THE MEDICAL CENTER OF AURORA

BODY HOLDING RELOCATION & COOLER INSTALLATION

1501 S. POTOMAC ST., AURORA, CO 80012

City of Aurora Building Division
Project: *Cooler Installation*
Address: *1501 S. Potomac St.*
Occupancy Group: *I-2*
Construction Type: *1A-SPK*
RSN: *1410755*
Permit: *19-1709424*

Provide a full size set of legible approved construction documents
PRINTED IN COLOR
for review by the Field Inspector..

Structural plan review is limited to a general survey for code compliance. No review is implied nor was undertaken to verify structural adequacy.

PROJECT TEAM

OWNER

THE MEDICAL CENTER OF AURORA.
1501 S. POTOMAC ST
AURORA, CO 80012

CONTACT:
DEB OBERMILLER
303.946.5511
Debra.Obermiller@healthonecares.com

ARCHITECT

TOM THOMPSON ARCHITECT
2510 SOUTH OSCEOLA STREET
DENVER, COLORADO 80219

CONTACT:
TOM THOMPSON
720.989.6084
TomThompsonArchitect@gmail.com

DESIGNER/ DRAFTSMAN

THE DESIGN PLOT
PARKER, COLORADO 80138

CONTACT:
THOMAS HECKER
303.565.7282 CELL
303.338.7869
thomas.hecker@healthonecares.com

MEP ENGINEER

WMACE ENGINEERING CONSULTANTS
9250 EAST COSTILLA AVENUE, SUITE 220
GREENWOOD VILLAGE, COLORADO 80112

CONTACT:
JON GRANT
303.225.6320 OFFICE
JGRANT@WMACE.COM

VENDOR

FRONT RANGE SCIENTIFIC
P.O. BOX 270324
LOUISVILLE, CO 80027

CONTACT:
BRIAN LAFRINERE
303.704.3124
brian.lafrinere@frscientific.com

CONTRACTOR

VERTIX BUILDERS
CONTACT:
TED LASZLO, CHC, DBIA
303.358.3848 (EXT) 702 OFFICE
303.358.3848 CELL
tlaszo@vertixbuilders.com

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN STRICT CONFORMANCE WITH ALL LOCAL LAWS, ORDINANCES, RULES, REGULATIONS AND CODES OF THE GOVERNMENT AUTHORITIES HAVING JURISDICTION.
2. DIMENSIONS ARE TO FINISHED FACE OF GYPSUM WALL BOARD OR FACE OF EXISTING BASE BUILDING CONSTRUCTION, UNLESS NOTED OTHERWISE.
3. VERIFY ALL ROUGH-IN DIMENSIONS AND ELECTRICAL REQUIREMENTS FOR EQUIPMENT. COORDINATE OUTLET PLACEMENT WITH CASEWORK.
4. CONTRACTOR SHALL NOTIFY OWNER BEFORE COMMENCING WORK ON ANY ITEMS NOT CLEARLY DEFINED.
5. CHANGES OR DEVIATIONS FROM THE PLANS MADE WITHOUT THE CONSENT OF OWNER ARE UNAUTHORIZED.
6. G.C. TO PROVIDE SEALANT AROUND ALL PLUMBING FIXTURES, PIPING AND EQUIPMENT ABUTTING OR PENETRATING A WALL OR PARTITION. COLOR TO MATCH.
7. INSTALL FIRE-SAFING INSULATION, PUTTY OR FIRE-RATED INTUMESCENT-TYPE SEALANT (INCLUDING PIPE-SLEEVES, DAMMING BOARDS AND ACCESSORIES) AROUND ALL PENETRATIONS THROUGH FIRE-RATED PARTITIONS, FLOORS AND WALLS PER MANUFACTURER'S TESTED INSTALLATION FOR APPLICATION AND REQUIRED RATING.
8. ALL ELECTRICAL AND MECHANICAL DEVICES OR APPLIANCES INSTALLED ON THIS PROJECT SHALL BE UL LISTED.
9. WHERE REMODELING IS TO OCCUR, THE CONTRACTOR SHALL PRESENT A WORKABLE PHASING PLAN TO THE OWNER PRIOR TO COMMENCEMENT OF WORK WITHIN THE AFFECTED AREA. CONTRACTOR SHALL ALSO KEEP THE OWNER APPRISED OF ANY VARIATIONS IN PHASING PLAN THAT WILL AFFECT THE OPERATION OF THE OWNER'S BUSINESS.
10. CONTRACTOR SHALL PRESENT A WORKABLE PLAN TO MAINTAIN SECURITY AND SAFETY OF THE OWNER'S BUSINESS FOR AREAS AFFECTED BY CONSTRUCTION DURING THE ENTIRE PHASE OF CONSTRUCTION.
11. CONTRACTOR SHALL MINIMIZE DISRUPTION BY CONSTRUCTION WORK TO THE ONGOING BUSINESSES AND TRAFFIC IN THE VICINITY. CONSTRUCTION AREA SHALL BE ENCLOSED TO KEEP OTHER AREAS FREE OF DUST, DEBRIS & NOISE.
12. EMPLOYEES OR SUBCONTRACTORS OF THE GENERAL CONTRACTOR SHALL REFRAIN FROM PROFANE OR OFFENSIVE LANGUAGE WHILE ON THE PROJECT SITE AND SHALL REFRAIN FROM USING LOUD RADIOS OR OTHER MUSIC PLAYERS WHILE OWNERS AND/OR DESIGN TEAM IS ONSITE.
13. GENERAL CONTRACTOR SHALL COORDINATE APPROPRIATE PARKING ACCOMMODATIONS FOR EMPLOYEE AND SUBCONTRACTOR VEHICLES WITH OWNER PRIOR TO COMMENCEMENT OF WORK.
14. G.C. SHALL COORDINATE APPROPRIATE CONSTRUCTION STAGING AREAS AND TRASH REMOVAL. G.C. WILL BE RESPONSIBLE FOR OBTAINING A DUMPSTER AND TRASH PICKUP FROM JOB SITE ON A REGULAR BASIS.
15. SUBSTITUTIONS OF SPECIFIED PRODUCTS MAY NOT OCCUR UNLESS SPECIFICALLY NOTED ON DRAWINGS THAT "OR EQUAL" IS ACCEPTABLE. OWNER APPROVAL IS REQUIRED FOR ALL SUBSTITUTIONS CONSIDERED BY G.C. TO MEET "OR EQUAL" REQUIREMENTS PRIOR TO BID SUBMISSION/INSTALLATION.
16. APPROVAL OF SHOP DRAWINGS DOES NOT IMPLY APPROVAL OF A SUBSTITUTED COLOR, SIZE OR FUNCTION OF AN ITEM SPECIFIED ON THESE CONTRACT DOCUMENTS UNLESS ATTENTION IS SPECIFICALLY CALLED TO THE REVISION AND APPROVAL IS GIVEN.
17. G.C. SHALL KEEP TOILET FACILITIES ON SITE CLEAN AND USABLE.
18. NO PLUMBING CLEAN-OUTS SHALL EXTEND INTO ROOM MORE THAN IS MINIMALLY REQUIRED. NO PIPE SHALL BE EXPOSED AND THERE SHALL BE ESCUTCHEON PLATES AT ALL GYPSUM WALL BOARD PENETRATIONS.
19. MULTIPLE SWITCHES SHALL BE GANGED IN SINGLE BOXES WITH COVER PLATE COLORS/ DEVICES TO BE WHITE, SWITCH PLATES SHALL ALIGN.
20. GENERAL CONTRACTOR MUST BE FAMILIAR WITH EXISTING CONDITIONS TO PROPERLY ACCOUNT FOR THE NECESSARY COSTS ASSOCIATED WITH CONSTRUCTION.
21. NO CHANGE ORDERS WILL BE PERMITTED UNLESS OWNER INITIATED OR APPROVED PRIOR TO COMMENCEMENT OF THE CHANGE.
22. GENERAL CONTRACTOR SHALL PROVIDE FOR FIRE SPRINKLER DESIGN/BUILD WITHIN THE SCOPE OF WORK AS REQUIRED.

Code violations that are found during inspection are required to be corrected. Permit issuance does not grant approval of a code violation.

Field consultation is available upon request. Call 303-739-7420 to request a consultation.

DRAWING INDEX

ARCHITECTURAL

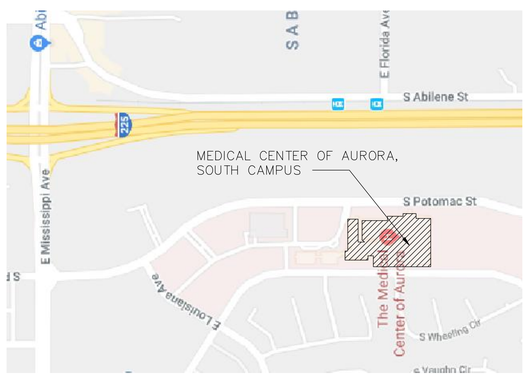
A.0 COVER SHEET
A0.1 CODE COMPLIANCE PLAN
A1.0 DEMOLITION PLAN / CEILING DEMO PLAN
A1.1 FLOOR PLAN / REFLECTED CEILING PLAN / ELEVATION / SECTIONS

MECHANICAL / PLUMBING / ELECTRIC

M0.0 MECHANICAL SYMBOLS & ABBREVIATIONS
M0.1 MECHANICAL SPECIFICATIONS
M0.2 MECHANICAL SCHEDULES & DETAILS
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E0.0 ELECTRICAL SYMBOL LIST, NOTES & SPECIFICATIONS
E0.1 ELECTRICAL SPECIFICATIONS
E0.2 ELECTRICAL PANEL SCHEDULE & RISER DIAGRAM
E1.0 ELECTRICAL PLAN

SEPARATE FIRE ALARM PERMIT REQUIRED:
Due to the proposed work the general contractor is required to obtain the services of a fire alarm contractor to determine if a separate alarm permit is required. If it is determined that the spacing of the fire alarm devices is not in compliance, then a separate fire alarm permit is required. Approval of the documents is required prior to system installation or any request for inspection. A certificate of occupancy or final approval cannot be issued by the Building Division without this fire protection system. **2015 IFC, Section 105.7.6.**

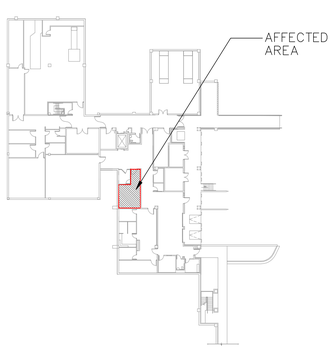
SEPARATE FIRE SPRINKLER PERMIT REQUIRED:
Due to the proposed work the general contractor is required to obtain the services of a fire sprinkler contractor to determine if a separate sprinkler permit is required. If it is determined that the spacing of the fire sprinkler heads is not in compliance, then a separate fire sprinkler permit is required. Approval of the documents is required prior to system installation or any request for inspection. A certificate of occupancy or final approval cannot be issued by the Building Division without this fire protection system. **2015 IFC, Section 105.7.1.**



VICINITY MAP
NTS

NORTH

POTOMAC ST.



KEY PLAN (Basement)
NTS

NORTH

CODE INFORMATION SUMMARY

PROJECT NAME: BODY HOLDING RELOCATION

PROJECT ADDRESS: 1501 S. POTOMAC STREET
AURORA, COLORADO 80012

CONSTRUCTION TYPE: I-A, I(332)

OCCUPANCY CLASSIFICATION: GROUP I-2 HOSPITAL (IBC)

AFFECTED SQUARE FOOTAGE: 322 S.F.

OCCUPANT LOAD FACTOR: 240 SF/OCCUPANT (INPATIENT)

OCCUPANT LOAD: 322 S.F./240 = 2 OCCUPANTS

FIRE PROTECTION: EXISTING BUILDING IS FULLY SPRINKLERED. AREAS AFFECTED BY THE WORK UNDER THIS CONTRACT SHALL MAINTAIN FIRE PROTECTION SYSTEM AND BE FULLY SPRINKLERED ON COMPLETION.

EXITS: 2 EXITS ON THE GROUND LEVEL
8'-0" WIDE EXIT ACCESS CORRIDORS

APPLICABLE CODES:
2015 INTERNATIONAL BUILDING CODE (IBC)
2015 INTERNATIONAL MECHANICAL CODE (IMC)
2015 INTERNAMTIONAL FUEL GAS CODE (IFGC)
2015 INTERNATIONAL FIRE CODE (IFC)
2015 INTERNATIONAL PLUMBING CODE (IPC)
2015 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
2015 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2017 NATIONAL ELECTRICAL CODE (NEC)

2009 ICC/ANSI A117.1

CHAPTER 22 BUILDINGS & REGULATIONS
(AURORA BUILDING & ZONING CODES)
CHAPTER 66 FIRE PREVENTION & PROTECTION
(AURORA BUILDING & ZONING CODES)

2012 NFPA 101 LIFE SAFETY CODES

2009 CDPHE LICENSING REQUIREMENTS

2010 FGI GUIDELINES

COLORADO CODE OF REGULATIONS:
8 CCR 1507-31, 6 CCR 1011-1 CHAPTER 04

CODE NOTES

A. EXISTING FIRE ALARM AND SPRINKLER SYSTEMS WILL REMAIN WITHOUT MODIFICATION.
B. FIRE RATED WALL ASSEMBLIES WILL BE NOT BE MODIFIED.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Chris Dodson
Date: Oct 10, 2019
2015 INTERNATIONAL CODES & 2017 NEC

RSN: *1410755*
Permit #: *19-1709424*

The Medical Center of Aurora
Health ONE

BODY HOLDING RELOCATION

MEDICAL CENTER OF AURORA

1501 S. POTOMAC ST.
AURORA, CO 80012

SOUTH CAMPUS

TOM THOMPSON ARCHITECT
2510 SOUTH OSCEOLA STREET
DENVER, COLORADO 80219
720.989.6084
TomThompsonArchitect@gmail.com

ASSOCIATIONS

DESIGN PLOT
dpteam@thedesignplot.com
(303) 565-7282

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STATE OF COLORADO
TOM THOMPSON
305892
LICENSED ARCHITECT
08.02.19

PROJECT NO.: 090303

DRAWN BY: BEPS
CHECKED BY: TH
SCALE: N/A
DATE: 08.02.2019
ISSUED FOR: CONSTRUCTION
REVISIONS:

SHEET TITLE:
COVER SHEET

SHEET NO.:
A0.0

DWG FILENAME: BODY HOLDING SHEET SIZE: 36" x 24"

Structural plan review is limited to a general survey for code compliance. No review is implied nor was undertaken to verify structural adequacy.

Consultation for fire extinguisher placement is available upon request. Call 303-739-7420 prior to final Life Safety inspection to verify proposed locations.

CODE INFORMATION SUMMARY

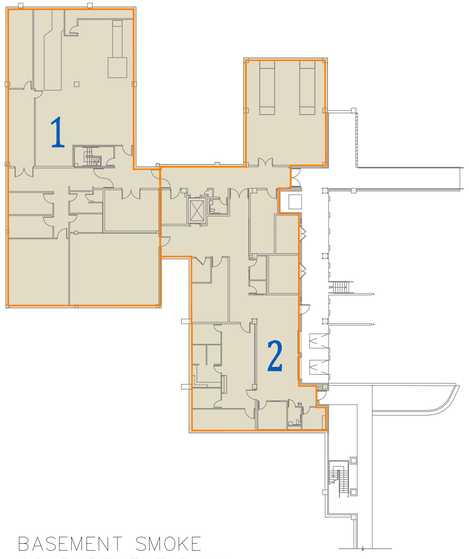
CONSTRUCTION:

- TYPE I-A IBC/ I(332) NFPA
- REINFORCED CONCRETE STRUCTURE AND STEEL STRUCTURE W/SPRAY FIRE-PROOFING
- FIVE STORY BUILDING

OCCUPANCY CLASSIFICATION:

- IBC - GROUP I-2 HOSPITAL
  - GROUP B BUSINESS (ACCESSORY USE)
- NFPA - HEALTHCARE OCCUPANCY CHAPTER 18 & 19

FULLY SPRINKLED BUILDING

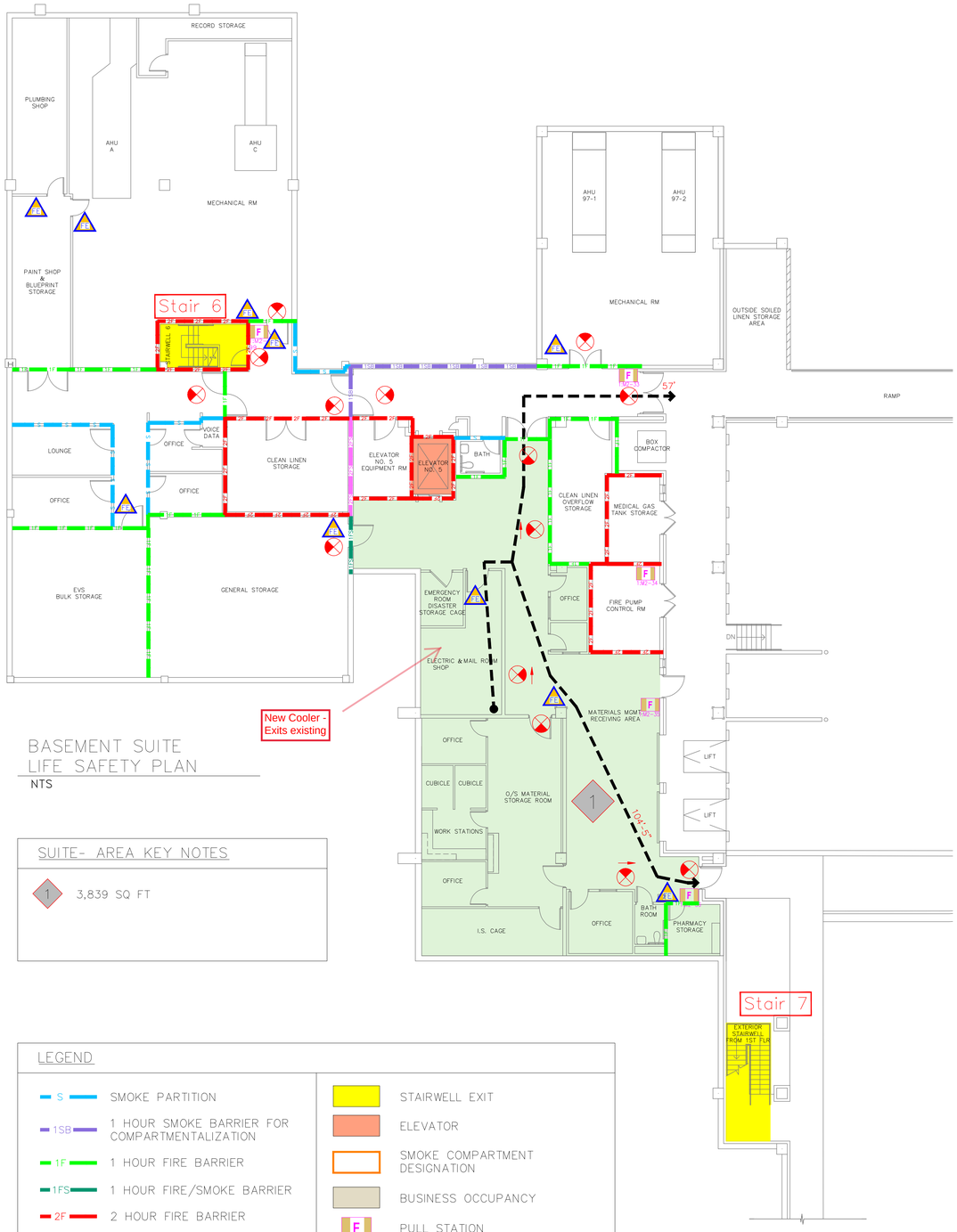


BASEMENT SMOKE COMPARTMENT PLAN
NTS

SMOKE COMPARTMENT - KEY PLAN AREAS

1 7,169 SQ FT

2 6,993 SQ FT



BASEMENT SUITE LIFE SAFETY PLAN
NTS

SUITE- AREA KEY NOTES

1 3,839 SQ FT

LEGEND

- S — SMOKE PARTITION
- 1SB — 1 HOUR SMOKE BARRIER FOR COMPARTMENTALIZATION
- 1F — 1 HOUR FIRE BARRIER
- 1FS — 1 HOUR FIRE/SMOKE BARRIER
- 2F — 2 HOUR FIRE BARRIER
- 2FS — 2 HOUR FIRE/SMOKE BARRIER
- EXIT ACCESS TRAVEL PATH AND DISTANCE
- EXIT SIGN
- STAIRWELL EXIT
- ELEVATOR
- SMOKE COMPARTMENT DESIGNATION
- BUSINESS OCCUPANCY
- F — PULL STATION
- X — NON-SLEEPING SUITE DESIGNATION
- FE — FIRE EXTINGUISHER

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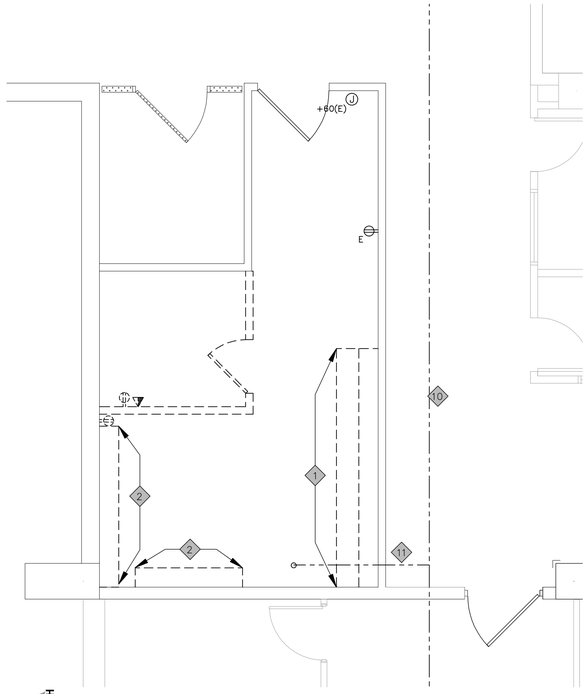
STATE OF COLORADO
TOM THOMPSON
305892
08.02.19
LICENSED ARCHITECT

PROJECT NO.: 190303

DRAWN BY: TH, BEPS
CHECKED BY: TT
SCALE: NTS
DATE: 08.02.2019
ISSUED FOR: CONSTRUCTION
REVISIONS:

SHEET TITLE:
CODE COMPLIANCE
LIFE SAFETY

SHEET NO.:
A0.1



NORTH

DEMOLITION PLAN
SCALE: 1/4"=1'-0"

KEY NOTES	
1	REMOVE & SALVAGE MAIL SLOT MILLWORK AND COUNTER FOR OWNER.
2	REMOVE & SALVAGE PLASTIC BINS AND METAL SLAT WALL MOUNTING STRIPS FOR OWNER.
3	RAISE & TURN UP EXISTING SPRINKLER HEADS AS REQUIRED & TO CLEAR NEW MORGUE REFRIGERATOR.
4	REMOVE & DISPOSE OF EXISTING AIR SUPPLY DIFFUSER. REMOVE DUCT BACK TO MAIN SUPPLY DUCT, RE: MECH DEMO
5	REMOVE & SALVAGE EXISTING LIGHT FIXTURE FOR OWNER. PRESERVE CONNECTION FOR NEW FIXTURES IN NEW PLAN.
6	REMOVE & SALVAGE EXISTING SPEAKER TO BE MOUNTED TO STRUCTURE ABOVE IN NEW PLAN.
7	REMOVE & SALVAGE EXISTING SMOKE DETECTORS TO BE MOUNTED TO STRUCTURE ABOVE IN NEW PLAN.
8	REMOVE & SALVAGE WIRELESS ACCESS DEVICE TO BE MOUNTED TO STRUCTURE ABOVE IN NEW PLAN.
9	PRESERVE EXISTING POWER AT EMERGENCY LIGHT FIXTURE BEING REMOVED.
10	EXISTING 4" SANITARY SEWER LINE BELOW CONCRETE SLAB ON GRADE.
11	SAW CUT CONCRETE SLAB ON GRADE TO EXISTING SANITARY SEWER LINE FOR NEW PLUMBING WASTE LINES.
12	REMOVE & DISPOSE OF EXISTING CEILING RETURN AIR GRILLE. (GRILLE IN WALL ABOVE DOOR TO REMAIN)
13	LOCATION OF EXISTING MAIN HVAC TRUNK LINE

DEMOLITION LEGEND	
	REMOVE AND DISPOSE OF ALL WALLS, CASEWORK, EQUIPMENT & FIXTURES AS INDICATED BY DASHED LINE.
	EXISTING ELEMENT TO REMAIN
E	EXISTING POWER OUTLET TO REMAIN.
E	REMOVE EXISTING POWER OUTLET; TERMINATE, SAFE-OFF AND/OR PREP FOR NEW LOCATION
	OWNER VENDOR TO REMOVE EXISTING DATA PORT OUTLET.
	REMOVE & DISPOSE OF EXISTING SUSPENDED CEILING GRID AND TILE
	REMOVE EXISTING 2'x4' FLUORESCENT LIGHT FIXTURE AND SALVAGE FOR OWNER
	REMOVE EXISTING CEILING MOUNTED SPEAKER FOR RELOCATION
	REMOVE AND DISPOSE EXISTING SUPPLY AIR DIFFUSER
	REMOVE AND DISPOSE EXISTING RETURN AIR GRILLE
	RAISE OR RELOCATE EXISTING SPRINKLER HEAD
$	REPLACE EXISTING LIGHT SWITCH WITH NEW, RE: ELECTRICAL PLAN
S	REMOVE EXISTING CEILING MOUNTED SMOKE DETECTOR FOR RELOCATION
	OUT OF SCOPE

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NORTH

CEILING DEMOLITION PLAN
SCALE: 1/4"=1'-0"

GENERAL NOTES	
A.	PRESERVE ANY ELECTRICAL OR SWITCH CONNECTIONS IF IT SERVES TO RELOCATE IN NEW PLAN.
B.	INSTALL COVER PLATES WHERE ALL DEVICES HAVE BEEN REMOVED FROM WALLS TO REMAIN.
C.	REPLACE OR REPAIR ANY EXISTING SURFACES WHICH ARE DAMAGED DURING DEMOLITION (I.E. - CONCRETE FOUNDATION WALL, GYP. BOARD WALLS, CONCRETE FLOOR, ETC.).
D.	EXISTING FIRE-RATED PLYWOOD WALL PROTECTION TO REMAIN.
E.	EXISTING FLOORING TO REMAIN, PREP & PAINT "BATTLESHIP GRAY" UPON COMPLETION.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Chris Dodson
Date: Oct 10, 2019
2015 INTERNATIONAL CODES & 2017 NEC

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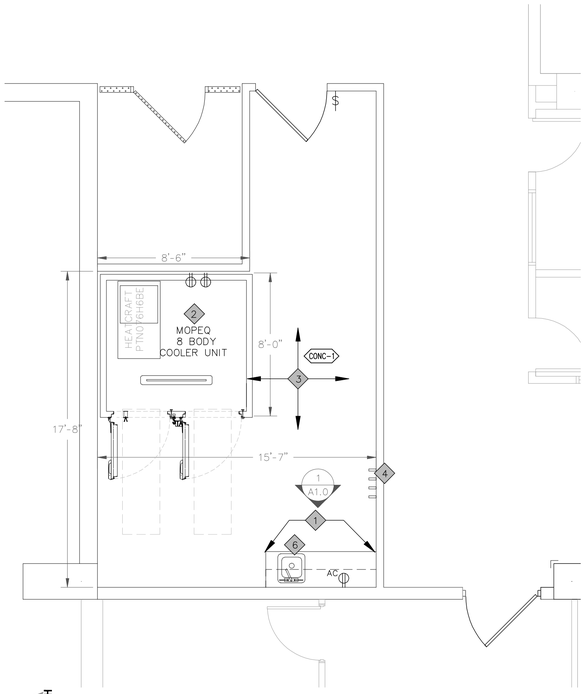
PROJECT NO.: 190303

DRAWN BY: BEPS
CHECKED BY: TH
SCALE: 1/4" = 1'
DATE: 08.02.2019
ISSUED FOR: CONSTRUCTION
REVISIONS:

SHEET TITLE:
DEMOLITION PLAN
CEILING DEMO PLAN

SHEET NO.:
A1.0

DWG FILENAME: BODY HOLDING SHEET SIZE: 36" x 24"



NORTH

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

KEY NOTES	
1	NEW CASEWORK AND SINK PER ELEVATION 1 THIS SHEET.
2	NEW EIGHT BODY MORGUE REFRIGERATOR.
3	PREP & LEVEL EXISTING CONCRETE FLOOR AS REQUIRED BY VENDOR.
4	OWNER SUPPLIED WALL MOUNTED HOOKS AT 60" A.F.F.
5	LIMIT OF COOLER SYSTEM BELOW.
6	NEW 19" STAINLESS STEEL SINK W/ GOOSENECK FAUCET AND PADDLE HANDLES. TIE INTO EXISTING WATER LINES ABOVE.
7	NEW EMERGENCY POWER-BACKED LIGHT FIXTURES.
8	RELOCATED FIRE ALARM SMOKE HEAD, SUPPORT TO STRUCTURE ABOVE.
9	RELOCATED WIRELESS ACCESS POINT DEVICE, SUPPORT TO STRUCTURE ABOVE.
10	INSTALL 5/8" FIRE RATED TYPE "X" GYP BOARD ABOVE CEILING TO DECK ABOVE ON EXISTING STEEL FRAMING, MUD & TAPE, PREP FOR PAINT. NO GYP BOARD NEEDED ON NORTH & WEST WALLS.
11	VENDOR SUPPLIED CAPSULE CONDENSER & AIR FLOW BOX MOUNTED ON TOP OF COOLER UNIT. EXACT LOCATION CAN BE DETERMINED AT TIME OF INSTALL.
12	RELOCATED SPEAKER, SUPPORT TO STRUCTURE ABOVE.
13	LOCATION OF EXISTING MAIN HVAC TRUNK LINE

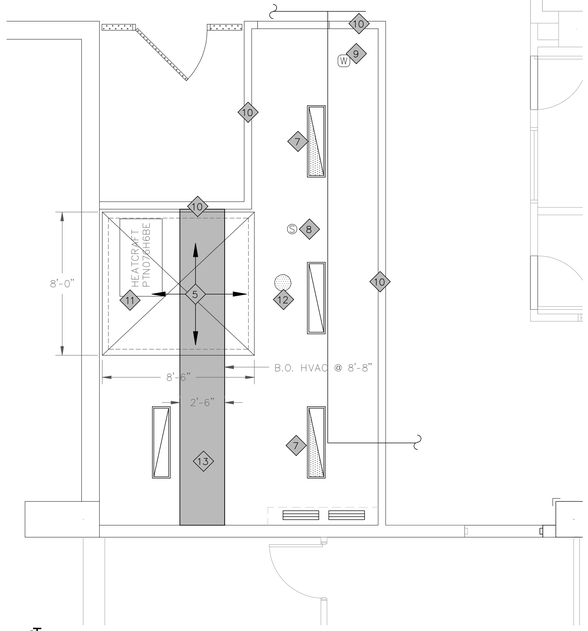
GENERAL NOTES	
A.	INSTALL COVER PLATES WHERE ALL DEVICES HAVE BEEN REMOVED.
B.	REFER TO VENDOR SITE SPECIFIC DRAWINGS FOR ADDITIONAL INFORMATION & SUPPORT REQUIREMENTS.
C.	LEVEL FLOOR FOR COOLER AS REQUIRED BY MANUFACTURER (1/4"~10' TOLERANCE). PAINT WALLS & FLOOR THROUGHOUT.
D.	SPECIFY BRUSHED NICKEL HARDWARE FOR CASEWORK.
E.	PROVIDE 4" BACKSPLASH OF LIKE MATERIAL AT ALL LOCATIONS WHERE COUNTERS MEET WALLS.
F.	ALL CABINETS TO HAVE ADJUSTABLE SHELVING AS SHOWN IN ELEVATIONS/CROSS SECTIONS BY DASHED LINE.
G.	APPLY 3mm PVC EDGES TO ALL NEW PLASTIC LAMINATE COUNTERTOPS, DRAWERS, AND DOORS
H.	PATCH & PAINT ALL WALLS P-1 WITHIN LIMITS OF NEW MORGUE.
I.	ALL ELECTRICAL WORK WITHIN THE WALK-IN INCLUDING COOLER LIGHT INSTALLATION TO BE PERFORMED BY CONTRACTOR.
J.	COOLER DELIVERY & ASSEMBLY TO BE PERFORMED BY OWNER'S VENDOR.

LEGEND	
	EXISTING ELEMENT TO REMAIN.
	NEW POWER OUTLETS PER VENDOR. REFER TO VENDOR DOCUMENTS
	SALVAGED CEILING MOUNTED SPEAKER MOUNTED TO STRUCTURE ABOVE.
	NEW 1'x4' LED SHOP LIGHT FIXTURE MOUNTED TO STRUCTURE ABOVE AND CONNECTED TO EXISTING WALL SWITCH.
	NEW UNDER CABINET LIGHT FIXTURE W/ ROCKER SWITCH ACTIVATION
R	SPRINKLER HEAD EXISTING OR RELOCATED (R=RELOCATED)
S	NEW LIGHT SWITCH
	OUT OF SCOPE

FINISH SPECIFICATIONS
FLOORING
CONC-1: BENJAMIN MOORE, GRAY EPOXY PAINT TO MATCH EXISTING (FACILITIES SPECS).
WALLS
P-1: SHERWIN WILLIAMS SEMI GLOSS INTERIOR PAINT, 2 COATS ON ALL WALLS. COLOR: KILIM BEIGE SW6106.
CASEWORK
PL-1: APPLY TO ALL COUNTER TOP SURFACES. WILSONART LAMINATE COLOR: PEARL SOAPSTONE, 4886-38. W/DOELLKEN WOODTAPE, NORTHSEA 2477 EDGING.
PL-2: APPLY TO ALL VERTICAL PANEL SURFACES. WILSONART LAMINATE COLOR: SHAKER CHERRY, 7935-07. USE 3MM EDGING TO MATCH.
* USE WHITE MELAMINE FOR ALL INTERIOR CABINETS AND DRAWER SURFACES.

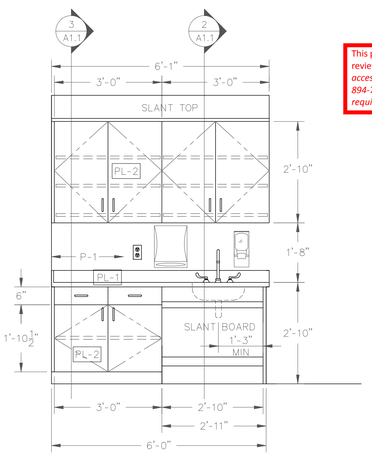
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Date: Oct 10, 2019
2015 INTERNATIONAL CODES & 2017 NEC

Structural plan review is limited to a general survey for code compliance. No review is implied nor was undertaken to verify structural adequacy.



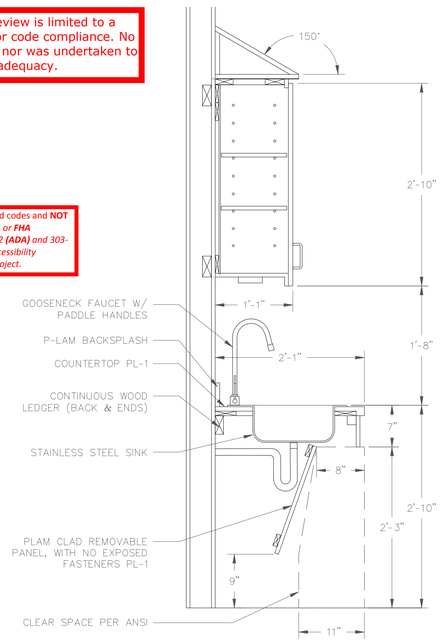
NORTH

REFLECTED CEILING PLAN
SCALE: 1/4"=1'-0"

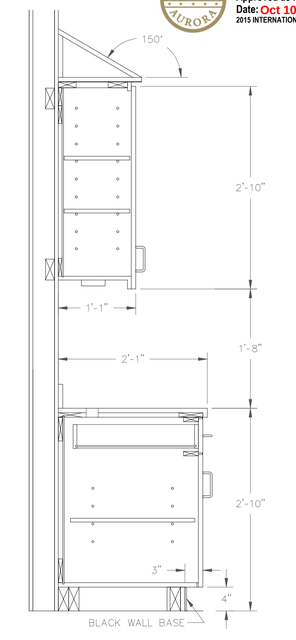


1 A1.1 CABINET ELEVATION
SCALE: 1/2"=1'-0"

This plan was reviewed for adopted codes and **NOT** reviewed for *compliance with **ADA** or **FHA** accessibility. Contact 800-949-4232 **(ADA)** and 303-894-7822x325**(FHA)** for federal accessibility requirements that apply to your project.*



2 A1.1 CABINET SECTION
SCALE: 1"=1'-0"



3 A1.1 CABINET SECTION
SCALE: 1"=1'-0"

The Medical Center of Aurora
Health ONE

BODY HOLDING RELOCATION

MEDICAL CENTER OF AURORA

1501 S. POTOMAC ST.
AURORA, CO 80012

SOUTH CAMPUS

TOM THOMPSON ARCHITECT
2510 SOUTH OSCEOLA STREET
DENVER, COLORADO 80219
720.989.6084
TomThompsonArchitect@gmail.com

ASSOCIATIONS

DESIGN PLOT
dpteam@thedesignplot.com
(303) 565-7282

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STATE OF COLORADO
TOM THOMPSON
305892
08.02.19
LICENSED ARCHITECT

PROJECT NO.:	190303
DRAWN BY:	BEPS
CHECKED BY:	TH
SCALE:	AS NOTED
DATE:	08.02.2019
ISSUED FOR:	CONSTRUCTION
REVISIONS:	

SHEET TITLE:
FLOOR PLAN
REFLECTED CEILING PLAN

SHEET NO.:
A1.1

DWG FILENAME: BODY HOLDING SHEET SIZE: 36" x 24"

RSN: 1410755
Permit #: 19-1709424

MECHANICAL ABBREVIATIONS

AC	AIR CONDITIONING UNIT OR AIR COMPRESSOR
ACH	AIR CHANGES PER HOUR
AD	ACCESS DOOR OR AUTOMATIC DAMPER
AF	AIR FILTER
AFC	AUTOMATIC FLOW CONTROL DEVICE
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALUM	ALUMINUM
AMP	AMPERE
AMS	AIR FLOW MEASURING STATION
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ARCH	ARCHITECT/ARCHITECTURAL
AS	AIR SEPARATOR
ASC	ABOVE SUSPENDED CEILING
AUTO	AUTOMATIC
AVG	AVERAGE
BAS	BUILDING AUTOMATION SYSTEM
BD	BACK DRAFT DAMPER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTUH	BRITISH THERMAL UNIT PER HOUR
CA	COMPRESSED AIR
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME TERMINAL UNIT
CC	COOLING COIL
CCW	COUNTER CLOCKWISE
CD	CONDENSATE DRAIN
CF	CUBIC FEET
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CL	CENTER LINE
CO	CLEAN OUT OR CARBON MONOXIDE
CONT	CONTINUOUS, CONTINUATION
CP	COIL PUMP
CT	COOLING TOWER
CU	CONDENSING/ER UNIT
CU FT	CUBIC FEET
CV	CONSTANT AIR VOLUME
CW	COLD WATER OR CLOCKWISE
D	DRAIN
DB	DECIBEL OR DRY BULB TEMPERATURE
DDC	DIRECT DIGITAL CONTROL
DE	DRYER EXHAUST
DEG.F	DEGREE FARENHEIT
DF	DOOR (AIR CURTAIN) FAN
DG	DOOR GRILLE
DH	DUCT HEATER
DIA	DIAMETER
DIFF	DIFFUSER
DISCH	DISCHARGE
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DWG	DRAWING
DX	DIRECT EXPANSION
(E)	EXISTING
E	EXHAUST
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EBB	ELECTRIC BASEBOARD HEATER
EC	ELECTRICAL CONTRACTOR
ECH	ELECTRIC CABINET HEATER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	ETHYLENE GLYCOL–WATER SOLUTION (% GLYCOL BY VOLUME)
EHC	ELECTRIC HEATING COIL
EJ	EXPANSION JOINT
ELEC	ELECTRIC/ELECTRICAL
EL/ELEV	ELEVATION
ENT	ENTERING
EPS	ELECTRIC PRESSURE SWITCH
EQUIP OR EQT	EQUIPMENT
E/RF	EXHAUST/RETURN FAN
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EUH	ELECTRIC UNIT HEATER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXIST	EXISTING
F	FILTER
°F	DEGREE FARENHEIT
FA	FREE AREA
F&T	FLOAT & THERMOSTATIC STEAM TRAP
FC	FAN COIL
FD	FIRE DAMPER
FLA	FULL LOAD AMPERES
FLEX	FLEXIBLE
FPB	FAN POWERED TERMINAL UNIT
FP	FIRE PROTECTION
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FS	FREEZE STAT
F/SD	COMBINATION FIRE/SMOKE DAMPER
FT	FEET OR FLASH TANK
FTR	FIN TUBE RADIATION (HOT WATER)
FV	FACE VELOCITY
GA	GAUGE
GAL	GALLON
GC	GENERAL CONTRACTOR
GD	GRAVITY DAMPER
GEN	GENERAL
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H	HUMIDISTAT
HC	HEATING COIL
HEPA	HIGH EFFICIENCY PARTICULATE AIR FILTER
HORIZ	HORIZONTAL
HP	HORSEPOWER OR HEAT PUMP
HR	HOUR
HTG	HEATING
HUM	HUMIDIFIER
HVAC	HEATING, VENTILATION & AIR CONDITIONING
HX	HEAT EXCHANGER
HZ	HERTZ
ID	INSIDE DIAMETER
IN OR"	INCH
INSUL.	INSULATION
IN W.C.	INCHES WATER COLUMN
IN W.G.	INCHES WATER GAUGE
KW	KILOWATT
KWH	KILOWATT HOUR
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LRA	LOCKED ROTOR AMPERES
LVG	LEAVING
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MB	MIXING BOX
MBH	THOUSAND BTU PER HOUR
MIN	MINIMUM OR MINUTE(S)
MD	MOTOR OPERATED DAMPER
NC	NORMALLY CLOSE OR NOISE CRITERIA
NIC	NOT IN CONTRACT
NK	NECK
NO	NORMALLY OPEN
NO OR #	NUMBER
NR	NOT REQUIRED
NTS	NOT TO SCALE
NV	NATURAL VENTILATION
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OBD	OPPOSED BLADE DAMPER
OD	OUTSIDE DIAMETER
OPNG	OPENING
OV	OUTLET VELOCITY OR OVAL
P	PUMP
CHWP	CHILLED WATER PUMP
CWP	CONDENSER WATER PUMP
PA	PASCAL
PC	PLUMBING CONTRACTOR
PCD	PUMPED CONDENSATE DISCAHRGE
PG	PROPYLENE GLYCOL–WATER SOLUTION (%GLYCOL BY VOLUME)
PH	PHASE
PLBG	PLUMBING
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
R	RETURN
RA	RETURN AIR
REQ'D	REQUIRED
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RO	RELIEF OPENING
RP	RADIANT PANEL
RPM	REVOLUTIONS PER MINUTE
RV	RELIEF VALVE (VENT) OR ROOF VENTILATOR
S	SUPPLY
SA	ATTENUATOR
SCU	SELF CONTAINED AC UNIT
SD	SMOKE DAMPER
(S)	SMOKE DETECTOR
SF	SUPPLY FAN OR SQUARE FEET
SHT	SHEET
SL	SENSIBLE LOAD
SP	STATIC PRESSURE
SPECS	SPECIFICATIONS
SQ	SQUARE
SQ.FT.	SQUARE FEET
SS	STAINLESS STEEL
ST	STEAM TRAP
STD	STANDARD
STL	STEEL
STM	STEAM
STRUC	STRUCTURE/STRUCTURAL
T	THERMOSTAT
TD	TEMPERATURE DIFFERENCE OR TRANFER DUCT
TEF	TOILET EXHAUST FAN
TEMP	TEMPERATURE
THK	THICK
TO	TRANSFER OPENING
TR	TEMPERATURE RISE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UC	UNDER–CUT (DOOR)
UGRD	UNDERGROUND
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
V	VOLT OR VENT
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
VSD	VARIABLE SPEED DRIVE
W	WATT
W/	WITH
WB	WET BULB TEMPERATURE
WC	WATER COLUMN
WFM	WATER FLOW MEASURING DEVICE
WFD	WATER PRESSURE DROP
WMS	WIRE MESH SCREEN
WT	WEIGHT

IDENTIFICATION SYMBOLS

(X) KEYED NOTE TAG

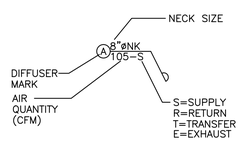
X / X — EQUIPMENT TAG; EQUIPMENT TAG NO.

X / M–X — SECTION NUMBER; DRAWING ON WHICH SECTION IS SHOWN

X / M–X — DETAIL NUMBER; DRAWING ON WHICH DETAIL IS LOCATED

POINT OF NEW CONNECTION BETWEEN EXISTING & NEW WORK

AIR DEVICES DATA TAG



T — THERMOSTAT

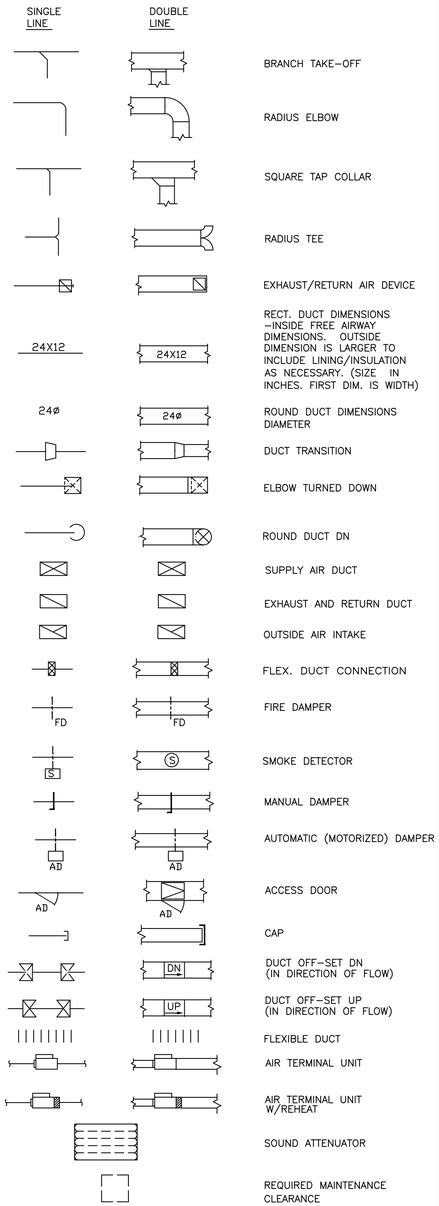
T — THERMOSTAT MOUNTED TO THERMOISOLATING PAD IF ON EXTERIOR COLUMN

CO — CARBON MONOXIDE DETECTOR

UC OR DG — DG: DOOR GRILLE; UC: DOOR UNDERCUT

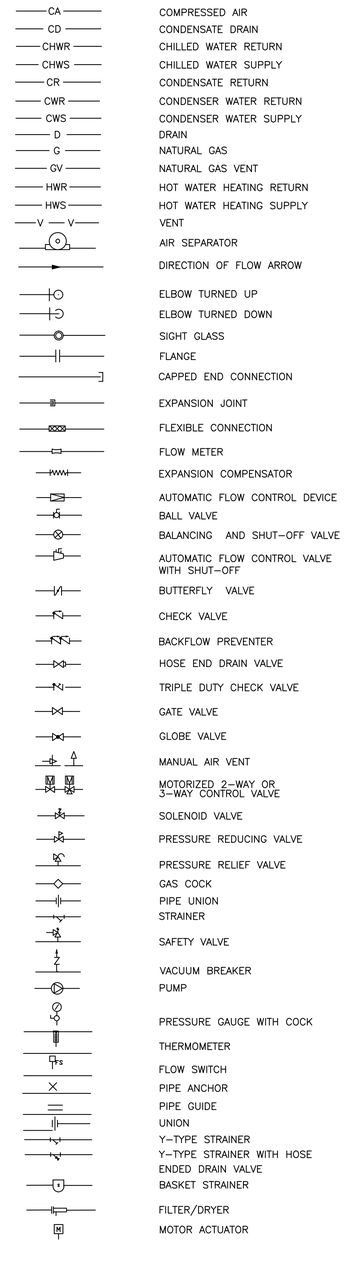
DUCTWORK SYMBOLS

DUCTWORK SHOWN AS DASHED ON NEW MECHANICAL PLANS IS EXISTING DUCTWORK OR FUTURE DUCTWORK PER NOTES.
DUCTWORK SHOWN AS SOLID ON NEW MECHANICAL PLANS IS NEW DUCTWORK IN THE SCOPE OF THIS PROJECT.
DUCTWORK SHOWN AS SOLID ON MECHANICAL DEMOLITION PLANS IS EXISTING DUCTWORK.



PIPING SYMBOLS

PIPING SHOWN AS DASHED ON NEW MECHANICAL PLANS IS EXISTING PIPING TO REMAIN.
PIPING SHOWN AS SOLID ON NEW MECHANICAL PLANS IS NEW PIPING IN THE SCOPE OF THIS PROJECT.



The Medical Center of Aurora
Health ONE

MORGUE EQUIPMENT UPGRADE

MEDICAL CENTER OF AURORA

1501 S. POTOMAC ST.
AURORA, CO 80012

SOUTH CAMPUS

TOM THOMPSON ARCHITECT
2510 SOUTH OSCEOLA STREET
DENVER, COLORADO 80219
720.989.6084
TomThompsonArchitect@gmail.com

WMA Consulting Engineers, Ltd.
WMA Job# 19003-00

DESIGN DOT LOT
dpteam@thedesignplot.com
(303) 565–7282

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COLORADO LICENSED MACHAEL P. THOMPSON 53150 PROFESSIONAL ENGINEER
8/2/19

PROJECT NO.: 18–18

DRAWN BY:
CHECKED BY:
SCALE: AS SHOWN
DATE: 08.02.2019
ISSUED FOR: CONSTRUCTION
REVISIONS:

SHEET TITLE:
MECHANICAL SYMBOLS AND ABBREVIATIONS

SHEET NO.:
M0.0

This sheet of drawings has not been reviewed for code compliance.

RSN: 1410755
Permit #: 19-1709424

G:\19003-00\3-10_MECH\DRAWINGS\M0.1 – MECHANICAL SPECIFICATIONS.DWG Last edited by K25 on 02-15-2019 @ 10:31
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MECHANICAL SPECIFICATION

GENERAL PROVISIONS FOR MECHANICAL WORK

1. WORK UNDER THIS SECTION IS SUBJECT TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, INCLUDING THE DRAWINGS, GENERAL AND SUPPLEMENTARY CONDITIONS OF THE ARCHITECTURAL SPECIFICATIONS.
2. THE DRAWINGS AND SPECIFICATIONS SHALL BE UNDERSTOOD TO COVER SYSTEMS OF HEATING, VENTILATION AND AIR CONDITIONING, INSULATION, BUILDING AUTOMATION SYSTEMS AND TEMPERATURE CONTROL, AND TESTING AND BALANCING. THE DRAWINGS AND SPECIFICATIONS ARE TO BE TAKEN TOGETHER. WORK SPECIFIED AND NOT SHOWN, OR WORK SHOWN AND NOT SPECIFIED, SHALL BE AS BINDING AS THOUGH REQUIRED BY BOTH, THE DRAWINGS AND SPECIFICATIONS.
3. MINOR ITEMS AND ACCESSORIES OR DEVICES REASONABLY INFERABLE AS NECESSARY TO THE COMPLETE AND PROPER OPERATION OF ANY SYSTEM SHALL BE PROVIDED FOR SUCH SYSTEMS, WHETHER OR NOT THEY ARE SPECIFICALLY CALLED FOR BY THE SPECIFICATIONS OR THE DRAWINGS.
4. THE CONTRACTOR SHALL PROCURE AND PAY FOR ALL NECESSARY PERMITS AND LICENSE FEES, MAKE ARRANGEMENTS FOR INSPECTIONS, PAY ALL FEES IN CONNECTION THEREWITH, EXCEPT BUILDING PERMIT, AND PAY ALL APPLICABLE FEDERAL, STATE AND LOCAL TAXES.
5. THE CONTRACTOR SHALL GUARANTEE ALL WORK TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR IN ACCORDANCE WITH THE GENERAL CONDITIONS, UNLESS A LONGER PERIOD IS STIPULATED UNDER SPECIFIED HEADINGS. HE SHALL REPAIR OR REPLACE, AT NO ADDITIONAL COST TO THE OWNER, ANY MATERIAL OR EQUIPMENT DEVELOPING DEFECTS. REPAIRS OR REPLACEMENTS SHALL BEAR AN ADDITIONAL TWELVE (12) MONTHS GUARANTEE FROM TIME REPAIR OR REPLACEMENT IS COMPLETE. THIS REQUIREMENT SHALL BE BINDING, EVEN THOUGH IT WILL EXCEED PRODUCT GUARANTEES NORMALLY FURNISHED BY SOME MANUFACTURERS.
6. THE CONTRACTOR SHALL SUBMIT HIS OWN AND EACH MANUFACTURERS' WRITTEN CERTIFICATES AND WARRANTIES WHICH INDICATE THAT EACH ITEM OF EQUIPMENT FURNISHED, COMPLIES WITH ALL REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. GUARANTEES AND WARRANTIES SHALL COMMENCE FROM THE DATE OF THE SIGNED ACCEPTANCE BY THE OWNER OF A PARTICULAR ITEM OF EQUIPMENT OR A PARTICULAR DEFINED PORTION OF THE WORK.
7. ALL WORK SHALL BE INSTALLED IN CONFORMITY WITH ALL GOVERNMENTAL JURISDICTIONAL AUTHORITIES REGULATIONS, LAWS, RULES, OR ORDINANCES IN EFFECT AND GOVERNING SAME; SUCH RULES AND REGULATIONS AND LOCAL ORDINANCES TO BE CONSIDERED PART OF SPECIFICATIONS. MECHANICAL CONSTRUCTOR SHALL BE HELD STRICTLY RESPONSIBLE FOR ANY VIOLATION OF SAME AND SHALL CHANGE HIS WORK TO CONFORM WITHOUT ADDITIONAL COST TO OWNER.
8. ALL WORK SHALL ALSO CONFORM TO THE PUBLISHED STANDARDS OF THE NATIONAL FIRE PROTECTION ASSOCIATION, AND ELECTRICAL WORK AND EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF THE CURRENT ISSUE OF THE NATIONAL ELECTRICAL CODE. ALL MATERIALS, IN GENERAL SHALL BE UNDERWRITERS' LABORATORIES LISTED AND SHALL BEAR UL LABEL WHERE LABELING SERVICE IS AVAILABLE.
9. WHERE JURISDICTIONAL RULES REQUIRE ASSISTANCE OF MECHANICS OF TRADES OTHER THAN THOSE ORDINARILY EMPLOYED BY A PARTICULAR MECHANICAL CONTRACTOR IN THE HANDLING, STORAGE OR SETTING OF SPECIAL EQUIPMENT, THE MECHANICAL CONTRACTOR SHALL EMPLOY SUCH TRADESMEN SO AS TO BE IN CONFORMANCE WITH LOCAL JURISDICTIONAL AGREEMENTS.
10. IT IS CONTEMPLATED THAT WORK INCLUDED BE DONE DURING REGULAR WORKING HOURS ON A "STRAIGHT TIME" BASIS; ANY WORK REQUIRING OVERTIME SHALL INCLUDE THE COST FOR SUCH OVERTIME WORK AS A PART OF THE BASE BID PROPOSAL.
11. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY INTERFERENCE WITH OR DAMAGE TO ANY EXISTING UTILITIES AND SHALL REPAIR OR REPLACE ANY DAMAGED UTILITIES WITH THE LEAST POSSIBLE DELAY AND HOLD THE OWNER HARMLESS IN THE EVENT THAT THERE IS ANY DAMAGE.
12. CERTAIN ITEMS OF EQUIPMENT ARE SPECIFIED ON THE DRAWING EQUIPMENT SCHEDULES OR IN NOTES AS THE PRODUCT OF A SPECIFIC MANUFACTURER INCLUDING THE TRADE NAME, SIZE AND MODEL NUMBER. THIS IS TO ESTABLISH A STANDARD OF QUALITY AND TO MAKE PROVISIONS FOR POWER, SPACE ALLOWANCE, AND CONNECTIONS BY OTHER TRADES.
13. IF ALTERNATE MANUFACTURERS OTHER THAN THOSE NAMED IN THE DOCUMENTS ARE PROPOSED TO BE USED, THE BIDDER SHALL LIST SUCH OTHER ALTERNATE MANUFACTURERS ALONG WITH ANY COST ADDITIONS OR DEDUCTIONS FROM THE BASE BID PROPOSAL. IF THE OWNER ACCEPTS THE ALTERNATE MANUFACTURER THE CONTRACT WILL SO STATE. IF THE CONTRACT DOES NOT CONTAIN THE NAMES OF ALTERNATE MANUFACTURERS THE CONTRACTOR SHALL SUBMIT ONLY MANUFACTURERS NAMED IN THE DOCUMENTS.
14. IF THE MECHANICAL CONTRACTOR PROPOSES TO USE THE PRODUCT OF A MANUFACTURER OTHER THAN THE ONE NAMED IN THE DOCUMENTS HE SHALL BE RESPONSIBLE FOR THAT ITEM OF EQUIPMENT FITTING IN PLACE WITH ADEQUATE CLEARANCES. FURTHER, IF DIFFERENT CONNECTIONS ARE REQUIRED, THEY SHALL BE FURNISHED BY OTHER TRADES FROM THE PRODUCT NAMED IN THE DOCUMENTS, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE OTHER TRADES OF ANY CHANGES AND IF ADDITIONAL COSTS ARE REQUIRED BY THE OTHER TRADES HE SHALL PAY SUCH COSTS.
15. THE ENGINEER HAS NO CONTRACTUAL RESPONSIBILITY IN CONNECTION WITH JOB SITE SAFETY MEASURES OR PRECAUTIONS AS RELATED TO MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES IN THAT REGARD. THE MECHANICAL CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE ARCHITECT/ENGINEER'S OBSERVATIONS OF THE MECHANICAL CONTRACTOR'S PERFORMANCE ARE NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE MECHANICAL CONTRACTOR'S SAFETY MEASURES IN, ON OR NEAR THE CONSTRUCTION SITE. IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION", VOLUME 36, NO. 75, PART II OF THE FEDERAL REGISTER BY THE U.S. DEPARTMENT OF LABOR. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL SUCH SAFETY MEASURES AND SHALL CONSULT WITH THE STATE OR FEDERAL SAFETY INSPECTOR FOR INTERPRETATION WHENEVER IN DOUBT AS TO WHETHER SAFE CONDITIONS DO OR DO NOT EXIST; OR WHETHER HE IS OR IS NOT IN COMPLIANCE WITH STATE OR FEDERAL REGULATIONS.
16. THE DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC IN NATURE AND SHOW GENERAL ARRANGEMENT OF ALL EQUIPMENT, PIPING, DUCTWORK, SERVICES, ETC. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO SHOW ALL OFFSETS, FITTINGS, AND ACCESSORIES WHICH MAY BE REQUIRED. FURNISH ALL FITTINGS, AND ACCESSORIES THAT MAY BE REQUIRED TO MEET SUCH CONDITIONS AND TO FIT WORK OF OTHER TRADES.
17. FURNISH THREE (3) SETS OF CUTS OR BROCHURES, OR ONE SEPIA REPRODUCIBLE SHOP DRAWING AND TWO PRINTS SHOWING ALL DETAILS OF CONSTRUCTION FOR DUCT LAYOUTS AND EQUIPMENT AND ASSOCIATED WIRING DIAGRAMS TO BE FURNISHED.
18. REVIEW OF THE SHOP DRAWINGS IS RENDERED AS A SERVICE ONLY AND SHALL NOT BE CONSIDERED AS A GUARANTEE OF MEASUREMENTS OR OF BUILDING CONDITIONS; NOR SHALL IT BE CONSTRUED AS RELIEVING THE MECHANICAL CONTRACTORS OF BASIC RESPONSIBILITIES UNDER HIS CONTRACT.
19. ALL EQUIPMENT SUBMITTED AS SHOP DRAWINGS SHALL BE APPROVED BY THE GOVERNING JURISDICTIONAL AUTHORITIES PREVIOUS TO SUBMITTAL. SUBMISSION OF A SHOP DRAWING SHALL MEAN THAT APPROVAL HAS BEEN OBTAINED FOR INSTALLATION OF THE EQUIPMENT SUBMITTED FOR REVIEW.
20. AT COMPLETION OF THE PROJECT, ALL CHANGES AND DEVIATIONS FROM THE CONTRACT DOCUMENTS SHALL BE RECORDED BY THE MECHANICAL CONTRACTOR ON AS-BUILT DRAWINGS. SUPPLY TO THE ARCHITECT/ENGINEER FOUR PAPER BLUE LINE SETS AND
21. THE OWNER, ARCHITECT, ENGINEER OR OTHERS WHO THEY MAY DESIGNATE SHALL BE PRIVILEGED TO ENTER AND OCCUPY THE BUILDING OR PORTIONS THEREOF, AT ANY TIME PRIOR TO COMPLETION OF THE MECHANICAL WORK WITHOUT PREJUDICE.
22. BEFORE MAKING ANY INSTALLATION, THE MECHANICAL CONTRACTOR SHALL CONFER WITH ALL OTHER CONTRACTORS WHOSE WORK MAY AFFECT THE WORK UNDER THEIR SECTIONS AND MAKE THE NECESSARY CHANGES TO AVOID INTERFERENCES OR IMPROPER EFFECT ON WORK TO BE PERFORMED BY ALL OTHER TRADES. IN THE EVENT THAT INTERFERENCES DEVELOP, THE ARCHITECT'S DECISION WILL BE FINAL AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR MOVING OF MISPLACED PIPING, DUCTS, CONDUIT AND/OR EQUIPMENT.
23. ALL MATERIALS AND/OR EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.
24. EACH MAJOR COMPONENT OF THE EQUIPMENT SHALL HAVE THE MANUFACTURER'S NAME, ADDRESS, MODEL NUMBER AND RATING ON A PLATE SECURELY AFFIXED IN A CONSPICUOUS PLACE. THE NAMEPLATE OF A DISTRIBUTING AGENT IS NOT ACCEPTABLE. ASME CODE RATINGS, OR OTHER DATA WHICH IS DIE-STAMPED INTO THE SURFACE OF THE EQUIPMENT SHALL BE IN A VISIBLE LOCATION.
25. USE ONLY NEW MATERIALS OF THE BEST QUALITY OF THEIR RESPECTIVE KINDS; LABOR SHALL BE DONE IN A THOROUGH WORKMANLIKE MANNER TO THE SATISFACTION OF THE ARCHITECT.
26. MATERIALS SHALL BE MANUFACTURED BY REPUTABLE MANUFACTURERS WHO HAVE BEEN PRODUCING THIS TYPE OF MATERIAL TO BE SOLD IN MAJOR CITIES IN THE UNITED STATES FOR A PERIOD OF AT LEAST FIVE (5) YEARS, UNLESS OTHERWISE NOTED HEREIN.
27. THE INSTALLATION OF ANY ACCESS PANEL IS STRICTLY LIMITED TO LOCATIONS AS INDICATED ON THE ARCHITECTURAL DRAWINGS OR APPROVED BY ARCHITECT.
28. FIRE STOPPING SHALL BE REQUIRED AT ALL FLOOR AND FIRE RATED WALL/PARTITION PENETRATIONS. FIRE STOPPING SYSTEMS SHALL BE AS DETAILED ON ARCHITECTURAL DRAWINGS.
29. ALL SHOP FABRICATED AND FACTORY BUILT EQUIPMENT NOT GALVANIZED OR PROTECTED BY PLATING SHALL BE CLEANED AND GIVEN ONE (1) SHOP COAT OF ZINC-CHROMATE PRIMER BEFORE DELIVERY OR DURING CONSTRUCTION. ALL FINISH PAINTING SHALL BE DONE BY THE GENERAL CONTRACTOR.
30. DUCTWORK BEHIND THE GRILLES, REGISTERS, DIFFUSERS, ETC. WHICH IS EXPOSED TO VIEW THROUGH THE UNITS, SHALL BE GIVEN ONE (1) COAT OF PRIMER AND A FINISH COAT OF FLAT BLACK PAINT.
31. ALL WORKMANSHIP SHALL BE FIRST CLASS IN EVERY RESPECT AND SHALL BE PERFORMED ONLY BY SKILLED MECHANICS, RECOGNIZED AS SUCH IN THEIR RESPECTIVE TRADES.
32. FURNISH NECESSARY SCAFFOLDING, STAGING OR CRIBBING REQUIRED FOR THE COMPLETION OF THEIR WORK. SUCH SCAFFOLDING, ETC., SHALL BE REMOVED FROM THE PREMISES WHEN ITS USE IS NO LONGER REQUIRED ON THE JOB.
33. SHOULD DAMAGE TO ANY MECHANICAL, ELECTRICAL OR ARCHITECTURAL PART OF THE BUILDING OCCUR, PAY ALL COSTS TO THE RESPECTIVE SUBCONTRACTORS AFFECTED ON THE JOB TO MAKE REPAIRS AND/OR TEMPORARY CONNECTIONS REQUIRED.
34. OPENINGS MADE IN FIRE RATED WALL, CEILING OR FLOOR SHALL BE EFFECTIVELY CLOSED AND REPAIRED SO THE FIRE RATING IS NOT REDUCED BELOW ORIGINAL FIRE RATING REQUIRED.
35. FURNISH 8 COMPLETE PORTFOLIOS TO THE OWNER'S REPRESENTATIVE, CONTAINING AS-BUILT SHOP DRAWINGS, TEST AND BALANCE REPORTS, OPERATING INSTRUCTIONS, WARRANTIES, PARTS LISTS, WIRING DIAGRAMS, ETC., ON ALL EQUIPMENT FURNISHED UNDER THIS CONTRACTOR.
36. THE CONTRACTOR SHALL FURNISH A COMPETENT INSTRUCTOR TO ADVISE THE OWNER'S OPERATING PERSONNEL AS TO THE PROPER OPERATION, SERVICING, ETC., OF ALL EQUIPMENT AND SYSTEMS INSTALLED.
37. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL CLEAN ALL OF HIS WORK, EQUIPMENT, ETC., FREE FROM DUST, ETC., AND LEAVE THE WORK IN GOOD HOUSEKEEPING FASHION IN A MANNER ACCEPTABLE TO THE OWNER'S REPRESENTATIVE. PROVIDE NECESSARY FITTINGS, LAMPS, VALVES, ETC., AND LEAVE THE WORK CLEAN AND IN PERFECT OPERATING CONDITION.
38. WHEN DIRECTED, DURING CONSTRUCTION PERIOD, OPERATE SYSTEM WITH ALL FILTERS IN PLACE AND ALL CAULKING COMPLETE. DO NOT OPERATE OR PERMIT SUPPLY SYSTEM TO BE OPERATED WITHOUT FILTERS.
39. UNDER NO CIRCUMSTANCES SHALL ANY ITEMS OF NEW AIR HANDLING EQUIPMENT BE OPERATED FOR TEMPORARY HEAT OR VENTILATION WITHOUT FILTERS IN PLACE. IF THE UNIT IS USED BEFORE CONSTRUCTION IS COMPLETED, THE FILTERS SHALL BE REPLACED, THE UNIT AND COILS SHALL BE CLEANED AND THIS SET OF FILTERS SHALL NOT BE CONSIDERED AS THE SPARE SET OF FILTERS HEREINAFTER SPECIFIED.
40. THE CONTRACTORS SHALL EXPEDITE THE INSTALLATION OF THEIR RESPECTIVE SYSTEMS AS THAT HEATING SYSTEMS CAN BE USED FOR TEMPORARY HEAT AS SOON AS THE SPACE IS ENCLOSED, THEY SHALL COOPERATE WITH THE GENERAL CONTRACTOR IN PROVIDING TEMPORARY HEAT AS REQUIRED.
41. ALL TENDERS SUBMITTED ON THESE DRAWINGS AND SPECIFICATIONS SHALL BE BASED ON NEW MATERIALS AND APPARATUS OF MAKE AND QUALITY AS SPECIFIED. IF THE CONTRACTOR DESIRES, HE MAY ALSO TENDER ON MATERIALS AND APPARATUS WHICH SHALL BE OF SAME QUALITY AND OF SIMILAR SPECIFICATIONS TO THOSE AS HEREIN SPECIFIED, IN WHICH CASE HE SHALL STATE IN HIS TENDER ALL ADDITIONS OR DEDUCTIONS INVOLVED IN THE ALTERNATE MATERIALS AND APPARATUS, AND SHALL SPECIFY THE NAME OR MAKE ON WHICH HIS ALTERNATE IS BASED. WHEN NO ALTERNATES ARE GIVEN OR ACCEPTED PRIOR TO CONTRACT AWARD, THE MAKE SPECIFIED SHALL BE INSTALLED.

HVAC SYSTEM:

1. THESE SPECIFICATIONS AND ACCOMPANYING DRAWINGS ARE TO COVER THE FURNISHINGS OF ALL LABOR, MATERIALS, EQUIPMENT, APPARATUS, SERVICE PERMANENT AND TEMPORARY FACILITIES AS NECESSARY TO THE HEATING AND AIR CONDITIONING WORK INVOLVED IN THE FURNISHING, INSTALLING, TESTING, ADJUSTING, RETESTING, READJUSTMENT AS REQUIRED AND DIRECTED, AND PLACING INTO APPROVED SATISFACTORY OPERATION THE COMPLETE RESPECTIVE SYSTEMS AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY THE JOB CONDITIONS.
2. FURNISH AND INSTALL A COMPLETE AND OPERABLE SYSTEM FOR VENTILATING, HEATING AND AIR CONDITIONING CONSISTING OF, BUT NOT LIMITED TO:

   SUPPLY AND EXHAUST/RETURN DUCT SYSTEMS

   GRILLES, DIFFUSERS, REGISTERS AND MANUAL VOLUME DAMPERS

   TESTING AND BALANCING
3. FURNISH ACCESS DOORS TO CEILING CONTRACTOR FOR ACCESS TO VALVES AND DAMPERS. ALL CONTROL DEVICES AND DAMPERS ABOVE INACCESSIBLE CEILINGS, LAY IN CEILINGS SHALL BE CONSIDERED ACCESSIBLE. PROVIDE 12"X12" (MIN.) ACCESS DOORS IN DUCTS FOR ACCESS TO FIRE DAMPERS, DUCT MOUNTED APPARATUSES, AND WHERE INDICATED FOR MAINTENANCE.
4. FURNISH AND INSTALL ALL INSULATION AS HEREINAFTER SPECIFIED.
5. FURNISH CUTTING AND CORING FOR INSTALLATION OF DUCTS AND EQUIPMENT. APPLICABLE STANDARDS AND CODES OF THE FOLLOWING:
6. THE WORK UNDER THIS SECTION SHALL COMPLY WITH THE LATEST EDITION OF THE INTERNATIONAL MECHANICAL CODE AND –

   ASME – AMERICAN SOCIETY OF MECHANICAL ENGINEERS.
   ASHRAE – AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS.
   ARI – AIR CONDITIONING AND REFRIGERATION INSTITUTE.
   ASTM – AMERICAN SOCIETY FOR TESTING MATERIALS.
   AABC – ASSOCIATED AIR BALANCE COUNCIL.
   NFPA – NATIONAL FIRE PROTECTION ASSOCIATION.
   SMACNA – SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION.
7. EXERCISE CARE IN TRANSPORTING AND HANDLING TO AVOID DAMAGE TO FIXTURES, EQUIPMENT AND MATERIALS.
8. STORE MATERIALS ON THE SITE SO AS TO PREVENT DAMAGE.
9. KEEP EQUIPMENT AND MATERIALS CLEAN, DRY AND FREE FROM DELETERIOUS CONDITIONS.
10. ALL DUCTWORK SHALL BE FABRICATED FROM G90 PRIME GALVANIZED SHEET STEEL WITH PAINT GRIP FINISH, UNLESS OTHERWISE SPECIFIED. THE DUCTS SHALL BE AIRTIGHT AND SHALL BE ANCHORED, BRACED AND REINFORCED TO PREVENT VIBRATION, LEAKAGE AND OIL CANNING. THE SPACING OF STIFFENERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA.
11. THE DUCTWORK SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE WITH 1 INCH X 1/8 INCH SOLID GALVANIZED STRAP HANGERS (BOTH SIDES OF DUCT AT POINT OF SUPPORT) WITH GAGES AND SPACING AS SPECIFIED IN SMACNA. WHERE REQUIRED, TRAPEZE HANGERS USING ADEQUATE STRENGTH STEEL ANGLES AND THREADED RODS SHALL BE USED. ALL DUCT SUPPORTS SHALL BE IN ACCORDANCE WITH SMACNA.
12. UNLESS OTHERWISE NOTED, ALL ROUND ELBOWS SHALL HAVE CENTER LINED RADIUS EQUAL TO 1-1/2 TIMES THE WIDTH OF THE DUCT. IF SPACE DOES NOT PERMIT, THEN PROVIDE 6" THROAT WITH SPLITTER VANES. SEE DUCT CONSTRUCTION DETAILS.
13. ALL DUCTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARDS. LOW PRESSURE SUPPLY AND EXHAUST TO HAVE A POSITIVE OR NEGATIVE RATING OF 2" W.G., VELOCITIES BELOW 2500 FPM, SEAL CLASS B.
14. ALL DUCTWORK SHALL BE 26 GAUGE GALVANIZED MINIMUM.
15. ROUND DUCTS AND FITTINGS SHALL BE FACTORY FABRICATED SPIRAL LOCK SEAM DUCT WITH MACHINE FORMED FITTINGS AS MANUFACTURED BY UNITED SHEET METAL. ALL FITTINGS SHALL BE SEALED WITH FIRE RETARDANT DUCT SEALER.
16. FLEXIBLE DUCTS SHALL BE FLEX MASTER OR APPROVED EQUAL. INSULATED FLEXIBLE DUCTS, SECURED WITH WORM DRIVE STAINLESS STEEL CLAMPS. DUCTS SHALL BE U.L. LISTED AND HAVE 2" W.G. GAUGE WORKING PRESSURE. 4'-0" MAXIMUM LENGTH.
17. FOR ALL OPERABLE DEVICES IN WALLS OR ABOVE INACCESSIBLE SUSPENDED CEILINGS, PROVIDE MILCOR ACCESS DOORS WITH SAME KEYED LOCKS AND CONCEALED HINGES. LAY IN CEILINGS ARE CONSIDERED ACCESSIBLE. SIZE AS REQUIRED FOR ACCESS.

    STYLE DW IN DRYWALL NO. 16 GA. FRAME NO. 14 GA. PANEL
    STYLE AP IN PLASTER NO. 16 GA. FRAME NO. 14 GA. PANEL
    STYLE M IN MASONRY NO. 16 GA. FRAME NO. 14 GA. PANEL
18. PROVIDE AN ADJUSTABLE BUTTERFLY OR OPPOSED MULTI BLADE VOLUME DAMPERS IN DUCTWORK AT EVERY DUCT JUNCTION ON ALL SUPPLY, RETURN AND EXHAUST AIR DUCTWORK. DAMPERS SHALL BE CONSTRUCTED OF GALVANIZED SHEET STEEL 2 GAGES HEAVIER THAN DUCT IN WHICH THE DAMPER IS INSTALLED. EACH DAMPER SHALL BE PROVIDED WITH DAMPER ROD HELD IN PLACE WITH A CLAMPING DEVICE. VISIBLE END OF THE DAMPER RODS SHALL BE FILE MARKED WITH MARKS PARALLEL TO THE BLADES.
19. FIRE DAMPERS SHALL BE COMPLETE WITH WALL FRAME, SLEEVES, ANGLE IRON STOPS, LATCHES, SPRINGS AND FUSIBLE LINK, ETC., AND SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS AND ELSEWHERE AS REQUIRED IN ACCORDANCE WITH NATIONAL BUREAU OF FIRE UNDERWRITER REGULATION BULLETIN 90-A. AND THE CITY OF CHICAGO FIRE PREVENTION BUREAU. THE FIRE DAMPERS SHALL BEAR UL LABEL. FIRE DAMPER SHALL BE 98% FREE AREA, AND BE OF THE LOW RESISTANCE TYPE WITH 1-1/2 HOUR OR 3 HOUR FIRE RATING AS MANUFACTURED BY PHILLIPS-AIRE AMERICAN WARNING AND VENTILATING, INC., AIR BALANCE, INC., OR RUSKIN MANUFACTURING.
20. ALL SUPPLY AND RETURN AIR OUTLETS SHALL BE MOUNTED TIGHTLY WITH RUBBER GASKETS TO PREVENT AIR LEAKAGE.
21. OUTLETS SHALL BE SELECTED AND GUARANTEED BY THE MANUFACTURER TO HANDLE THE AIR QUANTITIES AS SHOWN ON THE DRAWINGS WITH A MAXIMUM PRESSURE DROP THROUGH THE OUTLET NOT EXCEEDING 0.10 IN OF WATER.
22. UNLESS OTHERWISE NOTED, DIFFUSERS, REGISTERS OR GRILLES SHALL BE FABRICATED FROM PRIME STEEL AND SHALL BE PROVIDED WITH A FINISH COAT OF WHITE BAKED ENAMEL PAINT, UNLESS NOTED OTHERWISE. DIFFUSERS, REGISTERS AND GRILLES SHALL BE AS MANUFACTURED BY TITUS, OR APPROVED EQUAL.
23. DRILLED-IN THREADED INSERTS: PHILLIPS "REDHEAD" DRILLED-IN THREADED INSERTS SHALL BE PROVIDED. INSTALL IN ACCORDANCE WITH MANUFACTURER'S
24. PROVIDE ANCHOR BOLTS, NUTS SLEEVES FOR ANCHORING FANS, MOTORS AND ANY OTHER POWER-OPERATED EQUIPMENT.
25. ALL CONDITIONED SUPPLY AIR DUCTS SHALL BE INSULATED WITH 1 1/2" THICK FIBERGLASS INSULATION. MAKE-UP AIR DUCTS DO NOT NEED TO BE INSULATED.

DUCTWORK

1. DUCTWORK SHALL BE GALVANIZED STEEL CONSTRUCTED & INSTALLED IN ACCORDANCE WITH THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION HVAC DUCT CONSTRUCTION STANDARDS, 1995 EDITION, EXCEPT AS FOLLOWS:
2. LINING OF DUCTWORK SHALL NOT BE PERMITTED WHERE FIBERS ARE EXPOSED TO THE AIRSTREAM.
3. DUCTWORK THICKNESS SHALL BE 22 GAUGE MINIMUM EXCEPT FOR THE FOLLOWING:

   A. WHERE ANY WELDING OTHER THAN LONGITUDINAL SEAM IS PERFORMED, THE THICKNESS SHALL BE 18 GAUGE MINIMUM.
4. ROUND:

   A. ROUND DUCTS MAY BE SPIRAL OR LONGITUDINAL SEAM. LONGITUDINAL SEAMS SHALL BE CONTINUOUSLY WELDED. SNAPLOCK SEAMS ARE NOT PERMITTED. DUCTWORK WHICH WILL BE EXPOSED IN SPACE SHALL BE SPIRAL.
   B. CRIMP JOINTS ARE NOT PERMITTED.
   C. PLEATED ELBOWS ARE NOT PERMITTED.
   D. ADJUSTABLE ELBOWS ARE NOT PERMITTED.
   E. MITERED ELBOWS WITH TURNING VANES ARE NOT PERMITTED. USE RADIUS ELBOWS WITH CENTERLINE RADIUS AT LEAST AS GREAT AS THE DUCT WIDTH.
5. RECTANGULAR:

   A. BUTTON PUNCH SNAPLOCK SEAMS ARE NOT PERMITTED.
   B. TRANSVERSE (GIRTH) JOINTS 1-4, 9, 17, 18, 20, AND 23 ARE NOT PERMITTED.
   C. MITERED ELBOWS WITH TURNING VANES ARE NOT PERMITTED. USE RADIUS ELBOWS WITH CENTERLINE RADIUS AT LEAST AS GREAT AS THE DUCT WIDTH.
6. SIZES OF NEW DUCT SHOWN ON DRAWINGS ARE FREE AIRWAYS SIZES, NOT OUTSIDE DIMENSIONS.
7. FOR FINAL CONNECTIONS TO DIFFUSERS AND MODULATING DAMPER BOXES, FLEXIBLE DUCTS MAY BE USED FOR A MAXIMUM OF 1'-0" FEET. FLEXIBLE DUCTS SHALL BE U.L. LISTED, WITH 1" THICK FIBERGLASS INSULATION W/ VAPOR BARRIER. INSTALL FULLY EXTENDED W/ A MAXIMUM OF ONE 90° CHANGE OF DIRECTION, IN LENGTHS NO GREATER THAN NECESSARY. USE GENEROUS RADIUS TURNS AND SUPPORT AS REQUIRED TO PREVENT EXCESSIVE SAGGING. FLEXIBLE ELBOWS AT THE DIFFUSER INLET IS NOT PERMITTED.
8. PROVIDE ADJUSTABLE OPPOSED BLADE OR BUTTERFLY DAMPERS FOR ALL NEW LOW PRESSURE SUPPLY & RETURN BRANCHES. EXTRACTORS AND SPLITTER DAMPERS ARE NOT PERMITTED.
9. SEAL ALL JOINTS OF NEW DUCTWORK. ADDITIONALLY, SEAL SEAMS OF NEW DUCTWORK UPSTREAM OF BOXES. INSPECT EXISTING DUCTWORK FOR LEAKS & REPORT RESULTS BEFORE CONNECTING NEW DUCTWORK. ALL DUCTWORK WITHIN THE CONSTRUCTION LIMIT LINE IS SUBJECT TO LEAK TESTS AS REQUIRED AND WITNESSED BY THE OWNER. SEE LATEST BUILDING CONSTRUCTION STANDARDS FOR MEDIUM AND LOW PRESSURE ALLOWABLE LEAKAGE RATES, AND SPECIFIC TESTING REQUIREMENTS. ALL MEDIUM PRESSURE DUCTWORK UPSTREAM OF VAV AND FAN POWERED BOXES SHALL BE 3" W.G. PRESSURE CLASS, SEAL CLASS A. DUCT SEALANT SHALL BE WATER-BASED-UNITED McGILL OR APPROVED EQUAL. PRESSURE SENSITIVE TAPE IS UNACCEPTABLE. GASKETED FLANGES SHALL BE SEALED WITH A MASTIC.
10. PROTECT NEW & EXISTING DUCT OPENINGS FROM DUST & DIRT. CLEAN INSIDE & OUTSIDE OF NEW & EXISTING DUCTWORK IN AREA OF NEW WORK. REPLACE FILTERS AS REQUIRED DURING CONSTRUCTION PERIOD AND PROVIDE NEW SETS OF FILTERS AFTER COMPLETION OF WORK.

INSULATION

DUCTWORK

1. INSULATION SHALL BE OWENS-CORNING, CERTAINTEED, ARMSTRONG, OR GUSTIN-BACON.
2. NEW SUPPLY AIR DUCTWORK ABOVE CEILINGS SHALL BE INSULATED WITH MIN. 2" THICK, 1# DENSITY FIBERGLASS WRAP WITH FIRE RETARDANT VAPOR-BARRIER COVERING TO PROVIDE A MAXIMUM INSTALLED CONDUCTANCE OF 0.16. OVERLAP ALL SEAMS AND JOINTS & SECURE WITH MANUFACTURER APPROVED ADHESIVE TO PROVIDE CONTINUITY OF VAPOR BARRIER.
3. NEW RECTANGULAR SUPPLY AIR DUCTWORK SHALL BE LINED DOWNSTREAM OF AIR HANDLING UNIT (AHU-1) FOR 15'-0".

PIPING AND VALVES:

1. PIPING INSULATION
   a). INSULATION SHALL BE OWENS-CORNING, CERTAINTEED, ARMSTRONG, OR GUSTIN-BACON.
   b). HYDRONIC PIPING 1/2 TO 1-1/2" PROVIDE GLASS FIBER OR CELLULAR GLASS INSULATION 1-1/2" THICK WITH VAPOR BARRIER JACKET. FLEXIBLE ELASTOMERIC INSULATION ALSO ACCEPTABLE.
   c). CONDENSATE DRAIN PIPING SHALL BE INSULATED WITH MIN. 3/4" THICK FLEXIBLE ELASTOMERIC INSULATION WITH VAPOR BARRIER. APPLY FULL COVERAGE OF ADHESIVE TO THE SURFACES OF THE EQUIPMENT AND TO THE INSULATION. BUTT INSULATION JOINTS FIRMLY TOGETHER AND APPLY ADHESIVE TO INSULATION EDGES AT JOINTS.
2. CONDENSATE PIPING:
   a). CONDENSATE PIPING: TYPE I DRAWN-TEMPER COPPER TUBING WITH SOLDERED JOINTS. INSTALL CONDENSATE PIPING AT A UNIFORM GRADE OF 0.4 PERCENT DOWNWARD IN DIRECTION OF FLOW.

SEQUENCE OF OPERATION:

FAN COIL (FCU-19-1)

A. FAN COIL SHALL UTILIZE FACTORY CONTROLS TO MAINTAIN SPACE TEMPERATURE 75°F (ADJ) DURING SUMMER AND 70°F (ADJ) DURING WINTER.
B. FANS SHALL RUN CONTINUOUSLY TO PROVIDE REQUIRED OUTSIDE AIR TO THE SPACE.
F. OUTSIDE AIR DAMPER SHALL MODULATE TO MINIMUM SETPOINT WHILE FANS ARE ENERGIZED.
G. UPON CALL FOR HEATING OR COOLING, THE FANS EC MOTOR SHALL MODULATE SPEED TO MAINTAIN ROOM TEMP.
H. COOLING COIL VALVES SHALL MODULATE OPEN UPON A CALL FOR COOLING.
I. HEATING COIL VALVES SHALL MODULATE UPON A CALL FOR HEAT AND WHEN ROOM TEMPERATURE FALLS BELOW TEMPERATURE SET POINT.

TEMPERATURE CONTROLS:

1. FURNISH AND INSTALL MANUFACTURERS CONTROLS FOR FAN COIL.
2. COORDINATE ALL CONTROL

FAN COIL UNIT SCHEDULE (FCU)

TAG	LOCATION	FAN DATA			MOTOR DATA							HEATING COIL							COOLING COIL DATA								MANUFACTURER	MODEL	REMARKS
		DESIGN CFM	FAN QTY.	ESP (IN.)	MOTOR QTY.	HP	RPM	FLA	MCA	MSC P	VOLTS/PH/HZ	MBH	GPM	MAX PD. (FT.)	ROWS	EAT	LAT	EWT (°F)	LWT (°F)	TOTAL MBH	SENS. MBH	GPM	MAX PD. (FT.)	EAT DB °F	EAT WB °F	LAT DB °F	LAT WB °F			
FCU-19-1	BODY HOLD	390	2	0.2	2	1/20	1050	1.6	1.8	15	120/1/60	7	0.7	10	1	68	87	180	160	12.5	9.2	2.6	10	78	63	51	50.4	JCI	FHX-D 10	ALL

REMARKS:

1. PROVIDE REMOTE MOUNTED THERMOSTAT. SEE FLOORPLANS FOR LOCATION AND COORDINATE WITH ARCHITECT.
2. PROVIDE MERV 13 FILTERS.
3. PROVIDE HIGH STATIC FAN.
4. PROVIDE EC MOTOR CAPABLE OF VARIABLE SPEED OPERATION.
5. PROVIDE CONDENSATE OVERFLOW SWITCH.
6. PROVIDE DISCONNECT SWITCH.
7. PROVIDE EXTERNALLY INSULATED STAINLESS STEEL PRIMARY DRAIN PAN, WITH SECONDARY DRAIN CONNECTION FOR CONDENSATE OVERFLOW.
9. PROVIDE HANGING BRACKETS WITH SPRING VIBRATION ISOLATORS.
10. PROVIDE FACTORY INSTALLED FIXED DEFLECTION GRILL WITH FILTER RACK IN BOTTOM POSITION.
11. PROVIDE DDC CONTROL PANEL MOUNTED TO UNIT AND INTERLOCK WITH EXISTING BAS.
12. PROVIDE HOT WATER COIL DOWNSTREAM OF COOLING COIL.
13. PROVIDE GALVANIZED METAL ENCLOSURE. FIELD CUT OPENING FOR SUPPLY AIR DUCT.

Provide proof of a flame spread less than 26 and a smoke development less than 50 for any material used in a plenum.
2015 IMC 602.2.1

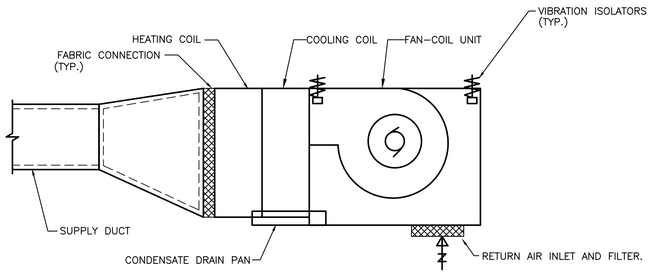
Plastic fire sprinkler piping exposed within a plenum shall be used only in wet pipe systems and shall have a maximum: peak optical density of 0.50; average optical density of 0.15; flame spread of 5 feet in accordance with UL 1887. Piping shall be listed and labeled.
2015 IMC 602.2.1.2

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

TAG	SERVICE	TYPE	AIR FLOW (CFM)	INLET SIZE (IN.)	FACE SIZE (IN.)	DAMPER	MATERIAL / FINISH	MANUFACTURER	MODEL	REMARKS
A	SUPPLY	35 DEGREE FIXED DEFLECTION GRILLE	SEE DWGS.	SEE DWGS.	SEE DWGS.	NO	STEEL	TITUS	350RL	1
B	SUPPLY	DOUBLE DEFLECTION REGISTER	SEE DWGS.	SEE DWGS.	SEE DWGS.	YES	STEEL	TITUS	S300F	1-4

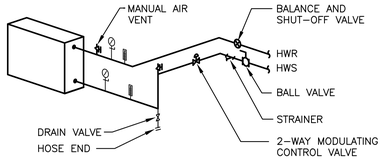
REMARKS:

1. COORDINATE FINISH WITH ARCHITECT.
2. PROVIDE REMOTE OPERATED DAMPER FOR BALANCING WHERE INSTALLED IN ACCESSIBLE CEILINGS.
3. PROVIDE OPPOSED BLADE DAMPER.
4. MOUNT SIDEWALL ON ROUND DUCT. PROVIDE MOUNTING ACCESSORIES REQUIRED FOR INSTALLATION.

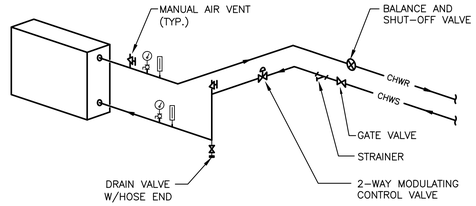


1 HORIZONTAL FAN-COIL UNIT DETAIL
N.T.S.

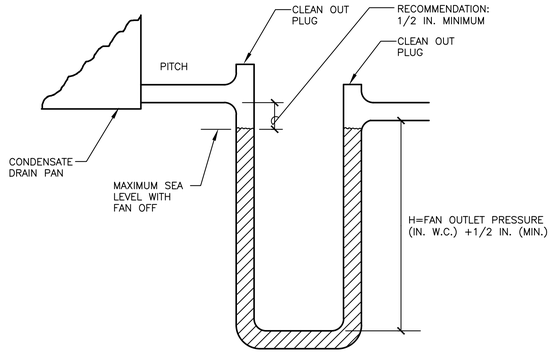
NOTES:
1. RETURN DIFFUSER HEIGHT AND WIDTH SHALL BE THE SAME DIMENSIONS AS THE FAN-COIL UNIT INLET.
2. SUPPLY/RETURN PLENUMS SHALL HAVE 1" LINING.
3. PROVIDE WITH FILTER IN RETURN IF FILTER RETURN GRILLE IS NOT SHOWN ON PLAN.
4. MOUNT UNIT AS TIGHT TO UNDERSIDE OF SLAB AS POSSIBLE.



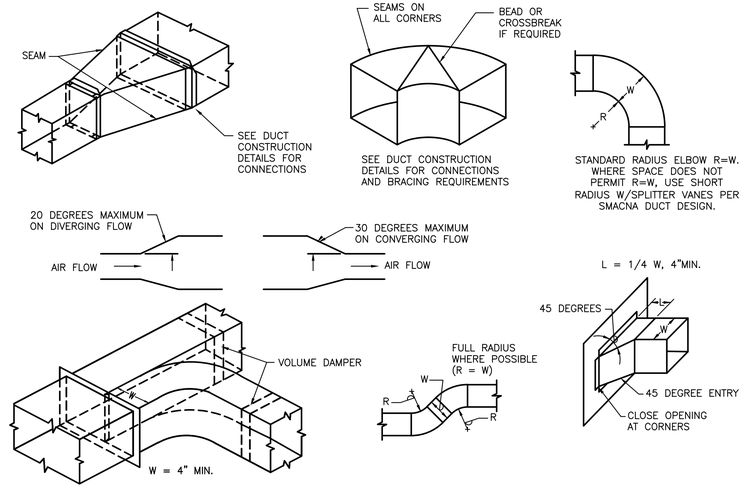
4 HEAT COIL PIPING DIAGRAM WITH 2-WAY MODULATING CONTROL VALVE
N.T.S.



2 COOLING COIL PIPING DIAGRAM-2-WAY VALVE
N.T.S.



5 TYPICAL COOLING COIL CONDENSATE DRAIN PIPING DETAIL (BLOW-THRU)
NO SCALE



3 DUCT CONSTRUCTION DETAILS
N.T.S.

Following notes are typical and apply to mechanical and plumbing drawings this permit:

Code violations that are found during inspection are required to be corrected. Permit issuance does not grant approval of a code violation. 2015 IBC 105.4.

PROVIDE INSULATION FOR PIPING THAT SERVES HEATING OR COOLING SYSTEMS. MIN. R-VALUE PER 2015 IECC, TABLE C403.2.10

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Y. MUNOZ
Date: Oct 10, 2019
2015 INTERNATIONAL CODES & 2017 NEC

The Medical Center of Aurora
Health ONE

MORGUE EQUIPMENT UPGRADE

MEDICAL CENTER OF AURORA

1501 S. POTOMAC ST.
AURORA, CO 80012

SOUTH CAMPUS

TOM THOMPSON ARCHITECT
2510 SOUTH OSCEOLA STREET
DENVER, COLORADO 80219
720.989.6084
TomThompsonArchitect@gmail.com

WMA Consulting Engineers, Ltd.
WMA Job# 19003-00

DESIGN dp LOT
dpteam@thedesignplot.com
(303) 565-7282

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COLORADO LICENSED MICHAEL P. THOMPSON 53150 PROFESSIONAL ENGINEER
8/2/19

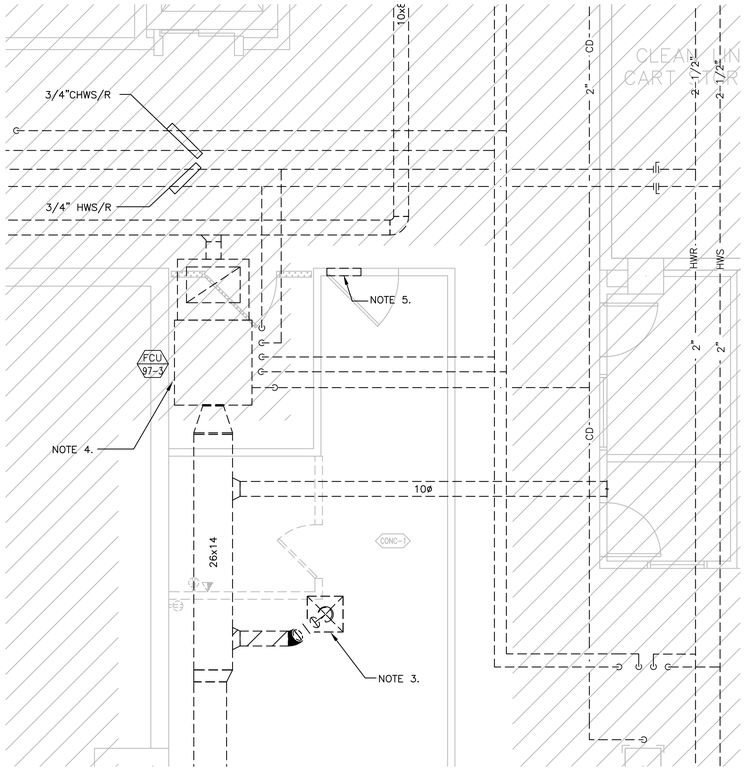
PROJECT NO.: 18-18
DRAWN BY:
CHECKED BY:
SCALE: AS SHOWN
DATE: 08.02.2019
ISSUED FOR: CONSTRUCTION
REVISIONS:

SHEET TITLE: MECHANICAL SCHEDULES AND DETAILS

SHEET NO.: M0.2

RSN: 1410755
Permit #: 19-1709424

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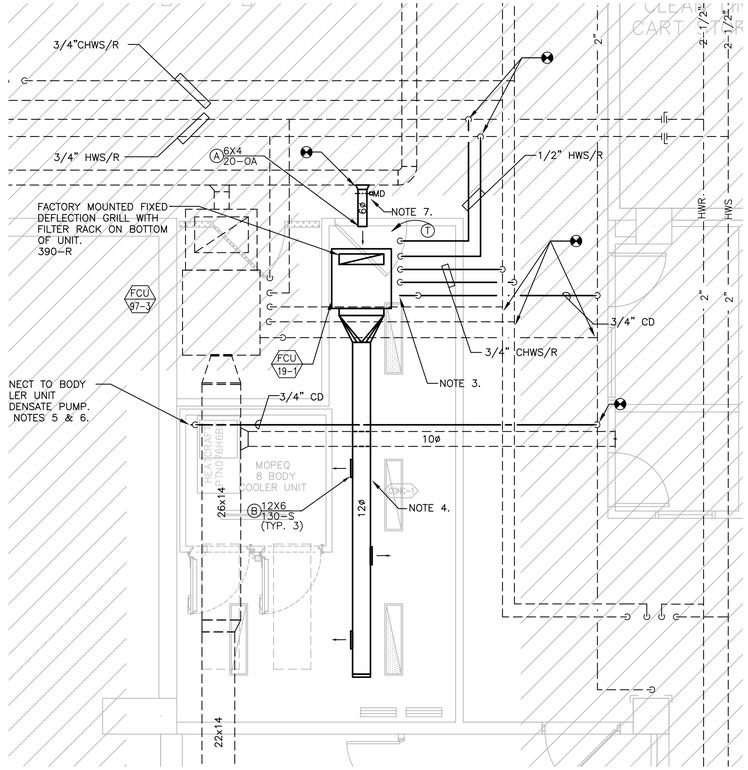


1 MECHANICAL DEMOLITION PLAN

1/4"=1'-0"

0 2 4 8

NOTES:
1. REFER TO MECHANICAL GENERAL NOTES AND SYMBOLS ON SHEET M0.0.
2. REFER TO MECHANICAL SPECIFICATIONS ON SHEET M0.1.
3. DEMOLISH EXISTING DIFFUSER AND DUCTWORK BACK TO MAIN SUPPLY DUCT AND CAP.
4. REBALANCE EXISTING FAN COIL (FCU-97-3) AND ALL CONNECTED DUCTWORK AND DIFFUSERS TO ACCOMMODATE REDUCTION IN AIRFLOW.
5. EXISTING SIDEWALL GRILLE TO REMAIN.



2 MECHANICAL FLOOR PLAN

1/4"=1'-0"

0 2 4 8

NOTES:
1. REFER TO MECHANICAL GENERAL NOTES AND SYMBOLS ON SHEET M0.0.
2. REFER TO MECHANICAL SPECIFICATIONS ON SHEET M0.1.
3. REFER TO MECHANICAL DETAILS ON SHEET M0.2 FOR ALL PIPING CONNECTION DETAILS AND REQUIREMENTS.
4. RUN DUCT AS TIGHT TO STRUCTURE AS POSSIBLE WITHOUT IMPEDING OTHER WORK.
5. ALL CONDENSATE DRAIN LINES TO BE SLOPED 1/4" DOWN AWAY FROM EQUIPMENT. CONNECT TO COMMON LINE WITH INDIRECT CONNECTION.
6. PROVIDE 5 GPM CONDENSATE LIFT STATION CAPABLE OF A MINIMUM 10 FT OF LIFT WITH 120V POWER CONNECTION. CONDENSATE PUMP SHALL BE LOCATED OUTSIDE OF COOLER.
7. PROVIDE MANUAL BALANCING DAMPER.

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TOM THOMPSON ARCHITECT
2510 SOUTH OSCEOLA STREET
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720.989.6084
TomThompsonArchitect@gmail.com

WMA Consulting Engineers, Ltd.
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DESIGN LOT
dpteam@thedesignplot.com
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COLORADO LICENSED MICHAEL P. THOMPSON 53150 PROFESSIONAL ENGINEER
8/2/19

PROJECT NO.: 18-18

DRAWN BY:
CHECKED BY:
SCALE: AS SHOWN
DATE: 08.02.2019
ISSUED FOR: CONSTRUCTION
REVISIONS:

SHEET TITLE:
MECHANICAL FLOOR PLANS

SHEET NO.:
M1.1

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PLUMBING SYMBOL LIST

SYMBOL	DESCRIPTION
UNDERGROUND PIPING	
SAN	SANITARY SEWER (CAST–IRON)
ST	STORM SEWER (CAST–IRON)
DT	STORM DRAIN TILE
SUSPENDED PIPING	
SAN	SANITARY SEWER (CAST–IRON)
ST	STORM SEWER (CAST–IRON)
	VENT
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RETURN
F	FIRE
G	GAS
NPW	NON–POTABLE WATER
VALVES	
	CHECK VALVE
	SHUT–OFF VALVE
	CIRCUIT SETTER / BALANCING VALVE
	GAS COCK
	RELIEF VALVE
	PRESSURE REDUCING/REGULATING VALVE
	BUTTERFLY VALVE
	SOLENOID VALVE
	BACKFLOW PREVENTER
	TEE (TOP)
	TEE (BOTTOM)
	90 DEGREE ELL TURNED DOWN
	90 DEGREE ELL TURNED UP (OR RISER UP AND DOWN)
	WASTE PIPE WITH TRAP
	FLOOR CLEANOUT/GRADE CLEANOUT
	CLEANOUT
	HOSE BIBB
	NON–FREEZE WALL HYDRANT
	VENT THROUGH ROOF
	ROOF DRAIN
	FLOOR DRAIN/FLOOR SINK
	UNION
	ALIGNMENT GUIDE
	ANCHOR
	PRESSURE GAUGE
	THERMOMETER
	SLEEVE THROUGH WALL
	DIRECTION OF FLOW
	PIPE PITCHES DOWN
	EXPANSION LOOP
	CAP
	POINT OF NEW CONNECTION
	EXISTING PIPE/EQUIPMENT TO REMAIN
	EXISTING PIPE/EQUIPMENT TO BE REMOVED
	NEW PIPE
	LEAK DETECTION CONTROL VALVE

PLUMBING ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
ANB	ACID NEUTRALIZING BASIN
AP	ACCESS PANEL
CB	CATCH BASIN
CCD	CHICAGO CITY DATUM
CM	COFFEE MAKER
CO	CLEANOUT
CONN.	CONNECTION
DCV	DOUBLE CHECK VALVE
DW	DISHWASHER
CW	DOMESTIC COLD WATER
DF	DRINKING FOUNTAIN
DFU	DRAINAGE FIXTURE UNIT
DIA.	DIAMETER
DN	DOWN
DS	DOWNSPOUT
D	DISPOSER
DW	DISHWASHER
EL (ELEV)	ELEVATION
EMSH	EMERGENCY SHOWER
EW	EYEWASH
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXIST. (E)	EXISTING
FBO	FURNISHED BY OTHERS
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FIN.	FINISHED
FS	FLOOR SINK
G	GAS
GC	GENERAL CONTRACTOR
GCO	GRADE CLEANOUT
GD	GARAGE DRAIN
GGB	GUY GRAY BOX
GW	GREASE WASTE
HB	HOSE BIB
HP	HOUSE PUMP
HD	HUB DRAIN
HW	DOMESTIC HOT WATER
HWR	DOMESTIC HOT WATER RETURN
IM	ICE MAKER
IW	INDIRECT WASTE
IE	INVERT ELEVATION
KS	KITCHEN SINK
KW	KITCHEN WASTE (GREASE WASTE)
L (LAV)	LAVATORY
M	WATER METER
MH	MANHOLE
MB	MUD BASIN
MR	MOP RECEPTOR
NFWH	NON–FREEZE WALL HYDRANT
NFPH	NON–FREEZE POST HYDRANT
NP	NON–POTABLE WATER
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OSD	OPEN SITE DRAIN
OW	OIL WASTE
OV	OIL VENT
ORD	OVERFLOW ROOF DRAIN
OD	OVERFLOW DRAIN
PC	PLUMBING CONTRACTOR
PD	PUMP DISCHARGE OR PLANTER DRAIN
PRV	PRESSURE REDUCING/REGULATING VALVE
PS	PLUMBING STACK
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
REF	REFRIGERATOR
ROB	ROD OUT BASIN
RP	RECIRCULATING PUMP
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
S	SOIL
SAN	SANITARY PIPE
SH	SHOWER
SK	SINK
SL	SLOPE
SP	SUMP PUMP
SRD	SECONDARY ROOF DRAIN
SS	SERVICE SINK
SST	SECONDARY STORM PIPE
ST	STORM PIPE
TMV	THERMOSTATIC MIXING VALVE
TOB	TRIPLE OIL BASIN
TP	TRAP PRIMER
TYP.	TYPICAL
UG	UNDERGROUND
V	VENT
VB	VACUUM BREAKER
VIF	VERIFY IN FIELD
VTR	VENT THROUGH ROOF
W	WASTE
WC	WATER CLOSET
WCO	WALL CLEANOUT
WF	WATER FILTER
WH	WATER HEATER
WM	WASHING MACHINE
WSFU	WATER SUPPLY FIXTURE UNIT

DEDUCT ALTERNATE

IN LIEU OF CUTTING AND PATCHING THE FLOOR FOR THE SPECIFIED UNDERSLAB CONNECTION TO THE EXISTING UNDERFLOOR SANITARY LINE, INSTALL THE UNDER SINK SYSTEM BELOW.

USP–1 UNDER SINK SUMP PUMPS

PROVIDE COST TO FURNISH AND INSTALL A METROPOLITAN UNDER SINK SUMP BASIN PACKAGE (OR APPROVED EQUAL) ALL PARTS INCLUDED TO INSTALL AN UNDER SINK SUMP SYSTEM. ORDERING PN: MPK20293. MODEL WC33V WITH VERTICAL SWITCH SUBMERSIBLE PUMPS. 1–1/2" CHECK VALVE. 1–1/2"x12" SCHEDLUE 40 PVC DISCHARGE PIPE. 18"x24" POLY WATER BOX WITH COVER. THE PUMP SHALL HAVE CARBON/CERAMIC MECHANICAL SEAL, CONSTRUCTION OF CAST IRON AND ENGINEERED THERMOPLASTIC. THE PUMP SHALL HAVE A 1–1/2–INCH DISCHARGE, RATED 20–GPM @ 20–FT. TDH, WITH AN 4–FLA, 115–VOLT, 1–PH, 1/3 HP, 3450 RPM OIL–FILLED HIGH EFFICIENCY PSC MOTOR. ALL EQUIPMENT SHALL BE PROVIDED WITH 3 YEAR WARRANTY, SERVICED AND WARRANTEED BY A LOCAL MANUFACTURER.

NOTE: COORDINATE INSTALLATION SPACE REQUIREMENTS UNDER SINK WITH ARCHITECT. CONNECT PUMP DISCHARGE PIPE TO OVER HEAD SEWER WITHIN THE AREA, VERIFY LOCATION IN FIELD.

PLUMBING SCHEDULE

SK–1 **HAND SINK**

ELKAY MODEL LRAD1919–55–3 LUSTERTONE™ CLASSIC STAINLESS STEEL 19–1/2" X 19" X 5–1/2", SINGLE BOWL DROP–IN ADA SINK. SINK IS MANUFACTURED FROM 18 GAUGE 304 STAINLESS STEEL WITH A LUSTROUS SATIN FINISH, REAR CENTER DRAIN PLACEMENT, AND BOTTOM ONLY PADS. ZURN AQUASPEC® Z831B4–XL–FC POLISHED CHROME–PLATED WIDESPREAD WITH ADJUSTABLE CENTERS FROM 6" TO 20", A 5–3/8" CENTERLINE RIGID OR SWING GOOSENECK SPOUT AND QUARTER TURN CERAMIC DISC CARTRIDGES. FURNISHED WITH A 2.0 GPM LAMINAR FLOW CONTROL IN BASE OF SPOUT, 4" VANDAL–RESISTANT COLOR–CODED METAL WRIST BLADE HANDLES, MOUNTING HARDWARE AND 1/2" NPSM COUPLING NUTS FOR STANDARD LAVATORY RISERS. PROFLO MODEL PFWTS FLAT TOP GRID STRAINER, CHROME PLATED BRASS BODY BRASS SNAP–IN STRAINER GRID, 8MM RUBBER LOCKNUT WASHER, PAPER WASHER, GALVANIZED STEEL CUP, DIE CAST LOCK NUT, BRASS SLIP NUT. PROFLO MODEL PFXQAC32C CHROME PLATED STOPS, LOW LEAD BRASS BODY, LOW LEAD BRASS STEM, LOW LEAD BRASS BALL MECHANISM, ANGLE STOPS, QUARTER TURN OPERATION. PROFLO MODEL PFX146324 CHROME PLATED 20" FLEX RISER, LOW LEAD. PROFLO MODEL PFE7 CHROME PLATED ESCUTCHEON. PROFLO MODEL PFPTB403 CHROME PLATED 1–1/2 17GA P–TRAP.

TMV–1 **THERMOSTATIC MIXING VALVE**

SYMMONS 'MAXLINE' MODEL NO. 7–210–CK–NI (LAWLER, ARMSTRONG, POWERS OR LEONARD) 3/8" COMPRESSION UNDER COUNTER THERMOSTATIC MIXING VALVE ASSEMBLY MADE FROM LEAD FREE BRASS, BRONZE AND STAINLESS STEEL CONSTRUCTION WITH INTEGRAL CHECKS AND ROUGH CHROME FINISH. MEETS ASSE 1017 & ASSE 1070. NOTE: FIELD SET TEMPERATURE AT 110°F MAXIMUM.

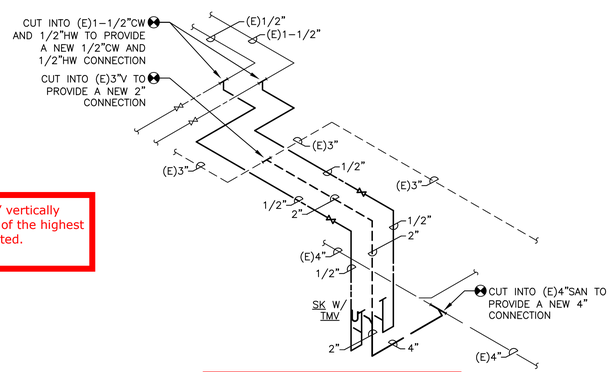
PLUMBING CODE REFERENCE

2017 EDITION OF THE CODE, AS PUBLISHED BY THE AURORA REGIONAL BUILDING DEPARTMENT
2015 INTERNATIONAL BUILDING CODE
2015 INTERNATIONAL PLUMBING CODE
2015 INTERNATIONAL MECHANICAL CODE
2015 INTERNATIONAL ENERGY CODE
PLUMBING CODE CITY OF AURORA, COLORADO

PLUMBING MATERIAL LIST

SERVICE DESCRIPTION	MATERIAL
DOMESTIC COLD, HOT AND RETURN HOT WATER (4–INCHES AND SMALLER) (ABOVE GROUND)	TYPE "L" HARD TEMPERED SEAMLESS COPPER TUBING CONFORMING TO ASTM B 88, WITH LEAD FREE SOLDERED JOINTS.
SANITARY, STORM WASTE AND VENT (ALL SIZES) (ABOVE GROUND)	SERVICE WEIGHT HUBLESS CAST IRON PIPE AND FITTINGS CONFORMING TO ASTM A74, WITH HEAVY DUTY STAINLESS STEEL CLAPMS AT JOINTS ALTERNATE: SCHEDULE 40 SOLID CORE POLYVINYL CHLORIDE (PVC) PLASTIC PIPE AND FITTINGS CONFORMING TO ASTM D 2665, WITH SOLVENT CEMENTED JOINTS.
SANITARY, WASTE AND VENT (ALL SIZES) (UNDERGROUND)	SERVICE WEIGHT HUBLESS CAST IRON PIPE AND FITTINGS CONFORMING TO ASTM A74, WITH NEOPRENE GASKET JOINTS ALTERNATE: SCHEDULE 40 SOLID CORE POLYVINYL CHLORIDE (PVC) PLASTIC PIPE AND FITTINGS CONFORMING TO ASTM D 2665, WITH SOLVENT CEMENTED JOINTS.

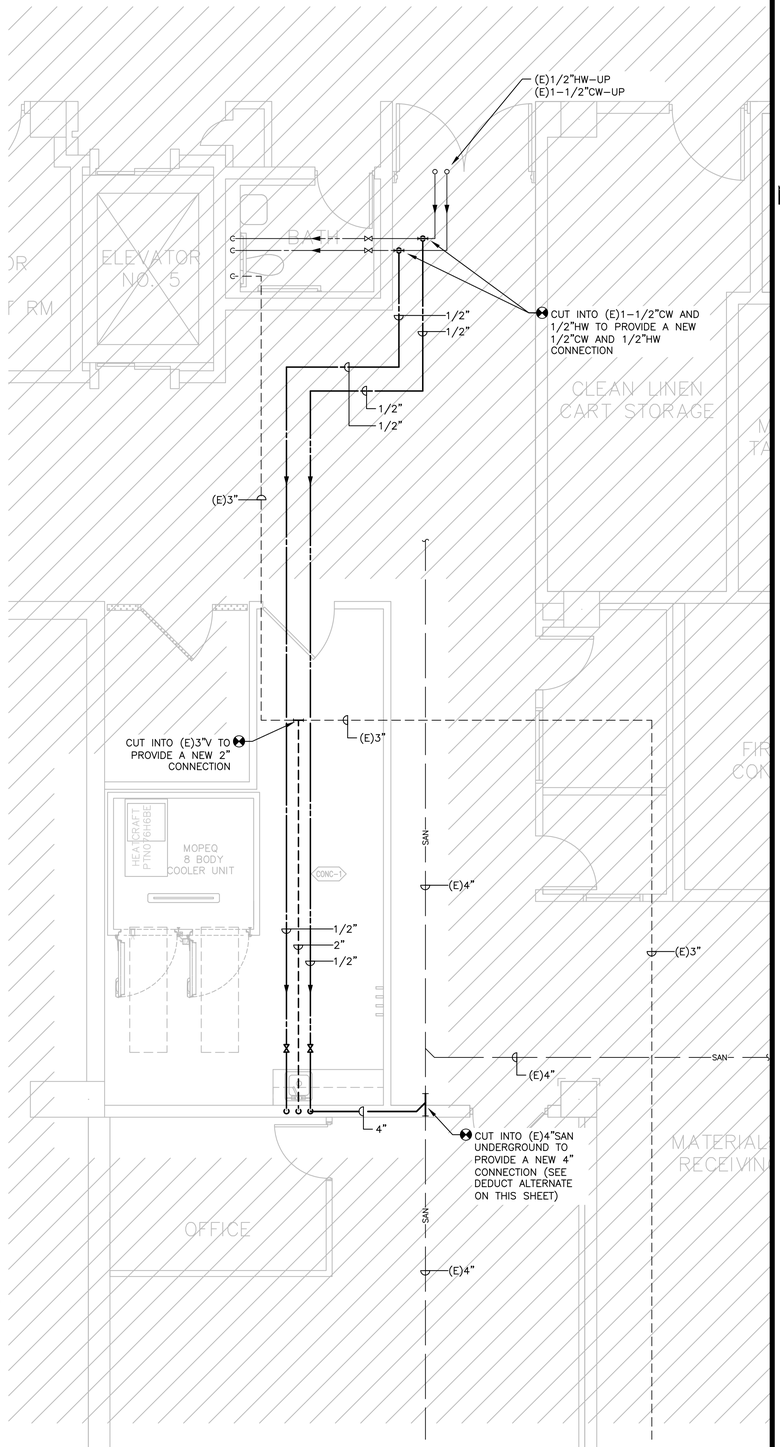
The dry vent must rise 6" vertically above the flood level rim of the highest trapped fixture being vented.
2015 IPC 905.4



Provide drains no smaller than allowed by **2015 IPC 709.1 and 710.1(1)**

2 PLUMBING DIAGRAM

N.T.S.



1 PLUMBING FLOOR PLAN

1/8"=1'-0"

0 4 8 16

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Y. MUNOZ
Date: Oct 10, 2019
2015 INTERNATIONAL CODES & 2017 NEC

RSN: *1410755*
Permit #: *19-1709424*

The Medical Center of Aurora
Health ONE

MORGUE EQUIPMENT UPGRADE

MEDICAL CENTER OF AURORA

1501 S. POTOMAC ST.
AURORA, CO 80012

SOUTH CAMPUS

TOM THOMPSON ARCHITECT
2510 SOUTH OSCEOLA STREET
DENVER, COLORADO 80219
720.989.6084
TomThompsonArchitect@gmail.com

WMA Consulting Engineers, Ltd.
WMA Job# 19003-00

DESIGN DP LOT
dpteam@thedesignplot.com
(303) 565–7282

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COLORADO LICENSED MICHAEL P. THOMPSON 53150 PROFESSIONAL ENGINEER
8/2/19

PROJECT NO.: 18–18

DRAWN BY: WMA
CHECKED BY: WMA
SCALE: AS SHOWN
DATE: 08.02.2019
ISSUED FOR: CONSTRUCTION
REVISIONS:

SHEET TITLE:
PLUMBING FLOOR PLAN

SHEET NO.:
P0.0

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GENERAL ELECTRICAL SYMBOLS

	CONDUIT RUN CONCEALED IN CEILING OR WALL
	CONDUIT RUN CONCEALED IN OR BELOW FLOOR
	CONDUIT RUN EXPOSED ON CEILING OR WALL

ARROWHEAD DENOTES HOMERUN TO PANELBOARD. SLASH LINES INDICATE QUANTITY OF WIRE; NEUTRAL WIRE SHOWN AS A LONG LINE, PHASE WIRES AND SWITCH LEGS SHOWN AS SHORT LINES, AND GROUND WIRE SHOWN AS A LONG LINE WITH A DOT.

— X — CONDUIT, WHERE "X" IS THE TYPE OR FUNCTION OF CONDUIT.

"C"	INDICATES CLOCK	"S"	INDICATES SOUND
"CO"	INDICATES CONDUIT ONLY	"T"	INDICATES TELEPHONE
"CTV"	INDICATES CCTV	"TVA"	INDICATES TELEVISION ANTENNA
"D"	INDICATES DATA	"TVC"	INDICATES CABLE TELEVISION
"FA"	INDICATES FIRE ALARM		
"I"	INDICATES INTERCOM		
"LV"	INDICATES LOW VOLTAGE		
"NC"	INDICATES NURSE CALL		

FLEXIBLE CONDUIT

UNDERGROUND DUCTBANK

PB — PULL BOX

J — JUNCTION BOX– EXPOSED OR IN CEILING

J — JUNCTION BOX – WALL MOUNTED

J — JUNCTION BOX WITH FLEXIBLE CONDUIT AND FINAL CONNECTION TO EQUIPMENT.

PDQ 13 — EQUIPMENT IDENTIFICATION TAG

LIGHTING SYMBOLS

F1 1a	2' X 4' LED LIGHTING FIXTURE.
F1 1a	1' X 4' LED LIGHTING FIXTURE.
F1 1a	LED LIGHTING FIXTURE– LENGTH AS INDICATED.
F1 E1	2' X 4' LED LIGHTING FIXTURE CONNECTED TO EMERGENCY CIRCUIT.
F1 E1	LED LIGHTING FIXTURE CONNECTED TO EMERGENCY CIRCUIT.
OS	OCCUPANCY SENSOR

LIGHTING FIXTURES:
"F1" INDICATES LIGHTING FIXTURE TYPE. REFER TO LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION AND MOUNTING.
"1" INDICATES CIRCUIT NUMBER
"a" INDICATES SWITCH CONTROL.
SHADING OF LIGHTING FIXTURE OR "E" INDICATES LIGHTING FIXTURE CONNECTED TO EMERGENCY CIRCUIT.

3W XXa — LIGHT SWITCH, SINGLE POLE UNLESS NOTED OTHERWISE:

"a"	INDICATES LIGHTS CONTROLLED	"XX"	INDICATES CIRCUIT NUMBER
"D"	INDICATES DIMMER SWITCH	"WP"	INDICATES WEATHERPROOF
"EP"	INDICATES EXPLOSION PROOF	"2P"	INDICATES 2 POLE
"FD"	INDICATES FLUORESCENT DIMMER	"3P"	INDICATES THREE POLE
"ID"	INDICATES INCANDESCENT DIMMER	"3W"	INDICATES THREE–WAY
"K"	INDICATES KEY OPERATED	"4W"	INDICATES FOUR–WAY
"LV"	INDICATES LOW VOLTAGE	"OS"	INDICATES COMBINATION
"MC"	INDICATES MOMENTARY CONTACT		WITH OCCUPANCY SENSOR
"P"	INDICATES PILOT LIGHT		

FIRE ALARM SYMBOLS

SD	SMOKE DETECTOR
S	VOICE SPEAKER
V	VISUAL STROBE

SIGNAL SYMBOLS

WALL	FLOOR	POKE–THROUGH	
			SUBSCRIPT INDICATES THE FOLLOWING FOR BELOW WALL MOUNTED OUTLETS, (U.N.O.): "H" HANDICAP MOUNTED AT 48" A.F.F. "P" PAY PHONE MOUNTED AT 54" A.F.F. "W" WALL MOUNTED AT 54" A.F.F.
			TELEPHONE OUTLET
			DATA SYSTEMS OUTLET
			COMBINATION TELEPHONE/ DATA SYSTEMS OUTLET

POWER SYMBOLS

WALL	FLOOR	POKE–THROUGH	
			DUPLEX RECEPTACLE
			DOUBLE DUPLEX RECEPTACLE
			SPECIAL RECEPTACLE – NEMA TYPE AS INDICATED
	P		JUNCTION BOX WITH FLEXIBLE CONDUIT AND FINAL EQUIPMENT OR FURNITURE SYSTEM POWER CONNECTION

WP XX — ADJACENT LETTERS IN THE SYMBOLS ABOVE INDICATE THE FOLLOWING:

"CR"	INDICATES CHILD RESISTANT (SAFETY TYPE)
"E"	INDICATES RECEPTACLE FED BY EMERGENCY CIRCUIT
"EP"	INDICATES RECEPTACLE IS EXPLOSION PROOF
"EWC"	INDICATES RECEPTACLE SERVES ELECTRIC WATER COOLER
"GFI"	INDICATES RECEPTACLE HAS GROUND FAULT CIRCUIT INTERRUPTER
"IG"	INDICATES RECEPTACLE HAS ISOLATED GROUND
"TVS"	INDICATES RECEPTACLE HAS TRANSIENT VOLTAGE SURGE SUPPRESSION
"WP"	INDICATES RECEPTACLE HAS WATERPROOF COVER
"XX"	INDICATES RECEPTACLE CIRCUIT NUMBER
"S"	INDICATES RECEPTACLE IS SAFETY TYPE

DUPLEX RECEPTACLE MOUNTED ABOVE COUNTERTOP OR DUPLEX MOUNTED WITHIN 12" BELOW COUNTERTOP TO SERVE COUNTER

SWITCHGEAR, SWITCHBOARD OR MOTOR CONTROL CENTER, DASHED LINES INDICATE FUTURE SECTIONS, ARROW INDICATES FRONT

SURFACE MOUNTED DISTRIBUTION PANELBOARD

SURFACE MOUNTED BRANCH CIRCUIT PANELBOARD

RECESSED MOUNTED BRANCH CIRCUIT PANELBOARD

1–HDP–1 — SWITCHBOARDS, DISTRIBUTION PANELBOARDS, MOTOR CONTROL CENTERS, PANELBOARDS, CABINETS, AND RELATED EQUIPMENT

1 HDP 1 — INDICATES LEVEL ON WHICH PANEL IS LOCATED – G, B, 1, 2, ETC.
INDICATES TYPE, CODED AS FOLLOWS:
INDICATES PANEL NUMBER

"C"	CRITICAL OR COMPUTER	"L"	208/120V, OR 208V
"D"	DISTRIBUTION	"MCC"	MOTOR CONTROL CENTER
"E"	EMERGENCY	"P"	POWER
"H"	480/277V, OR 480V	"Q"	EQUIPMENT
"ISP"	ISOLATION	"R"	RECEPTACLE
"K"	KITCHEN	"S"	STANDBY
"L"	LIGHTING	"SWBD"	SWITCHBOARD
		"XR"	X–RAY

T — TRANSFORMER

SINGLE LINE DIAGRAM SYMBOLS

GROUNDING ELECTRODE CONDUCTOR

CIRCUIT BREAKER

PANELBOARD

SWITCHBOARD OR MOTOR CONTROL CENTER AS INDICATED

TRANSFORMER WITH FLEXIBLE CONDUIT AND PAD

BRANCH CIRCUIT WIRING SCHEDULE

OCPD	1P & 2P	2P–3W & 3P–3W	3P–4W
15	2#12, 1#12G, 3/4"C	3#12, 1#12G, 3/4"C	4#12, 1#12G, 3/4"C
20	2#12, 1#12G, 3/4"C	3#12, 1#12G, 3/4"C	4#12, 1#12G, 3/4"C
25	2#10, 1#10G, 3/4"C	3#10, 1#10G, 3/4"C	4#10, 1#10G, 3/4"C
30	2#10, 1#10G, 3/4"C	3#10, 1#10G, 3/4"C	4#10, 1#10G, 3/4"C
35	2#8, 1#10G, 3/4"C	3#8, 1#10G, 3/4"C	4#8, 1#10G, 3/4"C
40	2#8, 1#10G, 3/4"C	3#8, 1#10G, 3/4"C	4#8, 1#10G, 3/4"C
45	2#6, 1#10G, 3/4"C	3#6, 1#10G, 3/4"C	4#6, 1#10G, 1"C
50	2#6, 1#10G, 3/4"C	3#6, 1#10G, 3/4"C	4#6, 1#10G, 1"C
60	2#4, 1#10G, 3/4"C	3#4, 1#10G, 1"C	4#4, 1#10G, 1 1/4"C
70	2#4, 1#8G, 3/4"C	3#4, 1#8G, 1"C	4#4, 1#8G, 1 1/4"C
80	2#3, 1#8G, 1"C	3#3, 1#8G, 1"C	4#3, 1#8G, 1 1/4"C
90	2#2, 1#8G, 1"C	3#2, 1#8G, 1 1/4"C	4#2, 1#8G, 1 1/4"C
100	2#1, 1#8G, 1 1/4"C	3#1, 1#8G, 1 1/4"C	4#1, 1#8G, 1 1/2"C

ABBREVIATIONS

NOTE: ABBREVIATIONS ARE ALPHABETICALLY LISTED BY DESCRIPTION.

ABBREV.	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
ACL	ACROSS THE LINE
ALM	ALARM
AC	ALTERNATING CURRENT
A	AMPERE
AMP	AMPERE
AIC	AMPERES INTERRUPTING CAPACITY
AL	ALUMINUM
ANN	ANNUNCIATOR
ATS	AUTOMATIC TRANSFER SWITCH
BAL	BALLAST
BR	BRANCH
BRKR	BREAKER
BGB	BUILDING GROUND BOX
CAB	CABINET
CATV	CABLE TELEVISION
C.B.	CIRCUIT BREAKER
CCT	CIRCUIT
CCTV	CLOSED CIRCUIT TELEVISION
CLO	CLOSET
COAX	COAXIAL
C.U.	COEFFICIENT OF UTILIZATION
C	CONDUIT
CONN	CONNECTION
CU	COPPER
CUH	CABINET UNIT HEATER
CT	CURRENT TRANSFORMER
HZ	HERTZ (CYCLES/SECOND)
DC	DIRECT CURRENT
DS	DISCONNECT SWITCH
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DT	DUSTTIGHT
ELEC	ELECTRIC
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EM	EMERGENCY
EMT	ELECTRIC METALLIC TUBING (THIN WALL CONDUIT)
EQ	EQUIPMENT
EUH	ELECTRIC UNIT HEATER
EX	EXISTING
EP	EXPLOSION PROOF
FPB	FAN POWERED BOX
FA	FIRE ALARM
FDC	FIRE DEPARTMENT CONNECTION
FB	FLOORBOX
FLUOR	FLUORESCENT
F	FUSE
F.S.	FUSED SWITCH
GEN	GENERATOR
GRD	GROUND
GFI	GROUND FAULT INTERRUPTER
GHW	GALVANIZED HEAVYWALL STEEL CONDUIT
HV	HIGH VOLTAGE
HP	HORSE POWER
IC	INTERRUPTING CAPACITY
IMC	INTERMEDIATE GRADE CONDUIT
JB	JUNCTION BOX
KW	KILOWATT
KWH	KILOWATT–HOUR
KVA	KILOVOLT–AMPERE
KO	KNOCKOUT
LTG	LIGHTING
LS	LOUD SPEAKER
LV	LOW VOLTAGE
MFR	MANUFACTURER
MTR	MOTOR
MCC	MOTOR CONTROL CENTER
MTD	MOUNTED
NEC	NATIONAL ELECTRICAL CODE
NEUT	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPENED
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PNL	PANEL
PH	PHASE
PT	POTENTIAL TRANSFORMER
PWR	POWER
PRI	PRIMARY
PROT.	PROTECTION OR PROTECTIVE
PA	PUBLIC ADDRESS
PB	PULL BOX
RT	RAINTIGHT
RECP	RECEPTACLE
RC	REMOTE CONTROL
R	RESISTANCE
REL	RELOCATE
SEC	SECONDARY
SC	SHORT CIRCUIT
SP	SINGLE POLE
SPST	SINGLE POLE SINGLE THROW
SPDT	SINGLE POLE DOUBLE THROW
SPKR	SPEAKER
SPEC	SPECIFICATION
SS	STAINLESS STEEL
STA	STATION
	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL
SYS	SYSTEM
TC	TERMINAL CABINET
TEL	TELEPHONE
TEL.CL.	TELEPHONE CLOSET
TTC	TELEPHONE TERMINAL CABINET
TV	TELEVISION
TERM.	TERMINAL
TX	TRANSFORMER
	TRIP
TL	TWIST LOCK
UL	UNDERWRITER'S LABORATORIES
UNG	UNGROUNDED
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VA	VOLT–AMPERE
WT	WATERTIGHT
W	WATT
WP	WEATHERPROOF
XR	EXISTING TO BE REMOVED
XRL	EXISTING TO BE RELOCATED
XRW	EXISTING TO BE REWIRED

GENERAL NOTES

1. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF LIGHTING AND CONTROLS, RECEPTACLES, COMMUNICATIONS DEVICES, FIRE ALARM DEVICES, AND LIFE SAFETY DEVICES.
2. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION OF HVAC, PLUMBING, AND FIRE PROTECTION EQUIPMENT.
3. REFER TO PANEL DIVISION LINES FOR BRANCH CIRCUIT HOMERUN PANELBOARD DEMARCATION LINES, UNLESS NOTED OTHERWISE.
4. BRANCH CIRCUIT WIRING FOR 120 VOLT 20 AMP CIRCUITS WIRED TO 208Y/120V SYSTEMS SHALL BE AS FOLLOWS:
   A. GENERAL RECEPTACLE LOADS:
      UP TO 100 FEET IN LENGTH: 3#12, 1#12N, 1#12G –3/4"C.
      OVER 100 FEET IN LENGTH: 3#10, 1#10N, 1#10G –3/4"C.
   B. ISOLATED GROUND RECEPTACLE LOADS:
      UP TO 80 FEET IN LENGTH: 3#12,1#10N,1#12G,1#12IG–3/4"C.
      OVER 80 FEET IN LENGTH: 3#10,1#8N,1#10G,1#10IG–3/4"C.
   C. LIGHTING LOADS:
      UP TO 100 FEET IN LENGTH: 3#12, 1#10N, 1#12G –3/4"C.
      OVER 100 FEET IN LENGTH: 3#10, 1#8N, 1#10G –3/4"C.
5. BRANCH CIRCUIT WIRING FOR 277 VOLT 20 AMP CIRCUITS WIRED TO 480Y/277V SYSTEMS SHALL BE AS FOLLOWS:
   A. ELECTRIC HEATING LOADS:
      UP TO 150 FEET IN LENGTH: 3#12, 1#12N, 1#12G –3/4"C.
      OVER 150 FEET IN LENGTH: 3#10, 1#10N, 1#10G –3/4"C.
6. MOUNTING HEIGHTS OF ELECTRICAL ITEMS SHALL BE AS LISTED BELOW ABOVE FINISHED FLOOR TO CENTERLINE, UNLESS NOTED OTHERWISE:

A. GENERAL RECEPTACLES	18"
B. GENERAL TELE AND DATA OUTLETS	18"
C. GENERAL TOGGLE SWITCHES	48"
D. CLOCK AND PAGING SPEAKER OUTLETS	84"
E. FIRE ALARM AUDIO VISUAL DEVICES	80"
F. INDIVIDUAL DISCONNECTS AND STARTERS	60"
G. GROUPED DISCONNECTS AND STARTERS	> 12" < 72"
H. PANELBOARD OVERCURRENT DEVICES	> 12" < 72"

7. PROVIDE RACEWAY AND GROUNDING FOR COMMUNICATIONS SYSTEMS INCLUDING TELEPHONE, DATA, SECURITY, CABLE TELEVISION, PAGING, INTERCOM, ETC. VERIFY REQUIREMENTS WITH COMMUNICATIONS CONSULTANTS AND CONTRACTORS.
8. VOICE AND DATA RACEWAY FOR WALL MOUNTED OUTLETS SHALL BE AS FOLLOWS: PROVIDE A TWO–GANG J–BOX AND SINGLE OR DOUBLE GANG FLUSH WALL OPENING AS REQUIRED FOR EACH VOICE/DATA OUTLET. CONDUITS SHALL INCLUDE PULL STRINGS AND 48" RADIUS BENDS. CONDUIT STUBS SHALL INCLUDE INSULATING BUSHINGS. CONDUIT FROM OUTLET BOX SHALL BE 1" MINIMUM AND SHALL STUB UP INTO CEILING SPACE.

This sheet of drawings has not been reviewed for code compliance.

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The Medical Center of Aurora Health

MORGUE EQUIPMENT UPGRADE

MEDICAL CENTER OF AURORA

1501 S. POTOMAC ST.
AURORA, CO 80012

SOUTH CAMPUS

TOM THOMPSON ARCHITECT
2510 SOUTH OSCEOLA STREET
DENVER, COLORADO 80219
720.989.6084
TomThompsonArchitect@gmail.com

WMA Consulting Engineers, Ltd.
WMA Job# 19003-00

DESIGN DOT LOT
dpteam@thedesignplot.com
(303) 565–7282

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COLORADO LICENSED RACHEL P THOMPSON No. 53150 PROFESSIONAL ENGINEER

8/2/19

PROJECT NO.: 18–18

DRAWN BY:
CHECKED BY:
SCALE: AS SHOWN
DATE: 08.02.2019
ISSUED FOR: CONSTRUCTION
REVISIONS:

SHEET TITLE:
ELECTRICAL SYMBOL LIST, NOTES, AND SPECIFICATIONS

SHEET NO.:
E0.0

RSN: 1410755
Permit #: 19-1709424

DIVISION 26 – ELECTRICAL

1. GENERAL

A. REQUIREMENTS:

1) PRODUCTS AND EXECUTION SHALL BE PROVIDED FOR A COMPLETE AND FULLY OPERATIONAL ELECTRICAL SYSTEM THROUGHOUT THE EXTENT OF THE PROJECT, IN CONFORMANCE WITH APPLICABLE CODES, LAWS, ORDINANCES AND AGENCY STANDARDS OF GOVERNING BODIES HAVING JURISDICTION, AND IN STRICT ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND BUILDING STANDARDS.

2) PRODUCTS, INCLUDING EQUIPMENT, DEVICES, FIXTURES, AND MATERIALS SHALL BE NEW UNLESS NOTED OTHERWISE, UL LISTED, AND BEAR APPROPRIATE LABEL.

3) EXECUTION, INCLUDING PREPARATION, INSTALLATION, STARTING, AND TESTING SHALL BE PERFORMED BY SKILLED TRADES PERSONNEL, IN COMPLIANCE WITH THE ASSOCIATED MANUFACTURERS RECOMMENDATIONS, AND COORDINATED WITH THE OTHER CONSTRUCTION TRADES.

B. APPLICABLE CODES:

1) 2017 NATIONAL ELECTRICAL CODE	NEC
2) 2015 INTERNATIONAL BUILDING CODE	IBC
3) 2015 INTERNATIONAL FIRE CODE	IFC
4) 2015 INTERNATIONAL MECHANICAL CODE	IMC
5) 2015 INTERNATIONAL PLUMBING CODE	IPC
6) 2015 INTERNATIONAL ENERGY CONSERVATION CODE	IECC

C. APPLICABLE LAWS AND AGENCY STANDARDS:

1) AMERICAN NATIONAL STANDARDS INSTITUTE	ANSI
2) AMERICAN SOCIETY FOR TESTING AND MATERIALS	ASTM
3) AMERICANS WITH DISABILITIES ACT	ADA
4) ASSOCIATION OF EDISON ILLUMINATING COMPANIES	AEIC
5) CERTIFIED BALLAST MANUFACTURERS	CBM
6) ELECTRICAL TESTING LABORATORIES	ETL
7) ELECTRONIC/TELECOMMUNICATIONS INDUSTRIES ASSOCIATION	EIA/TIA
8) ENERGY POLICY ACT OF 1992	EPACT
9) ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA	IESNA
10) INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS	IEEE
11) INSULATED CABLE ENGINEERS ASSOCIATION	ICEA
12) NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION	NEMA
13) NATIONAL FIRE PROTECTION ASSOCIATION	NFPA
14) UNDERWRITERS' LABORATORIES	UL

D. APPROVALS:

1) FIRE ALARM AND LIFE SAFETY DOCUMENTS SHALL BE PREPARED AND SUBMITTED TO THE LOCAL FIRE DEPARTMENT FOR THEIR APPROVAL OF SYSTEM EXPANSION, LAYOUT, CIRCUITING, EQUIPMENT AND DEVICE TYPE. THE BASE BUILDING FIRE ALARM AND LIFE SAFETY SYSTEM MANUFACTURER/INSTALLER SHALL BE RETAINED TO PRODUCE OR UPDATE THE BUILDING FIRE ALARM AND LIFE SAFETY DOCUMENTS, AND TO MAKE FINAL CONNECTIONS AND ALTERATIONS TO THE EXISTING SYSTEM. APPROVED DRAWINGS SHALL BE SUBMITTED FOR REVIEW PRIOR TO CONSTRUCTION.

2) OTHER SYSTEMS REQUIRING SPECIFIC APPROVAL.

E. SUBMITTALS:

1) PRODUCT DATA SHALL BE PREPARED AND SUBMITTED FOR REVIEW PRIOR TO CONSTRUCTION FOR THE FOLLOWING PRODUCTS: CABINETS, ACCESS PANELS, SUPPORTS, RACEWAY COMPONENTS, FLOOR BOXES, FIRE PROOF FITTINGS, WIRE, FUSES, CIRCUIT BREAKERS, RECEPTACLES, TOGGLE SWITCHES, SLIDE DIMMERS, DISCONNECT SWITCHES, MOTOR STARTERS, CONTACTORS, LIGHTING FIXTURES, BALLASTS, LAMPS, CONTROLS, FIRE ALARM DEVICES, LIFE SAFETY DEVICES, AND ELECTRIC HEATING EQUIPMENT.

2) SHOP DRAWINGS SHALL BE PREPARED AND SUBMITTED FOR REVIEW PRIOR TO CONSTRUCTION FOR THE FOLLOWING PRODUCTS: METERING EQUIPMENT, DISTRIBUTION PANELBOARDS, BRANCH PANELBOARDS, TRANSFORMERS, CABLE TRAY, DIMMING EQUIPMENT, FIRE ALARM EQUIPMENT, AND LIFE SAFETY EQUIPMENT.

3) TEST RESULTS SHALL BE PREPARED AND SUBMITTED PRIOR TO PROJECT COMPLETION FOR CABLE INSULATION, GROUNDING SYSTEM, EMERGENCY SYSTEM, FIRE ALARM SYSTEM, AND LIFE SAFETY SYSTEMS IN ACCORDANCE WITH AUTHORITIES HAVING JURISDICTION, AND APPLICABLE CODES AND AGENCY STANDARDS.

4) MANUFACTURERS INSTRUCTIONS SHALL BE PREPARED AND SUBMITTED PRIOR TO CONSTRUCTION INCLUDING INSTALLATION MANUALS WITH APPLICATION CONDITIONS AND LIMITATIONS FOR ELECTRICAL APPARATUS USE, STORAGE, HANDLING, PROTECTION, EXAMINATION, PREPARATION, INSTALLATION, AND STARTING.

5) PROJECT RECORD DOCUMENTS SHALL BE PREPARED USING AUTOCAD OR EQUIVALENT CAD PACKAGE. PROJECT RECORD DOCUMENTS SHALL BE SUBMITTED ON REPRODUCIBLE MEDIA PRIOR TO PROJECT COMPLETION FOR ELECTRICAL SYSTEMS. RECORD ACTUAL LOCATION OF EQUIPMENT, DEVICES, FIXTURES, ETC. RECORD ACTUAL ROUTING OF OVERHEAD FEEDERS. RECORD ACTUAL ROUTING OF FEEDERS BELOW SLAB AND BRANCH CIRCUITS WITHIN OR BELOW SLAB.

6) MAINTENANCE DATA SHALL BE PREPARED AND SUBMITTED PRIOR TO PROJECT COMPLETION FOR ELECTRICAL APPARATUS INCLUDING OPERATION MANUALS AND MAINTENANCE MANUALS.

F. COORDINATION:

1) ELECTRICAL ENGINEER: NOTIFY THE ENGINEER OF ANY CONFLICTING DESIGN INFORMATION OR ANY DESIGN INTENTIONS WHICH ARE NOT READILY INTERPRETED FROM THE CONTRACT DOCUMENTS PRIOR TO ANY PRODUCT SELECTION OR EXECUTION OF WORK. NOTIFY THE ENGINEER OF ANY PRODUCTS WHICH ARE DAMAGED, UNSUITABLE, INCOMPATIBLE, OR NON-COMPLIANT WITH ANY APPLICABLE CODES OR ORDINANCES OF ANY GOVERNING BODIES HAVING LAWFUL JURISDICTION.

2) ARCHITECT: COORDINATE CONSTRUCTION OF THE ELECTRICAL SYSTEM WITH THE ARCHITECT. FINAL LOCATIONS AND MOUNTING HEIGHTS OF ELECTRICAL EQUIPMENT, FIRE ALARM EQUIPMENT, RECEPTACLES, SWITCHES, COMMUNICATIONS DEVICES, FIRE ALARM DEVICES, LIGHTING FIXTURES, ETC. SHALL BE AS DIRECTED BY THE ARCHITECT.

3) CONSTRUCTION TRADES: COORDINATE WORK WITH OTHER CONSTRUCTION TRADES.

4) BUILDING MANAGEMENT: MEET ON SITE WITH THE BUILDING ENGINEER TO BECOME FAMILIAR WITH BUILDING STANDARDS. NORMAL BUILDING WORKING HOURS SHALL BE RECOGNIZED. AFTER-HOURS WORK OR TEMPORARY SERVICES SHALL BE WITH PRIOR WRITTEN APPROVAL FROM BUILDING MANAGEMENT. ENCLOSE CONSTRUCTION AREA FROM OTHER AREAS TO PREVENT TRANSMISSION OF DUST, DIRT AND NOISE INTO OTHER EXISTING TENANT AREAS. PRODUCT AND WASTE TRANSFER SHALL BE COORDINATED WITH BUILDING MANAGEMENT FOR SCHEDULING OF THE ELEVATORS, DELIVERIES, AND WASTE REMOVAL.

5) EXISTING BUILDING SYSTEMS: REVIEW BUILDING STANDARDS WITH THE BUILDING ENGINEER. PERFORM A SITE VISIT TO VERIFY THE EXISTING SITE CONDITIONS. COSTS ASSOCIATED WITH UNFORESEEN CONDITIONS AS RESULT OF NOT PERFORMING A SITE VISIT SHALL NOT BE AN ENTITLEMENT FOR AN INCREASE TO THE CONTRACT. CONSTRUCTION SHALL BE PERFORMED WITHOUT INTERRUPTION TO THE BUILDING POWER, COMMUNICATIONS, SECURITY, FIRE ALARM AND LIFE SAFETY SYSTEMS, OR INTERFERENCE TO COMMON AREAS, CORRIDORS, EXITS OR EXISTING TENANTS. WHERE ANY CONSTRUCTION WOULD INTERFERE WITH THE DAILY OPERATIONS OF THE BUILDING OR OTHER TENANTS, AFTER-HOURS WORK OR TEMPORARY SERVICES SHALL BE PROVIDED AT NO INCREASE TO THE CONTRACT.

H. WARRANTEE AND GUARANTEE

1) PROVIDE WARRANTEE AND MANUFACTURERS CERTIFICATE FOR EACH PRODUCT, MINIMUM OF ONE YEAR OR LONGER AS SPECIFIED, FROM THE DATE OF OCCUPANCY. REPAIR AND/OR REPLACE ANY EQUIPMENT, DEVICES, FIXTURES, MATERIALS, ETC. WITH DEFECT AS REQUIRED AT NO INCREASE TO THE CONTRACT.

2) PROVIDE GUARANTEE OF INSTALLATION FOR A PERIOD OF ONE YEAR FROM THE DATE OF OCCUPANCY. REPAIR AND/OR REINSTALL ANY WORK WITH DEFECT AS REQUIRED AT NO INCREASE TO THE CONTRACT. PROVIDE GUARANTEE OF REWORK FOR A PERIOD OF ONE YEAR FROM THE COMPLETION OF REPAIR OR REINSTALLATION.

3) DAMAGE CAUSED TO FINISHES, SURFACES, CEILING TILES, EQUIPMENT, ETC. SHALL BE REPAIRED AND/OR REPLACED TO MATCH THE PRE-EXISTING CONDITION AT NO INCREASE TO THE CONTRACT.

I. PAY FEES AND OTHER CHARGES INCIDENTAL TO THE ELECTRICAL WORK AND OBTAIN AND PAY FOR REQUIRED LIABILITY AND CASUALTY INSURANCE, PERMITS, LICENSES, INSPECTIONS, TAXES, ETC.

J. CONSTRUCTION SHALL BE DONE DURING REGULAR WORKING HOURS AND DAYS, UNLESS OTHERWISE SPECIFIED. WORK REQUIRED TO BE PERFORMED DURING OVERTIME HOURS OR DAYS SHALL BE AS INDICATED.

K. ALLOW FOR 2 MAN-HOURS OF TRAINING TO THE OWNERS STAFF FOR THE OPERATION OF THE ELECTRICAL SYSTEMS.

L. SUBSTITUTIONS ARE NOT ACCEPTABLE.

2. PRODUCTS

A. CABINETS, ENCLOSURES AND ACCESS PANELS SHALL BE CODE GAGE STEEL WITH BAKED ENAMEL FINISH AND FLANGELESS HINGES AND FASTENERS. EQUIPMENT BASES SHALL BE 3 INCH HIGH CONCRETE, STEEL BRACED AND REINFORCED WITH 1/4 INCH CHAMFER, AND SHALL EXTEND A MINIMUM OF 2 INCHES AROUND BASE OF EQUIPMENT. VIBRATION ISOLATION SHALL BE SPRING ELEMENTS IN SUSPENDED RODS AND ISOLATION PADS BELOW EQUIPMENT, ELECTRICAL CONNECTIONS SHALL BE FLEXIBLE CONDUIT.

B. CONDUITS SHALL BE HOT-DIPPED GALVANIZED OR ELECTRO-GALVANIZED STEEL, MINIMUM SIZE SHALL BE 3/4 INCH. FLEXIBLE STEEL CONDUIT SHALL BE GALVANIZED STEEL, WITH UL LISTED LIQUID TIGHT JACKET AS REQUIRED, FOR FINAL CONNECTIONS TO MOTORS, RECESSED LIGHTING FIXTURES (NORMAL BRANCH ONLY), AND LIFE SAFETY DEVICES. SUPPORTS, INCLUDING CHANNELS, ANGLES, RODS, AND FASTENERS SHALL BE HOT-DIPPED GALVANIZED STEEL. MANUFACTURER SHALL BE ALLIED, LTV/REPUBLIC, STEELDUCT, OR WHEATLAND.

C. CONDUIT FITTINGS SHALL BE STEEL, DIE CAST FITTINGS OF POT METAL ARE NOT ACCEPTABLE. ELECTRICAL METALLIC TUBING (EMT) FITTINGS SHALL BE SET SCREW TYPE. MANUFACTURER SHALL BE APPLETON, CROUSE HINDS/MIDWEST, OZ/GGEDNEY, RACO, STEEL CITY, OR T&B.

D. OUTLET BOXES FOR ALL TOGGLE SWITCHES, RECEPTACLES, COMMUNICATIONS DEVICES, FIRE ALARM DEVICES, AND LIFE SAFETY DEVICES SHALL INCLUDE PLASTER RINGS, DEVICE PLATES, AND COVER PLATES WHERE REQUIRED. PROVIDE BOXES SUITABLE FOR WET, OR HAZARDOUS LOCATIONS AS REQUIRED. DEVICE COVER PLATES SHALL BE STAINLESS STEEL PAINTED TO MATCH FINISH. MULTI-GANG OUTLET BOXES SHALL INCLUDE SUITABLE ONE-PIECE DEVICE COVER PLATE. OUTLETS LOCATED ON OPPOSITE SIDES OF A PARTITION SHALL BE STAGGERED BY 12 INCHES, MINIMUM. MANUFACTURER SHALL BE APPLETON, RACO, OR STEEL CITY.

E. FLUSH INFLOOR DUCT RACEWAY SYSTEMS, INCLUDING POWER AND COMMUNICATIONS DUCTS, ADJUSTABLE SUPPORTS, ELBOWS, FITTINGS, AND ALL REQUIRED ACCESSORIES SHALL BE OF UL STANDARD GALVANIZED STEEL, AND SHALL BE SIZED IN ACCORDANCE WITH CODE TO ADEQUATELY FACILITATE PULLING AND CONNECTING THE QUANTITY AND SIZE OF WIRES AND CABLES CONTAINED. MANUFACTURER SHALL BE WIREMOLD, OR STEEL CITY.

F. SURFACE METAL RACEWAY INCLUDING POWER DEVICES, COMMUNICATIONS DEVICES, FITTINGS, CONNECTORS, FEEDS, ELBOWS, COUPLINGS, BLANKS, TEES, WIRE CLIPS, DEVICE BRACKETS, DEVICE COVERS, AND OTHER ASSOCIATED APPARATUS SHALL BE SIZED TO FACILITATE PULLING THE QUANTITY AND SIZE OF WIRES AND CABLES, AND INSTALLING THE DEVICES CONTAINED. RACEWAY SHALL BE OF CODE GAGE GALVANIZED STEEL, SHALL INCLUDE MOUNTING KNOCK-OUTS, AND SHALL BE FINISHED AS DIRECTED BY THE ARCHITECT. MANUFACTURER SHALL BE WIREMOLD.

G. WIRE SHALL BE 600 VOLT INSULATED COPPER, MINIMUM SIZE SHALL BE NO.12 AWG, WIRE SIZES NO.8 AWG AND LARGER SHALL BE STRANDED. MANUFACTURER SHALL BE AMERICAN INSULATED WIRE CORP., CERRO, COLLYER, CAPITOL WIRE AND CABLE, OKONITE, SENETOR, SOUTH WIRE, OR TRIANGLE.

H. CABLE SUPPORTS SHALL BE APPROPRIATE FOR THE SIZE OF CONDUIT AND TYPE OF WIRE AND CABLES. CABLE LUBRICANT SHALL BE LESS THAN SIX PERCENT SOLID RESIDUE AFTER DRYING AND SHALL NOT CONTAIN ANY WAXES, GREASES, SILICONES, OR GLYCOL OILS.

N. BRANCH PANELBOARDS SHALL BE FULLY RATED WITH COPPER PHASE, NEUTRAL, AND GROUND BUS, BRACED AT 14,000 AIC FOR 480Y/277 VOLT SYSTEMS AND 10,000 AIC FOR 208Y/120 VOLT SYSTEMS, OR MORE TO BE GREATER THAN THE AVAILABLE SHORT CIRCUIT CURRENT. NEUTRAL BUS SHALL BE RATED AT 200 PERCENT WITHIN PANELS SERVING NON-LINEAR LOADS. ISOLATED GROUND BUS SHALL BE AS REQUIRED. MANUFACTURER SHALL BE CUTLER-HAMMER, SIEMENS/ITE, OR SQUARE D. OVERCURRENT PROTECTION MANUFACTURER SHALL BE CUTLER-HAMMER, SIEMENS/ITE, OR SQUARE D.

O. LOCAL DISCONNECT SWITCHES FOR ELECTRICALLY OPERATED EQUIPMENT SHALL BE HEAVY DUTY WITHIN ENCLOSURE SUITABLE FOR THE LOCATION. FUSIBLE DISCONNECT SWITCHES 800 AMPS AND LARGER SHALL BE BOLTED PRESSURE, LOAD-BREAK TYPE. FUSIBLE AND NON-FUSIBLE DISCONNECT SWITCHES 600 AMPS AND SMALLER SHALL BE QUICK-MAKE, QUICK-BREAK TYPE. MANUFACTURER SHALL BE CUTLER-HAMMER, SIEMENS/ITE, OR SQUARE D.

P. OVERCURRENT AND SHORT CIRCUIT PROTECTION WITHIN FUSIBLE SWITCHES SHALL BE CLASS L CURRENT LIMITING TIME DELAY FUSES FOR SWITCHES RATED 800 AMPS AND LARGER, AND CLASS RK-1 CURRENT LIMITING TIME DELAY FUSES FOR SWITCHES RATED 600 AMPS AND SMALLER. MANUFACTURER SHALL BE BUSSMANN.

R. TRANSFORMERS SHALL BE COPPER WOUND, DRY TYPE VENTILATED, 115°C RISE WITH NEMA STANDARD VOLTAGE TAPS AND SOUND RATINGS. TRANSFORMERS SERVING NON-LINEAR LOADS SHALL BE K-13 RATED OR BETTER FOR THE ORDER AND MAGNITUDE OF HARMONIC CONTENT. TRANSFORMERS SERVING ISOLATED GROUND DISTRIBUTION SYSTEMS SHALL BE SHIELDED ISOLATION TYPE. MANUFACTURER SHALL BE MAGNETEK/JEFFERSON, SOLA/HEAVY DUTY, SQUARE D.

S. GROUNDING SYSTEM, INCLUDING SERVICE AND EQUIPMENT GROUNDING AND BONDING, SHALL BE IN ACCORDANCE WITH CODE AND SHALL CONNECT ALL ELECTRICALLY OPERATED EQUIPMENT. PROVIDE A SEPARATE GREEN GROUND WIRE FOR EACH BRANCH CIRCUIT AND FEEDER.

T. RECEPTACLES SHALL BE DUPLEX NEMA 5-20R, BACK AND SIDE WIRED, HOSPITAL SPECIFICATION GRADE, UNLESS NOTED OTHERWISE. SPECIAL RECEPTACLE CONFIGURATIONS, DUPLEX ISOLATED GROUND RECEPTACLES, AND DUPLEX GROUND FAULT INTERRUPTER RECEPTACLES SHALL BE AS REQUIRED OR AS INDICATED ON THE CONTRACT DOCUMENTS. GENERAL RECEPTACLE COLOR SHALL BE IVORY AND CRITICAL BRANCH RECEPTACLE COLOR SHALL BE RED UNLESS SPECIFIED OTHERWISE, VERIFY COLOR WITH ARCHITECT. MANUFACTURER SHALL BE BRYANT, HUBBELL, LEVITON, OR PASS & SEYMOUR.

U. TOGGLE SWITCHES SHALL BE SINGLE POLE 20 AMP, 120-277 VOLT, BACK AND SIDE WIRED, SPECIFICATION GRADE, UNLESS NOTED OTHERWISE. SPECIAL SWITCHES, INCLUDING 3-WAY, PILOT LIGHT AND MOMENTARY CONTACT, SHALL BE AS REQUIRED OR AS INDICATED ON THE CONTRACT DOCUMENTS. COLOR SHALL BE IVORY UNLESS SPECIFIED OTHERWISE, VERIFY COLOR WITH ARCHITECT. MANUFACTURER SHALL BE BRYANT, HUBBELL, LEVITON, OR PASS & SEYMOUR.

V. SLIDE DIMMERS SHALL BE LOW PROFILE, QUIET, SLIDE-TO-OFF TYPE, AND SHALL BE RATED AS REQUIRED FOR THE WATTAGE AND SPECIFIC LOAD TYPE. MANUFACTURER SHALL LUTRON NOVA T, LIGHTOLIER, HUBBELL, OR LEVITON.

W. LIGHTING FIXTURES SHALL INCLUDE ALL APPROPRIATE ACCESSORIES, MOUNTING FRAME AND TRIM FOR CEILING TYPE. LED FIXTURES SHALL HAVE 0-10V DIMMABLE DRIVERS. LIGHTING FIXTURES SHALL INCLUDE COORDINATED AIR HANDLING CAPABILITY, DAMP LABEL, WET LABEL, AND SHALL BE EXPLOSION PROOF WHERE REQUIRED. LIGHTING FIXTURES RECESSED WITHIN GRID TYPE CEILINGS SHALL INCLUDE SECURING CLIPS AS REQUIRED BY THE LOCAL AUTHORITY. FIXTURE MANUFACTURER SHALL BE AS INDICATED.

X. NEW FIRE ALARM DEVICES PROVIDED WITHIN EXISTING SYSTEMS SHALL MATCH EXISTING DEVICE MANUFACTURER AND TYPE. STROBES SHALL MEET ADA GUIDELINES FOR THE APPLICATION AND SHALL RATED 75DC. STROBES RATED 15/75DC WITH 75DC ON AXIS ARE NOT ACCEPTABLE EXCEPT IN SMALL CONFERENCE ROOMS. EXISTING FIRE ALARM DEVICES SHALL BE EXTENDED AS REQUIRED. EXISTING FIRE ALARM EQUIPMENT SHALL BE EXPANDED AS REQUIRED WITH ANY ADDITIONAL COMPONENTS FOR PROPER OPERATION OF NEW DEVICES ON EXISTING EQUIPMENT.

3. EXECUTION

A. PENETRATIONS AND CHANNELS IN FLOORS AND WALLS SHALL BE VIA CUTTING AND CORING AS REQUIRED FOR THE SIZE OF PRODUCT, ONLY IN ACCORDANCE WITH THE ARCHITECT AND ENGINEER RECOMMENDATIONS, AND AS SCHEDULED WITH THE BUILDING MANAGEMENT. PATCH AND FILL SLEEVES, INSERTS, PENETRATIONS, AND CHANNELS WITH APPROPRIATE CODE APPROVED FIRE SAFING OR FILLING TO MATCH OR RESTORE THE ORIGINAL FIRE RATING OF THE CONSTRUCTION.

B. MAKE FINAL CONNECTIONS TO VIBRATING EQUIPMENT, FIXTURES, AND DEVICES WITH FLEXIBLE METAL CONDUIT OR LIQUID TIGHT FLEXIBLE METAL CONDUIT AS REQUIRED. EXTEND GROUND WIRE THROUGH FLEXIBLE CONNECTIONS.

C. INSTALL CONDUIT, FITTINGS, SUPPORTS, ETC. IN ACCORDANCE WITH CODES, STANDARDS, AND MANUFACTURERS RECOMMENDATIONS. THE VOLTAGES IDENTIFIED IN THE FOLLOWING SCHEDULES ARE LINE-TO-LINE OR LINE-TO-NEUTRAL. INTERIOR CONCEALED LOCATIONS ARE THOSE LOCATIONS WHICH ARE ABOVE CEILINGS, WITHIN WALLS, WITHIN FLOOR SLABS, AND WITHIN DEDICATED ELECTRICAL ROOMS. CONDUIT INSTALLATION SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

VOLTAGE LOCATION	0V THRU 50V	ABOVE 50V THRU 250V	ABOVE 250V THRU 600V	ABOVE 600V
INTERIOR CONCEALED	EMT	EMT	≤ 2"EMT ≥ 2 1/2"IMC	HWG
INTERIOR EXPOSED	EMT	≤ 2"EMT ≥ 2 1/2"IMC	IMC	HWG
EXTERIOR AND HAZARDOUS LOCATIONS	EMT	IMC	HWG	HWG

D. INSTALLATIONS WITHIN AIR HANDLING SPACES, INCLUDING PLENUM CEILINGS AND BUILT UP AIR HANDLING SYSTEMS SHALL BE APPROVED FOR PLENUM INSTALLATION AND SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES.

E. INSTALLATIONS WITHIN HAZARDOUS LOCATIONS SHALL BE LISTED FOR THE CLASSIFICATION AND DIVISION OF HAZARD. INSTALL WIRING AND CONDUIT COMPLETE WITH SEALS AND EXPLOSION PROOF FITTINGS IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES.

F. INSTALL PULL BOXES, JUNCTION BOXES, AND OUTLET BOXES IN ACCORDANCE WITH CODES, STANDARDS, AND MANUFACTURERS RECOMMENDATIONS. BOXES SHALL INCLUDE ACCESSIBLE COVERS, SHALL BE FABRICATED OF HEAVY GAGE GALVANIZED STEEL, AND SHALL BE SIZED WITH CODE TO ADEQUATELY FACILITATE PULLING AND CONNECTING THE QUANTITY OF WIRES, CABLES, AND FEEDERS CONTAINED. CONDUIT TERMINATIONS SHALL BE MADE WITH BUSHINGS AND LOCKNUTS. SUPPORTS FOR CONDUITS AND BOXES SHALL BE SUSPENDED DIRECTLY TO THE BUILDING STRUCTURAL COMPONENTS AND IN NO CASE SHALL THEY BE ATTACHED TO SUSPENDED CEILING GRID, DUCTWORK, OR PIPING COMPONENTS.

G. INSTALL FEEDERS AND BRANCH CIRCUIT WIRING IN ACCORDANCE WITH CODES, STANDARDS, AND MANUFACTURERS RECOMMENDATIONS. PROVIDE NEUTRAL SIZED AT 200% OR (2) NEUTRAL CONDUCTORS WHERE SERVING PANELS WITH 200% RATED NEUTRAL BUS, COORDINATE INSTALLATION WITH PANEL MANUFACTURERS LUG PROVISIONS. INSTALL NORMAL POWER, EMERGENCY POWER, FIRE ALARM, AND LIFE SAFETY SYSTEMS WITHIN CONTINUOUS METAL RACEWAYS. INSTALL CONCEALED SECURITY AND COMMUNICATIONS WIRING WITHIN CONTINUOUS METAL RACEWAYS. SEPARATE EACH SYSTEM INTO INDEPENDENT RACEWAYS. PROVIDE CABLE SUPPORTS AS REQUIRED. TERMINATE CABLES PER CODE AND MANUFACTURERS RECOMMENDATIONS. PROVIDE (2) HOLE LUGS FOR CABLES 250 KCMIL AND LARGER. POWER WIRING INSULATION SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

WIRE LOCATION	300 KCMIL AND SMALLER	350 KCMIL AND LARGER	ENVIRONMENTAL CONDITIONS
INTERIOR LOCATIONS	THHN/THWN	XHHW	DRY
EXTERIOR LOCATIONS	THHN/THWN THHN/THWN	XHHW XHHW-2	DAMP WET

H. INSTALL ELECTRICAL DISTRIBUTION EQUIPMENT AND DEVICES, INCLUDING LOCAL DISCONNECT SWITCHES, PANELBOARDS, TRANSFORMERS, OVERCURRENT PROTECTION, RECEPTACLES, ETC. IN ACCORDANCE WITH CODES, STANDARDS, AND MANUFACTURERS RECOMMENDATIONS.

I. INSTALL GROUNDING SYSTEMS IN ACCORDANCE WITH CODES, STANDARDS, AND MANUFACTURERS RECOMMENDATIONS.

J. INSTALL LIGHTING AND ASSOCIATED CONTROLS, INCLUDING FIXTURES, DRIVERS, TOGGLE SWITCHES, SLIDE DIMMERS, ETC IN ACCORDANCE WITH CODES, STANDARDS, AND MANUFACTURERS RECOMMENDATIONS.

K. INSTALL SINGLE AND MULTIPLE DEVICE COVER PLATES AS REQUIRED. EXTEND EXISTING DEVICES TO FINISHED SURFACE AS REQUIRED.

L. INSTALL FIRE ALARM AND OTHER LIFE SAFETY SYSTEMS IN ACCORDANCE WITH CODES, STANDARDS, AND MANUFACTURERS RECOMMENDATIONS.

M. INSTALL INSCRIPTION PLATES AND IDENTIFICATION MARKINGS FOR PRODUCTS AND WIRING INCLUDING THE SAME INSCRIPTIONS WHERE INDICATED ON THE CONTRACT DOCUMENTS. INSTALL PLASTIC LAMINATE NAMEPLATES ON ENCLOSURES FOR EACH DEVICE WITHIN METERING EQUIPMENT, DISTRIBUTION PANELBOARDS, BRANCH PANELBOARDS, MOTOR STARTERS, DISCONNECT SWITCHES, TRANSFORMERS, AND CONTACTORS. NAMEPLATES SHALL BE WHITE WITH BLACK CORE, 1-1/4 INCHES BY 3 INCHES MINIMUM, WITH 3/16 INCH LETTERING, SECURED TO EQUIPMENT WITH TWO MACHINE SCREWS. PREPARE AND INSTALL TYPE-WRITTEN PANEL DIRECTORY WITHIN EACH BRANCH PANEL. DEVICE PLATES SHALL BE ENGRAVED FOR TOGGLE SWITCHES AND OTHER DEVICES WHOSE FUNCTION IS NOT READILY APPARENT. MARKERS SHALL BE SELF-STICKING FOR EACH WIRE AND CABLE AT TERMINATIONS AND AT EACH ACCESSIBLE POINT IN EQUIPMENT AND RACEWAY.

N. CLEAN ELECTRICAL APPARATUS PRIOR TO COMPLETION OF CONSTRUCTION. KEEP WORK AREAS CLEAN AT ALL TIMES.

O. ALTERATIONS AND DEMOLITION OF EXISTING SYSTEMS SHALL BE AS FOLLOWS:

1) PROVIDE ALL ALTERATIONS AND DEMOLITION OF THE EXISTING ELECTRICAL INSTALLATION AS REQUIRED, INCLUDING ANY INCIDENTAL MATERIALS TO EXECUTE ALL REMOVAL, REROUTING, RELOCATION, AND ANY OTHER MODIFICATIONS FOR PROPER ACCOMMODATION OF ALL NEW CONSTRUCTION AS INDICATED ON THE CONTRACT DOCUMENTS. ALL ALTERATIONS AND DEMOLITION SHALL BE AS INDICATED ON THE CONTRACT DOCUMENTS OR AS REQUIRED, INCLUDING ANY MODIFICATIONS NOT SPECIFICALLY IDENTIFIED ON ANY CONTRACT DOCUMENTS BUT REQUIRED TO COMPLETE ALL NEW CONSTRUCTION.

2) PROVIDE ALL MODIFICATIONS TO EXISTING EQUIPMENT AS REQUIRED OR AS INDICATED ON THE CONTRACT DOCUMENTS IN STRICT ACCORDANCE WITH THE EXISTING PRODUCT MANUFACTURERS RECOMMENDATIONS.

3) EXISTING RACEWAY, WIRE AND CABLE EXTENDING THROUGH THE CONSTRUCTION AREA BUT SERVING AREAS OUTSIDE THE CONTRACT SHALL BE REROUTED AND RECONNECTED AS REQUIRED. ALL MODIFICATIONS SHALL BE WITHOUT ANY INTERRUPTION TO THE BUILDING POWER, COMMUNICATIONS, SECURITY, FIRE ALARM AND LIFE SAFETY SYSTEMS, OR INTERFERENCE TO OTHER AREAS OR TENANTS. WHERE ANY MODIFICATIONS WOULD INTERFERE WITH THE DAILY OPERATIONS OF THE BUILDING OR OTHER TENANTS, AFTER-HOURS WORK OR TEMPORARY SERVICES SHALL BE PROVIDED WITH PRIOR WRITTEN APPROVAL FROM THE BUILDING.

4) EXISTING CONDUIT, WIRE, CABLE, SUPPORTS, HANGERS, AND OTHER ELECTRICAL INSTALLATION WHICH IS REMOVED, SHALL BE COMPLETELY REMOVED, BACK TO THE FIRST DEVICE OR THAT EQUIPMENT WHICH IS UNAFFECTED BY THE MODIFICATIONS. CONDUIT WHICH IS BURIED IN CONCRETE OR OTHERWISE INACCESSIBLE MAY BE ABANDONED AND CAPPED AT EACH END. ALL WIRE AND CABLE SHALL BE REMOVED FROM ANY ABANDONED CONDUIT.

5) EXISTING ELECTRICAL MATERIALS AND EQUIPMENT, INCLUDING LIGHTING FIXTURES, SWITCHES, RECEPTACLES, SPEAKERS, CONDUIT, OUTLET BOXES, FITTINGS, WIRE, CABLE, AND OTHER EQUIPMENT AND DEVICES WHICH ARE REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE STORED OR DISCARDED AS DIRECTED.

6) REUSE EXISTING ELECTRICAL PRODUCTS AS INDICATED ON THE CONTRACT DOCUMENTS ONLY AS IS FOUND PRACTICAL. EXAMINE THE CONDITION OF ALL SUCH PRODUCTS, DETERMINE SUITABILITY FOR RE-USE, AND PERIODICALLY NOTIFY THE ARCHITECT/ENGINEER OF FINDINGS FOR FINAL ACCEPTANCE OF RE-USE. WIRE AND CABLE FOR NEW CONSTRUCTION OR EXTENSION OF AN EXISTING INSTALLATION SHALL BE NEW, IN NO CASE SHALL EXISTING WIRE AND CABLE BE REUSED.

7) REFER TO ARCHITECTURAL DEMOLITION DRAWINGS FOR FULL EXTENT AND SCOPE OF PARTITION AND CEILING MODIFICATIONS.

a. EXISTING CEILINGS TO REMAIN SHALL NOT BE ALTERED EXCEPT WHERE REMOVAL AND REPLACEMENT OF SURFACES IS REQUIRED TO MODIFY SYSTEMS WITHIN CEILING SPACE.
b. EXISTING CEILINGS TO BE REMOVED SHALL INCLUDED DEMOLITION OF ALL FIXTURES EQUIPMENT, SPEAKERS, RACEWAY, AND WIRE, INCLUDING ANY OBSOLETE OR PREVIOUSLY ABANDONED PRODUCTS. REMAINING AREAS SHALL ONLY BE ALTERED AS REQUIRED AND IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
c. EXISTING PARTITIONS TO REMAIN SHALL NOT BE ALTERED EXCEPT WHERE REMOVAL AND REPLACEMENT OF SURFACES IS REQUIRED TO MODIFY SYSTEMS WITHIN PARTITIONS.
d. EXISTING PARTITIONS TO BE REMOVED SHALL INCLUDE DEMOLITION OF ALL DEVICES, RACEWAY AND WIRE INCLUDING ANY OBSOLETE OR PREVIOUSLY ABANDONED PRODUCTS. RACEWAY AND WIRING SYSTEMS SERVING OTHER REMAINING AREAS SHALL ONLY BE ALTERED AS REQUIRED AND IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
e. EXISTING FLOOR MOUNTED DEVICES SHALL BE DEMOLISHED. PROVIDE ABANDONING PLATES AND FIRE PROOFING AS REQUIRED.

8) REFER TO MECHANICAL AND PLUMBING DEMOLITION DRAWINGS FOR FULL EXTENT AND SCOPE OF ELECTRICALLY OPERATED EQUIPMENT MODIFICATIONS.

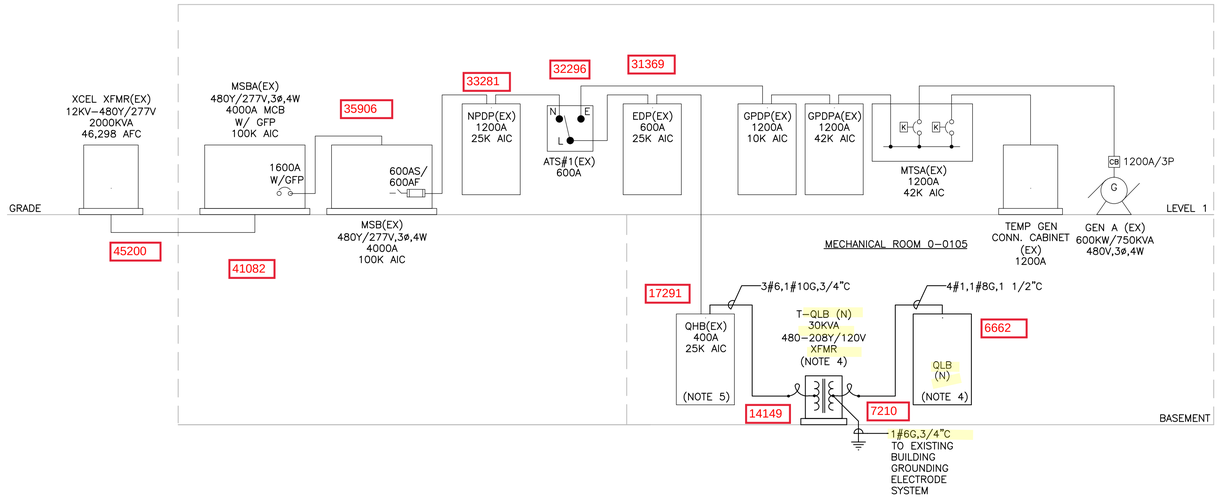
a. DEMOLITION OF EXISTING MECHANICAL EQUIPMENT SHALL INCLUDE ASSOCIATED DISCONNECTS, RACEWAY, WIRE AND CONTROLS.

This sheet of drawings has not been reviewed for code compliance.

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The Medical Center of Aurora Health

MORGUE EQ



1 ELECTRICAL RISER DIAGRAM

N.T.S.

NEW
EXISTING TO REMAIN

NOTES:

1. REFER TO ELECTRICAL SYMBOL LIST AND GENERAL NOTES ON SHEET E0.0.
2. REFER TO SPECIFICATIONS ON SHEET E0.1.
3. ELECTRICAL DISTRIBUTION IS EXISTING TO REMAIN, UNO.
4. PROVIDE NEW TRANSFORMER AND PANELBOARD. REFER TO PANEL SCHEDULE AND SHORT CIRCUIT CALCULATIONS ON THIS SHEET.
5. PROVIDE NEW 50A/3P CB IN PANELBOARD QHB TO FEED NEW TRANSFORMER T-QLB.

Legibly identify each breaker or switch for it's use or purpose on the circuit directory in the panel/switchboard per 2017 NEC 408.4.

PANEL DESIGNATION: QHB LOCATION: MECH 0-0105 MOUNTING: SURFACE FAULT DUTY: 42000
MLO: X MAIN: BUS: 250A VOLTS 277/480 PHASE: 3 WIRE: 4

EQUIPMENT DESCRIPTION	DMD	WATTS A	WATTS B	WATTS C	BRKR SIZE			BRKR SIZE	WATTS A	WATTS B	WATTS C	DMD	EQUIPMENT DESCRIPTION
	G	23700				1	2		11080			G	
ELEV #5	G		23700		150/3	3	4	100/3		11080		G	PARKING LOT PANEL
	G			23700		5	6				11080	G	
	G					7	8		1440			G	
	G					9	10	50/3		1008		G	T-QLB
	G					11	12				68	G	
	G					13	14		11080			G	
	G					15	16	50/3		11080		G	AHU-1
	G					17	18				11080	G	
	G					19	20					G	
SPARE	G				40/3	21	22	40/3				G	SPARE
	G					23	24					G	
	G	2105				25	26		831			G	
SUMP PUMP	G		2105		15/3	27	28	15/3		831		G	JOCKEY PUMP
	G			2105		29	30				831	G	

TOTAL "A"	25805			50236	24431			148.9 CONN. KVA
TOTAL "B"		25805		49804		23999		179.2 CONN. AMPS
TOTAL "C"			25805	48864			23059	148.9 DEMAND KVA
TOTAL "A,B,C"				148904 CONN.				179.2 DEMAND AMPS
TOTAL "A,B,C"				148904 DEMAND				

PANEL DESIGNATION: QLB LOCATION: MECH 0-0105 MOUNTING: SURFACE FAULT DUTY: 10000
MLO: N/A MAIN: 100A BUS: VOLTS 120/208 PHASE: 3 WIRE: 4

EQUIPMENT DESCRIPTION	DMD	WATTS A	WATTS B	WATTS C	BRKR SIZE			BRKR SIZE	WATTS A	WATTS B	WATTS C	DMD	EQUIPMENT DESCRIPTION
BODY COOLER	G	1008			15	1	2	15	432			G	FCU-19-1
CONDENSING UNIT	G		1008			3	4	20				G	
COOLER LIGHT	G			68	20	5	6	20				G	
	G				20	7	8	20				G	
	G				20	9	10	20				G	
	G				20	11	12	20				G	
	G				20	13	14	20				G	
	G				20	15	16	20				G	
	G				SP	17	18	SP				G	
	G				SP	19	20	SP				G	
	G				SP	21	22	SP				G	
	G				SP	23	24	SP				G	
	G				SP	25	26	SP				G	
	G				SP	27	28	SP				G	
	G				SP	29	30	SP				G	
	G				SP	31	32	SP				G	
	G				SP	33	34	SP				G	
	G				SP	35	36	SP				G	
	G				SP	37	38	SP				G	
	G				SP	39	40	SP				G	
	G				SP	41	42	SP				G	

TOTAL "A"	1008			1440	432			2.5 CONN. KVA
TOTAL "B"		1008		1008		0		7 CONN. AMPS
TOTAL "C"			68	68			0	2.5 DEMAND KVA
TOTAL "A,B,C"				2516 CONN.				7 DEMAND AMPS
TOTAL "A,B,C"				2516 DEMAND				

Utility fault contribution
Transformer KVA: 2000
Transformer %Z: 5.32
Secondary Voltage: 480 Volts

I_{FLA} = KVA x 1000 / (V_{L-L} x 1.732) = 2,405.7
Multiplier = 100 / (0.9 x Transf %Z) = 18.8
3-Phase I_{SCA} = I_{FLA} x Multiplier = 45,220

Source: Utility Transformer Secondary
Load: MSBA
System Voltage: 480 Volts
Conductor Material: Copper
Conductor Size: 500 AWG or MCM
# of sets (n): 11
Raceway Material: Steel
Conductor Constant (C): 18756
Length of Circuit (L): 150 Feet

f = 1.732 x L x I / (C x n x V_{L-L}) = 0.1
M = 1 / (1+f) = 0.894
3-Phase I_{SCA} = I_{SCA} x M = 40,424

Source: EDP
Load: QHB
System Voltage: 480 Volts
Conductor Material: Copper
Conductor Size: 4/0 AWG or MCM
# of sets (n): 1
Raceway Material: Steel
Conductor Constant (C): 15082
Length of Circuit (L): 100 Feet

f = 1.732 x L x I / (C x n x V_{L-L}) = 0.7
M = 1 / (1+f) = 0.574
3-Phase I_{SCA} = I_{SCA} x M = 17,794

Source: MSBA
Load: MSB
System Voltage: 480 Volts
Conductor Material: Copper
Conductor Size: 400 AWG or MCM
# of sets (n): 5
Raceway Material: Steel
Conductor Constant (C): 20566
Length of Circuit (L): 100 Feet

f = 1.732 x L x I / (C x n x V_{L-L}) = 0.1
M = 1 / (1+f) = 0.876
3-Phase I_{SCA} = I_{SCA} x M = 35,402

Source: QHB
Load: T-QLB Primary
System Voltage: 480 Volts
Conductor Material: Copper
Conductor Size: 6 AWG or MCM
# of sets (n): 1
Raceway Material: Steel
Conductor Constant (C): 2425
Length of Circuit (L): 10 Feet

f = 1.732 x L x I / (C x n x V_{L-L}) = 0.3
M = 1 / (1+f) = 0.791
3-Phase I_{SCA} = I_{SCA} x M = 14,069

Source: MSB
Load: NPDP
System Voltage: 480 Volts
Conductor Material: Copper
Conductor Size: 350 AWG or MCM
# of sets (n): 2
Raceway Material: Steel
Conductor Constant (C): 19704
Length of Circuit (L): 24 Feet

f = 1.732 x L x I / (C x n x V_{L-L}) = 0.1
M = 1 / (1+f) = 0.928
3-Phase I_{SCA} = I_{SCA} x M = 32,847

Transformer fault contribution: T-QLB
Transformer KVA: 30
Transformer %Z: 1
Primary Voltage (V_p): 480
Secondary Voltage (V_s): 208

f = $I_{SCA(P)}$ x V_p x 1.732 x %Z / 100,000 x KVA = 11.2
M = 1 / (1+f) = 0.082
3-Phase $I_{SCA(S)}$ = V_p/V_s x M x $I_{SCA(P)}$ = 3,365

Source: NPDP
Load: ATS #1
System Voltage: 480 Volts
Conductor Material: Copper
Conductor Size: 350 AWG or MCM
# of sets (n): 2
Raceway Material: Steel
Conductor Constant (C): 19704
Length of Circuit (L): 10 Feet

f = 1.732 x L x I / (C x n x V_{L-L}) = 0.03
M = 1 / (1+f) = 0.971
3-Phase I_{SCA} = I_{SCA} x M = 31,888

Source: T-QLB Secondary
Load: QLB
System Voltage: 208 Volts
Conductor Material: Copper
Conductor Size: 1 AWG or MCM
# of sets (n): 1
Raceway Material: Steel
Conductor Constant (C): 7293
Length of Circuit (L): 10 Feet

f = 1.732 x L x I / (C x n x V_{L-L}) = 0.04
M = 1 / (1+f) = 0.963
3-Phase I_{SCA} = I_{SCA} x M = 3,241

Source: ATS #1
Load: EDP
System Voltage: 480 Volts
Conductor Material: Copper
Conductor Size: 350 AWG or MCM
# of sets (n): 2
Raceway Material: Steel
Conductor Constant (C): 19704
Length of Circuit (L): 10 Feet

f = 1.732 x L x I / (C x n x V_{L-L}) = 0.03
M = 1 / (1+f) = 0.972
3-Phase I_{SCA} = I_{SCA} x M = 30,983

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Chris Dodson
Date: Oct 10, 2019
2015 INTERNATIONAL CODES & 2017 NEC

RSN: 1410755
Permit #: 19-1709424

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The Medical Center of Aurora
Health UCHealth

MORGUE EQUIPMENT UPGRADE

MEDICAL CENTER OF AURORA

1501 S. POTOMAC ST.
AURORA, CO 80012

SOUTH CAMPUS

TOM THOMPSON ARCHITECT
2510 SOUTH OSCEOLA STREET
DENVER, COLORADO 80219
720.989.6084
TomThompsonArchitect@gmail.com

WMA Consulting Engineers, Ltd.
WMA Job# 19003-00

DESIGN DOT PLOT
dpteam@thedesignplot.com
(303) 565-7282

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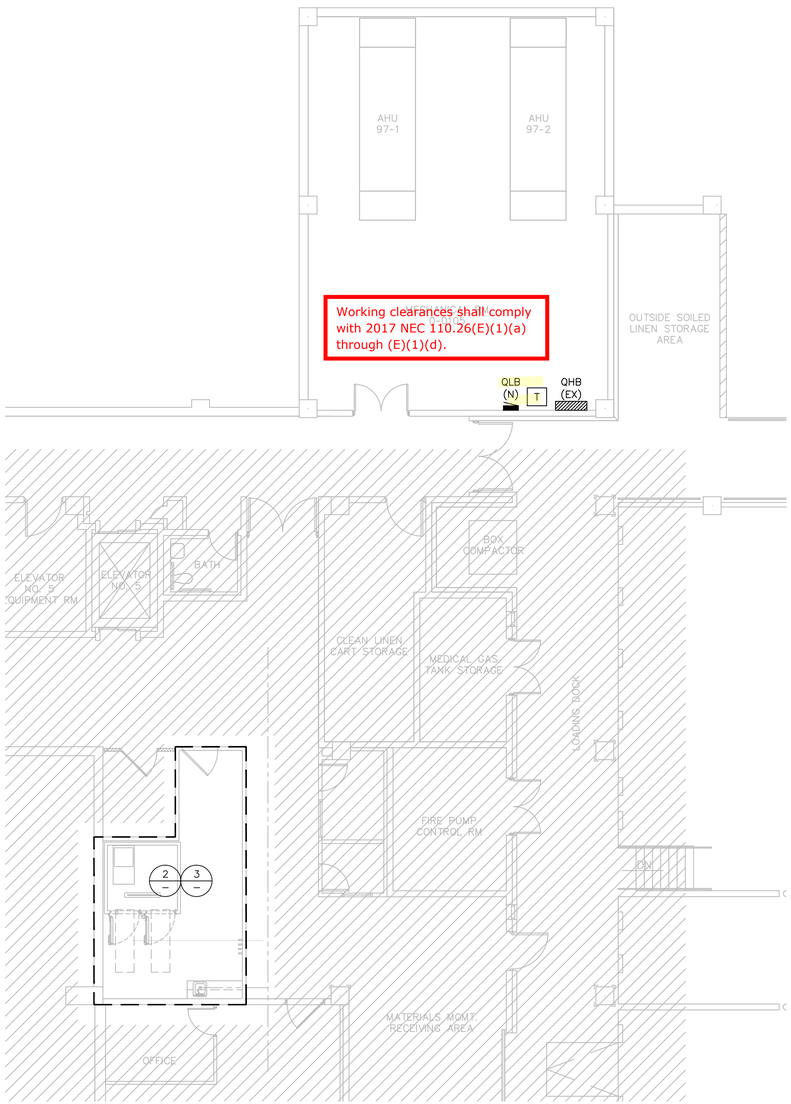
COLORADO LICENSED
RACHEL P. THOMPSON
63150
PROFESSIONAL ENGINEER
8/2/19

PROJECT NO.: 18-18

DRAWN BY:
CHECKED BY:
SCALE: AS SHOWN
DATE: 08.02.2019
ISSUED FOR: CONSTRUCTION
REVISIONS:

SHEET TITLE:

SHEET NO.:
E0.2

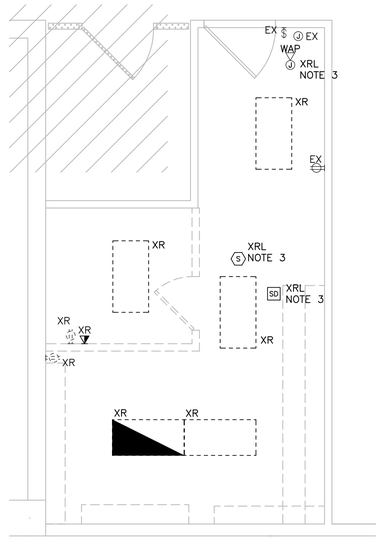


Working clearances shall comply with 2017 NEC 110.26(E)(1)(a) through (E)(1)(d).

1 BASEMENT FLOOR PLAN

1/8"=1'-0"

0 4 8 16



2 DEMOLITION PLAN

1/4"=1'-0"

0 2 4 8

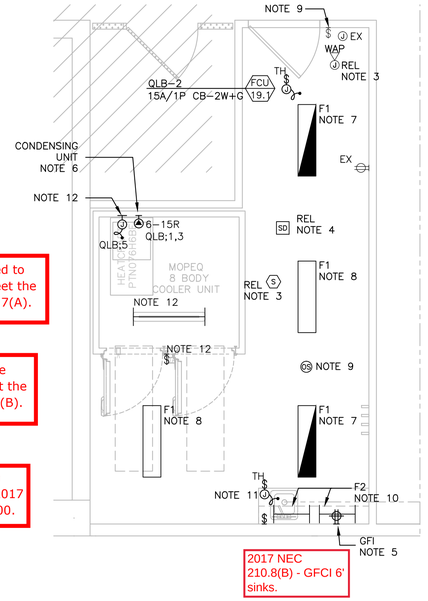
NOTES:

1. REFER TO ELECTRICAL GENERAL NOTES AND SYMBOLS ON SHEET E0.0.
2. REFER TO ELECTRICAL SPECIFICATIONS ON SHEET E0.1.
3. REMOVE EXISTING ELECTRICAL DEVICE TO ACCOMMODATE CEILING DEMOLITION AND SALVAGE FOR RE-INSTALLATION.

The sealing of raceways exposed to different temperatures shall meet the requirements of 2017 NEC 300.7(A).

Suspended ceiling systems and the luminaires they support shall meet the requirements of 2017 NEC 410.36(B).

Provide emergency illumination equipment that complies with 2017 NEC 700.12 (F) or 2017 NEC 700.



2017 NEC 210.8(B) - GFCI 6' sinks.

3 ELECTRICAL PLAN

1/4"=1'-0"

0 2 4 8

NOTES:

1. REFER TO ELECTRICAL GENERAL NOTES AND SYMBOLS ON SHEET E0.0.
2. REFER TO ELECTRICAL SPECIFICATIONS ON SHEET E0.1.
3. RE-WORK EXISTING RACEWAY AND WIRING, SUPPORT BACKBOX FROM STRUCTURE ABOVE FOR A MOUNTING HEIGHT OF 10' AFF AND RE-INSTALL DEVICE.
4. RE-WORK EXISTING RACEWAY AND WIRING TO SURFACE MOUNT SMOKE DETECTOR TO STRUCTURE ABOVE, AND RE-INSTALL DEVICE.
5. WIRE NEW RECEPTACLE TO EXISTING RECEPTACLE BRANCH CIRCUIT SERVING ROOM. NET ADDED LOAD TO CIRCUIT IS -180VA.
6. PROVIDE NEMA 6-15R RECEPTACLE WITH 208V, 1-PHASE CONNECTION TO BODY COOLER FROM INDICATED PANELBOARD AND BRANCH CIRCUITS. COORDINATE REQUIREMENTS WITH EQUIPMENT VENDOR.
7. WIRE NEW EMERGENCY LIGHTING FIXTURE TO EXISTING LIFE SAFETY BRANCH CIRCUIT SERVING ROOM. NET ADDED LOAD TO CIRCUIT IS .
8. WIRE NEW LIGHTING FIXTURE TO EXISTING NORMAL POWERED BRANCH CIRCUIT SERVING ROOM. REFER TO NOTE 9 FOR CONTROLS.
9. PROVIDE NEW CEILING MOUNTED VACANCY SENSOR EQUAL TO SENSOR SWITCH #CMX SERIES TO PROVIDE AUTOMATIC CONTROL OF NORMAL LIGHTING FIXTURES IN CONJUNCTION WITH MANUAL CONTROL. REPLACE EXISTING WALL SWITCH AS REQUIRED TO COORDINATE WITH VACANCY SENSOR.
10. WIRE NEW UNDERCABINET LIGHTING FIXTURE TO EXISTING NORMAL POWERED LIGHTING BRANCH CIRCUIT SERVING ROOM UPSTREAM OF EXISTING LOCAL SWITCHLEG. PROVIDE NEW WALL SWITCH CONTROL.
11. PROVIDE AN ALTERNATE PRICE TO PROVIDE A 120V CONNECTION TO AN UNDER SINK SUMP SYSTEM CONSISTING OF A FLEXIBLE CONNECTION AND LOCAL TOGGLE DISCONNECT WITH 2#12, 1#12G, 3/4"C VIA A 15A/1P CB IN PANELBOARD QLB. REFER TO PLUMBING DRAWING FOR ADDITIONAL INFORMATION.
12. PROVIDE HARDWIRED CONNECTION TO BODY COOLER FROM INDICATED PANELBOARD AND BRANCH CIRCUIT FOR INTERNAL LIGHTING. LIGHTING FIXTURE SHALL BE CONTROLLED BY TOGGLE SWITCH INTEGRAL TO THE COOLER. LIGHTING FIXTURE SHALL BE FURNISHED BY EQUIPMENT VENDOR AND INSTALLED BY EC.

MOTOR/EQUIPMENT SCHEDULE - NOTE 2

TAG	DESCRIPTION	LOCATION	ELECTRICAL RATING**					FEEDER/SOURCE - NOTE 1				DISCONNECT		STARTER		NOTES
			KW	MCA	HP	VOLT	PH	PANEL	CCT	OCPD	WIRING	INTEGRAL	BY EC	SIZE	TYPE	
FCU-19-1	FAN COIL UNIT			3.6		120	1	QLB		15A/1P	2W+G	X				

1. REFER TO BRANCH CIRCUIT WIRING NOTES ON SHEET E0.0
2. COORDINATE EXACT EQUIPMENT REQUIREMENTS WITH OTHER TRADES PRIOR TO ROUGH-IN AND INSTALLATION

ARCHITECT'S LIGHTING FIXTURE SCHEDULE

TAG	DESCRIPTION	LAMP		FIXTURE		MANUFACTURER	ITEM NUMBER	REMARKS
		QUANT	TYPE/CRI-CT	VOLT	WATTS			
F1	4' INDUSTRIAL STRIP WITH SYMMETRIC REFLECTOR, ACRYLIC LENS AND CHAIN SUSPENSION KIT	-	LED/4000K/80 CRI	NOTE 3	41	LITHONIA	Z1LD-L48-SMR-5000LM-FST-MVOLT-40K-80CRI-WH	NOTES 1,2
F2	UNDERCABINET FIXTURE WITH FROSTED ACRYLIC LENS. COORDINATE FIXTURE LENGTH/INSTALLATION WITH UPPER CABINETS.	-	LED/4000K/80 CRI	NOTE 3	12	HEALTHCARE LIGHTING	HUC523-MVOLT-LED40-GW	NOTES 1,2

NOTES:

1. MANUFACTURERS' CATALOG NUMBERS ARE INTENTIONALLY INCOMPLETE; COORDINATE REQUIRED TRIM KITS, MOUNTING BRACKETS, LAMPS, FINISHES, ETC. WITH THE ARCHITECT, CONTRACT DOCUMENTS, SPECIFICATIONS, AND OTHER TRADES.
2. VERIFY TYPE OF CEILING OR WALL FOR MOUNTING OF LIGHTING FIXTURES PRIOR TO ORDERING.
3. VERIFY VOLTAGE OF EXISTING LIGHTING FIXTURE BRANCH CIRCUITS PRIOR TO ORDERING.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Chris Dodson
Date: Oct 10, 2019
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RSN: 1410755
Permit #: 19-1709424

The Medical Center of Aurora
Health ONE

MORGUE EQUIPMENT UPGRADE

MEDICAL CENTER OF AURORA
1501 S. POTOMAC ST.
AURORA, CO 80012

SOUTH CAMPUS

TOM THOMPSON ARCHITECT
2510 SOUTH OSCEOLA STREET
DENVER, COLORADO 80219
720.989.6084
TomThompsonArchitect@gmail.com

WMA Consulting Engineers, Ltd.
WMA Job# 19003-00

DESIGN DP LOT
dpteam@thedesignplot.com
(303) 565-7282

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COLORADO LICENSED MICHAEL P. THOMPSON 53150 PROFESSIONAL ENGINEER
8/2/19

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ELECTRICAL PLAN

SHEET NO.:
E1.0

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