANTY PERIOD.
5. ALL ITEMS INCLUDED ON THESE DRAWINGS AND THE SPECIFICATIONS SHALL BE INCLUDED IN THE CONTRACTORS BID. ANY ITEMS THAT ARE UNCLEAR OR FOUND TO BE INCORRECT BY THE CONTRACTOR SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER PRIOR TO THE BID DUE DATE. EXCLUSIONS OF WORK FROM THE BID ARE NOT ACCEPTABLE.
6. ALL WORK INDICATED ON THE MECHANICAL DRAWINGS SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE.
7. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL FIRESTOPPING FOR DUCT AND PIPE PENETRATIONS THAT PENETRATE FIRE RATED ASSEMBLIES. SEE ARCHITECTURAL DRAWINGS OR REFER TO THE OWNERS RECORD DRAWINGS FOR LOCATIONS OF FIRE RATED ASSEMBLIES. ALL FLOOR PENETRATIONS SHALL BE FIRESTOPPED AND SEALED WATER TIGHT WITH A FLEXIBLE SEALANT.
8. THE MECHANICAL CONTRACTOR SHALL PATCH ALL WALLS, CEILINGS OR FLOORS WHERE EQUIPMENT, CONTROLS, CONDUIT, DUCTWORK OR PIPING HAS BEEN REMOVED, RELOCATED OR INSTALLED NEW. PATCHING SHALL MATCH EXISTING SURFACES WITH RESPECT TO MATERIALS, COLOR AND TEXTURE.
9. THE MECHANICAL CONTRACTOR SHALL PROVIDE ROOF PATCHING FOR ANY ROOF PENETRATIONS NOT SPECIFICALLY IDENTIFIED ON THE ARCHITECTURAL DRAWINGS. ALL PATCHING SHALL BE PERFORMED IN A MANNER CONSISTENT WITH THE ROOF SYSTEMS CURRENT WARRANTY REQUIREMENTS AND MANUFACTURERS RECOMMENDATIONS.
10. THE MECHANICAL CONTRACTOR SHALL NOT PERFORM ANY WELDING OR TORCH CUTTING OPERATIONS WITHIN THE OCCUPIED BUILDING WITHOUT OBTAINING PERMISSION OR A BURN PERMIT FROM THE OWNER.
11. VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO EXCAVATION, TRENCHING OR DRILLING.
12. VERIFY THE LOCATION OF CONCEALED PIPING, CONDUIT, DUCTWORK, WIRING, ETC. PRIOR TO CUTTING OR DRILLING THROUGH WALLS, FLOORS, CEILINGS OR ROOF DECKS.

PIPING NOTES:

1. PRESSURE TEST ALL STEAM AND STEAM CONDENSATE PIPING SYSTEMS TO 100 PSIG OR 1.5 TIMES THE SYSTEM OPERATING PRESSURE, WHICHEVER IS GREATER, FOR A PERIOD OF 24 HOURS.
2. PITCH ALL CONDENSATE PIPING NO LESS THAN 1/8" PER 10' TOWARD THE FLOOR DRAINS, ROOF DRAINS OR SPLASH BLOCKS.
3. FLEXIBLE CONNECTIONS ON EQUIPMENT AND PUMPS SHALL NOT BE USED TO CORRECT MISALIGNMENT OF EQUIPMENT AND PIPING.
4. INSTALL ALL THERMOMETERS IN ACCESSIBLE AND READABLE POSITIONS.
5. ALL PIPING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH THE SEISMIC RESTRAINT MANUAL: GUIDELINES FOR MECHANICAL SYSTEMS, 3RD EDITION 2008, AS PUBLISHED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION, INC. (SMACNA) AS WELL AS ALL LOCAL CODES.
6. PROVIDE P-TRAPS WITH CLEANOUT ON ALL AIR HANDLING EQUIPMENT CONDENSATE DRAIN CONNECTIONS. SEE DETAILS ON DRAWINGS.
7. PROVIDE P-TRAPS WITH CLEANOUT ON ALL FAN COIL UNITS, UNIT VENTILATORS, DX FURNACE COIL CONDENSATE DRAIN CONNECTIONS. PIPE PER MANUFACTURERS RECOMMENDATIONS.

PAINTING:

1. MECHANICAL SUPPORTS, INTERIOR, FINISHED SPACE: EXPOSED UNPAINTED, PRIMED OR NON-PLATED STEEL SUPPORTS, HANGERS, BRACKETS, ETC., LOCATED WITHIN INTERIOR FINISHED SPACES VIEWABLE BY THE GENERAL BUILDING POPULATION SHALL BE PAINTED WITH ONE COAT OF RUST INHIBITIVE PRIMER AND TWO COATS OF ENAMEL OR ACRYLIC PAINT. COLOR AND FINISH TO BE SELECTED BY THE ARCHITECT.
2. MECHANICAL SUPPORTS, MECHANICAL ROOMS: UNPAINTED, PRIMED OR NON-PLATED STEEL SUPPORTS, HANGERS, BRACKETS, ETC., LOCATED WITHIN MECHANICAL OR UTILITY ROOMS SHALL BE PAINTED WITH ONE COAT OF RUST INHIBITIVE PRIMER AND TWO COATS OF ENAMEL OR ACRYLIC PAINT. PAINT GLOSS GRAY OR BLACK.
3. MECHANICAL SUPPORTS, EXTERIOR: UNPAINTED, PRIMED OR NON-PLATED STEEL SUPPORTS, HANGERS, BRACKETS, ETC., LOCATED ON THE EXTERIOR OF THE BUILDING, SHALL BE PAINTED WITH ONE COAT OF RUST INHIBITIVE PRIMER AND TWO COATS OF ENAMEL OR ACRYLIC PAINT. WHERE VIEWABLE BY THE GENERAL PUBLIC, COLOR AND FINISH TO BE SELECTED BY THE ARCHITECT OTHERWISE PAINT WITH SEMI-GLOSS PAINT TO MATCH THE COLOR OF THE SURFACE ON WHICH THE SUPPORT IS MOUNTED OR ADJACENT TO.
4. NON-INSULATED PIPING, NON-INSULATED DUCTWORK, AND CONDUIT, INTERIOR, FINISHED SPACE: EXPOSED, NON-INSULATED PIPING, NON-INSULATED DUCTWORK, AND CONDUIT LOCATED WITHIN INTERIOR FINISHED SPACES, VIEWABLE BY THE GENERAL BUILDING POPULATION, SHALL BE PAINTED WITH ONE COAT OF RUST INHIBITIVE PRIMER AND TWO COATS OF ENAMEL OR ACRYLIC PAINT. COLOR AND FINISH TO BE SELECTED BY THE ARCHITECT.
5. INSULATED PIPING AND DUCTWORK, INTERIOR, FINISHED SPACE: EXPOSED, INSULATED PIPING AND DUCTWORK, LOCATED WITHIN INTERIOR FINISHED SPACES, VIEWABLE BY THE GENERAL BUILDING POPULATION, SHALL BE PAINTED WITH TWO COATS OF LATEX PAINT. COLOR AND FINISH TO BE SELECTED BY THE ARCHITECT.
6. NON-INSULATED PIPING, NON-INSULATED DUCTWORK, AND CONDUIT, MECHANICAL ROOMS: NON-INSULATED PIPING, NON-INSULATED DUCTWORK, AND CONDUIT LOCATED WITHIN MECHANICAL AND UTILITY ROOMS SHALL BE PAINTED WITH ONE COAT OF RUST INHIBITIVE PRIMER AND TWO COATS OF GLOSS ENAMEL OR ACRYLIC PAINT PER THE COLOR CODE LOCATED ON THE PIPE SCHEDULE.
7. INSULATED PIPING AND DUCTWORK, MECHANICAL ROOMS: WHERE PVC OR FOIL FACED JACKETS HAVE NOT BEEN SPECIFIED PER THE PIPE AND DUCT SCHEDULES ON EXPOSED, INSULATED PIPING AND DUCTWORK LOCATED WITHIN MECHANICAL ROOMS, PAINT THE ALL SERVICE JACKET WITH TWO COATS OF GLOSS LATEX PAINT. PAINT PIPE PER THE COLOR CODE LOCATED ON THE PIPE SCHEDULE. PAINT DUCTWORK WHITE.
8. NON-INSULATED PIPING, NON-INSULATED DUCTWORK, AND CONDUIT, EXTERIOR: NON-INSULATED PIPING, NON-INSULATED DUCTWORK, AND CONDUIT LOCATED ON OR AROUND THE BUILDING EXTERIOR, SHALL BE PAINTED WITH ONE COAT OF RUST INHIBITIVE PRIMER AND TWO COATS OF GLOSS ENAMEL OR ACRYLIC PAINT. WHERE PIPING DUCTWORK AND CONDUIT IS VIEWABLE BY THE GENERAL PUBLIC, COLOR AND FINISH TO BE SELECTED BY THE ARCHITECT, OTHERWISE PAINT WITH SEMI-GLOSS PAINT TO MATCH THE COLOR OF THE SURFACE ON WHICH THE SUPPORT IS MOUNTED OR ADJACENT TO.
9. INSULATED PIPING AND DUCTWORK, EXTERIOR: EXPOSED, INSULATED PIPING AND DUCTWORK, THAT INCLUDE A METAL, PVC, OR LAMINATED MULTIP-LAYER WRAP WITH BUILT-IN FINISH SHALL NOT BE PAINTED. FLEXIBLE UNICELLULAR PIPE OR DUCT INSULATION SHALL PAINTED WITH A COATING SPECIFICALLY RECOMMENDED BY THE INSULATION MANUFACTURER. WHERE PIPING DUCTWORK AND CONDUIT IS VIEWABLE BY THE GENERAL PUBLIC, COLOR AND FINISH TO BE SELECTED BY THE ARCHITECT, OTHERWISE PAINT WITH SEMI-GLOSS PAINT TO MATCH THE COLOR OF THE SURFACE ON WHICH THE SUPPORT IS MOUNTED OR ADJACENT TO.
10. WHERE GALVANIZED DUCTWORK REQUIRES PAINTING PROVIDE A PAINT GRIP FINISH OR CHEMICALLY CLEAN AND PREPARE THE DUCT SURFACE PRIOR TO PAINTING.
11. DO NOT PAINT OVER NAME PLATES, WARNING SIGNS, IDENTIFICATION LABELS, ETC.

EQUIPMENT - GENERAL:

1. INSTALL STEAM SYSTEM THERMOMETERS WHERE INDICATED ON THE DRAWINGS AND AT THE INLET AND OUTLET CENTRAL STATION AIR HANDLING UNIT COIL AND HEAT EXCHANGER. STEM AND PROBE MUST EXTEND TO AT LEAST THE CENTER OF THE PIPE. FILL THERMOMETER WELL WITH CONDUCTIVE PASTE.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE SERVICE ACCESS SPACE FOR ALL EQUIPMENT WITH OTHER TRADES TO MAINTAIN PROPER CLEARANCES FOR EQUIPMENT MAINTENANCE AND OPERATION.
3. VARIATIONS IN THE EQUIPMENT ORDERED AND THAT SHOWN ON THE DRAWINGS SHALL BE COORDINATED BEFORE THE INSTALLATION OF ANY PIPING, DUCTWORK, EQUIPMENT PADS, CONDUIT ETC.
4. THE H.V.A.C. EQUIPMENT AND SYSTEM SHALL NOT BE USED TO TEMPORARILY HEAT, COOL OR DEHUMIDIFY THE SPACE DURING CONSTRUCTION (PRIOR TO SUBSTANTIAL COMPLETION) WITHOUT APPROVAL BY THE OWNER. THE WARRANTY PERIOD SHALL NOT BEGIN UNTIL SUBSTANTIAL COMPLETION. THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY ADDITIONAL CHARGES TO EXTEND THE EQUIPMENT WARRANTY PERIOD AS NECESSARY.

EQUIPMENT SUPPORTS:

1. COORDINATE THE EXACT SUPPORT PAD SIZE AND EQUIPMENT MOUNTING REQUIREMENTS WITH ALL INVOLVED CONTRACTORS PRIOR TO CONSTRUCTION. REFER TO FINAL EQUIPMENT SHOP DRAWINGS PROVIDE BY THE MANUFACTURER FOR EQUIPMENT SIZES AND MOUNTING REQUIREMENTS. PROVIDE SEISMIC RESTRAINTS AND SNUBBERS WHERE INDICATED.
2. INSTALL DOWEL RODS TO CONNECT CONCRETE BASES TO CONCRETE FLOOR. UNLESS OTHERWISE INDICATED INSTALL DOWEL RODS ON 18" CENTERS AROUND THE FULL PERIMETER OF THE BASE. DOWELS SHALL NOT BE PLACED CLOSER THAN 4" FROM THE EDGE OF THE PAD. PROVIDE CONTROL JOINTS ON ALL PADS WITH AN ASPECT RATIO OF 1.5:1 OR GREATER THAN 12'-0" IN LENGTH. ROUND ALL EDGES AND CORNERS OF CONCRETE PAD. PROVIDE A TROWEL FINISH. CONCRETE SHALL REQUIRE AT LEAST 7 DAYS TO CURE PRIOR TO SETTING EQUIPMENT OR INSTALLING ANCHORS.
3. FOLLOW THE MANUFACTURERS REQUIREMENTS FOR ANCHOR BOLT TYPE, SIZE, EMBEDMENT, HOLE SIZE, ETC. SPECIFIC APPLICATION UNLESS INDICATED OTHERWISE.
4. PROVIDE GROUT UNDER BASEPLATES, RAILS OR SUPPORTS WHERE REQUIRED OR AS INDICATED ON THE DRAWINGS.
5. SEE STRUCTURAL AND ARCHITECTURAL DRAWINGS FOR STRUCTURAL SUPPORT REQUIREMENTS FOR ROOFTOP EQUIPMENT. COORDINATE EXACT SIZE AND LOCATION REQUIREMENTS PRIOR TO INSTALLATION.

DEMOLITION:

1. THE CONTRACTOR SHALL MAKE ALL PROVISIONS TO PROTECT THE PREMISES FROM DAMAGE DURING DEMOLITION WORK.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MOVING AND PROTECTING ALL OWNER OWNED FURNITURE, EQUIPMENT ETC. AS REQUIRED TO PERFORM THE WORK OF THIS PROJECT.
3. THE CONTRACTOR SHALL PROTECT THE ROOF MEMBRANE DURING DEMOLITION AND MAKE ANY PROVISIONS REQUIRED TO MAINTAIN THE CURRENT ROOFING SYSTEM WARRANTY.
4. PROVIDE TEMPORARY WEATHERPROOFING AND CURBING AT ROOF OPENINGS AS REQUIRED DURING DEMOLITION TO PROTECT THE SPACE BELOW.
5. WHEN TEMPORARY OPENINGS THROUGH THE ROOF MUST REMAIN OPEN 8 HOURS OR LONGER, FRAME AND COVER OPENINGS WITH 3/4" PLYWOOD. TEMPORARY OPENING ENCLOSURES SHALL BE SECURED IN PLACE WITH MECHANICAL MEANS TO WITHSTAND POTENTIAL ADVERSE WEATHER CONDITIONS.
6. WHERE THE USE OF CUTTING TORCHES ARE REQUIRED, PROVIDE A MEANS TO VENTILATE THE SPACE TO REMOVE SMOKE AND ODORS. COORDINATE ALL TORCH CUTTING OPERATIONS WITH THE OWNER AND OBTAIN NECESSARY BURN PERMITS. PROVIDE A DOCUMENTED FIRE SAFETY PLAN PRIOR TO CUTTING OPERATIONS AND INSTRUCT ALL PERSONNEL ON THE PLANS IMPLEMENTATION. FIRE EXTINGUISHERS SHALL BE PRESENT AT ALL TIMES.
7. THE CONTRACTOR SHALL NOTE ANY EXISTING DAMAGE ON CEILING TILES, ROOFING, LIGHT FIXTURES, WALLS, FLOORS FURNITURE, PAVING, ETC. PRIOR TO THE START OF ANY WORK. THE CONTRACTOR SHALL PHOTOGRAPH THESE ITEMS AND SUBMIT THEM TO THE ENGINEER BEFORE BEGINNING WORK.
8. THE CONTRACTOR SHALL DISPOSE OF ALL DEMOLISHED EQUIPMENT EXCEPT WHERE NOTED OTHERWISE.
9. THE CONTRACTOR SHALL REMOVE ALL ABANDONED THERMOSTATS, CONDUIT, ELECTRICAL COMPONENTS, EQUIPMENT, WIRING, CONTROLS, ETC.
10. WHERE EXISTING PIPING, DUCTWORK, EQUIPMENT, CONTROLS, CONDUIT, WIRE MOLD, ETC. HAVE BEEN REMOVED FROM WALLS, PATCH WALL AND PAINT TO NEAREST "EYE BREAK" OR MASONRY UNIT. OBTAIN THE APPROPRIATE PAINT COLOR FROM THE OWNER OR USE COMPUTER COLOR MATCHING BY THE PAINT SUPPLIER.
11. WHERE EXISTING PIPING, DUCTWORK, EQUIPMENT, CONTROLS, CONDUIT, WIRE MOLD, ETC. HAVE BEEN REMOVED FROM CEILINGS, PATCH CEILING AND BLEND PAINT INTO EXISTING AS MUCH AS POSSIBLE. OBTAIN THE APPROPRIATE PAINT COLOR FROM THE OWNER OR USE COMPUTER COLOR MATCHING BY THE PAINT SUPPLIER.
12. WHERE EXISTING PIPING, DUCTWORK, EQUIPMENT, CONDUIT, SUPPORT PADS ETC. HAVE BEEN REMOVED FROM FLOORS, PATCH FLOOR TO MATCH EXISTING MATERIALS, COLOR AND SURFACE FINISH TO MATCH EXISTING AND BLEND PAINT INTO EXISTING AS MUCH AS POSSIBLE. OBTAIN SPARE TILE AND OR CARPET MATERIAL FROM THE OWNER WHERE POSSIBLE.
13. ALL REFRIGERANT SHALL BE REMOVED FROM THE EQUIPMENT PRIOR TO DEMOLITION. DOCUMENT THE TOTAL POUNDS REMOVED, STORAGE METHOD AND PLACE OF DISPOSAL OR STORAGE. REMOVE REFRIGERANT AND STORE OR DISPOSE OF IN A MANNER CONSISTENT WITH EPA REGULATIONS AND GUIDELINES.
14. DISPOSE OF WASTE OIL AND CLEANSING SOLUTIONS IN A MANNER CONSISTENT WITH EPA REGULATIONS AND GUIDELINES.
15. CAP ALL PIPING ABANDONED IN PLACE AFTER DEMOLITION.
16. WHERE PIPING, CONDUIT, DUCTWORK, CONTROLS, EQUIPMENT, ETC ARE CALLED FOR TO BE DEMOLISHED, REMOVE ALL ASSOCIATED HANGERS, SUPPORTS AND OTHER ASSOCIATED AND OR CONNECTED ITEMS ABANDONED AS A RESULT OF THE DEMOLITION.

IDENTIFICATION:

1. PROVIDE PLASTIC LAMINATE IDENTIFICATION LABELS ON ALL EQUIPMENT SCHEDULED ON THE DRAWINGS. THE IDENTIFICATION SHALL BE CONSISTENT WITH THE PLANMARKS SHOWN ON THE DRAWINGS AND THE BAS SYSTEM USER INTERFACE. SEE DETAILS ON DRAWINGS REGARDING COLOR, SIZE, TEXT HEIGHT, ETC.
2. PROVIDE PLASTIC LAMINATE IDENTIFICATION LABELS ON ALL TEMPERATURE CONTROL COMPONENTS SUCH AS VALVE AND DAMPER ACTUATORS, CONTROL PANELS, TEMPERATURE SENSORS, HUMIDITY SENSORS, ETC. THE IDENTIFICATION SHALL BE CONSISTENT WITH THE PLANMARKS SHOWN ON THE DRAWINGS WHERE AVAILABLE AND THE BAS SYSTEM USER INTERFACE. SEE DETAILS ON DRAWINGS REGARDING COLOR, SIZE, TEXT HEIGHT, ETC.
3. PROVIDE IDENTIFICATION LABELS ON ALL PIPING SYSTEMS. SEE DETAILS ON DRAWINGS REGARDING COLOR, SIZE, TEXT HEIGHT, ETC.
4. PROVIDE A STENCILED LABEL ON ALL ACCESS DOORS PROVIDED FOR ACCESS TO FIREDAMPERS. THE STENCILED LABEL SHALL BE RED, 2" HIGH AND READ "FD"
5. PLASTIC LAMINATE SIGNS AND LABELS ON OUTDOOR EQUIPMENT SHALL BE FIXED TO EQUIPMENT WITH STAINLESS STEEL OR ALUMINUM RIVETS OR STAINLESS STEEL OR PLATED SCREWS.
6. CLEAN EQUIPMENT AND PIPING PRIOR TO AFFIXING ADHESIVE TYPE LABELS AND SIGNS.

TEMPERATURE CONTROL NOTES:

1. PROVIDE PROJECT SPECIFIC TEMPERATURE CONTROL SYSTEM MANUAL FOR THE PROJECT. THE MANUAL SHALL CONTAIN A DIAGRAM OF THE CONTROL SYSTEM ARCHITECTURE, WIRING DIAGRAMS AND A SEQUENCE OF OPERATION. THE MANUAL SHALL ALSO INCLUDE AN 11 X 17 FLOOR PLAN INDICATING THE MAJOR EQUIPMENT AND PANEL LOCATIONS. THE MANUAL SHALL BE BOUND IN A HARD BACK 3 RING BINDER WITH DIVIDERS. BINDER SHALL BE LABELED "H.V.A.C TEMPERATURE CONTROL MANUAL" AND INCLUDE THE PROJECT NAME AS WELL AS THE BUILDING NAME, NUMBER AND ADDRESS.
2. LABEL ALL CONTROL PANELS, ACTUATORS, SENSORS, ETC WITH 1/8" THICK PLASTIC LAMINATE SIGNS. SEE DRAWINGS FOR LABEL AND LETTERING REQUIREMENTS. LABEL DESIGNATIONS SHALL BE CONSISTENT WITH THE DRAWINGS, TEMPERATURE CONTROL SYSTEM MANUAL AND DIAGRAMS.
3. MOUNT THERMOSTATS AND SENSORS 4'-0" ABOVE FINISH FLOOR. DO NOT MOUNT IN DIRECT SUNLIGHT OR NEAR HEAT PRODUCING EQUIPMENT.
4. ALL COVERS AND TRIM ON SENSORS LOCATED IN OCCUPIED SPACES TO BE WHITE.
5. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL SMOKE DETECTORS FOR THE H.V.A.C SYSTEM. THE ELECTRICAL CONTRACTOR SHALL ALSO PROVIDE ALL WIRING BETWEEN THE STARTERS OR DRIVES AND THE FIRE ALARM SYSTEM AS REQUIRED TO SHUT DOWN THE EQUIPMENT IN THE EVENT OF A FIRE AS DESCRIBED BY THE SEQUENCE OF OPERATION. THE BUILDING AUTOMATION SYSTEM (BAS) SHALL NOT BE USED AS PART OF THE FIRE ALARM SYSTEM.
6. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL INTERFACE WIRING REQUIRED BETWEEN THE TEMPERATURE CONTROL SYSTEM AND THE FIRE ALARM SYSTEM. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE INTERFACE TERMINALS AS PART OF THE FIRE ALARM SYSTEM AS REQUIRED TO PROVIDE THE SPECIFIED SEQUENCE OF OPERATION.
7. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL MOTOR STARTERS AND DISCONNECT SWITCHES FOR H.V.A.C. EQUIPMENT UNLESS THEY ARE INCLUDED WITH THE EQUIPMENT AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS. COORDINATE STARTER REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR AND THE BAS CONTRACTOR PRIOR TO ORDERING.
8. WHERE AUXILIARY CONTACTS ARE REQUIRED IN STARTERS PROVIDED BY THE ELECTRICAL CONTRACTOR, THE MECHANICAL CONTRACTOR SHALL COORDINATE THE QUANTITY AND TYPE OF CONTACTS WITH THE ELECTRICAL CONTRACTOR PRIOR TO PURCHASE.
9. THE ELECTRICAL CONTRACTOR SHALL PROVIDE CIRCUIT BREAKERS IN THE ELECTRICAL PANELS THAT ARE SPECIFICALLY DEDICATED FOR THE TEMPERATURE CONTROL SYSTEM. COORDINATE THE QUANTITY AND SIZES WITH THE BAS CONTRACTOR. SEE ELECTRICAL DRAWINGS FOR LOCATION.
10. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL TEMPERATURE CONTROL SYSTEM WIRING AND CONDUIT REGARDLESS OF VOLTAGE AS REQUIRED TO PROVIDE THE SPECIFIED SEQUENCE OF OPERATION OR SATISFY ANY MANUFACTURER REQUIREMENTS. POWER AND CONTROL WIRING AND CONDUIT FOR VALVE ACTUATORS, DAMPER ACTUATORS, REFRIGERANT MONITORS, CARBON DIOXIDE SENSORS, TEMPERATURE CONTROL PANELS, RELAYS, INDICATOR LIGHTS, REMOTE CONTROL PANELS, SOLENOID VALVES AND OTHER SIMILAR DEVICES THAT ARE PART OF THE H.V.A.C SYSTEM SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR. SEE ELECTRICAL DRAWINGS FOR THE LOCATION OF CIRCUIT BREAKERS SPECIFICALLY DEDICATED FOR TEMPERATURE CONTROL SYSTEM COMPONENTS.
11. ALL CONDUIT SHALL BE CONCEALED WITHIN THE WALL OR CEILING CAVITY WITH THE EXCEPTION OF MECHANICAL ROOMS, ELECTRICAL ROOMS, OR WHERE NOTED OTHERWISE. CONDUIT MAY BE EXPOSED AT THE CEILING LEVEL OF AREAS WITHOUT CEILINGS (EXPOSED STRUCTURE). COORDINATE THE ROUGH-IN OF CONDUIT AND JUNCTION BOXES IN MASONRY WALLS WITH THE GENERAL CONTRACTOR. SURFACE MOUNTED RACEWAYS OR EXPOSED CABLE ARE NOT ACCEPTABLE UNLESS SPECIFICALLY NOTED OTHERWISE.
12. IT SHALL BE THE MECHANICAL CONTRACTORS RESPONSIBILITY TO COORDINATE ALL TEMPERATURE CONTROL SYSTEM REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR PRIOR TO THE PURCHASE OR INSTALLATION OF ANY OF THE ELECTRICAL POWER OR TEMPERATURE CONTROL SYSTEM COMPONENT.
13. ALL DAMPER ACTUATORS FOR DUCT SYSTEMS OR EQUIPMENT THAT COMMUNICATES DIRECTLY WITH THE OUTDOORS SHALL BE SPRING RETURN TYPE TO CLOSE IN THE EVENT OF A POWER FAILURE.
14. ALL VALVE ACTUATORS FOR PIPE SYSTEMS SERVING EQUIPMENT THAT CONDITIONS OUTDOOR AIR SHALL BE SPRING RETURN TYPE TO OPEN IN THE EVENT OF A POWER FAILURE.
15. ALL DAMPERS ON THE INLET OR OUTLET OF THE FAN SHALL BE OPEN PRIOR TO STARTING THE FAN. PROVIDE ANY TIME DELAYS OR END SWITCHES AS REQUIRED.

DUCTWORK - GENERAL:

1. ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED PER THE LATEST VERSION OF THE S.M.A.C.N.A. H.V.A.C. DUCT CONSTRUCTION STANDARDS. UNLESS SPECIFIED MORE STRINGENTLY ELSEWHERE IN THESE CONSTRUCTION DOCUMENTS.
2. ALL 90° RECTANGULAR ELBOWS, 2" PRESSURE CLASS AND BELOW, SHALL BE EQUIPPED WITH SINGLE THICKNESS TURNING VANES MOUNTED TO A PREFABRICATED VANE RAIL, UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
3. ALL RECTANGULAR 90° ELBOWS, 3" PRESSURE CLASS AND HIGHER, SHALL BE RADIUS TYPE, EQUIPPED WITH 3 SPLITTER VANES FOR DUCT 40" AND WIDER, AND TWO SPLITTER VANES FOR DUCTS 39" WIDE AND SMALLER. SPACE AND MOUNT SPLITTER VANES ACCORDING TO THE S.M.A.C.N.A. STANDARDS.
4. ALL RECTANGULAR RADIUS ELBOWS TO BE FABRICATED WITH AN INSIDE RADIUS NO LESS THAN 1/2 OF WIDTH OF THE DUCT. THE WIDTH IS DEFINED AS THE DIMENSION OF THE DUCT IN THE PLANE IN WHICH THE DUCT IS TURNING.
5. RECTANGULAR DUCTWORK SHALL BE SUPPORTED PER THE S.M.A.C.N.A. STANDARDS AND AT EACH CHANGE IN DIRECTION.
6. "BULL HEAD" RECTANGULAR TEES WITH OR WITHOUT TURNING VANES AND SPIRAL DUCT TEES ARE NOT ACCEPTABLE.
7. PROVIDE MANUAL, SINGLE BLADE, BALANCING DAMPERS WITH LOCKING QUADRANT AND INTEGRAL POSITION INDICATOR ON ALL RUNOUTS TO SUPPLY AND EXHAUST AIR DEVICES.
8. PROVIDE MANUAL OPPOSED BLADE, BALANCING DAMPERS WITH LOCKING QUADRANT AND INTEGRAL POSITION INDICATOR ON ALL RECTANGULAR BRANCH DUCTS AND AIR DEVICE RUNOUTS THAT EXCEED 12" IN HEIGHT.
9. MANUAL SPLITTER DAMPERS ARE NOT ACCEPTABLE.
10. ALL DUCT, 3" PRESSURE CLASS AND HIGHER, SHALL BE SEALED EXTERNALLY AT EACH JOINT AND INTERNALLY ALONG ALL LONGITUDINAL SEAMS.
11. ALL DUCT, 3" PRESSURE CLASS AND HIGHER, SHALL BE EXTERNALLY SEALED AT EACH JOINT.
12. PROVIDE ACCESS DOORS IN ALL DUCT SYSTEMS OR PLENUMS WHERE REQUIRED TO ACCESS AND MAINTAIN MOTORIZED OR AUTOMATIC DAMPER BLADES AND LINKAGES. (NOT REQUIRED FOR FIXED POSITION BALANCING DAMPERS.)
13. ALL DUCTWORK LOCATED WITHIN MECHANICAL ROOMS SHALL BE SEALED EXTERNALLY AT EACH JOINT REGARDLESS OF PRESSURE CLASS.
14. ALL DUCTWORK SHALL BE PROVIDED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH THE SEISMIC RESTRAINT MANUAL: GUIDELINES FOR MECHANICAL SYSTEMS, 3RD EDITION 2008, AS PUBLISHED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION, INC. (SMACNA) AS WELL AS ALL LOCAL CODES.
15. ALL DUCTWORK SHALL BE SUPPORTED FROM ROOF OR FLOOR STRUCTURE ABOVE. DUCTWORK SHALL NOT LAY ON TOP OF CEILING OR LIGHT FIXTURES.
16. FLEXIBLE DUCT RUNOUTS TO AIR DEVICES SHALL NOT EXCEED 5'-0" IN LENGTH. FLEXIBLE RUNOUTS SHALL BE TRIMMED TO THE MINIMUM LENGTH NECESSARY TO MAKE THE CONNECTION.
17. WHERE DAMPER ACTUATORS ARE MOUNTED TO DUCTWORK OR PLENUMS PROVIDE A HEAVY GAGE BASE PLATE, ANGLE STIFFENERS OR MOUNTING AS REQUIRED TO ELIMINATE DEFLECTION OF DUCTWORK DURING ACTUATOR OPERATION.
18. COORDINATION OF DUCT SYSTEM INSTALLATION WITH OTHER TRADES SHALL BE PERFORMED PRIOR TO THE FABRICATION OF ANY DUCTWORK. VERIFY DUCT CLEARANCES PRIOR TO FABRICATION. NOTIFY THE ARCHITECT/ENGINEER OF ANY CONFLICTS THAT REQUIRE DIMENSIONAL CHANGES OR REQUIRE MAJOR RELOCATION OF DUCTWORK.
19. PROVIDE OUTDOOR TYPE FLEXIBLE CONNECTIONS ON ALL EXTERIOR CONNECTIONS TO AIR HANDLING EQUIPMENT.
20. PROVIDE STANDARD FLEXIBLE DUCT CONNECTIONS ON ALL FAN POWERED TERMINAL UNITS, FAN COIL UNITS, FURNACES, BLOWER COILS AND EXHAUST FANS.
21. PROVIDE 45° FLARED TAKEOFFS FOR ALL RECTANGULAR BRANCH DUCT CONNECTIONS TO THE MAIN DUCT.

Scale: 1/4" = 1'-0"

Revisions: | Date

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FINAL SUBMITTAL
FOR CONSTRUCTION

SEAL

LICENSED PROFESSIONAL ENGINEER
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3/13/17

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Drawing Title
MECHANICAL LEGENDS AND NOTES

Approved: Project Director
Approver

Project Title
VA HEALTH CARE SYSTEM

Location
VAS 438-16-104 BLDG. 5 CHAPEL
SIOUX FALLS, SD 57105

Date	Checked	Drawn
2017.03.13	AWS	MCB

Project Number
438-16-104 2016.052

Building Number
5

Drawing Number
M001

OWNER

VA FORM 08-6231

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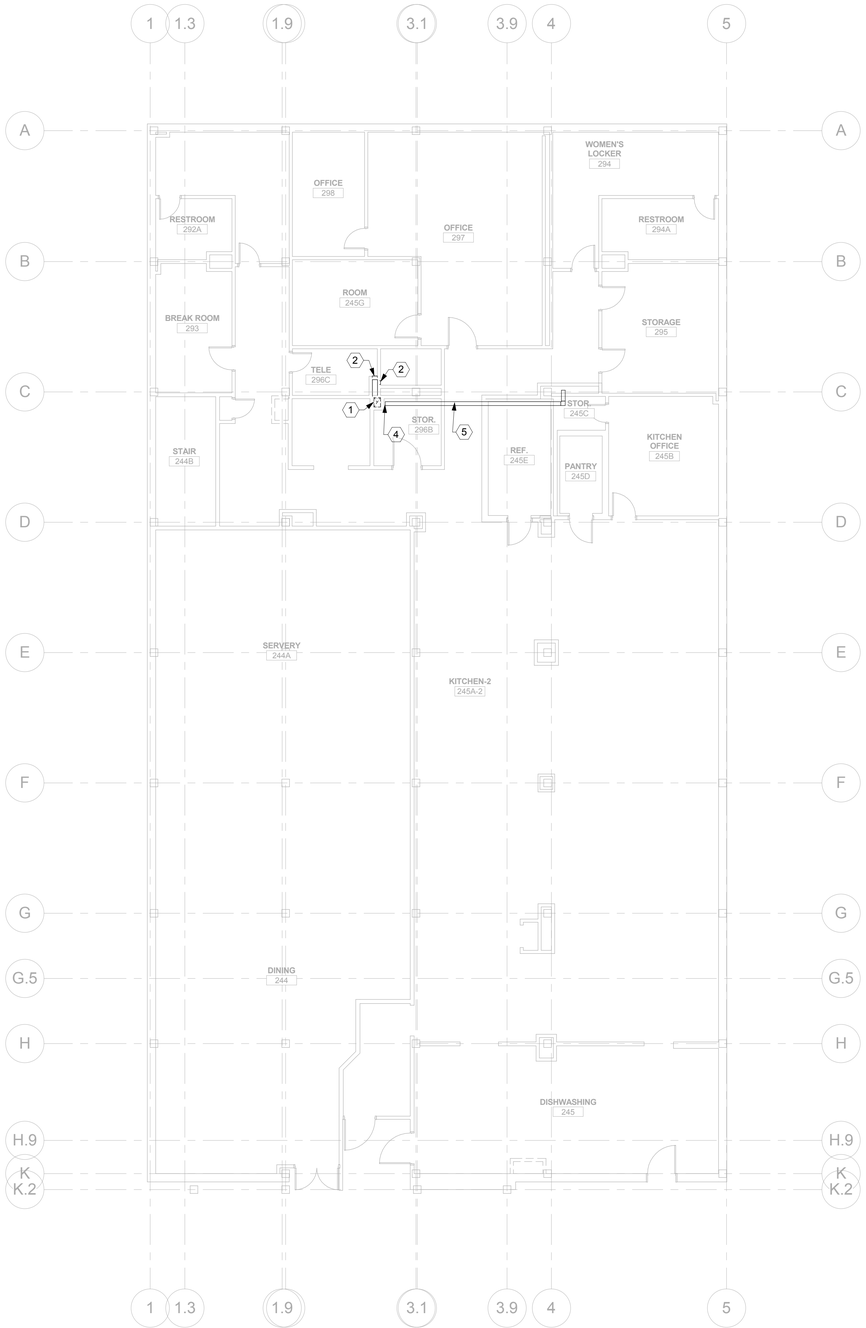
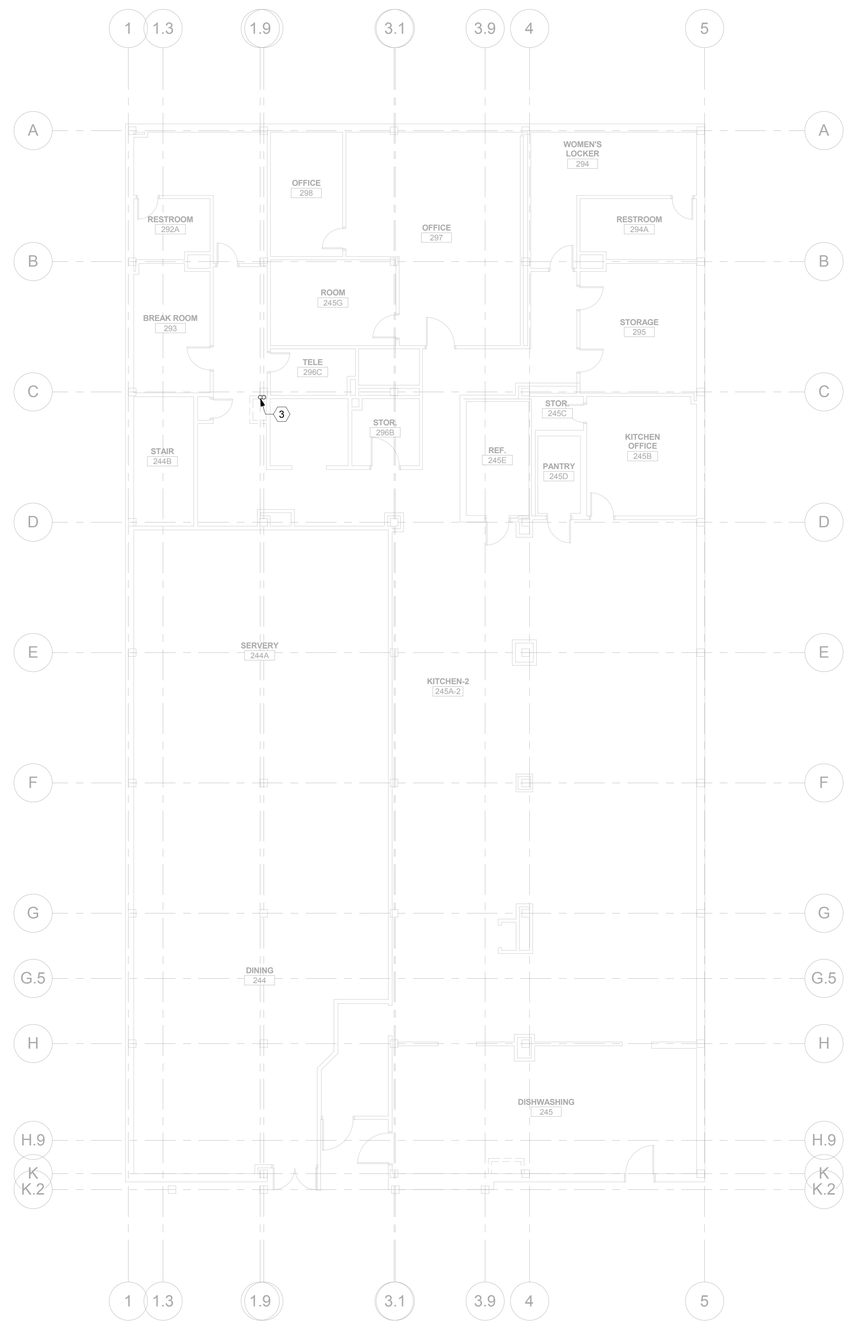


1 MD102 MECHANICAL HVAC SECOND FLOOR DEMO PLAN
1/8" = 1'-0"
0 4' 8' 16'



2 MD102 MECHANICAL PIPING SECOND FLOOR DEMO PLAN
1/8" = 1'-0"
0 4' 8' 16'

KEYED NOTES

1	EXISTING EXHAUST DUCT MAIN DOWN FROM THIRD FLOOR TO REMAIN.
2	EXISTING EXHAUST GRILLES IN ROOM TO REMAIN.
3	EXISTING STEAM AND CONDENSATE RETURN IN VERTICAL CHASE. CHASE TO BE OPENED UP FOR CONNECTION OF NEW STEAM AND CONDENSATE RETURN PIPING. SEE SHEET M102.
4	DISCONNECT 6X4 EXHAUST DUCT BRANCH FROM MAIN IN CHASE. DUCT IS LOCATED ABOVE CEILING OF ROOM. CAP END OF ABANDONED DUCT RUN.
5	ABANDONED 6X4 EXHAUST DUCT ABOVE CEILING TO REMAIN.

GENERAL DEMO NOTES

1. REMOVE ALL ASSOCIATED CONTROLS, THERMOSTATS, CONDUIT, WIRING ASSOCIATED WITH THE HVAC SYSTEMS BEING DEMOLISHED. REMOVE ALL ABANDONED PNEUMATIC PIPING BACK TO THE DISTRIBUTION PANEL AND CAP AND SEAL ALL AS REQUIRED TO ALLOW EXISTING PNEUMATIC SYSTEM TO REMAIN OPERATIONAL.
2. ALL REFRIGERANT SHALL BE RECLAIMED PER STATE AND FEDERAL CODES AND EPA REGULATIONS.
3. PROVIDE TEMPORARY FILTER ELEMENTS OVER ACTIVE RETURN GRILLES OF THE PULMONARY WINGTO PREVENT CONSTRUCTION DEBRIS FROM ENTERING THE MAIN HVAC SYSTEM.
4. CONTRSTRUCTION PHASING PLANS SHALL BE CLEARLY DOCUMENTED TO ALLOW THE RESPIRATORY WING TO BE ACTIVE FOR AS LONG AS POSSIBLE.

Scale: 1/8" = 1'-0"

Revisions:	Date

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LICENSED PROFESSIONAL ENGINEER — MICHELLE C. BEHRMANN — 062-060595 — STATE OF ILLINOIS — 3/13/17

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