COURTHOUSE VETERINARY HOSPITAL & PET BOARDING



VIRGINIA BEACH, VIRGINIA
BRIAN WATSON, DVM

JULY 19TH, 2022
CONSTRUCTION DOCUMENTS

INDEX TO DRAWINGS

G001	TITLE SHEET
G101	LIFE SAFETY PLAN
G102	LIFE SAFETY PLAN - ATTIC
AS101	ARCHITECTURAL SITE PLAN
AS501	SITE DETAILS
S01.A	GENERAL PROJECT NOTES
S01.B	SPECIAL INSPECTIONS NOTES & TABLES
S03.A	CONCRETE GENERAL NOTES AND DETAILS
S03.B	CONCRETE SLAB-ON-GRADE REQUIREMENTS
S06.A	CARPENTRY GENERAL NOTES
S06.B	ROUGH CARPENTRY GENERAL DETAILS
S06.C	ROUGH CARPENTER GENERAL DETAILS (2)
S31.A	EARTHWORK GENERAL NOTES
S100	FOUNDATION AND CONTROL JOINT PLAN
S200	FLOOR FRAMING PLAN
S300	ROOF FRAMING PLAN
S400	FOUNDATION SECTIONS
S500	ROOF FRAMING SECTIONS
S501	ROOF FRAMING SECTIONS (2)
SW0.1	SHEARWALL GENERAL NOTES AND DETAILS
SW0.2	WOOD SHEARWALL ELEV. AND FRAMING DETAILS
SW1.0	ROOF TO FOUNDATION SHEARWALL PLAN
A101	ARCHITECTURAL FLOOR PLAN
A102	ARCHITECTURAL FLOOR & DIMENSION PLAN - ATTIC
A103	DIMENSION PLAN EXTERIOR
A104	DIMENSION PLAN NORTH
A105	DIMENSION PLAN SOUTH
A106	REFLECTED CEILING PLAN
A107	REFLECTED CEILING PLAN - ATTIC
A110	ROOF PLAN
A201	EXTERIOR ELEVATIONS
A202	INTERIOR ELEVATIONS
A203	INTERIOR ELEVATIONS
A204	INTERIOR ELEVATIONS
A205	INTERIOR ELEVATIONS
A206	INTERIOR ELEVATIONS
A301	BUILDING SECTIONS
A302	BUILDING SECTIONS
A303	WALL SECTIONS
A304	WALL SECTIONS
A305	WALL SECTIONS
A401	ENLARGED PLANS
A501	MISC. DETAILS
A502	MISC. DETAILS
A503	MISC. DETAILS
A504	MISC. DETAILS
A505	DOOR DETAILS
A506	DOOR DETAILS
A507	WINDOW DETAILS
A601	DOOR SCHEDULE AND TYPES
A602	ROOM FINISH SCHEDULE AND WINDOW TYPES
I001	INTERIOR SPECIFICATION
I101	REFERENCE FLOOR PLAN
I201	INTERIOR ELEVATIONS
I202	INTERIOR ELEVATIONS
FA101	MAIN FLOOR PLAN - SPRINKLER AND HVAC MONITORING SYSTEM
FA102	UPPER FLOOR PLAN - HVAC MONITORING SYSTEM
FA103	SPRINKLER AND HVAC MONITORING SYSTEM RISER AND NOTES
FS101	MAIN FLOOR PLAN - FIRE SPRINKLER
FS102	UPPER FLOOR PLAN - FIRE SPRINKLER
P001	PLUMBING SPECIFICATIONS, LEGEND, GENERAL NOTES
P002	PLUMBING SCHEDULES AND DETAILS
P003	PLUMBING DETAILS
P101	MAIN FLOOR PLAN - WASTE
P102	UPPER FLOOR PLAN - WASTE
P201	MAIN FLOOR PLAN - WATER
P202	UPPER FLOOR PLAN - WATER
P301	MAIN FLOOR PLAN - MED GAS
M001	MECHANICAL LEGENDS & GENERAL NOTES
M002	MECHANICAL SPECIFICATIONS
M003	MECHANICAL SCHEDULES
M004	MECHANICAL SCHEDULES
M005	MECHANICAL CALCULATIONS
M006	MECHANICAL DETAILS
M007	MECHANICAL SECTIONS
M101	MAIN LEVEL FLOOR PLAN - MECHANICAL
M102	UPPER LEVEL FLOOR PLAN - MECHANICAL
M103	UPPER LEVEL FLOOR PLAN - GAS PIPING
M201	MECHANICAL COMMISSIONING
E001	ELECTRICAL SPECIFICATIONS
E002	ELECTRICAL SYMBOLS
E003	LIGHTING FIXTURE SCHEDULE
E100	SITE PLAN - ELECTRICAL
E101	MAIN FLOOR PLAN - LIGHTING
E102	UPPER FLOOR PLAN - LIGHTING
E201	MAIN FLOOR PLAN - POWER
E202	UPPER FLOOR PLAN - POWER
E301	MAIN FLOOR PLAN - MECHANICAL CONNECTIONS
E302	UPPER FLOOR PLAN - MECHANICAL AND PLUMBING CONNECTIONS
E401	PANEL SCHEDULES
E402	PANEL SCHEDULES
E501	POWER RISER DIAGRAM

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COMMONWEALTH OF VIRGINIA
DAVID S. GASSER
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ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING
2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL STATE AND LOCAL BUILDING CODES AND ORDINANCES.
2. ALL PUBLIC UTILITY TIE INS TO COMPLY WITH LOCAL MUNICIPALITY REQUIREMENTS.
3. CONTRACTOR IS RESPONSIBLE FOR ALL UNDERGROUND UTILITY LOCATIONS AND ASSOCIATED EXCAVATIONS.
4. CONTRACTOR SHALL BECOME FAMILIAR WITH AND EXAMINE THE SITE PRIOR TO PROPOSING OR WORKING ON THE PROJECT. PROPOSING OR WORKING ON THE PROJECT SHALL CONSTITUTE UNDERSTANDING AND ACCEPTANCE OF ALL CONDITIONS.
5. BRACE PARTITIONS TO ROOF STRUCTURE ABOVE AS REQUIRED.
6. ALL EXPOSED WOOD TRIM TO BE STAIN GRADE PINE OR FIR, UNLESS NOTED OTHERWISE.
7. NON-BEARING PARTITIONS MAY BE CONSTRUCTED OF 2X4 WD OR 3 5/8" 26 GA. METAL STUDS AT CONTRACTORS OPTION.
8. PARTITIONS DESIGNATED AS DEMISING OR SOUND ATTENUATING SHALL BE CONSTRUCTED AS INDICATED, FROM FLOOR TO STRUCTURE WITH CAULKING AT ENTIRE PERIMETER AND ANY PENETRATIONS TIGHTLY SEALED AND CAULKED. INSULATE ENTIRE CAVITY WITH FULL THICKNESS UNFACED BATT INSULATION.
9. GENERAL PARTITIONS SHALL EXTEND TO ABOVE FINISH CEILING.
10. ALL DOOR FRAMES TO RECEIVE SILENCERS.
11. ALL ROOF PENETRATIONS SHALL BE FLASHED BY PROFESSIONAL ROOFER.
12. ALL EXPOSED SURFACES TO BE FINISHED.
13. ALL WALL SURFACES TO BE PRIME PAINTED PRIOR TO FINISH COAT OR VWC.
14. ALL TRADES SHALL BE RESPONSIBLE FOR WORK IN THEIR RESPECTIVE TRADES REGARDLESS OF WHERE REFERENCES APPEAR. SHOULD ELECTRICAL WORK APPEAR ON AN ARCHITECTURAL DRAWING, THE ELECTRICAL CONTRACTOR WILL BE HELD RESPONSIBLE FOR ITS COMPLETION: ETC. ALL CONTRACTORS SHOULD BE THOROUGHLY FAMILIAR WITH ALL PLANS AND SPECIFICATIONS SECTIONS AND THE WORK OF ALL OTHER TRADES TO ASSURE COMPLETE COVERAGE AND SYSTEM INTERFACE.
15. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL BUILDING PERMITS. A BUILDING PERMIT IS REQUIRED. ALL WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE LOCAL AND STATE CODES, ORDINANCES, AND REGULATIONS. GOVERNING THE PARTICULAR CLASS OF WORK INVOLVED. THE BUILDER IS RESPONSIBLE FOR ALL PLAN CHECK AND PERMIT SUBMITTALS, INCLUDING ENERGY CODE COMPLIANCE. THE ARCHITECT WILL FURNISH ALL MECHANICAL AND ELECTRICAL CALCULATIONS FOR THE CONTRACTORS USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FINAL EXECUTION OF THE WORK TO SUIT THESE REQUIREMENTS. ON COMPLETION OF THE WORK, THE CONTRACTOR SHALL OBTAIN AND DELIVER TO THE OWNER, FINAL CERTIFICATES OF ACCEPTANCE AND OCCUPANCY.
16. EXCEPT AS OTHERWISE INDICATED, COMPLY WITH APPLICABLE PROVISIONS OF NEC AND STANDARDS BY NEMA, FOR ELECTRICAL COMPONENTS OF GENERAL WORK. PROVIDE UL LISTED AND LABELED PRODUCTS.

VICINITY MAP



REVISIONS		
INITIALS		REVIEWS
		BDA DESIGN REVIEW
		BDA TECHNICAL REVIEW

REVISIONS:		
REV. NO.	DATE	COMMENTS

PROJECT NO. 2004

LEGEND:

- DETAIL CUT SYMBOL (A3 / A301)
- SECTION CUT SYMBOL (A3 / A301)
- ELEVATION SYMBOL (A / A202)
- KEYED NOTE SYMBOL (01 00 00.01)
- DOOR NUMBER SYMBOL (101A)
- WINDOW NUMBER SYMBOL (A)
- STANDARD DIMENSION (1'-0")
- CLEAR DIMENSION - ALL CLEAR DIMENSIONS ARE FROM FACE OF FINISH TO FACE OF FINISH (1'-0" CLEAR)

ABBREVIATIONS:

ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
ALT	ALTERNATE
AT	ACOUSTICAL CEILING TILE
CAB	CABINET
CFM	CUBIC FOOT PER MINUTE
CJ	CONTROL JOINT
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
CONT	CONTINUOUS
CW	COLD WATER
DC	DROP CORD OUTLET
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DTL	DETAIL
DWV	DRAIN WASTE VENT
EA WAY	EACH WAY
EWC	ELECTRIC WATER COOLER
EJ	EXPANSION JOINT
EW	EYEWASH
EXT	EXTERIOR
FD	FLOOR DRAIN
FF	FINISH FLOOR
FIN FLR	FINISH FLOOR
GA	GAGE
GB	GYPSUM BOARD
GSF	GROSS SQUARE FOOT
GYP BD	GYPSUM BOARD
HC	HOLLOW CORE or HANDICAPPED
HM	HOLLOW METAL
HT	HEIGHT
HVAC	HEATING VENTILATING AIR CONDITIONING
HW	HOT WATER
INT	INTERIOR
JAN	JANITOR
MAX	MAXIMUM
MECH	MECHANICAL
MFG	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MO	MASONRY OPENING
MT	METAL THRESHOLD
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
O2	OXYGEN
OC	ON CENTER
OCP	OCCUPANTS
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED/CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED/OWNER INSTALLED
OH	OVER HEAD or OVERHANG
OR	OPERATING ROOM
P LAM	PLASTIC LAMINATE
PCF	PER CUBIC FOOT
PGB	PAINTED GYPSUM BOARD
PL	PROPERTY LINE
PLF	PER LINEAR FOOT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
RD	ROOD DRAIN
RE	REFER
RO	ROUGH OPENING
SC	SOLID CORE or SEALED CONCRETE
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SS	SANITARY SEWER
SST	STAINLESS STEEL
STL	STEEL
SQ	SQUARE
TOA	TOP OF ASPHALT
TOC	TOP OF CURB/CONCRETE
TOP	TOP OF PARAPET
TOW	TOP OF WALL
TYP	TYPICAL
UNGD	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
VBI	VIEW BOX ILLUMINATOR
VTR	VENT THRU ROOF
WD	WOOD
WP	WATER PROOF/WEATHER PROOF
WWF	WELDED WIRE FABRIC

CONSULTANTS

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FAX: (505) 296-1672
E-MAIL: jjkgroup.com

MECHANICAL,: TEG, TEETER ENGINEERING GROUP, P.A.
ELECTRICAL, 3400 SOUTH TRYON STREET, SUITE D
PLUMBING CHARLOTTE, NC 28217
DIRECT: (980) 949-7527
OFFICE: (704) 376-2999
WEB: www.tegpa.com
E-MAIL: ryanh@tegpa.com

PROJECT DATA:

LEGAL DESCRIPTION: GPIN #1494811072000
AREA = 82,114 SF OR 1.88 AC
GPIN #1494800978000
AREA = 42,960 SF OR 0.99 AC
TOTAL = 125,074 SF OR 2.87 AC

SITE ADDRESS: 2497 NORTH LANDING ROAD
CURRENT ZONING: AG2

Frontage Increase Calculations

$W = (L_1 \times w_1 + L_2 \times w_2 + L_3 \times w_3 + L_4 \times w_4)/F$

L_1 (north) =	201.8	feet	w_1 (north) =	20	feet
L_2 (west) =	75	feet	w_2 (west) =	30	feet
L_3 (south) =	201.8	feet	w_3 (south) =	30	feet
L_4 (east) =	75	feet	w_4 (east) =	30	feet
F =	497	feet			

W= 29.35

Amount of Increase
$I_f = (F/P - 25)W/30$
F = 497
P = 497
W = 29.35

I_f = 0.73

Allowable area with frontage increase
Single-occupancy, multistory buildings
$A_a = [A_t + (NS\text{x}I_f)] \times S_a$ = 31209 S.F.

A_t = 9000 (B occupancy, NS, Type VB)

RELEVANT CODE: 2018 VIRGINIA CONSTRUCTION CODE
2018 VIRGINIA PLUMBING CODE
2018 VIRGINIA MECHANICAL CODE
2018 VIRGINIA ENERGY CONSERVATION CODE
2017 NFPA 70

BUILDING TYPE: VETERINARY HOSPITAL
OCCUPANCY TYPE: B
OCCUPANT LOAD: 94
CONSTRUCTION TYPE: VB

ALLOWABLE AREA: TABLE 506.2	9,000 SF
ALLOWABLE AREA: FRONTAGE INCREASE:	31,209 SF
PROPOSED USABLE AREA - MAIN LEVEL:	11,679 SF
PROPOSED USABLE AREA - ATTIC LEVEL:	2,313 SF
PROPOSED USABLE AREA TOTAL:	13,951 SF
ALLOWABLE BUILDING HEIGHT: TABLE 504.3	40'-0"
PROPOSED BUILDING HEIGHT:	30'-11"
ALLOWABLE BUILDING STORIES: TABLE 504.4	2 STORIES
PROPOSED BUILDING STORIES:	2 STORIES

EXITS:	REQUIRED:	2
	CURRENT PROVIDED:	3
WIDTHS:	REQUIRED:	32"
	CURRENT PROVIDED:	36"

Save Date: July 20, 2022 - 2:09 PM - Lawrence
Plot Date: August 11, 2022 - 8:16 AM
Drawing Name: G:\Archive\2020\2004 - Watson\BDA\DWGS\Construction Documents\Courthouse Veterinary\Sheets\2004-G001 Cover Sheet.dwg

LEGEND

	1 HOUR RATED PARTITION - SEE SHEETS A104 & A105 FOR WALL TYPES
0'-0" TRAVEL DISTANCE	TRAVEL DISTANCE
	EGRESS PATHWAY
	EXIT DISCHARGE
	EMERGENCY EGRESS LIGHT FIXTURE (WALL UP 7'-6") - SEE ELECTRICAL
	EMERGENCY EXIT LIGHT FIXTURE, WITH BATTERY BACK-UP (CEILING SURFACE) - SEE ELECTRICAL
FEC	PORTABLE FIRE EXTINGUISHER IN CABINET: LOCATIONS AS PER NFPA 10. MINIMUM SIZE TO BE _2_A_10_BC_2, INSTALLED AT A MAXIMUM OF 48" A.F.F. TO THE TOP OF THE HANDLE. EXTINGUISHERS SHALL BE LOCATED SO THAT NO TRAVEL DISTANCE EXCEEDS 75'-0".

OCCUPANCY AND EGRESS TABLES

2018 VIRGINIA CONSTRUCTION CODE SECTION 1005.3.2 EGRESS WIDTH PER OCCUPANT SERVED		
TABLE 506.2: ALLOWABLE BUILDING AREA NON-SPRINKLER, FRONTAGE INCREASE INCLUDED	15,750 SF	CURRENT 11,642 SF
SEC. 1005.3.1: STAIRWAYS EGRESS COMPONENTS (INCHES PER PERSON)	0.3	0.3 x 18 OCC. 5.4 INCHES REQ.
SEC. 1005.3.2: EGRESS WIDTH PER OCCUPANT SERVED EGRESS COMPONENTS (INCHES PER PERSON)	0.2	.2 x 78 OCC. WORST CASE
TABLE 1006.2.1: COMMON PATH OF EGRESS TRAVEL DISTANCE / B OCCUPANCY (FEET)	100	74'-10"
TABLE 1017.2: EXIT ACCESS TRAVEL DISTANCE B OCCUPANCY (FEET)	300	85'-0"
TABLE 1020.2: MINIMUM CORRIDOR WIDTH (INCHES) FACILITIES NOT LISTED	44"	60"
TABLE 1020.1: SINGLE STORY / SINGLE OCCUPANT SPRINKLED- GREATER THEN 30 OCC.	0 HR	N/A
SEC. 1020.4: DEAD ENDS MAXIMUM DEAD END IN CORRIDOR (FEET)	50	13'-10"

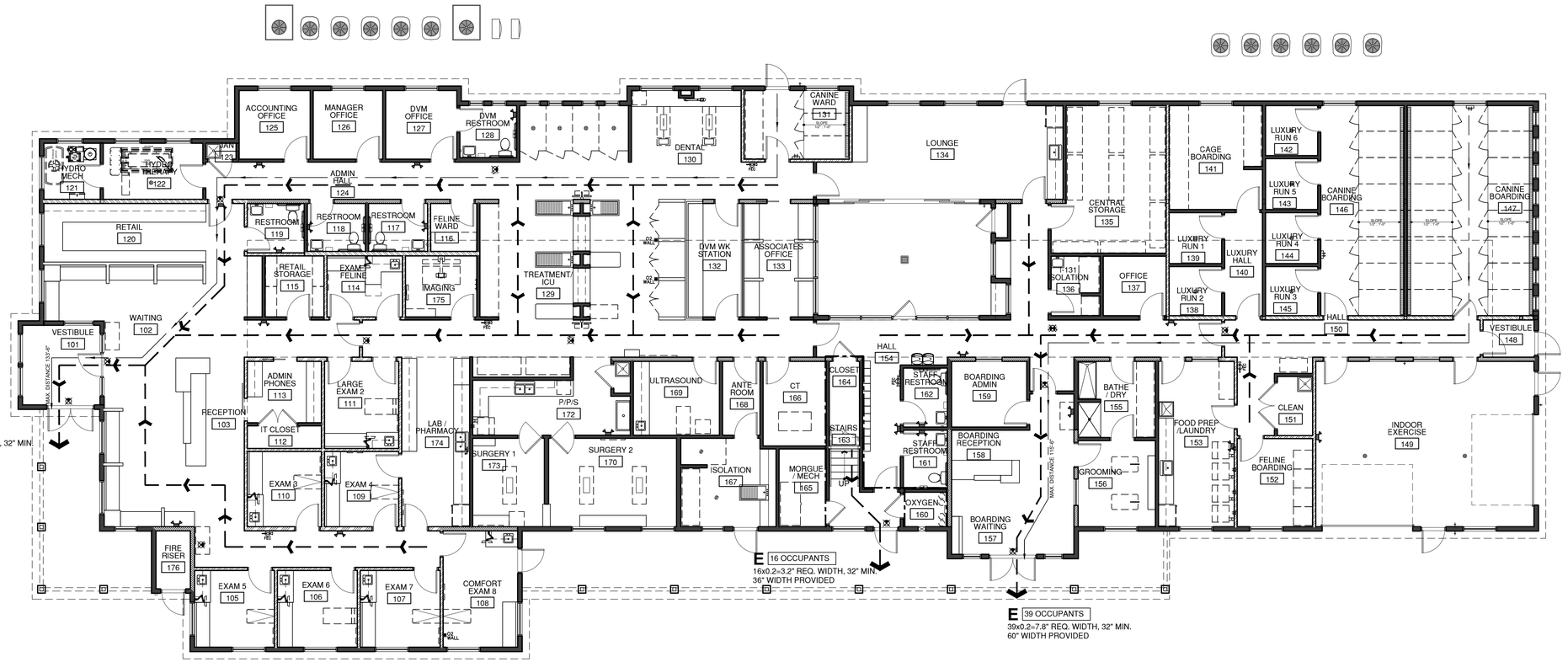
2018 VIRGINIA CONSTRUCTION CODE TABLE 1004.5 MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT			
FUNCTION OF SPACE	OCCUPANT LOAD FACTOR (SF)	AREA	NUMBER OF OCCUPANTS
BUSINESS AREAS	150	11,679 SF - MAIN 2,313 SF - ATTIC	78 16
TOTAL NUMBER OF OCCUPANTS			94

NOTES:

A. 2018 VCC SEC. 907.2.2 GROUP B. MANUAL FIRE ALARM BOXES ARE NOT REQUIRED WHERE THE BUILDING IS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 903.3.1.1 AND THE OCCUPANT NOTIFICATION APPLIANCES WILL ACTIVATE THROUGHOUT THE NOTIFICATION ZONES UPON SPRINKLER WATER FLOW.

OCCUPANT LOAD:

E XX OCCUPANTS
XXx0.2=X.X" REQ. WIDTH, 32" MIN.
36" WIDTH PROVIDED



B1 LIFE SAFETY PLAN - MAIN LEVEL

1/8"=1'-0"

TRUE NORTH

NORTH

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Brian Watson, DVM

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LIFE SAFETY PLAN MAIN LEVEL

REV. #	DATE	COMMENTS
-		
-		
-		
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REVISION:
REVISION:
REVISION:
REVISION:

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON
PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

G101

- OF -

Save Date: July 19, 2022, 4:59 PM Lawrence
Plot Date: July 20, 2022, 10:24 AM
Drawing Name: G:\Archive\2020\2004 - Watson\BDA\DWGS\Construction Documents\Courthouse Veterinary\Sheets\2004-G101 Life Safety Plan.dwg

LEGEND

1 HOUR RATED PARTITION - SEE SHEET A104 FOR WALL TYPES

0'-0" TRAVEL DISTANCE — TRAVEL DISTANCE

EGRESS PATHWAY

EXIT DISCHARGE

EMERGENCY EGRESS LIGHT FIXTURE (WALL UP 7'-6") - SEE ELECTRICAL

EMERGENCY EXIT LIGHT FIXTURE, WITH BATTERY BACK-UP (CEILING SURFACE) - SEE ELECTRICAL

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2018 VIRGINIA CONSTRUCTION CODE TABLE 1004.5 MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT			
FUNCTION OF SPACE	OCCUPANT LOAD FACTOR (SF)	AREA	NUMBER OF OCCUPANTS
BUSINESS AREAS	150	11,679 SF - MAIN 2,313 SF - ATTIC	78 16
TOTAL NUMBER OF OCCUPANTS			94

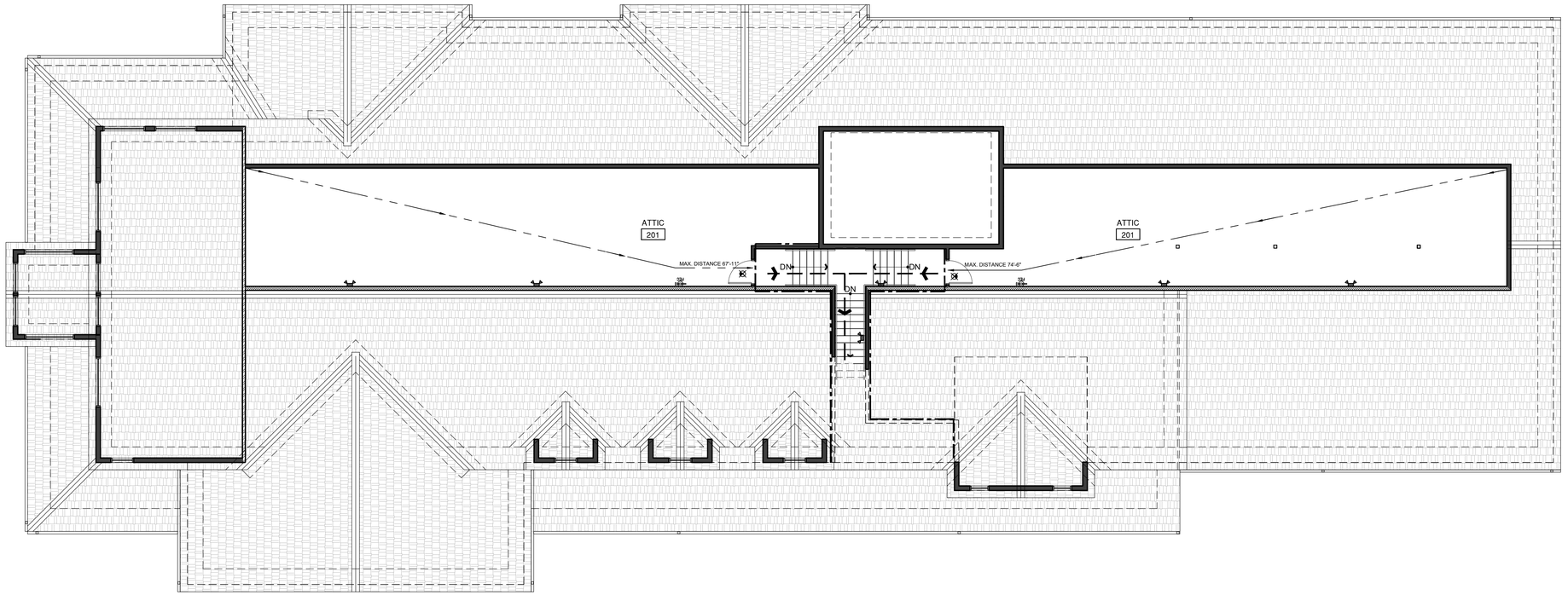
NOTES:

A. 2018 VCC SEC. 907.2.2 GROUP B. MANUAL FIRE ALARM BOXES ARE NOT REQUIRED WHERE THE BUILDING IS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 903.3.1.1 AND THE OCCUPANT NOTIFICATION APPLIANCES WILL ACTIVATE THROUGHOUT THE NOTIFICATION ZONES UPON SPRINKLER WATER FLOW.

OCCUPANT LOAD:

E XX OCCUPANTS

XXx0.2=X.X" REQ. WIDTH, 32" MIN.
36" WIDTH PROVIDED



B1 LIFE SAFETY PLAN - ATTIC LEVEL

1/8"=1'-0"

TRUE NORTH

NORTH

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Brian Watson, DVM

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LIFE SAFETY PLAN ATTIC LEVEL

REV. #	DATE	COMMENTS
-		
-		
-		
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REVISION:	REVISION:	REVISION:	REVISION:

REVIEWS	
INITIALS	
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-	BDA TECH REV.

WATSON

PROJECT NO.: 2004

DRAWN: -

DATE: 07/19/2022

G102

- OF -

Save Date: July 20, 2022 - 10:05 AM Lawrence
Plot Date: July 20, 2022 - 10:27 AM
Drawing Name: G:\Archive\2020\2004 - Watson\BDA\DWGS\Construction Documents\Courthouse Veterinary\Sheets\2004-G102 Life Safety Plan.dwg

PARKING ANALYSIS

1 SPACE PER 400 SF.
TOTAL BUILDING SF = 11,679 SF
11,679/400 = 29.19
= 30 SPACES

REQUIRED: 30 SPACES

PROVIDED:

33 REGULAR SPACES
2 ACCESSIBLE SPACES
35 TOTAL SPACES

LEGEND

WETLAND AREA

WETLAND AREA TO BE MITIGATED

PROPOSED NEW BUILDING AREA

REFERENCE KEYNOTES

DIVISION 02 - EXISTING CONDITIONS
02 21 13.01 - PROPERTY LINE
02 21 13.11 - FRONT YARD SETBACK
02 21 13.12 - SIDE YARD SETBACK

DIVISION 03 - CONCRETE
03 11 23.23 - CONCRETE APRON

DIVISION 10 - SPECIALTIES
10 14 00.02 - MONUMENT SIGN BY OWNER
10 14 53.01 - ADA PARKING SIGN
10 41 16.02 - FIRE DEPARTMENT KNOX-BOX - VERIFY LOCATION WITH LOCAL FIRE MARSHAL

DIVISION 12 - FURNISHINGS
12 93 23.05 - DUMPSTER - N.I.C.

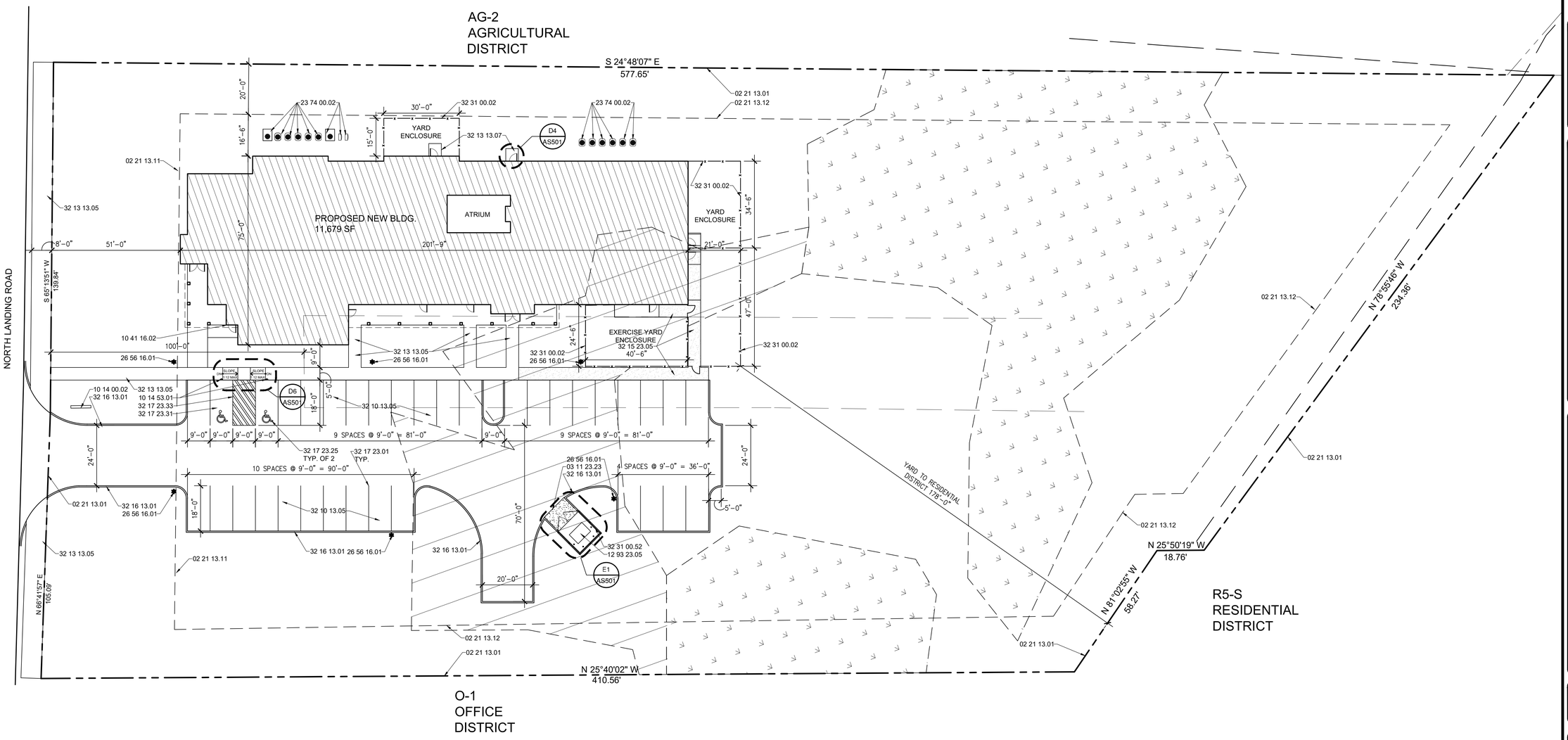
DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING
23 74 00.02 - MECHANICAL UNIT - SEE MECHANICAL

DIVISION 26 - ELECTRICAL
26 56 16.01 - PARKING LOT LIGHT POLE

DIVISION 32 - EXTERIOR IMPROVEMENTS
32 10 13.05 - PAVED PARKING
32 13 13.05 - CONCRETE SIDEWALK
32 13 13.07 - CONCRETE STOOP
32 15 23.05 - GRAVEL PATH
32 16 13.01 - CONCRETE CURB
32 17 23.01 - PARKING STRIPES
32 17 23.25 - ADA PARKING SYMBOL
32 17 23.31 - ADA ACCESSIBLE PARKING
32 17 23.33 - ADA ACCESS AISLE
32 31 00.02 - FENCED ENCLOSURE
32 31 00.52 - TRASH ENCLOSURE

GENERAL NOTES

A. **THIS IS NOT A SURVEY**. INFORMATION TAKEN FROM A SURVEY PREPARED BY PINNACLE GROUP ENGINEERING INC., DATED 04/13/2022. *JOB# 2020-004* REFER TO THAT TOPOGRAPHIC SURVEY FOR ALL BOUNDARY AND EXISTING CONDITIONS.



B1 ARCHITECTURAL SITE PLAN

1" = 20'-0"

0 10 20 40

TRUE NORTH NORTH

BDA Architecture, P.C.
Building Design for Animals, LLC
991 Lamberton Pl. NE
Albuquerque, NM 87107
Phone: (505) 888-0180
Fax: (505) 884-4141
Email: info@bdaarc.com

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BDA

COMMONWEALTH OF VIRGINIA
DAVID S. GASSER
Lic. No. 0401019577
ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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ARCHITECTURAL SITE PLAN

REV.#	DATE	COMMENTS
REVISION: -		
REVISION: -		
REVISION: -		
REVISION: -		

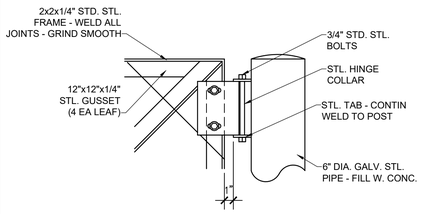
REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON
PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

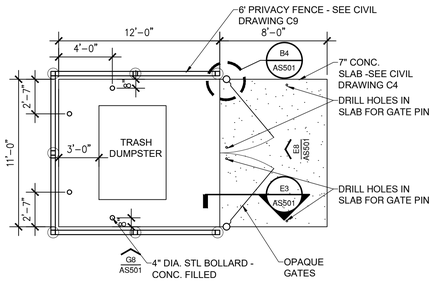
AS101

- OF -

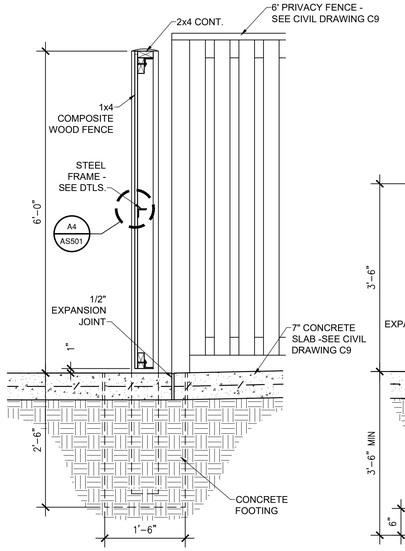
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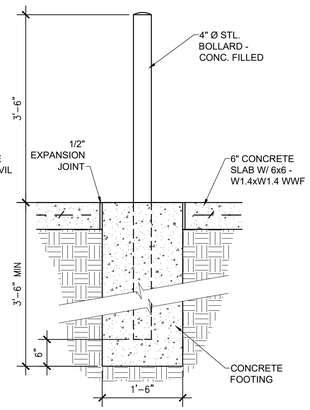
G1 GATE DETAIL
1 1/2" = 1'-0"



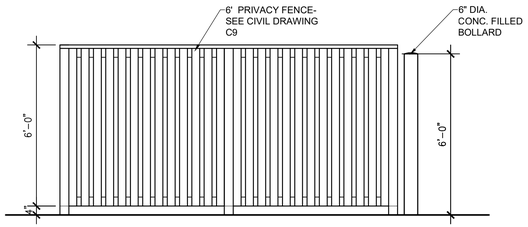
E1 TRASH ENCLOSURE
3/16" = 1'-0"



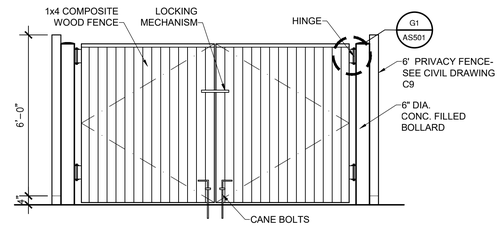
E3 GATE SECTION
3/4" = 1'-0"



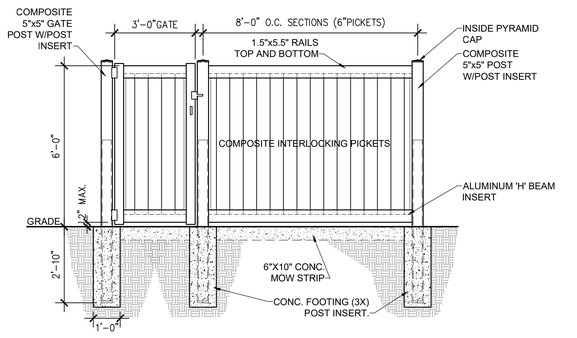
E6 BOLLARD SECTION
3/4" = 1'-0"



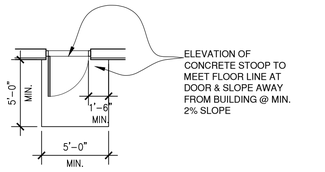
G8 TRASH ENCLOSURE WALL
3/8" = 1'-0"



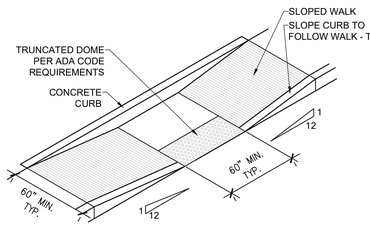
E8 TRASH ENCLOSURE GATE
3/8" = 1'-0"



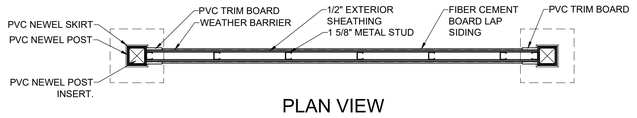
C1 GATE ELEVATION
3/8" = 1'-0"



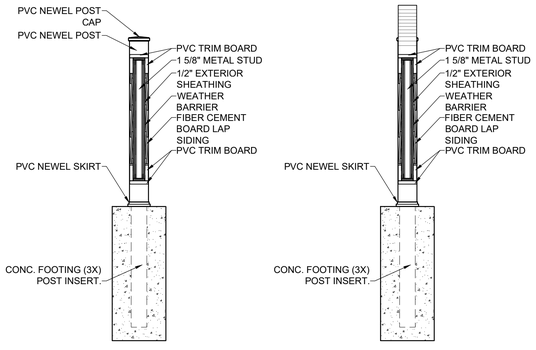
D4 TYP. CONCRETE STOOP
3/16" = 1'-0"



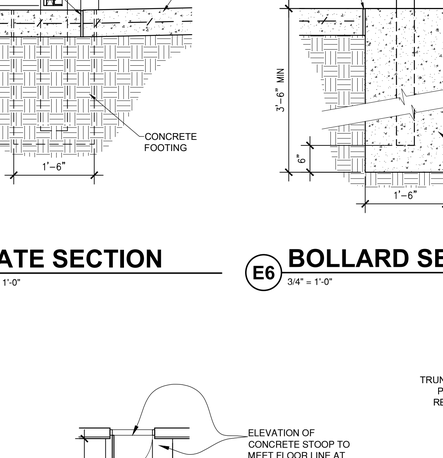
D6 SLOPED SIDEWALK
3/16" = 1'-0"



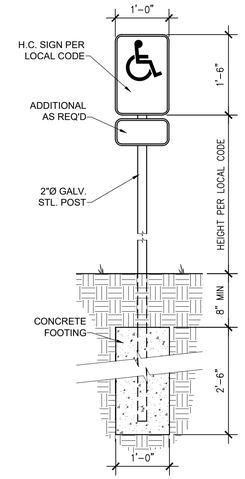
PLAN VIEW



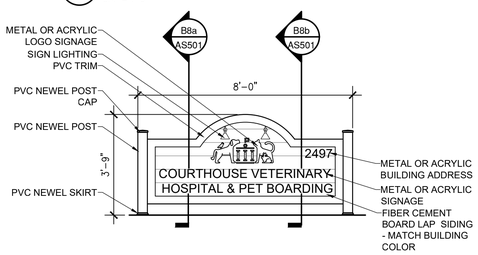
B8 MONUMENT SIGN DETAIL
3/4" = 1'-0"



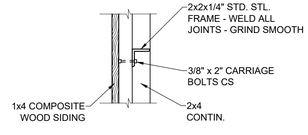
B4 GATE DETAIL
1 1/2" = 1'-0"



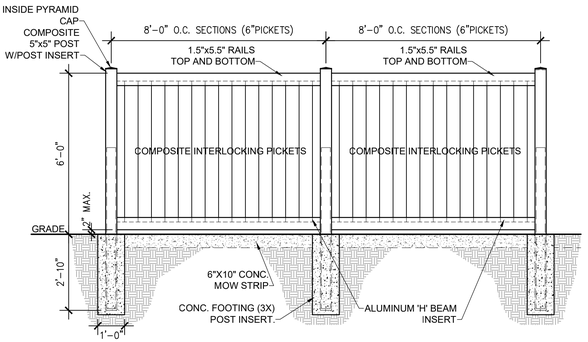
A6 H.C. PARKING SIGN
3/4" = 1'-0"



A8 MONUMENT SIGN
3/8" = 1'-0"



A4 GATE DETAIL
1 1/2" = 1'-0"



A1 FENCE ELEVATION
3/8" = 1'-0"

BDA Architecture, P.C.
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Albuquerque, NM 87107
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BDA

DAVID S. GASSER
COMMONWEALTH OF VIRGINIA
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ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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SITE DETAILS

REV.#	DATE	COMMENTS
-		
-		
-		
-		

REVISION:	REVISION:	REVISION:	REVISION:

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON

PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

AS501

- OF -

Save Date: July 28, 2022 - 10:01 AM - Lawrence
Plot Date: July 20, 2022 - 10:22 AM
Drawing Name: G:\Archive\2020\2004 - Watson\BDA\DWGS\Construction Documents\Courthouse Veterinary\Sheets\2004-AS501 Site Details.dwg

GENERAL NOTES

- THESE CONTRACT DOCUMENTS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE, WORKERS AND OTHER PERSONS DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO, MEANS AND METHODS, BRACING, SHORING, FORMS, SCAFFOLDING, GUYING OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING DEMOLITION/CONSTRUCTION. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER OR STRUCTURAL OBSERVERS SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.

- TYPICAL DETAILS AND NOTES ON STANDARD SO SHEETS SHALL OTHERWISE APPLY UNLESS SPECIFICALLY SHOWN OR NOTED, CONSTRUCTION DETAILS NOT FULLY SHOWN OR NOTED SHALL BE SIMILAR TO DETAILS SHOWN FOR SIMILIAR CONDITIONS. ALL WORK, MATERIALS AND CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES, REGULATIONS AND SAFETY REQUIREMENTS.

- FOR CLARITY, ALL OPENINGS MAY NOT BE SHOWN ON DRAWINGS. SEE ALSO ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING PLANS. ALL OPENINGS AND PENETRATIONS SHALL BE LOCATED AND VERIFIED BY ALL TRADES FROM DRAWINGS MADE BY THEM. CONTRACTOR SHALL NOT PROCEED WITH ANY WORK SHOWN ON DRAWINGS IF IN CONFLICT UNTIL RECEIVING CLARIFICATION FROM ARCHITECT. FOR FRAMING AT OPENINGS, SEE TYPICAL STRUCTURAL DETAILS.

- ALL DIMENSIONS AND ELEVATIONS SHOWN ON STRUCTURAL DRAWINGS SHALL BE VERIFIED WITH ARCHITECTURAL DRAWINGS. RESOLVE ALL DISCREPANCIES WITH ARCHITECT PRIOR TO START OF CONSTRUCTION.

- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, CONDITIONS AND ELEVATIONS AT THE JOB SITE DURING CONSTRUCTION AND BRING ANY DISCREPANCIES TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK INVOLVED.

- NO STRUCTURAL CHANGE FROM THE APPROVED PLANS AND SPECIFICATIONS SHALL BE MADE IN THE FIELD UNLESS WRITTEN APPROVAL IS OBTAINED PRIOR TO MAKING SUCH CHANGE. CHANGES WITHOUT THE WRITTEN APPROVAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONDITION SHALL BE REPAIRED OR REPLACED AS DIRECTED.

DO NOT SCALE DRAWINGS

- THE MECHANICAL, ELECTRICAL, PLUMBING AND CONCRETE CONTRACTORS SHALL COORDINATE INSTALLATION OF THE REQUIRED INSERTS WITH THE GENERAL CONTRACTOR. REFER TO MECHANICAL DRAWINGS FOR SUPPORT STRUCTURES AND INSERTS.

- THE MECHANICAL,ELECTRICAL AND PLUMBING CONTRACTORS SHALL FURNISH ALL NECESSARY STRUCTURES FOR MECHANICAL EQUIPMENT, HANGING DEVICES AND INSERTS FOR INSTALLATION OF EQUIPMENT, DUCTS, PIPING, CONDUIT ETC..

SUPPLEMENTARY NOTES

- CERTIFICATIONS:

  REINFORCING OR THREADED RODS DRILLED AND EPOXIED INTO CONCRETE AS DETAILED OR NOTED ON THE CONSTRUCTION DOCUMENTS SHALL BE ONE OF THE FOLLOWING OR APPROVED EQUIVALENT:

REPORT#	PRODUCT	CURRENT REPORT	RE-EVALUATION DATE:
ESR #3187	HILTI HY--200	MAY 2021	MARCH 2022
ER #2024	DEWALT POWER DRIVEN FASTENERS	SEPT. 2021	SEPT. 2022
ESR #4057	DEWALT POWER DRIVEN FASTENERS CEILING CLIP AND SILL PLATE ANCHORAGES	APRIL 2021	APRIL 2022

  INSTALLATION OF EPOXIED DOWELS SHALL FOLLOW THE STRICT RECOMMENDATIONS OF THE MANUFACTURER AND THE APPLICABLE ER REPORT. WHERE SPALLING IS ANTICIPATED DUE TO INSUFFICIENT EDGE DISTANCE, USE THREADED ANCHOR ROD EPOXIED INTO DRILLED HOLE. CONTRACTOR SHALL HAVE ER REPORT ON-SITE DURING ALL INSTALLATIONS. THE CONTRACTOR SHALL USE THE LATEST REPORT FOR THE TIME OF INSTALLATION (FIRST OCCURENCE) BUT SHALL UTILIZE THE SAME PARTICULAR REPORT FOR THE DURATION OF THE PROJECT.

  EXPANSION BOLTS DRILLED AND INSTALLED INTO CONCRETE AS DETAILED OR NOTED ON THE CONSTRUCTION. DOCUMENTS SHALL BE ONE OF THE FOLLOWING OR APPROVED EQUIVALENT:

REPORT#	PRODUCT	CURRENT REPORT	RE-EVALUATION DATE:
ESR #1917	HILTI KWIK--BOLT TZ	MAY 2021	MAY 2022
ESR #3772	ITW REDHEAD TRUBOLT	DEC 2020	OCT. 2020
ESR #3260	DEWALT/POWERS POWER--BOLT	NOV 2020	NOV. 2020
ESR #1396	SIMPSON STRONG TIE WEDGE--ALL	MAR 2021	MARCH 2021
ESR #2024	DEWALT POWER DRIVEN FASTENERS CEILING CLIP AND SILL PLATE ANCHORAGES	APRIL 2021	APRIL 2022

  INSTALLATION OF EXPANSION BOLTS SHALL FOLLOW THE STRICT RECOMMENDATION OF THE MANUFACTURER AND THE APPLICABLE ICBO-ER REPORT. CONTRACTOR SHALL HAVE ER REPORT ON-SITE DURING ALL INSTALLATIONS. THE CONTRACTOR SHALL USE THE LATEST REPORT FOR THE TIME OF INSTALLATION (FIRST OCCURRENCE) BUT SHALL UTILIZE THE SAME PARTICULAR REPORT FOR THE DURATION OF THE PROJECT.

- MISCELLANEOUS:

  FOR STEEL CONNECTIONS SEE CONSTRUCTION DOCUMENTS. IF NOT SHOWN OR NOTED, MINIMUM CONNECTIONS TO BE INCLUDED SHALL BE TWO 3/4" DIAMETER BOLTS OR 1/4" FILLET WELD 4" LONG USING 1/4" CONNECTION MATERIAL AND DETAILED TO MINIMIZE BENDING IN CONNECTION.. PROCEED AFTER CLARIFICATION THROUGH SHOP DRAWING SUBMITTAL.

@---------- AT
A.B.---------- ANCHOR BOLT
APA ---------- AMERICAN PLYWOOD ASSOCIATION
A.S.T.M. ----- AMERICAN SOCIETY OF TESTING MATERIALS
ARCH. -------- ARCHITECTURAL
ASD ---------- ALLOWABLE STRESS DESIGN
BLDG --------- BUILDING
BLK. ---------- BLOCK
BM. ---------- BM
BN. ---------- BOUNDARY NAILING
B.O. ---------- BOTTOM OF
BTM ---------- BOTTOM
BRG. --------- BEARING
BRK ---------- BRICK
C ---------- CHANNEL
CJ. ---------- CONTROL JOINT
CGJ. --------- CONSTRUCTION CONTROL JOINT
CLR ---------- CLEAR
CMU ---------- CONCRETE MASONRY UNIT
COL ---------- COLUMN
CONC. -------- CONCRETE
CONN. -------- CONNECTION
CONT. -------- CONTINUOUS
CORR --------- CORRIDOR
DBL ---------- DOUBLE
DTL ---------- DETAIL
DIA. --------- DIAMETER
DIM. --------- DIMENSION
DL ---------- DEAD LOAD
D.T. ---------- DOUBLE TEE / DRAIN TILE
DWL ---------- DOWEL
EA ---------- EACH
EF ---------- EACH FACE
EJ ---------- EXPANSION JOINT
EL ---------- ELEVATION
ELEV -------- ELEVATOR
E.N. -------- EDGE NAILING
E.S. -------- EDGE SCREW
EQ. --------- EQUAL
EW --------- EACH WAY
EXST. ------ EXISTING
EXP. -------- EXPANSION
F.D. --------- FLOOR DRAIN
FDN --------- FOUNDATION
FTG --------- FOOTING
FT ---------- FEET
GALV. ------ GALVANIZE
GA. --------- GAUGE
HK. --------- HOOK
HORIZ. ----- HORIZONTAL
HSS --------- HOLLOW STRUCTURAL SECTION
INT ---------- INTERIOR
JST ---------- JOIST
KLF ---------- KIPS PER LINEAR FOOT
KSI ---------- KIPS PER SQUARE INCH
LL ---------- LIVE LOAD
LLH ---------- LONG LEG HORIZONTAL
LLV ---------- LONG LEG VERTICAL
LONG. -------- LONGITUDINAL
LWC ---------- LIGHT WEIGHT CONCRETE
MANUF ------- MANUFACTURER
MAS ---------- MASONRY
MAX. --------- MAXIMUM
MIN. --------- MINIMUM
MISC. -------- MISCELLANEOUS
MTL ---------- METAL
M.O. --------- MECHANICAL OPENING
N. ---------- NORTH
NTS ---------- NOT TO SCALE
O.C. --------- ON CENTER
O.D. --------- OUTSIDE DIAMETER
O.F. --------- OUTSIDE FACE
O.H. --------- OVERHEAD
OPNG. -------- OPENING
ORIG. -------- ORIGINAL
P.C. ---------- PRECAST
PLF ---------- POUND PER LINEAR FOOT
PLWD --------- PLYWOOD
PSF ---------- POUNDS PER SQUARE FOOT
PSI ---------- POUNDS PER SQUARE INCH
R. OR RAD. --- RADIUS
REINF. ------- REINFORCING
REQ'D -------- REQUIRED
S.A. ---------- STUD ANCHOR
SCHED. ------ SCHEDULE
SHT. ---------- SHEET
SIM ---------- SIMILAR
S.J. ---------- STEEL JOIST
SL ---------- SNOW LOAD
SPA. --------- SPACING/ SPACES
SPECS. ------ SPECIFICATIONS
S.S. ---------- STAINLESS STEEL
STD ---------- STANDARD
STL ---------- STEEL
TEMP --------- TEMPORARY
T & B -------- TOP & BOTTOM
T & G -------- GROOVE
THK. --------- THICK/ THICKENED
T.O. ---------- TOP OF
TRANS. ------ TRANSVERSE
TS ---------- TUBE STEEL
TYP. --------- TYPICAL
U.O.N. ------ UNLESS OTHERWISE NOTED
VERT. -------- VERTICAL
WD ---------- WOOD
WL ---------- WIND LOAD
W/ ---------- WITH
W/O ---------- WITH OUT
WT. ---------- WEIGHT
WWF --------- WELDED WIRE FABRIC

DESIGN CRITERIA

GOVERNING CODES AND MANUALS :

1. INTERNATIONAL BUILDING CODE (IBC), 2015 EDITION
2. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
   - MANUAL OF STEEL CONSTRUCTION - 15 EDITION
   - SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL BUILDINGS - ASD - 2012 NASPEC (AISI S100-2012) FOR COLD FORM STEEL
   - SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS
   - CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES
3. AMERICAN CONCRETE INSTITUTE (AC1)
   - ACI 318-14, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - ACI 301-16, SPECIFICATIONS FOR STRUCTURAL CONCRETE
4. AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)
   - ASCE 7-10 MINUMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURE
5. NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS), 2015 EDITION
   - SPECIAL DESIGN PROVISIONS FOR WIND AND SEISMIC (SDPWS) - 2015

DESIGN LOADS

VERTICAL LOADINGS :

FLOOR DEAD LOADS:
- Attic Floor = 20 PSF

ROOF DEAD LOADS:
- Main Roof = 20 PSF

WALL DEAD LOADS:
- Exterior Wall = 17 PSF

LIVE LOADS:
- Floor Live Load
  - Attic with storage and Mechanical = 120 PSF
- Roof Live Load
  - Pitched, Flat or Curved = 20 PSF

SNOW LOADS :

Ground Snow Load	Pg =	10	PSF
Importance Factor	I =	1.00	
Snow Exposure Factor	Ce =	1.00	
Thermal Factor	Ct =	1.10	
Sloped-roof Factor	Cs =	1.00	

LATERAL LOADINGS :

WIND DESIGN DATA:

Ultimate Design Wind Speed	=	121 MPH
Nominal Design Wind Speed	=	93.73 MPH
Risk Category	=	II
Exposure Category	=	C
Enclosure Classif.	=	Enclosed Building
Internal pressure Coef.	=	0.18
Directionality (Kd)	=	0.85
Windward Wall Pressures (Max) - Perp. to Ridge	=	32.27 PSF (Unfactored Ultimate)
Windward Wall Pressures (Max) - Para. to Ridge	=	26.47 PSF (Unfactored Ultimate)
Components and Cladding (10 sq.ft. Area) :		
Max. Roof Uplift Pressure	=	-81.20 PSF (Unfactored Ultimate)
Max. Roof Positive Pressure	=	19.86 PSF (Unfactored Ultimate)
Max. Overhange Uplift Pressures	=	-108.07 PSF (Unfactored Ultimate)
Max. Wall Positive Inward Pressure	=	34.47 PSF (Unfactored Ultimate)
Max. Wall Positive Outward Pressure	=	-46.15 PSF (Unfactored Ultimate)
Max. Parapet Positive Inward Pressure	=	0.00 PSF (Unfactored Ultimate)
Max. Parapet Positive Outward Pressure	=	0.00 PSF (Unfactored Ultimate)

EARTHQUAKE DESIGN DATA:

Risk Category	=	II	
Importance Factor	=	1.00	
Mapped spectral response accelerations	Ss =	8.90	%g
	S1 =	4.70	%g
Site Class	=	D	
Spectral Response Coef.	Sds =	0.09	
	Sd1 =	0.0752	
Seismic Design Category	=	B	
Basic Structural System	=	Bearing Wall Systems	
Seismic Resisting System	=	Light frame (wood) walls with structural wood shear panels	
Design Base Shear	V =	0.015	x W
Seismic Response Coef.	Cs =	0.015	
Response Modification Factor	R =	6.5	
Analysis Procedure	=	Equivalent Lateral-Force Analysis	

SOILS REPORT :

ECS MID-ATLANTIC, LLC
#11861 DATED 4, 2022 (W/ EMAILED REVISIONS BY DAVID ANDERSON PE)

SYMBOLS

SECTION / ELEVATION
FIELD WELD
ELEVATION / TOP OF BRG.

$ STEPPED FOOTING
℄ CENTERLINE
PL PLATE
L ANGLE
ø DIAMETER

GENERAL SHOP DRAWING NOTES:

- THE STRUCTURAL SHOP DRAWING REVIEW IS INTENDED TO HELP THE ENGINEER VERIFY HIS DESIGN CONCEPT. THE REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND DOES NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE DESIGN DRAWINGS AND SPECIFICATIONS, WHICH HAVE PRIORITY OVER SHOP DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMED AND CORRELATED DIMENSIONS, FABRICATION PROCESSES, MEANS, METHODS, TECHNIQUES, SAFETY AND COORDINATION OF THE WORK WITH OTHER TRADES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK HIS OWN SHOP DRAWINGS AND THOSE OF HIS SUBCONTRACTORS.

- THE STRUCTURAL SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR PRIOR TO SUBMITTAL. THE SHOP DRAWINGS WILL BE RETURNED FOR RESUBMITTAL IF A CURSORY REVIEW SHOWS MAJOR ERRORS WHICH SHOULD HAVE BEEN FOUND BY THE CONTRACTOR'S REVIEW. ALL SHOP DRAWINGS SHALL INCLUDE PLAN LAYOUTS SHOWING LOCATIONS OF ITEMS DETAILED ON THE SHOP DRAWINGS. ANY CHANGES, SUBSTITUTIONS OR DEVIATIONS FROM THE CONTRACT DOCUMENTS SHALL BE CLOUDED ON SHOP DRAWINGS. ANY OF THE CHANGES WHICH ARE NOT CLOUDED OR FLAGGED BY SUBMITTING PARTIES, SHALL NOT BE CONSIDERED REVIEWED AFTER ENGINEER'S REVIEW UNLESS NOTED ACCORDINGLY. THE SUBMITTED SHOP DRAWINGS WILL BE REVIEWED BY THE ENGINEER OF RECORD IN A TIMELY MANNER, TYPICALLY TWO WEEKS IS STANDARD, ASSUMING ALL NECESSARY SHOP DRAWING SUBMITTAL CRITERIA HAVE BEEN MET AND ALL PERTINENT SHOP DRAWING DOCUMENTS REFLECT THE MOST CURRENT CONSTRUCTION DOCUMENTS IN SOME CASES THE SCALE WILL BE STIPULATED UPON RECEIPT OF A PARTICULAR SUBMITTAL PACKAGE. IN ALL CASES THIS REVIEW PERIOD IS EXCLUSIVE OF ARCHITECTURAL REVIEW AND SUBMITTAL PROCESSING.

- SHOP DRAWINGS SHALL BE CONSIDERED RECEIVED ON THE SAME DAY IF RECEIVED BY 2:00PM (ENGINEERES LOCAL TIME) ON THE DAYTRANSMITTED ELSE THAY SHALL BE CONSIDERED RECEIVED ON THE FIRST BUSINESS DAY FOLLOWING THE DAY TRANSMITTED (INCLUDING HOLIDAYS)

REQUIRED SHOP DRAWING SUBMITTALS

THE CONTRACTOR SHALL PREPARE AND SUBMIT COMPLETE SUBMITTALS FOR EACH OF THE HIGHLIGHTED (CHECK BOX FILLED IN) TO BE INCORPORATED INTO WORK:

DIVISON 03 -CONCRETE:
- ■ CONCRETE MIX DESIGN
- ■ CONCRETE REINFORCING LAYOUT

DIVISON 04 -MASONRY:
- ☐ MASONRY PRODUCT DATA
- ☐ MASONRY MORTAR MIX DESIGN
- ☐ MASONRY GROUT MIX DESIGN
- ☐ MASONRY LAYOUT WITH REINFORCING

DIVISON 05 -METALS:
- ☐ STRUCTURAL STEEL LAYOUT
- ☐ ENGINEERED METAL TRUSS LAYOUT
- ☐ PRE-ENGINEERED OPEN WEB JOIST LAYOUT
- ☐ LIGHT GAGE METAL LAYOUT

DIVISON 06 -WOOD AND COMPOSITE:
- ■ LUMBER PRODUCT DATA
- ☐ ENGINEERED LUMBER/TIMBER PRODUCT DATA
- ■ ENGINEERED WOOD JOIST LAYOUT
- ■ PRE-ENGINEERED WOOD TRUSS DESIGN LAYOUT

GENERAL STRUCTURAL SHEET INDEX (S00 SERIES)

THE FOLLOWING SHEET INDEX INDICATES GENERAL STRUCTURAL SHEETS (S00 SERIES SHEETS). THESE SHEETS ARE STANDARDIZED TO CORRESPOND TO ASSOCIATED CSI MASTER SPECIFICATION DIVISIONS AND WILL BE HIGHLIGHTED (CHECK BOX FILLED IN) IF INCLUDED IN THIS PROJECT SET.

DIVISON 01 -GENERAL:
- ■ S01.A GENERAL PROJECT NOTES, DRAWING CONVENTIONS, DESIGN CRITERIA AND SHEET INDEX
- ■ S01.B SPECIAL INSPECTION NOTES AND TABLES
- ☐ S01.C SPECIAL INSPECTION NOTES AND TABLES

DIVISON 03 -CONCRETE:
- ■ S03.A CONCRETE GENERAL NOTES AND DETAILS
- ■ S03.B CONCRETE SLAB-ON-GRADE REQUIREMENTS
- ☐ S03.C MISCELLANEOUS CONCRETE DETAILS

DIVISON 04 -MASONRY:
- ☐ S04.A MASONRY GENERAL NOTES, REINFORCING REQUIREMENTS AND LINTEL DIAGRAMS
- ☐ S04.B MASONRY DETAILS AND MASONRY VENEER REQUIREMENTS

DIVISON 05 -METALS:
- ☐ S05.A STRUCTURAL STEEL GENERAL NOTES AND DETAILS
- ☐ S05.B STRUCTURAL METAL DECK GENERAL NOTES AND DETAILS
- ☐ S05.C MOMENT RESISTING FRAMES
- ☐ S05.D LIGHT GAGE METAL FRAMING GENERAL NOTES AND DETAILS
- ☐ S05.E GENERAL SHEARWALL SCHEDULES (LIGHT GAGE METAL STUD FRAMING)

DIVISON 06 -WOOD AND COMPOSITES:
- ■ S06.A CARPENTRY GENERAL NOTES
- ■ S06.B CARPENTRY GENERAL DETAILS
- ■ S06.C CARPENTRY GENERAL DETAILS (2)
- ☐ S06.D WOOD STAIR AND SHAFT ENCLOSURE DETAILS
- ☐ S06.E GENERAL SHEARWALL SCHEDULES (WOOD STUD FRAMING)

DIVISON 13 -SPECIAL CONSTRUCTION:
- ☐ S13.A SPECIAL DETAILS

DIVISON 31 -EARTHWORK:
- ■ S31.A EARTHWORK GENERAL NOTES AND DETAILS

DIVISON 32 -EXTERIOR IMPROVEMENTS:
- ☐ S32.A EXTERIOR DETAILS

STRUCTURAL PLAN SHEET INDEX

S100	FOUNDATION AND CONTROL JOINT PLAN
S200	FLOOR FRAMING PLAN
S300	ROOF FRAMING PLAN
S400	FOUNDATION SECTIONS
S500	ROOF /FLOOR FRAMING SECTIONS
S501	ROOF /FLOOR FRAMING SECTIONS (2)
SW0.1	SHEARWALL SCHEDULES
SW0.2	SHEARWALL ELEV. AND FRAMING DETAILS
SW1.0	ROOF TO FOUNDATION SHEARWALL PLAN

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GENERAL PROJECT NOTES

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SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

TABLE 1908 ITEM	VERIFICATION AND INSPECTION TASK	CONTINUOUS SPECIAL INSPECTION	PERIODICAL SPECIAL INSPECTION	REFERENCE STANDARD	IBC REFERENCE
1	INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	----	X	AISC 318 CH. 20, 25.2, 25.3, 26.5.1-26.5.3	1908.4
2	REINFORCING BAR WELDING:				
2 a	VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706	----	X	PER AWS D1.4 ACI 318: 26.5.4	----
2 b	INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"	----	X		
2 c	INSPECT ALL OTHER WELDS	X	----		
3	INSPECT ANCHORS CAST IN CONCRETE	----	X	ACI 318: 17.8.2	----
4	INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS:				
4 a	ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	X	----	ACI 318: 17.8.2.4	----
4 b	MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.A.	----	X	ACI 318: 17.8.2.4	----
5	VERIFY USE OF REQUIRED DESIGN MIX.	----	X	AISC 318 CH. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
6	PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	----	ASTM C 172, ASTM C 31, ACI 318: 26.4.5, 26.12	1908.10
7	INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	----	AISC 318: 26.4.5	1908.6, 1908.7, 1908.8
8	VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	----	X	AISC 318: 26.4.7-26.4.9	1908.9
9	INSPECT PRESTRESSED CONCRETE FOR:				
9 a	APPLICATION OF PRESTRESSING FORCES.	X	----	ACI 318: 26.9.2.1	----
9 b	GROUTING OF BONDED PRESTRESSING TENDONS.	X	----	ACI 318: 26.9.2.3	----
10	INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	----	X	ACI 318: CH. 26.9.2.1	----
11	VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST- TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	----	X	AISC 318: 26.10.2	1908.9
12	INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	----	X	ACI 318: CH 26.10.1 (b)	----

SPECIAL INSPECTIONS AND TESTS OF SOILS

TABLE 1705.6 ITEM	VERIFICATION AND INSPECTION TASK	FEQUENCY OF INSPECTION		REFERENCE FOR CRITERIA
		CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED	IBC SECTION
1	VERIFY MATERIAL BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	----	X	1705.6
2	VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	----	X	1705.6
3	PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	----	X	1705.6
4	VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	----	1705.6
5	PRIOR TO PLACEMENT OF COMPACTED FILL, VERIFY SUBGRADE AND VERIFY THAT THE SITE HAS BEEN PREPARED PROPERLY	X	----	1705.6

STATEMENT OF STRUCTURAL SPECIAL INSPECTIONS PER IBC 2015

1. SPECIAL INSPECTIONS / TESTING -

   SPECIAL STRUCTURAL INSPECTIONS" ARE NOT TO BE CONFUSED WITH, NOR RELIEVE THE OWNER OF OWNER'S AGENT FROM THE JURISDICTION BUILDING DEPARTMENT INSPECTIONS REQUIRED BY IBC SECTION 110. SPECIAL INSPECTIONS DOR NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE CONTRACT DOCUMENTS. MEANS AND METHODS AND JOBSITE SAFETY ARE SOLELEY THE RESPONSIBILITY OF THE CONTRACTOR. SEE SPECIFICATIONS FOR ADDITIONAL TESTING REQUIREMENTS.

2. REPORTING FOR SPECIAL INSPECTION -

   SPECIAL INSPECTION AND TESTING REPORTS SHALL BE COMPLETED AND DISTRIBUTED ON A WEEKLY BASIS. REPORT DEFICIENCIES THAT HAVE NOT BEEN RESOLVED IMMEDIATELY. PROVIDE COPIES OF REPORTS TO: CONTRACTOR, OWNER, ARCHITECT AND STRUCTURAL ENGINEER OF RECORD. SPECIAL INSPECTOR TO KEEP A NON-COMPLIANT LIST DOCUMENTING ITEMS INSPECTED NOT MEETING APPROVED CONSTRUCTION DOCUMENTS AND WHEN /HOW RESOLVED

3. REFER TO IBC SECTION 1705 AND ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING CONSTRUCTION DOCUMENTS FOR ADDITIONAL NON-STRUCTURAL SPECIAL INSPECTION ITEMS.

4. ANY FABRICATOR NEEDS TO BE APPROVED BY THE JURISDICTION BUILDING DEPARTMENT OR BE CERTIFIED BY AN INDUSTRY RECOGNIZED AGENCY QUALIFIED FOR SUCH CERTIFICATION. CERTIFICATION OF FABRICATORS ARE TO BE PROVIDED TO THE STRUCTURAL ENGINEER . THE SPECIAL INSPECTION ITEMS CONTAINED HEREIN ARE REQUIRED FOR ALL NON-CERTIFIED FABRICATORS.

5. DEFINITION OF "PERIODIC" AND "CONTINUOUS" SPECIAL INSPECTIONS:
   - CONTINUOUS: THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED.
   - PERIODIC: THE PART-TIME OF INTERMITTEMT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF THE WORK.
   - WHERE "PERIODIC" SPECIAL INSPECTION IS REQUIRED, "PART-TIME" OR "INTERMITTENT" MEANS THAT INSPECTION OF THE TASK NEED TO BE PERFORMED FROM TIME TO TIME DURING THE PROGRESS OF THE TASK. THE PERIOD OF TIME BETWEEN INSPECTIONS VARIES GREATLY FOR DIFFERENT TYPES FO WORK DEPENDING ON THE TYPE OF INSPECTION DONE.
   - THE PERIOD OF TIME BETWEEN INSPECTION ALSO DEPENDS ON THE PACE OF CONSTRUCTION, THE NUMBER OF WORKERS, AND THE QUALITY OF WORKMANSHIP, AND OTHER FACTORS.
   - IT IS THE RESPONSIBILITY OF THE SPECIAL INSPECTOR TO PROVIDE INSPECTIONS AT AN APPROPRIATE FREQUENCY AND AT APPROPRIATE TIMES DURING CONSTRUCTION. THE INSPECTOR MUST HAVE ADEQUATE EXPERIENCE AND EXHIBIT GOOD JUDGEMENT IN DETERMINING THE FREQUENCY AND TIMING OF INSPECTIONS.

GRAPHIC CONVENTIONS

TABLE ITEM	VERIFICATION AND INSPECTION TASK
1	THIS CELL WITHOUT SHADE - ITEM IS NOT SCHEDULED FOR INCORPORATION INTO THE WORK
2	THIS CELL WITH SHADE - ITEM IS TO BE INCORPORATED INTO THE WORK

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SPECIAL INSPECTION NOTES & TABLES

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CONCRETE:

PRODUCT REQUIREMENTS:

- ALL HARDROCK CONCRETE SHALL BE OF REGULAR WEIGHT OF 145 POUNDS PER CUBIC FOOT.
- AGGREGATE SIZE SHALL CONFORM TO ASTM C33.
- CONCRETE GROUT SHALL BE NON-SHRINKING WITH SUFFICIENT WATER TO ALLOW POURING. ULTIMATE COMPRESSIVE STRENGTH (Fc) AT (28) DAYS SHALL BE EQUAL TO 4000 PSI (MIN).
- ADMIXTURES TO BE INCORPORATED IN CASE-BY CASE-BASIS, REFER TO TABLE C-1

EXECUTION REQUIREMENTS:

- CONTRACTOR SHALL COORDINATE PLACEMENT OF ALL OPENINGS, CURBS, DOWELS, SLEEVES, CONDUITS, BOLTS AND EMBEDS REQUIRED WITH MECH., ELC., AND EQUIPMENT MANUFACTURER'S PRIOR TO PLACEMENT.
- REFER TO SHEET S03B FOR CONTROL/CONSTRUCTION AND ISOLATION JOINT DETAILS.
- NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN CONCRETE.
- ALL ITEMS TO BE CAST IN CONCRETE SUCH AS REINFORCING, DOWELS, BOLTS, ANCHORS, PIPES, SLEEVES ETC. SHALL BE SECURELY POSITIONED IN THE FORMS BEFORE PLACING THE CONCRETE.
- REMOVE ALL DEBRIS FROM FORMS BEFORE POURING.
- NO MORE THAN 90 MINUTES SHALL ELAPSE BETWEEN CONCRETE BATCHING AND CONCRETE PLACEMENT UNLESS APPROVED BY TESTING AGENCY. CONCRETE SHALL BE PLACED WITHIN 15 MINUTES AFTER DISCHARGE.
- ALL CONCRETE TESTS INCLUDING AIR CONTENT, SLUMP, AND TEST CYLINDERS SHALL BE TAKEN AT THE POINT OF DISCHARGE AND FROM THE DISCHARGE END OF PUMP HOSE WHEN CONCRETE IS PUMPED.
- ONE GRADE OF CONCRETE SHALL BE POURED AT THE JOB SITE AT ANY ONE TIME.
- CONCRETE SHALL NOT BE DROPPED THROUGH REINFORCING STEEL SO AS TO CAUSE SEGREGATION OF AGGREGATES. USE HOPPERS, CHUTES OR TRUNKS OF VARIOUS LENGTHS SO THAT THE FREE UNCONFINED FALL OF CONCRETE SHALL NOT EXCEED (5) FEET, AND A SUFFICIENT NUMBER SHALL BE USED TO ENSURE THE CONCRETE IS KEPT LEVEL AT ALL TIMES.
- PROTECT FRESHLY POURED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE COLD AND HOT TEMPERATURES. START CURING AS SOON AS FREE WATER HAS DISAPPEARED FROM THE CONCRETE SURFACE AFTER PLACING AND FINISHING. ALL CURING PROCEDURES TO FOLLOW ACI 308R-16.
- PROTECT CONCRETE FROM DAMAGE AND REDUCED STRENGTH CAUSED BY FROST, FREEZING ACTIONS AND LOW TEMPERATURES IN COMPLIANCE WITH ACI 306R-16.
- PROTECT CONCRETE FROM DAMAGE AND REDUCED STRENGTH CAUSED BY HIGH TEMPERATURES IN COMPLIANCE WITH ACI 305R-10. UNIFORMLY COOL WATER AND AGGREGATES BEFORE MIXING TO OBTAIN A CONCRETE MIXTURE TEMPERATURE OF NOT GREATER THAN 90 DEGREES FAHRENHEIT AT POINT OF PLACEMENT.
- CURING: PROVIDE 7-DAY MINIMUM CONTINUOUS CURE ON ALL CONCRETE SURFACES AS SPECIFIED.

CONCRETE REINFORCING:

PRODUCT REQUIREMENTS:

- ALL REINFORCING STEEL SHALL BE NEW STOCK DEFORMED BARS CONFORMING TO ASTM A615 AS FOLLOWS:
  #3 BARS..... GRADE 40
  #4 & LARGER BARS..... GRADE 60
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

EXECUTION REQUIREMENTS:

- FABRICATION AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH CRSI MSP-1 "MANUAL OF STANDARD PRACTICE" AND ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE."
- ALL BENDS SHALL BE MADE COLD.
- ALL WALLS AND COLUMNS SHALL BE DOWELED INTO FOOTING WITH BARS OF THE SAME SIZE AND SPACING AS THE BARS ABOVE (U.O.N. ON PLANS).
- ALL REINFORCING STEEL SHALL BE SECURELY WIRED AND PROPERLY SUPPORTED ABOVE THE GROUND AND AWAY FROM FORMS.
- PROVIDE CORNER BARS THE SAME SIZE AND SPACING AS THE HORIZ. REINF. AT THE CORNERS AND INTERSECTION OF ALL WALLS, BEAMS AND FOOTINGS (U.O.N. ON PLANS).
- CONTINUOUS FOOTING REINFORCEMENT SHALL HAVE A MINIMUM LAP PER SCHEDULE AND THE SPLICES IN ADJACENT BARS SHALL NOT BE LESS THAN (3) FEET APART.
- ALL DIMENSIONS SHOWING THE LOCATION OF REINFORCING STEEL NOT NOTED AS "CLEAR" ARE TO CENTER OF STEEL. MINIMUM REBAR COVER FOR CONCRETE SHALL BE AS OUTLINED IN TABLE CR-1
- TOLERANCES FOR LONGITUDINAL LOCATION OF BENDS AND ENDS OF REINFORCEMENT SHALL BE PLUS OR MINUS (2) INCHES EXCEPT AT DIS-CONTINUOUS ENDS OF MEMBERS WHERE TOLERANCES SHALL BE PLUS OR MINUS 1/2 INCH.
- REINFORCING FOR CONCRETE POURED ON GRADE SHALL BE SUPPORTED BY STEEL CHAIRS.

TABLE C-1 ADMIXTURES

ADMIXTURE TYPE	DESCTRIPTION
ACCELERATORS (ASTM C494)	ACCELERATING SETTING AND EARLY-STRENGTH DEVELOPMENT.
AIR DETRAINERS	DECREASE AIR CONTENT.
AIR-ENTRAINING ADMIXTURES (ASTM C260)	IMPROVE DURABILITY IN FREEZE-THAW, DEICER, SULFATE AND ALKALI-REACTIVE ENVIRONMENTS; IMPROVE WORKABILITY BY INTRODUCING AIR BUBBLES IN CONCRETE.
ALKALI-AGGREGATE REACTIVITY INHIBITORS	REDUCE ALKALI-AGGREGATE REACTIVITY EXPANSION.
COLORING ADMIXTURES (ASTM C979)	COLORED CONCRETE.
CORROSION INHIBITORS (ASTM C1582)	REDUCE STEEL CORROSION ACTIVITY IN A CHLORIDE-LADEN ENVIRONMENT.
HYDRATION CONTROL ADMIXTURES	SUSPEND AND REACTIVATE CEMENT HYDRATION WITH STABILIZER AND ACTIVATOR.
RETARDING ADMIXTURES (ASTM C494 AND AASHTO M 194, TYPE B)	RETARD SETTING TIME.
SHRINKAGE REDUCERS	REDUCE DRYING SHRINKAGE.
SUPERPLASTICIZERS (ASTM C1017, TYPE 1)	INCREASE FLOWABILITY OF CONCRETE; REDUCE WATER-CEMENT RATIO.
WATER REDUCER (ASTM C494 AND AASHTO M 194, TYPE A)	REDUCE WATER CONTENT AT LEAST 5%.
SYNTHETIC MICRO FIBERS	REDUCE PLASTIC AND CRAZING CRACKS

TABLE CR-1
REINFORCING STEEL CLEARANCES

CLEARANCE FROM FINISHED FACE	MINIMUM COVER	TOLERANCES + OR -
CAST AGAINST PERM. EXPOSED TO EARTH	3"	3/8"
EXPOSED TO EARTH OR WEATHER		
NO. 5 AND SMALLER BARS	1-1/2"	3/8"
NO. 6 AND LARGER BARS	2"	3/8"
NOT EXPOSED TO EARTH OR WEATHER SLABS, WALLS, JOISTS:		
NO. 11 AND SMALLER BARS	3/4"	3/8"
NO. 14 AND NO. 18 BARS	1-1/2"	3/8"

TABLE CQ-1
(CONCRETE QUALITY (ACI 318-08))
CEMENT TYPE (ASTM C150)

USE	TYPE OF PORTLAND CEMENT	DESCTRIPTION
■	TYPE I	GENERAL-PURPOSE FOR PAVEMENTS, FLOORS, REINF. CONC. BUILDINGS, BRIDGES, TANKS, RESERVOIRS, PIPE, MASONRY UNITS AND PRE-CAST CONC. PRODUCTS.
■	TYPE IA (EXTERIOR)	TYPE I CEMENT W/ AIR ENTRAINING.
☐	TYPE II	USED FOR MODERATE SULFATE ATTACK.
☐	TYPE IIA	TYPE II CEMENT W/ AIR ENTRAINING.
☐	TYPE III	HIGH EARLY STRENGTH (ONE WEEK OR LESS).
☐	TYPE IIIA	TYPE III W/ AIR ENTRAINING.
☐	TYPE IV	USED WHERE RATE/AMOUNT OF HEAT GENERATED FROM HYDRATION MUST BE BE MINIMIZED.
☐	TYPE V	USED FOR SEVERE SULFATE ATTACK.

TABLE CQ-2
COMPRESSIVE STRENGTH AND WATER-CEMENT RATIO (BY MASS)(ACI 211.1 & 211.3)

USE	COMPRESSIVE STRENGTH @ 28 DAYS (PSI)	EXPOSURE a, b CATEGORY	WATER-CEMENT RATIOS	
			NON-AIR ENTRAINED	AIR ENTRAINING
☐	7000	F0, S0, P0, C0	0.33	-
☐	6000		0.41	0.32
☐	5000		0.48	0.40
☐	4000		0.57	0.48
☐	3000		0.68	0.59
☐	2000		0.82	0.74
■	4000	P1, S1	0.50	-
☐	4500	F1, F2, F3, S2	0.45	-
☐	5000	C2, S3	0.40	-

FOOTNOTES:

(a) EXPOSURE CATEGORY

CATEGORY	DESCTRIPTION
F0, S0, P0, C0	CONCRETE PROTECTED FROM EXPOSURE TO FREEZING AND THAWING, APPLICATION OF DEICING CHEMICALS, OR AGGRESSIVE SUBSTANCES.
P1	CONCRETE INTENDED TO HAVE LOW PERMEABILITY WHEN EXPOSED TO WATER.
F1, F2, F3	CONCRETE EXPOSED TO FREEZING AND THAWING IN A MOIST CONDITION OR DEICERS.
C2	FOR CORROSION PROTECTION FOR REINFORCED CONCRETE EXPOSED TO CHLORIDES FROM DEICING SALTS, SALT WATER, BRACKISH WATER, SEAWATER, OR SPRAY FROM THESE SOURCES.

(b) * SULFATE EXPOSURE CLASS

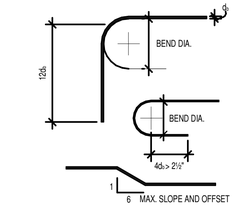
EXPOSURE CLASS	SULFATE (SO4) IN SOIL, % BY MASS	SULFATE (SO4) IN WATER, PPM
S0 NEGLIBIBLE	LESS THAN 0.10	LESS THAN 150
S1 MODERATE	0.10 TO 0.20	150 TO 1500
S2 SEVERE	0.20 TO 2.00	1500 TO 10,000
S3 VERY SEVERE	OVER 2.00	OVER 10,000

TABLE CQ-3
AIR CONTENT (ACI 211.1) (%)

USE	EXPOSURE (a)	AGGREGATE SIZE (IN)							
		3/8	1/2	3/4	1	1½	2	3	6
■	MILD	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0
☐	MODERATE (F1)	6.0	5.5	5.0	4.5	4.5	3.5	3.5	3.0
☐	SEVERE (F2 & F3)	7.5	7.0	6.0	6.0	5.5	5.0	4.5	4.0

TABLE CQ-4
SLUMP (ACI 211.1)

USE	TYPE OF CONSTRUCTION	SLUMP (IN)	
		MAXIMUM	MINIMUM
■	REINFORCED FOUNDATION WALLS AND FOOTINGS	6	3
☐	UNREINFORCED FOOTINGS, CAISSONS, AND SUB-STRUCTURE WALLS	4	3
☐	REINFORCED SLABS, BEAMS, AND WALLS	6	4.5
☐	BUILDING COLUMNS	6	4
☐	PAVEMENTS	3	1
☐	HEAVY MASS CONSTRUCTION	3	1
☐	BRIDGE DECKS	4	3
■	SIDEWALK, DRIVEWAY, AND SLABS ON GROUND	5	3



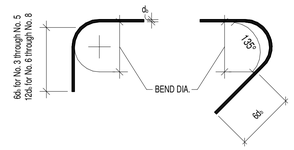


TABLE CR-2
STANDARD HOOKS FOR PRIMARY REINFORCEMENT

BAR SIZE NUMBER	MINIMUM FINISHED BEND DIAMETER (a)
3 THROUGH 8	6 d_b
9, 10, 11	8 d_b
14 AND 18	10 d_b
FOOTNOTES: (a) MEASURED ON INSIDE OF BAR	

TABLE CR-3
STANDARD HOOKS FOR STIRRUPS & TIE REINFORCEMENT

BAR SIZE NUMBER	MINIMUM FINISHED BEND DIAMETER (a)
3 THROUGH 5	4 d_b
6 THROUGH 8	6 d_b
FOOTNOTES: (a) MEASURED ON INSIDE OF BAR	

TABLE CR-4
STIRRUP SIZE/SPACING - TYPICAL (U.O.N.)

LATERAL TIES	STIRRUP SIZE	SPACING
MAIN REINFORCEMENT (d_b)		
< #10	# 3	LESSER OF: a. 16 d_b b. 48 x STIRRUP DIA. c. LEAST COL./BM. DIM
> #10	# 4	
SPIRAL TIES		
< #10	# 3	MAXIMUM SPACING = 3"
> #10	# 4	

1 S03.A STANDARD HOOK, STIRRUPS AND TIE REINFORCING DETAILS
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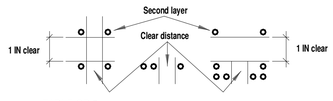
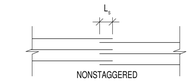


TABLE CR-5
CLEAR DISTANCES FOR REINF.

REINFORCEMENT TYPE	MEMBER TYPE	CLEAR DISTANCE
DEFORMED BARS	BEAMS / WALLS	(a) d_b > 1 INCH
	COLUMNS	(b) 1.5 d_b > 1-1/2 INCH
FOOTNOTES: (a) IF $d_b \leq$ 1 INCH, USE 1 INCH; OTHERWISE, USE d_b (b) IF $d_b \leq$ 1-1/2 INCHES, USE 1-1/2 INCHES; OTHERWISE, USE 1.5 d_b		

6 S03.A REINFORCING CLEARANCE DETAILS
NTS



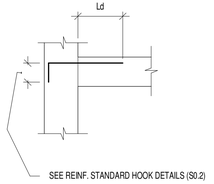


TABLE CR-6
LAP SPLICE SCHEDULE (L_S VALUES (IN))

BAR SIZE	f'_c(psi)								
	2000	3000	4000	5000	6000	7000	8000	9000	10000
#3	35	29	27	27	27	27	27	27	27
#4	47	38	33	30	27	27	27	27	27
#5	59	48	42	37	34	31	29	28	27
#6	70	58	50	45	41	38	35	33	32
#7	82	67	58	52	47	44	41	39	37
#8	94	77	66	59	54	50	47	44	42
#9	106	86	75	67	61	57	53	50	47
#10	119	97	84	75	69	64	60	56	53

TABLE CR-7
DEVELOPMENT LENGTHS SCHEDULE
(L_d VALUES (IN))

BAR SIZE	f'_c (psi)								
	2000	3000	4000	5000	6000	7000	8000	9000	10000
#3	27	22	21	21	21	21	21	21	21
#4	36	29	26	23	21	21	21	21	21
#5	45	37	32	29	26	24	23	21	21
#6	54	44	38	34	31	29	27	26	24
#7	63	52	45	40	36	34	32	30	28
#8	72	59	51	46	42	39	36	34	32
#9	81	67	58	52	47	44	41	38	36
#10	92	75	65	58	53	49	46	43	41

2 S03.A REINFORCING DEVELOPMENT LENGTHS AND SPLICES
NTS

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CONCRETE GENERAL NOTES AND DETAILS

REV.#	DATE	COMMENTS
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-	-	-
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REVISION: REVISION: REVISION: REVISION:

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
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CONCRETE SLAB-ON-GRADE REQUIREMENTS

GENERAL

1. SAW-CUT JOINTS AS SOON AS THE SLAB WILL SUPPORT THE WEIGHT OF THE SAW AND OPERATOR WITHOUT DISTURBING THE FINAL FINISH.
2. THE DEPTH OF THE SAW-CUT WHEN USING A WET CUT SAW SHALL BE 1/4 THE SLAB THICKNESS.
3. PROVIDE CONSTRUCTION JOINT AT THE END OF CONCRETE PLACEMENT FOR THE DAY. SEE DETAIL A (THIS SHEET).
4. SEE FOUNDATION AND/OR CONTROL JOINT PLAN FOR ADDITIONAL INFORMATION.
5. SEE GENERAL NOTE SHEET S0.2 FOR ADDITIONAL CONCRETE REQUIREMENTS.
6. CONTRACTOR TO FAMILIARIZE HIMSELF WITH SOILS REPORT FOR SUBGRADE PREPARATION.

DESIGN

THE FOLLOWING MINIMUM ALLOWABLE REINFORCING RATIO USED IN THE DESIGN IS AS FOLLOWS:
.1 % FOR WELDED WIRE FABRIC
.2 % FOR REINFORCING BARS
THIS MINIMUM REINFORCING RATIO IS FOR SHRINKAGE AND KEEPING RANDOM CRACKING TIGHT. IT ALSO ALLOWS FOR LONGER JOINT SPANS.

ALSO ALLOWS FOR LONGER JOINT SPANS.

CONTROL/CONTRACTION JOINT SPACING WITH MINIMUM REINFORCING IS BASED OF THE FOLLOWING
SUBGRADE DRAG FORMULA:

As = FLW/2Fs WHERE:

As	CROSS-SECTION AREA OF STEEL, IN SQUARE INCHES PER LINEAL FOOT OF SLAB WIDTH
F	COEFFICIENT OF SUBGRADE FRICTION. (DESIGNERS USE 1.5 OR 2.0 FOR PAVEMENTS; 1.5 IS RECOMMENDED FOR CONCRETE FLOORS ON GROUND.)
L	SLAB LENGTH (OR WIDTH IF APPROPRIATE) BETWEEN FREE ENDS, IN FEET. (A FREE END IS ANY JOINT FREE TO MOVE IN A HORIZONTAL PLANE.)
W	WEIGHT OF SLAB, IN POUNDS PER SQUARE FOOT. (FOR NORMAL-WEIGHT CONCRETE, DESIGNERS USE 12.5 POUNDS PER INCH OF FLOOR THICKNESS)
Fs	ALLOWABLE WORKING STRESS OF REINFORCEMENT, IN POUNDS PER SQUARE INCH. (THE WORKING STRESS OF STEEL IS USUALLY 0.67 TO 0.75 THE YIELD STRENGTH OF THE STEEL IN POUNDS PER SQUARE INCH.)

DEFINITIONS

ISOLATION JOINTS
ISOLATION JOINTS ARE PLACED WHEREVER COMPLETE SEPARATION BETWEEN THE FLOOR AND ADJOINING CONCRETE IS NEEDED TO ALLOW THEM TO MOVE INDEPENDENTLY WITHOUT DAMAGE. ISOLATION JOINTS PERMIT HORIZONTAL AND VERTICAL MOVEMENT BETWEEN THE ABUTTING FACES OF THE FLOOR SLAB AND OTHER PARTS OF THE BUILDING BECAUSE THERE IS NO KEYWAY, BOND OR MECHANICAL CONSTRUCTION ACROSS THE JOINT.

CONTROL/CONTRACTION JOINTS

CONTROL JOINTS (ALSO CALLED CONTRACTION JOINTS) ACT TO RELIEVE STRESS AND WITH PROPER SPACING (SEE CONTROL JOINT PLAN) THEY ELIMINATE THE CAUSE OF UNCONTROLLED RANDOM CRACKING. THEY ALLOW HORIZONTAL MOVEMENT OF THE SLAB. THE OBJECTIVE IS TO FORM A PLANE OF WEAKNESS IN THE SLAB SO THAT THE CRACK WILL OCCUR ALONG THAT LINE AND NOWHERE ELSE. AS SHOWN ON SECTIONS ON THIS SHEET ALL SLAB REINFORCING MUST BE DISCONTINUOUS THROUGH JOINT. LOAD TRANSFER ACROSS THE CONSTRUCTION JOINT IS PROVIDED BY USE OF DOWELS (A BOND BREAKER IS USED ON ONE END TO ALLOW HORIZONTAL MOVEMENT).

CONSTRUCTION JOINT
CONSTRUCTION JOINTS ARE STOPPING PLACES AND FORM THE EDGE OF EACH DAY'S WORK. THEY FREQUENTLY ALIGN WITH CONTROL/CONTRACTION JOINTS OR ISOLATION JOINTS. WHENEVER CONTINUOUS CONCRETE PLACEMENT WILL BE INTERRUPTED FOR 30 MINUTES OR MORE, A BONDED OR TIED CONSTRUCTION JOINT SHOULD BE FORMED AND DEFORMED REINFORCING BARS ADDED. IF THE CONSTRUCTION JOINT OCCURS WITHIN THE PANEL (I.E. BETWEEN SPECIFIED CONTROL/CONTRACTION JOINTS) ALL REINFORCING MUST CONTINUE THROUGH THE CONSTRUCTION JOINT.

VISIBLE CONDITIONS THAT MAY OCCUR DURING CONSTRUCTION RANDOM CRACKING

WHEN RANDOM CRACKING OCCURS ON A NEWLY PLACED SLAB, IT IS USUALLY RELATED TO IMPROPER TIMING OF JOINT SAWING. THE PURPOSE OF CUTTING THE SLAB IS TO INDUCE A CRACK BENEATH THE CUT.

RANDOM CRACKING

CONCRETE NEEDS TO GAIN ADEQUATE STRENGTH BEFORE HAVING JOINTS CUT INTO IT. IDEALLY, THE TENSILE STRENGTH HOLDS THE SLAB TOGETHER, THE SAWCUT NOTCH CREATES A REDUCED SLAB SECTION, WHICH INCREASES THE TENSILE STRESSING IN THE CONCRETE BELOW THE NOTCH. IN THE REDUCED SECTION, THE TENSILE STRESS IS OF THE GREATER THAN THE CONCRETE TENSILE STRENGTH. THUS A CRACK OCCURS BELOW THE NOTCH. THE CRACK AND SAWCUT COMBINE TO RELIEVE THE STRESSES AND THUS PREVENT UNWANTED RANDOM CRACKING. BUT NEW CONCRETE IS ALWAYS TRYING TO SHRINK. AS THE SAWBLADE CUTS A JOINT IN THE CONCRETE, THE SAWCUT WEAKENS THE CONCRETE SLAB. IF SAWCUTTING IS STARTED WHEN CONTRACTION STRESS (AS A RESULT OF CONCRETE SHRINKAGE) IS GREAT AND TENSILE STRENGTH IS NOT YET ADEQUATE TO RESIST IT, CRACKS CAN JUMP AHEAD OF THE BLADE DURING JOINT CUTTING.

IF COOLING WATER (USED WITH WET SAWING) HITS THE WARM SLAB, IT CAN BE A THERMAL SHOCK THAT ADDS TO THE POTENTIAL FOR RANDOM CRACKING AHEAD OF THE SAW BLADE.

TO AVERT RANDOM CRACKING, SAWCUT JOINTING MUST BE DONE BEFORE CONCRETE COOLING AND DRYING STARTS, BUT AFTER SOME (TENSILE) STRENGTH HAS DEVELOPED (7 HOURS MAXIMUM AFTER CONCRETE IS POURED). THE NOTCH INSTALLED BY SAWCUTTING SHOULD BE DEEP ENOUGH THAT THE CRACK OCCURS BELOW THE SAWCUT (1/4 OF THE SLAB THICKNESS IS SUFFICIENT).

BLEEDING AND SET RETARDING

EXCESSIVE BLEEDING THAT OCCURS AFTER CONCRETE PLACING, STRIKEOFF, AND BULLFLOATING CAN DELAY SUBSEQUENT FINISHING STEPS. IN MOST INSTANCES, THE CAUSE OF EXCESSIVE BLEEDING IS DUE TO ONE OF THE FOLLOWING:

- A WATER-CEMENT RATIO THAT IS TOO HIGH
- POOR AGGREGATE GRADATION
- SLOW SET TIMES
- AMBIENT CONDITIONS THAT HINDER SURFACE WATER EVAPORATION: LOW TEMPERATURES, HIGH HUMIDITY, OR LACK OF AIR MOVEMENT

BLISTERING AND DELAMINATIONS

BLISTERING IS THE CONVEX RAISING OF THE SURFACE MORTAR LAYER WHILE THE CONCRETE IS STILL PLASTIC. THE BLISTERS ARE ATTRIBUTED TO SEALING THE FLOOR SURFACE BEFORE ALL THE BLEEDWATER AND AIR HAVE ESCAPED.

SIMILAR TO BLISTERING, DELAMINATION OF SURFACE MORTAR CAN OCCUR DUE TO ENTRAPMENT OF BLEEDWATER AND AIR BELOW THE PREMATURELY SEALED MORTAR SURFACE. DELAMINATIONS AFFECT LARGER SURFACE AREAS THAN BLISTERS, AND ARE VERY DIFFICULT TO DETECT DURING FINISHING. THEY BECOME APPARENT AFTER CONCRETE SURFACE DRYING WHEN THE DELAMINATED AREA IS CRUSHED UNDER TRAFFIC. THE THICKNESS OF DELAMINATED MORTAR RANGES FROM ABOUT 3 MM TO 9MM (1/8 IN TO 3/8 IN). THE AFFECTED AREA CAN BE ANYWHERE FROM A FEW SQUARE CENTIMETERS (INCHES) TO A FEW SQUARE METERS (YARDS).

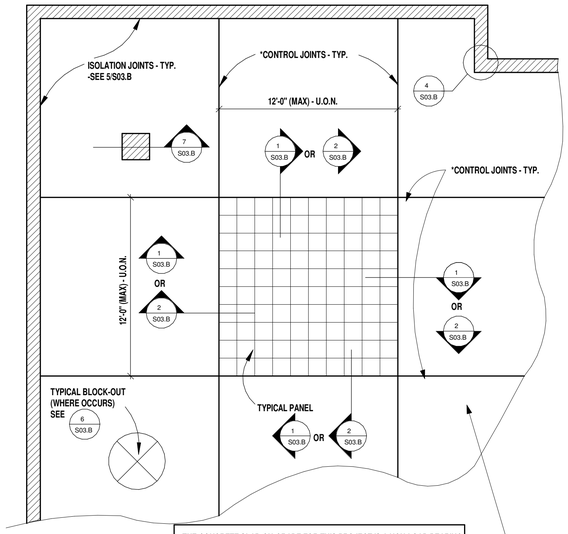
IF THE CONCRETE HAS STIFFENED FROM THE TOP DOWN, AS IT OFTEN DOES WHEN WIND SPEEDS ARE HIGHER, THERE IS A TENDENCY TO FINISH THE SLAB TOO SOON, BEFORE BLEEDING IS COMPLETE. FINISHING OPERATIONS PERFORMED WHILE THE UNDERLYING CONCRETE IS STILL SOFT (AND BLEEDING) WILL SEAL THE SLAB SURFACE, POTENTIALLY TRAPPING BLEEDWATER AND LEADING TO DELAMINATIONS.

PLASTIC SHRINKAGE CRACKING
PLASTIC SHRINKAGE CRACKING IS DUE TO CONCRETE AT THE SURFACE DRYING (AND SHRINKING) BEFORE INITIAL SET OF THE CONCRETE OCCURS. PLASTIC SHRINKAGE OCCURS DURING AND AFTER FINISHING, USUALLY WHEN THERE IS RAPID EVAPORATING OF BLEEDWATER. THE CONDITIONS THAT LEAD TO RAPID WATER EVAPORATION ARE LOW RELATIVE HUMIDITY, HIGH AIR TEMPERATURES, RAPID AIR MOVEMENT (WIND) ACROSS THE CONCRETE SURFACE, AND ELEVATED CONCRETE TEMPERATURES. UNDER THESE CONDITIONS THE CONCRETE SURFACE CAN CRUST OVER WHILE THE UNDERLYING CONCRETE IS STILL PLASTIC. AS PLASTIC SHRINKAGE CRACKS FORM, THEY START AT THE SURFACE AND EXTEND SOME DEPTH INTO THE UNHARDENED CONCRETE. FLOATING THE CONCRETE SLAB CAN REPAIR PLASTIC SHRINKAGE CRACKS, BUT ONLY IF DONE IMMEDIATELY AS THE CRACKS OCCUR.

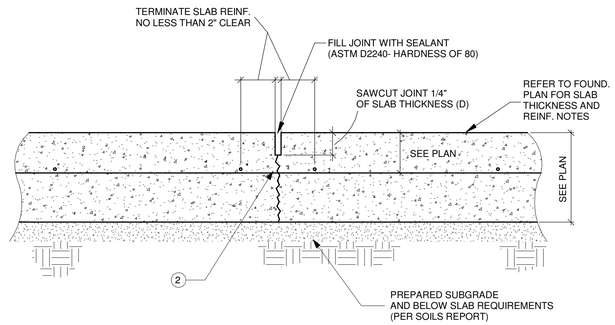
CRAZING
CRAZE CRACKS ARE FINE RANDOM CRACKS OF FISSURES IN A CONCRETE SURFACE. ON CONCRETE FLATWORK, THEY USUALLY EXTEND LESS AN 3 MM (1/4 IN) BELOW THE SURFACE. THE CRACKS OCCUR WITHIN THE PASTE-RICH SURFACE MORTAR AND GENERALLY PASS THROUGH THE PASTE AND NOT THROUGH AGGREGATE PARTICLES. IT IS TYPICAL FOR THE CRACKS TO FORM A MAP PATTERN. THE NARROW CRACKS ARE SO FINE THAT THEY ARE DIFFICULT TO SEE. IN MANY INSTANCES, THEY ARE ONLY VISIBLE DURING THE DRYING PHASE OF A WETTED SURFACE OR WHEN A TRANSLUCENT COATING IS INSTALLED. CRAZE CRACKS ARE ATTRIBUTED TO INADEQUATE CURING THAT LEADS TO CONCRETE SURFACE DRYING AND COOLING BEFORE THE MORTAR HAS GAINED SUFFICIENT STRENGTH. THESE ARE COSMETIC BLEMISHES THAT GENERALLY HAVE NO EFFECT ON THE
SERVICEABILITY OR DURABILITY OF THE FLOOR.

CURLING
WHEN THE EDGES AND CORNERS OF A FLOOR SLAB ON GROUND DISH UPWARD IN THE ABSENCE OF ANY LOADS OTHER THAN GRAVITY, THE SLAB IS SAID TO BE CURLING. IT IS USUALLY ATTRIBUTED TO DIFFERENCES IN MOISTURE CONTENT OR TEMPERATURE FROM TOP TO BOTTOM WITHIN THE SLAB. THESE TEMPERATURE AND MOISTURE GRADIENTS DEVELOP BETWEEN THE TOP AND BOTTOM SURFACE AS THE CONCRETE IN A FLOOR SLAB HARDENS. THE SLAB WILL CURL UP IF THE TOP IS TRYING AND COOLING (SHORTENING) WHILE THE BOTTOM REMAINS MOIST AND WARM. UNDER OPPOSITE
CONDITIONS, THE SLAB SHOULD THEORETICALLY CURL DOWN. DOWNWARD CURL AS SUCH, HOWEVER, DOES NOT OCCUR DUE TO SUBBASE RESTRAINT.

POPOUTS
A POPOUT IS A CONICAL GRADMENT THAT BREAKS OUT OF A CONCRETE SURFACE, LEAVING A HOLE, THE HOLE VARIES IN SIZE FROM 5MM (1/4 IN TO 2 IN), THOUGH LARGER POPOUTS ARE POSSIBLE. USUALLY, A FRACTURED AGGREGATE PARTICLE IS LOCATED AT THE BOTTOM OF THE HOLE. THE MATCHING PIECE OF THE FRACTURES PARTICLE ADHERES TO THE POINT OF THE POPOUT CONE. POPOUTS ARE CONSIDERED A COSMETIC DETRACTION AND GENERALLY DO NOT AFFECT THE SERVICE OF THE CONCRETE.



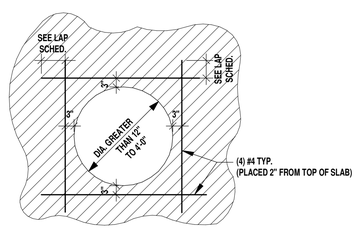
A S03.B TYPICAL JOINT LAYOUT PLAN
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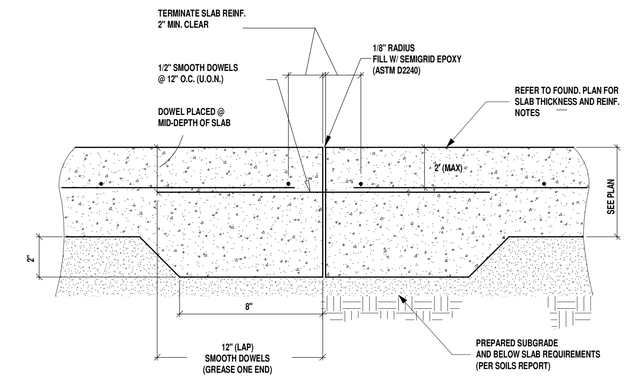
NOTES:

1. SAWCUT JOINT MUST OCCUR WITHIN 7 HOURS OF CONCRETE POUR.
2. CUT EVERY OTHER BAR @JOINT LOCATIONS TO PROVIDE A WEAK PLAN FOR INDUCED CRACKING.
3. SPACING OF JOINTS TO BE 12'-0" O.C. MAX EACH WAY (U.O.N.) ON PLAN
4. REFER TO CONTROL JOINT PLAN OR FOUNDATION PLAN FOR JOINT LOCATIONS.
5. REFER TO DEFINITIONS (THIS SHEET)

2 S03.B CONTROL/ CONTRACTION JOINT SECTION
NTS



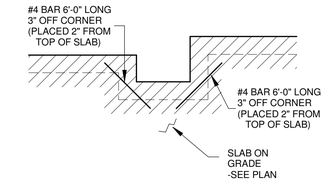
6 S03.B TYP REINFORCING AT ROUND OPENINGS AT CONC. SLAB-ON-GRADE
NTS



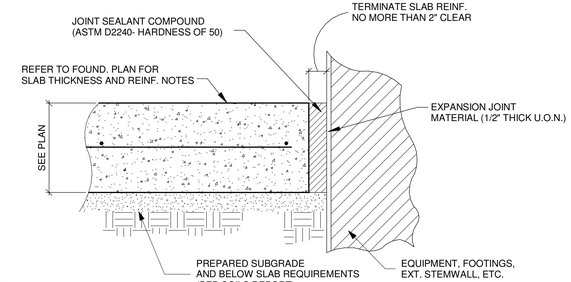
NOTES:

1. CONSTRUCTION JOINTS TO MATCH CONTROL JOINT LOCATIONS. IF NOT POSSIBLE AND LOCATED IN PANEL AREA, CONTINUE ALL REINFORCING THRU JOINT.
2. REFER TO DEFINITIONS (THIS SHEET)

1 S03.B CONSTRUCTION JOINT CONNECTION (TO OCCUR @CONTROL JOINT LOCATION)
NTS



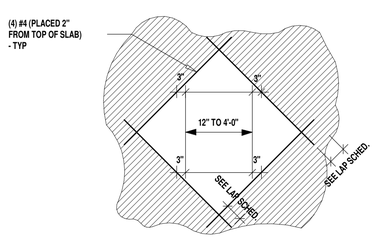
4 S03.B TYP. REINFORCING AT RE-ENTRANT CORNERS
NTS



NOTES:

1. EXPANSION JOINT MATERIAL TO BE MINIMUM 1/2" THICK (U.O.N.)
2. REFER TO DEFINITIONS (THIS SHEET)

5 S03.B ISOLATION/ EXPANSION JOINT SECTION
NTS



7 S03.B TYP, REINFORCING @SQUARE /RECTANGULAR OPENINGS AT CONC. SLAB-ON-GRADE
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CONCRETE SLAB-ON-GRADE REQUIREMENTS

REV.#	DATE	COMMENTS
REVISION: -	-	-
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REVIEWS

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-	BDA DSGN. REV.
-	BDA TECH REV.

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ROUGH CARPENTRY:

PRODUCT REQUIREMENTS:

- EACH PIECE OF STRUCTURAL LUMBER, SHEATHING AND TIMBER SHALL BE MARKED WITH GRADE BY SUCH COMPETENT AND RELIABLE ORGANIZATION WHOSE REGULAR BUSINESS IS TO ESTABLISH LUMBER GRADES.
- ALL LUMBER, EXCEPT WHERE SPECIFICALLY NOTES OTHERWISE, SHALL BE MILL SIZED AND SURFACED ON (4) SIDES. ALL SHALL BE STRAIGHT STOCK, FREE FROM WARP OR CUP, AND SINGLE LENGTH PIECES. SPLICES WILL NOT BE PERMITTED EXCEPT WHERE SPECIFCALLY SO DETAILED OR AS DIRECTED BY THE ENGINEER.
- ROUGH HARDWARE, JOIST HANGERS, STRAPS, HOLDOWNS, ETC. SHALL BE MANUFACTURED BY "SIMPSON" COMPANY OR APPROVED EQUAL. THE MAXIMUM SIZE AND NUMBER OF FASTENERS SPECIFIED BY THE MANUFACTERER SHALL BE USED UNLESS NOTED OTHERWISE.
- BLOCKING AND FIRESTOPPING TO BE INSTALLED AS REQUIRED TO SUPPORT ALL ITEMS OF FINISH SUCH AS BULKHEADS AND BUCKS. PROVIDE FIREBLOCKING TO CUT OFF ALL CONCEALED DRAFT OPENINGS, BOTH VERTICAL AND HORIZONTAL, BETWEEN CEILING AND FLOOR AREAS (AS REQUIRED BY BUILDING OFFICIAL AND ARCHITECT).
- COMMON NAILS SHOULD BE USED WHEN NAILING IS SPECIFIED ON THESE PLANS (U.O.N.), SUCH AS AT SHEARWALLS AND DIAPHRAGMS. ALL OTHER NAILING MAY BE OF THE "BOX OR SINKER" TYPE.
- SHEATHING GRADE SHALL BE CD-X WITH EXTERIOR GLUE P.S. 1-83, U.O.N. ON PLANS: PRODUCTS SHALL BE THOSE LISTED IN TABLE WS-1 (THIS SHEET)
- UNLESS OTHERWISE NOTED ON PLANS, LUMBER SHALL BE AT LEAST OF THE GRADES SHOWN IN THE TABLE BELOW. ALL LUMBER SHALL BE SURFACED AND FREE OF HEART CENTER. LUMBER SHALL MEET SPECIES AND COMMERCIAL GRADE AS INDICATED ON THE PLANS AND THE DESIGN VALUES FOR VISUALLY GRADED LUMBER IN ACCORDANCE WITH THE PLANS AND THE DESIGN VALUES FOR VISUALLY GRADED LUMBER IN ACCORDANCE WITH THE NATIONAL DESIGN SPECIFICATION BY THE NATIONAL FOREST PRODUCTS ASSOCIATION, WHICHEVER IS GREATER. BASED VALUES SHOWN MAY BE ADJUSTED IN ACCORDANCE WITH THE NATIONAL DESIGN SPECIFICATION. "DF" INDICATES DOUGLAS-FIR-LARCH, "HF" INDICATES HEM-FIR, "SPF" INDICATES SPRUCE-PINE-FIR.

EXECUTION REQUIREMENTS:

- BOLTS (IF APPLICABLE) SHALL BE INSTALLED IN HOLES BORED WITH A BIT 1/16" LARGER THAN THE DIEMETER OF THE BOLT. BOLTS AND NUTS SEATING ON WOOD SHALL HAVE CUT STEEL WASHERS UNDER HEADS AND NUTS. NUTS SHALL BE PULLED TIGHT AND AGAIN CHECKED AND TIGHTENED JUST PRIOR TO ENCLOSING BOLTED MEMBERS. COUNTER BORE FOR BOLTED HEADS OR NUTS ONLY WHERE SO INDICATED ON THE DRAWINGS AND THEN SUFFICIENT DEPTH TO HOUSE THE BOLT HEAD OR NOT AND WASHER. CUT OFF EXCESSIVE BOLT PROJECTION WHERE NECESSARY. NICK THREADS TO PREVENT LOOSENING.
- LAG SCREWS (IF APPLICABLE) SHALL BE SCREWED AND NOT DRIVEN INTO PLACE. LAG SCREWS FASTENING ONE WOOD MEMBER TO ANOTHER SHALL HAVE PENETRATION INTO FAR MEMBER OF NOT LESS THAN (2/3) OF THE LENGTH OF THE LAG SCREW MEASURED UNDER THE HEAD U.O.N. IN PLACING LAG SCREWS IN WOOD, A HOLE SHALL FIRST BE BORED OF THE SAME DIAMETER AND DEPTH OF THE SHANK OF THE SCREW. AFTER WHICH THE HOLE SHALL BE CONTINUED TO A DEPTH EQUAL TO THE LENGTH OF THE LAG SCREW WITH THE DIAMETER EQUAL TO THE DIAMETER OF THE SCREW AT THE ROOT OF THE THREAD.
- ALL ROUGH CARPENTRY WILL PRODUCE JOINTS TRUE AND TIGHT AND WELL NAILED WITH MEMBERS ASSEMBLED IN ACCORDANCE WITH THE DRAWINGS AND ALL PERTINENT BUILDING CODES. THE SHIMMING OF SILLS, JOISTS SHORT STUDS, TRIMMERS, HEADERS OR OTHER FRAMING MEMBERS SHALL NOT BE PERMITTED. ALL WALLS AND PARTITIONS SHALL BE STRAIGHT, PLUMB AND ACCURATELY LOCATED. CAREFULLY SELECT ALL STRUCTURAL MEMBERS. INDIVIDUAL PIECES SHALL BE SELECTED SO THAT KNOTS AND OBVIOUS MINOR DEFECTS WILL NOT INTERFERE WITH THE PLACING OF BOLTS, OR PROPER NAILING OR THE MAKING OS SOUND CONNECTIONS. LUMBER MAY BE REJECTED BY THE ENGINEER FOR EXCESSIVE WARP, TWIST, BOW OR CROOK, MILDEW, FUNGUS OR MOLD AS WELL AS FOR IMPROPER GRADE MARKING, DEFECTS WHICH WILL RENDER A PIECE UNABLE TO SERVE ITS INTENDED FUNCTION SHALL BE DISCARDED.

PRE-ENGINEERED TRUSSES

PRODUCT REQUIREMENTS:

- "GANG-NAIL" PRE-ENGINEERED TRUSSES ARE TO BE CONSTRUCTED WITH METAL PLATE CONNECTORS AND DESIGNED AND MANUFACTURED BY OTHERS. DESIGN, CONSTRUCTION, AND INSTALLATION SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION AND OF THE TRUSS PLATE INSTITUTE. PROVIDE ALL REQUIRED BLOCKING AND BRACING REQUIRED BY THE MANUFACTURER FOR CONSTRUCTION AND ERECTION IN ADDITION TO BLOCKING SHOWN ON THE STRUCTURAL DETAILS. MEMBERS OF A COMPLETED TRUSS ARE NEVER TO BE NOTCHED OF CUT. THE TRUSS MANUFACTURER SHALL PROVIDE DESIGN CALCULATIONS AND SHOP DRAWINGS SIGNED AND SEALED BY A STRUCTURAL ENGINEER (CONTRACTED BY TRUSS SMANUFACTURER) FOR REVIEW PRIOR TO FABRICATION. THE DESIGN SHALL ACCOUNT FOR ALL UNIFORM LOADS AND EQUIPMENT LOADS. CONTACT THE STRUCTURAL ENGINEER FOR UNIFORM LOADING AN REQUIREMENTS IF REQUIRED.

EXECUTION REQUIREMENTS:

- TRUSS SHOP DRAWINGS SHALL SHOW THE TRUSS DESIGN LOADS, SIZES AND GRADES OF THE CHORDS AND WEBS, LOCATIONS OF THE JOINTS AND CONNECTIONS, SIZE AND TYPE OF METAL PLATES AND ALL BRACING AND BLOCKING REQUIREMENTS.
- ROOF AND FLOOR TRUSSES SHALL BE DESIGNED FOR THE FOLLOWING CRITERIA:
  SEE DESIGN LOADS SHEET S0.1 FOR VERTICAL LOADS
  STRESS INCREASE FOR DURATION OF LOAD -- ROOF (15%)
- LOCATION OF TRUSS BRACING REQUIRED BY THE PLANS OR TRUSS MANUFACTURER'S DESIGN SHALL BE INDICATED ON EACH TRUSS BY PAINT MARKING.

PARALLAM MEMBERS:

- WHERE PARALLAM "PSL" MEMBERS ARE INDICATED ON THE PLANS AND SCHEDULES THEY SHALL BE MANUFACTERED BY TRUSS-JOINST MACMILLAN (NEW-482 & ICBO ER-4979), OR BE AN APPROVED EQUAL PRODUCT. MEMBERS SHOWN ON THE PLANS AND SCHEDULES ARE DETERMINED FROM MANUFACTURER SUPPLIED INFORMATION AND SHOULD BE REVIEWED FOR COMPLAINCE BY THE MANUFACTERER'S CIVIL OR STRUCTURAL ENGINEER. LOADING INFORMATION MAY BE PROVIDED UPON REQUEST. NOTCHES, HOLES OR CUTS SHOWN IN THE TYPICAL DETAILS ARE ALLOWED WITHOUT ADDITION APPROVAL; ALL OTHER MEMBER MODICATIONS ARE TO BE APPROVED BY THE STRUCTURAL ENGINEER.

PLYWOOD WEB JOISTS:

- PLYWOOD WEB JOISTS NOTED "TJI" ARE TO BE MANUFACTURED BY TRUSS-JOIST MACMILLAN (NER-200 & ICBO ER-4354) OR APPROVED EQUAL. PROVIDE BLOCKING, WEB STIFFENERS, AND BRACING OVER THE SPAN BER THESE STRUCTURAL DRAWINGS AND ALL MANUFACTURER'S RECOMMENDATIONS. TOP AND BOTTOM FLANGES OF JOISTS ARE NEVER TO BE CUT AND ALL HOLES THROUGH THE JOIST WEB ARE TO BE SPECIFICALLY APPROVED BY STRUCTURAL ENGINEER.

TABLE WS-1 :
SHEATHING PRODUCTS:

DESCRIPTION	REQUIREMENTS
ROOF SHEATHING	5/8" APA RATED T&G ROOF PLYWOOD SHEATHING. NAIL W/ 10d @ 6" O.C. BOUNDARY/EDGES AND 12" O.C. FIELD. (U.O.N. ON SHEARWALL SCHEDULE) SPAN INDEX = 48/24
ATTIC FLOOR SHEATHING	7/8" APA RATED FLOOR PLYWOOD SHEATHING. NAIL W/ 10d @ 6" O.C. BOUNDARY/EDGES AND 12" O.C. FIELD. (U.O.N. ON SHEARWALL SCHEDULE) SPAN INDEX = 48/24
WALL SHEATHING	1/2" APA RATED WALL PLYWOOD SHEATHING. NAIL W/ 10d @ 4" O.C. BOUNDARY/EDGES AND 12" O.C. FIELD. (U.O.N. ON SHEARWALL SCHEDULE)
	7/16" WAFERBOARD AND ORIENTED STRAND BOARD CONFORMING TO NER-108 AND PRODUCT STANDARD 2-92, AND WITH THE SAME EXPOSURE DURABILITY CLASSIFICATION, NOMINAL THICKNESS AND SPAN/INDEX RATIO MAY BE SUBSTITUTED FOR PLYWOOD ONLY IF APPROVED BY THE STRUCTURAL ENGINEER.
NOTES: 1. THE NAIL EDGE DISTANCE FOR 3" NOMINAL (2-1/2" ACTUAL) WIDE MEMBERS ON WHICH SHEETS ARE SPLICED SHALL BE 3/4" MIN. 2. THE NAIL EDGE DISTANCE FOR 2" NOMINAL (1-1/2" ACTUAL) WIDE MEMBERS ON WHICH SHEETS ARE SPLICED SHALL BE 3/8" MIN. CARE SHALL BE MADE NOT TO TO SPLIT THE MEMBERS. 3. NAILS MAY BE SLANT DRIVEN TO MAINTAIN MINIMUM EDGE DISTANCE.	

TABLE WL-1 :
MINIMUM LUMBER GRADES (PER NDS 2001 ED.)

TYPE	PRIMARY USE	SIZES (IN)	MIN. GRADE	BASE VALUES (PSI)				
				Fb	Fv	E a	Fc ‖	Fc ⊥
SAWN LUMBER	STUDS	2x	DF #2	700	180	1.4	850	625
	JOISTS	2" & WIDER	DF #2	900	180	1.6	1350	625
	BEAMS	5" x 5" & LARGER	DF #2	875	170	1.3	600	625
	POSTS	5" x 5" & LARGER	DF #2	750	170	1.3	700	625
MICRO-LAMS	BEAMS	ANY	LAM	2400	275	1.8	2400	500
PSL	BEAMS	ANY	LAM	2900	285	2.0	2900	750
FOOTNOTES: (a) *.0X10^6 (PSI)								

TABLE WFS-1 :
FASTENING SCHEDULE

CONNECTION	FASTENING a,m	LOCATION
1. JOIST TO SILL GIRDER	(3) 8d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	TOENAIL
2. BRIDGING TO JOIST	(2) 8d COMMON (2) 3" x 0.131" NAILS (2) 3" 14 GAGE STAPLES	TOENAIL EACH END
3. 1"X6" SUBFLOOR OR LESS TO EACH JOIST	(2) 8d COMMON	FACE NAIL
4. WIDER THAN 1"X6" SUBFLOOR TO EACH JOIST	(3) 8d COMMON	FACE NAIL
5. 2" SUBFLOOR TO JOIST OR GIRDER	(2) 16d COMMON	BLIND & FACE NAIL
6A. SOLE PLATE TO JOIST OR BLOCKING	16d @ 16" O.C. 3" x 0.131" NAILS @ 8" O.C. 3" 14 GAGE STAPLES @ 12"O.C.	TYPICAL FACE NAIL
6B. SOLE PLATE TO JOIST OR BLOCKING AT BRACED WALL PANEL	(3) 16d @ 16" (4) 3" x 0.131" NAILS @ 16" (4) 3" 14 GAGE STAPLES PER 16"	BRACED WALL PANELS
7. TOP PLATE TO STUD	(2) 16d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	END NAIL
8. STUD TO SOLE PLATE	(4) 8d COMMON (4) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	TOENAIL
	(2) 16d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	END NAIL
9. DOUBLE STUDS	16d @ 24" O.C. 3" x 0.131" NAILS @ 8" O.C. 3" 14 GAGE STAPLES @ 8" O.C.	FACE NAIL
10. DOUBLE TOP PLATE	16d @ 16" O.C. 3" x 0.131" NAILS @ 12" O.C. 3" 14 GAGE STAPLES @ 12" O.C.	TYPICAL FACE NAIL
	(8) 16d COMMON (12) 3" x 0.131" NAILS (12) 3" 14 GAGE STAPLES	LAP SPLICE
11. BLOCKING BETWEEN JOISTS OR RAFTERS TO TOP PLATE	(3) 8d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	TOENAIL
12. RIM JOIST TO TOP PLATE	8d @ 6" O.C. 3" x 0.131" NAILS @ 6" O.C. 3" 14 GAGE STAPLES @6" O.C.	TOENAIL
13. TOP PLATES, LAPS AND INTERSECTIONS	(2) 16d COMMON (3) 3" x 0.131" NAILS @ 6" O.C. (3) 3" 14 GAGE STAPLES @6" O.C.	FACE NAIL
14. CONTINUOUS HEADER, TWO PIECES	16d COMMON	16" O.C. ALONG EDGE
15. CEILING JOISTS TO PLATE	(3) 8d COMMON (5) 3" x 0.131" NAILS (5) 3" 14 GAGE STAPLES	TOENAIL
16. CONTINUOUS HEADER TO STUD	(4) 8d COMMON	TOENAIL
17. CEILING JOISTS, LAPS OVER PARTITIONS (SEE SECTION 2308.10.4.1, TABLE 2308.10.4.1)	(3) 16d COMMON, MINIMUM (4) 3" x 0.131" NAILS (4) 3" 14 GAGE STAPLES	FACE NAIL
18. CEILING JOISTS TO PARALLEL RAFTERS (SEE SECTION 2308.10.4.1, TABLE 2308.10.4.1)	(3) 16d COMMON, MINIMUM (4) 3" x 0.131" NAILS (4) 3" 14 GAGE STAPLES	FACE NAIL
19. RAFTER TO PLATE (SEE SECTION 2308.10.1, TABLE 2308.10.1)	(3) 8d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	TOENAIL
20. 1" DIAGONAL BRACE TO EACH STUD AND PLATE	(2) 8d COMMON (2) 3" x 0.131" NAILS (2) 3" 14 GAGE STAPLES	FACE NAIL
21. 1"X8" SHEATHING TO EACH BEARING WALL	(2) 8d COMMON	FACE NAIL
22. WIDER THAN 1"X8" SHEATHING TO EACH BEARING	(3) 8d COMMON	FACE NAIL
23. BUILT-UP CORNER STUDS	16d COMMON 3" x 0.131" NAILS 3" 14 GAGE STAPLES	24" O.C. 16" O.C. 16" O.C.
24. BUILT-UP GIRDER AND BEAMS	20d COMMON @ 32" O.C. 3" x 0.131" NAILS @ 24" O.C. 3" 14 GAGE STAPLES @ 24" O.C.	FACE NAIL AT TOP & BOTTOM STAGGERED ON OPPOSITE SIDES
	(2) 20d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	FACE NAIL AT ENDS AT EACH SPLICE
25. 2" PLANKS	16d COMMON	AT EACH BEARING
26. COLLAR TIE TO RAFTER	(3) 10d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	FACE NAIL
27. JACK RAFTER TO HIP	(3) 10d COMMON (4) 3" x 0.131" NAILS (4) 3" 14 GAGE STAPLES	TOENAIL
	(2) 16d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	FACE NAIL
28. ROOF RAFTER TO 2-BY RIDGE BEAM	(2) 16d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	TOENAIL
	(2) 16d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	FACE NAIL
29. JOIST TO BAND JOIST	(3) 16d COMMON (5) 3" x 0.131" NAILS (5) 3" 14 GAGE STAPLES	FACE NAIL
30. LEDGER STRIP	(3) 16d COMMON (4) 3" x 0.131" NAILS (4) 3" 14 GAGE STAPLES	FACE NAIL

FASTENING SCHEDULE (CONTINUED)

CONNECTION	FASTENING a,m	LOCATION
31. WOOD STRUCTURAL PANELS AND PARTICLEBOARD b; SUBFLOOR, ROOF AND WALL SHEATHING (TO FRAMING):	1/2" AND LESS 19/32" TO 3/4" 7/8" TO 1"	6d c,t 2-3/8" x 0.131" NAIL n 1-3/4" 16 GAGE o 8d d OR 6d e 2-3/8" x 0.131" NAIL p 2" 16 GAGE p 8d c	
SINGLE FLOOR (COMBINATION SUBFLOOR-UNDERLAYMENT TO FRAMING	1-1/8" TO 1-1/4" 3/4" AND LESS 7/8" TO 1" 1-1/8" TO 1-1/4"	10d dOR 8d e 2-3/8" x 0.131" NAIL n 8d e 10d dOR 8d e	
32. PANEL SIDING (TO FRAMING)	1/2" AND LESS 5/8"	6d f 8d f	
33. FIBERBOARD SHEATHING:g	1/2" 25/32"	11 GAGE ROOFING NAIL h 6d COMMON NAIL 16 GAGE STAPLE i 11 GAGE ROOFING NAIL h 8d COMMON NAIL 16 GAGE STAPLE i	
34. INTERIOR PANELING	1/4" 3/8"	4d j 6d k	

FOOTNOTES:
(a) COMMON OR BOX NAILS ARE PERMITTED TO BE USED EXCEPT WHERE OTHERWISE STATED.
(b) NAILS SPACED AT 6 INCHES ON CENTER AT EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS EXCEPT 6 INCHES AT SUPPORTS WHERE SPANS ARE 48 INCHES OR MORE. FOR NAILING OF WOOD STRUCTURAL PANEL AND PARTICLEBOARD DIAPHRAGMS AND SHEARWALLS, REFER TO SECTION 2305. NAILS FOR WALL SHEATHING ARE PERMITTED TO BE COMMON, BOX OR CASING.
(c) COMMON OR DEFORMED SHANK.
(d) COMMON.
(e) DEFORMED SHANK.
(f) CORROSION-RESISTANT SIDING OR CASING NAIL.
(g) FASTENERS SPACES 3 INCHES ON CENTER AT EXTERIOR EDGES AND 6 INCHES O.C. AT INTERMEDIATE SUPPORTS.
(h) CORROSION-RESISTANT ROOFING NAILS WITH 7/16-INCH-DIAMETER HEAD AND 1 1/2-INCH LENGTH FOR 1/2-INCH SHEATHING AND 1 3/4-INCH LENGTH FOR 25/32-INCH SHEATHING..
(i) CORROSION-RESITANT STAPLES WITH NOMINAL 7/16-INCH CROWN AND 1 1/8-INCH LENGTH FOR 1/2-INCH SHEATHING AND 1 1/2-INCH LENGTH FOR 23/32-INCH SHEATHING. PANEL SUPPORTS AT 16 INCHES (20 INCHES IF STRENGTH AXIS IN THE LONG DIRECTION OF THE PANEL, UNLESS OTHERWISE MARKED).
(j) CASING OR FINISH NAILS SPACED 6 INCHES ON PANEL EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS.
(k) PANEL SUPPORTS AT 24 INCHES. CASING OR FINISH NAILS SPACED AT 6 INCHES ON PANEL EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS.
(l) FOR ROOF SHEATHING APPLICATIONS, 8d NAILS ARE THE MINIMUM REQUIRED FOR WOOD STRUCTURAL PANELS.
(m) STAPLES SHALL HAVE A MINIMUM CROWN WIDTH OF 7/16 INCH.
(n) FOR ROOF SHEATHING APPLICATIONS, FASTENERS SPACED 4 INCHES ON CENTER AT EDGES, 8 INCHES AT INTERMEDIATE SUPPORTS.
(o) FASTENERS SPACED 4 INCHES ON CENTER AT EDGES, 8 INCHES AT INTERMEDIATE SUPPORTS FOR SUBFLOOR AND WALL SHEATHING AND 3 INCHES ON CENTER AT EDGES, 6 INCHES AT INTERMEDIATE SUPPORTS FOR ROOF SHEATHING.
(p) FASTENERS SPACED 4 INCHES ON CENTER AT EDGES, 8 INCHES AT INTERMEDIATE SUPPORTS.

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CARPENTRY GENERAL NOTES

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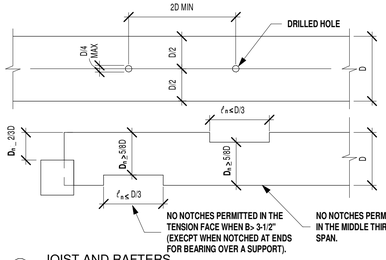
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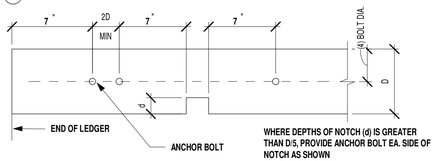
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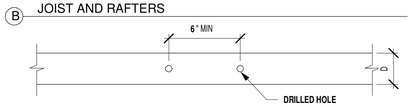
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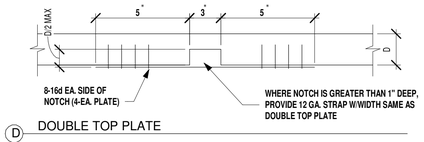
A JOIST AND RAFTERS



B JOIST AND RAFTERS



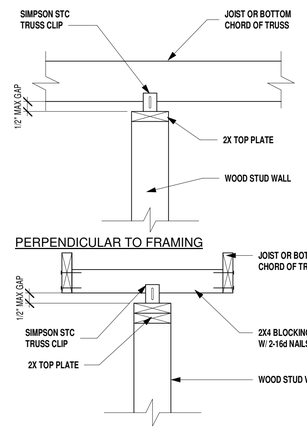
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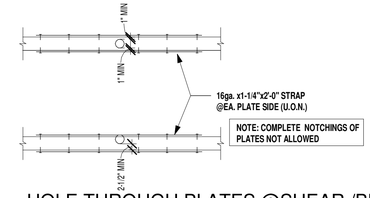
D DOUBLE TOP PLATE

E SILL PLATE

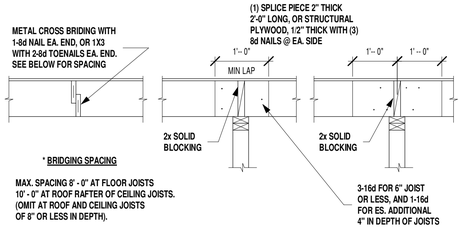
1 S06.B HOLES AND NOTCHES
NTS



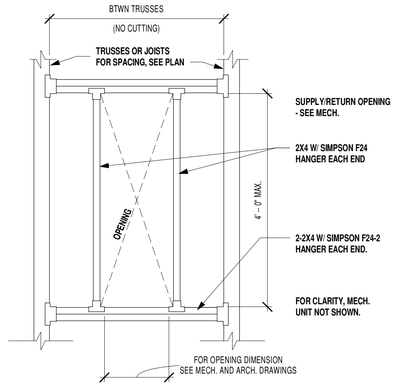
2 S06.B WOOD STUDS @NON-LOADING BEARING WALLS
NTS



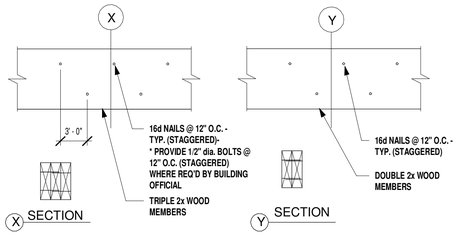
3 S06.B HOLE THROUGH PLATES @SHEAR /BEARING WALL
NTS



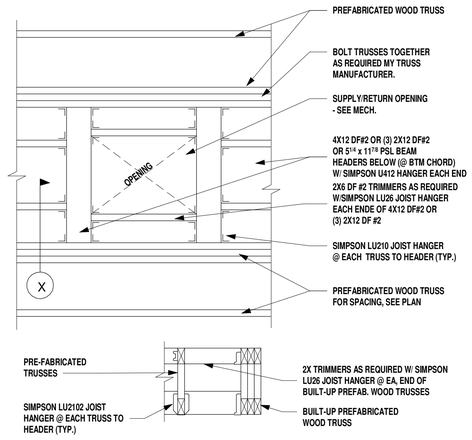
4 S06.B JOIST AND RAFTER LAP @SUPPORTS
NTS



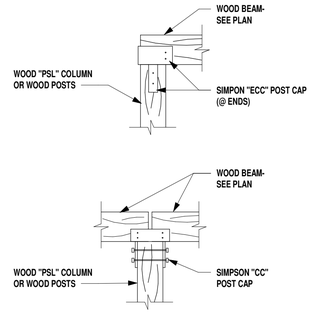
5 S06.B TYP. FRAMING OF SMALL OPENINGS BETWEEN TRUSSES / JOISTS
NTS



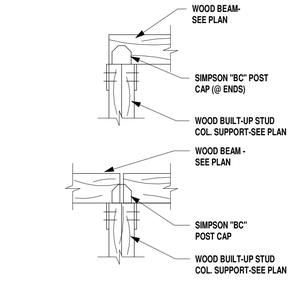
6 S06.B TYP. BUILT-UP WOOD MEMBERS (BUILT-UP STUD COLUMNS OR HEADERS)
NTS



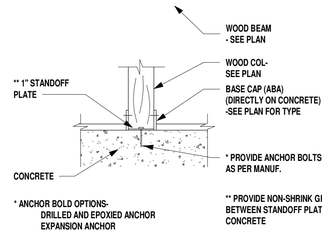
7 S06.B TYP. FRAMING OF LARGE OPENINGS CAUSING CUTTING OF PRE-ENGINEERED TRUSSES (SIM@JOISTS)
NTS



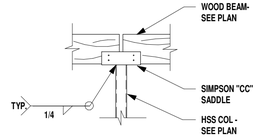
8 S06.B WOOD BEAM TO WOOD COL/POST
NTS



10 S06.B WOOD BEAM TO BUILT UP STUD COL
NTS



9 S06.B BASE AND POST DOWN CONN
NTS



11 S06.B TUBE STEEL COL TOP CONNECTIONS
NTS

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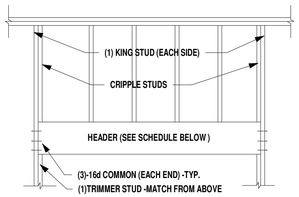


TABLE RC -1 :
LUMBER HEADER SCHEDULE

OPENING SIZE	HEADER SIZE
0'-4"	(2)-2X FLAT
4'-1" - 8'-0"	(2)-2X8
8'-1" - 12'-0"	(2)-2X12 HF#2
(DF#2, HF#2, OR SPF#2 MAY BE USED)	

1 S06.C TYP. NON-LOAD BEARING HEADER
NTS

TABLE RC - 2 :
TYPICAL CEILING JOIST SCHEDULE

JOIST SIZE	MAX. SPAN	BRIDGING SPACING	LEDGER AT MASONRY WALL	LEDGER AT STUD WALL
2 x 4	8'-0"	2'-9" O.C.	N/A	2x4 W/ (2) 16d NAILS EA. STUD
2 x 8	14'-0"	4'-8" O.C.	N/A	2x8 W/ (3) 16d NAILS EA. STUD
2 x 10	18'-0"	6'-0" O.C.	N/A	2x8 W/ (3) 16d NAILS EA. STUD

NOTES:
1. SPACE CEILING JOISTS @ 24" O.C. MAX.
2. 2. HANG CEILING JOISTS FROM LEDGERS W/ SIMPSON LU FACE MOUNTED JOIST HANGER.
3. 3. PROVIDE CONTINUOUS FLAT 2X4 BRIDGING W/ 1-16d NAIL EACH JOIST AT THE TOP OF THE JOISTS.
4. IF JOIST SPANS ARE GREATER THAT THOSE SHOWN ABOVE, NOTIFY THE STRUCTURAL ENGINEER.
5. JOISTS ARE DESIGNED FOR 5 PSF DEAD LOAD AND 10 PSF LIVE LOAD. IF ACTUAL LOADS ARE GREATER, NOTIFY THE STRUCTURAL ENGINEER.
6. ALL MATERIAL TO BE DF#2 OR SPF#2

2 S06.C CEILING JOISTS
NTS

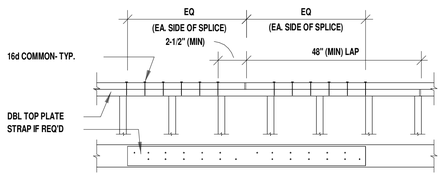


TABLE RC -3 :
LUMBER HEADER SCHEDULE

TYPE	NAILS BETWEEN BUTTS	STRAP TIE	CAPACITY (LBS)
A	(2) ROWS- 10 NAILS/ ROW 20 NAILS TOTAL / SIDE	N/A	7500 LBS

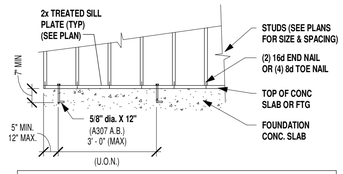
NOTES:
1. REFER TO FRAMING PLAN GENERAL NOTES FOR TYPE.
2. ALL NAILS TO BE 16d (COMMON)

3 S06.C TYP. DOUBLE TOP PLATE SPLICE
NTS

TABLE RC - 4 :
WASHER SCHEDULE

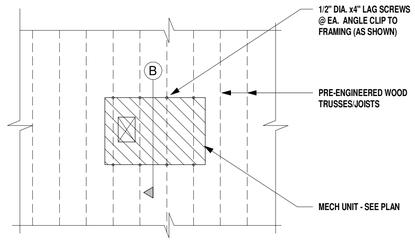
BOLT SIZE	WASHER TYPE		
	MALLEABLE IRON	HEAVY PLATE	STANDARD CUT
5/8"Ø	2-1/2" Ø x 1/4"	3" x 3" x 3/16"	1-3/8" Ø x 3/32"

NOTES:
1. USE STANDARD CUT WASHER FOR ALL BOLTS, U.O.N.
2. HEAVY PLATE WASHERS ARE REQUIRED @ SILL PLATE TO FOUNDATION AT ALL SHEARWALLS.
3. HEAVY PLATE WASHERS ARE REQUIRED @ HOLDOWNS.



NOTE :
1. PROVIDE (2) BOLTS MIN PER SILL PIECE.
2. SEE PLANS FOR SIZE AND SPACING OF ANCHOR BOLTS AT SHEARWALLS.
3. PROVIDE ANCHOR BOLTS AT ALL PERIMETER WALLS AND SHEARWALLS.
4. PROVIDE WASHERS @EA. ANCHOR BOLT. - SEE SCHEDULE THIS SHEET.

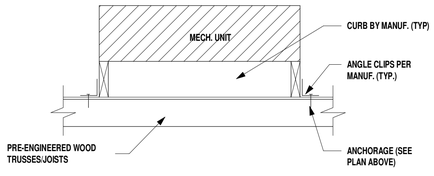
4 S06.C BOTTOM SILL PLATE ANCHORAGE
NTS



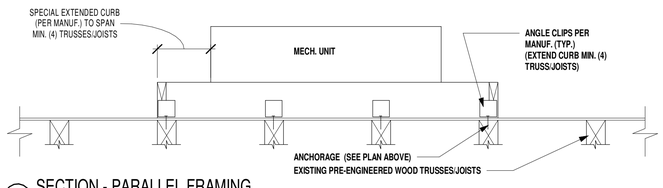
A PLAN - PERP. FRAMING



C PLAN - PARALLEL FRAMING



B SECTION - PERP. FRAMING



D SECTION - PARALLEL FRAMING

5 S06.C MECH EQUIP. SUPPORT /ANCHORAGE
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EARTHWORK NOTES

● CRITERIA:

ALL INFORMATION BELOW IS A SUMMARY PROVIDED BY THE GEOTECHNICAL ENGINEER

SOILS REPORT BY: SEE SHEET S01.A

THE FOLLOWING INFORMATION BELOW BY JJK GROUP, INC. DOES NOT RELIEVE THE CONTRACTOR FROM REVIEWING THE SOILS REPORT AND FOLLOWING ALL REQUIRED SUBGRADE PREPARATIONS.

● GENERAL:

— **THE GEOTECHNICAL ENGINEER SHALL ACT AS THE OWNER'S REPRESENTATIVE AND SHALL MAKE OBSERVATIONS AND TEST AS CONSIDERED NECESSARY FOR QUALITY CONTROL. WHERE FOUNDATIONS OR OTHER CRITICAL ELEMENTS ARE TO BE SUPPORTED ON ENGINEERED FILL, CONTINUOUS OBSERVATIONS AND TESTS OF GRADING OPERATIONS SHALL BE MADE BY THE GEOTECHNICAL ENGINEER. ALL TESTS SHALL BE PERFORMED IN ACCORDANCE WITH PROCEDURES SET FORTH IN THE CURRENT BOOK OF STANDARDS OF THE AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM).**

— **FILL OR BACKFILL, CONSISTING OF SOIL APPROVED BY THE GEOTECHNICAL ENGINEER, SHALL BE PLACED IN CONTROLLED COMPACTED LAYERS WITH APPROVED COMPACTION EQUIPMENT. CONTROLLED COMPACTED LAYERS WITH APPROVED COMPACTION EQUIPMENT. ALL COMPACTION SHALL BE TO A MINIMUM OF 95% (U.O.N. IN SOILS REPORT) OF THE MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH ASTM D-1557 A TEST METHOD. SOIL'S MOISTURE CONTENT DURING COMPACTION SHALL BE AT OPTIMUM MOISTURE CONTENT PLUS OF MINUS 2% (U.O.N. IN SOILS REPORT).**

— **TEST FOR DEGREE OF COMPACTION SHALL BE DETERMINED BY THE ASTM D-1556 OR ASTM D-2922 TEST METHODS. OBSERVATION AND FIELD TESTS SHALL BE CARRIED ON DURING FILL AND BACKFILLPLACEMENT BY THE GEOTECHNICAL ENGINEER TO ASSIST THE CONTRACTOR IN OBTAINING THE REQUIRED DEGREE OF COMPACTION. IF LESS THAN 95 (U.O.N. IN SOILS REPORT) PERCENT IS INDICATED, ADDITIONAL COMPACTION EFFORT SHALL BE MADE WITH ADJUSTMENT OF THE MOISTURE CONTENT AS REQUIRED COMPACTION IS OBTAINED.**

— **WHEREVER, IN THE OPINION OF THE GEOTECHNICAL ENGINEER, AN UNSTABLE CONDITION IS BEING CREATED, EITHER BY CUTTING OR FILLING, THE WORK SHALL NOT PROCEED IN THAT AREA UNTIL AN INVESTIGATION HAS BEEN MADE AND THE GRADING PLAN REVISED.**

● GENERAL DRAINAGE, MAINTENANCE AND PRECAUTIONS:

— **PRECAUTIONS SHALL BE TAKEN DURING AND AFTER CONSTRUCTION TO MINIMIZE SATURATION OF THE FOUNDATION SOILS. POSITIVE DRAINAGE SHALL BE ESTABLISHED AWAY FROM THE EXTERIOR WALLS OF THE STRUCTURE (FOUR PERCENT GRADIENT WITHIN TEN FEET OF THE STRUCTURE). ALL UTILITY TRENCHES LEADING INTO THE BUILDING SHALL BE BACKFILLED WITH COMPACTED FILL. SPECIAL CARE SHALL BE TAKEN DURING INSTALLATION OF WATER LINES TO REDUCE THE POSSIBILITY OF FUTURE SUBSURFACE SATURATION.**

— **DEPRESSIONS AND EXCAVATIONS SHOULD BE BACKFILLED WITH COMPACTED, NON-SWELLING, RELATIVELY-IMPERVIOUS SOILS SUCH AS CLAYEY SANDS.**

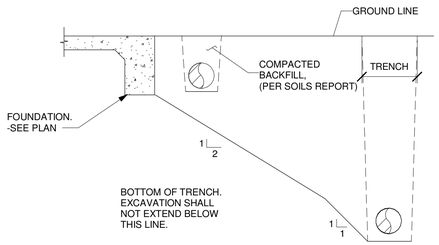
— **GUTTERS AND DOWNSPOUTS SHOULD BE INSTALLED TO CONTROL ROOF DRAINAGE. DOWNSPOUTS SHOULD DISCHARGE A MINIMUM OF TEN FEET AWAY FROM STRUCTURES. AREA DRAINS MAY BE INSTALLED AROUND STRUCTURES TO IMPROVE DRAINAGE. DISCHARGE PIPES SHOULD SLOPE A MINIMUM OF 1/8TH INCH VERTICALS PER FOOT OF HORIZONTAL PIPE. DRAINAGE SEWERS AND DISCHARGE CHANNELS SHOULD BE KEPT FREE OF DEBRIS.**

— **EXPANSION JOINTS WITHIN EXTERIOR CONCRETE FLATWORK SHOULD BE FILLED WITH A FLEXIBLE JOINT SEALER TO MINIMIZE WATER INFILTRATION.**

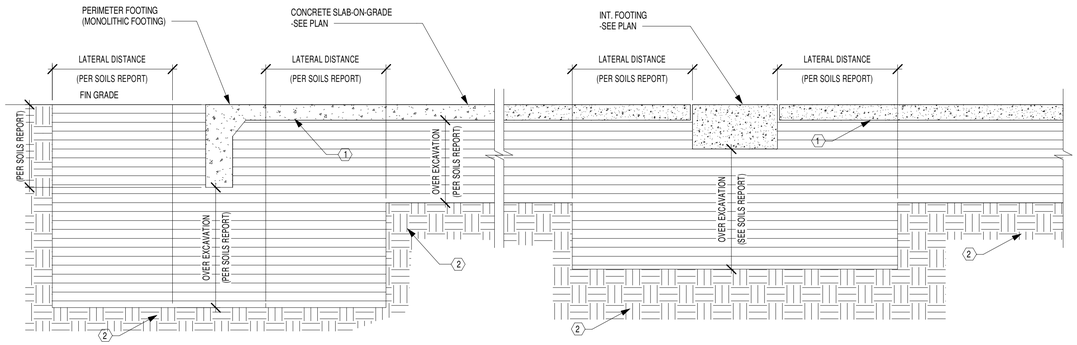
— **SOME MINOR CRACKING OF NEW CONCRETE FOUNDATIONS, CONCRETE FLATWORK, AND INTERIOR DRY WALL IS NORMAL. THIS IS A RESULT OF CONCRETE SHRINKAGE AS IT CURES, "SETTLING IN" OF THE NEW STRUCTURE, DRYING OF TIMBERS USED IN CONSTRUCTION,, ETC. NORMALLY THE MAJORITY OF THIS MOVEMENT SHOULD CEASE WITHIN THE FIRST YEAR FOLLOWING CONSTRUCTION. HOWEVER, DEPENDING ON THE STRUCTURE AND SITE CONDITIONS, MOVEMENT MAY CONTINUE AT A SLOW RATE FOR SEVERAL YEARS.**

— **ROOF GUTTERS AND DOWNSPOUTS SHOULD BE UTILIZED. DOWNSPOUTS SHOULD DISCHARGE DOWN SLOPE AND WELL AWAY FROM STRUCTURES. SPLASH BLOCKS SHOULD BE UTILIZED BELOW DOWNSPOUTS. SURFACE WATER SHOULD RUN OFF RAPIDLY.**

— **LANDSCAPING ADJACENT TO STRUCTURES SHOULD BE DESIGNED AND CONSTRUCTED TO MINIMIZE THE POTENTIAL FOR WETTING OF SOILS SUPPORTING THE PROPOSED FACILITIES. IT IS NOT RECOMMENDED THAT LANDSCAPING REQUIRING IRRIGATION BE INSTALLED CLOSER THAN FIVE FEET OF STRUCTURES. TREES AND SHRUBS SHOULD BE HAND WATERED OR WATERED USING CONTROLLED DRIP IRRIGATION. IF DRIP IRRIGATION IS USED, EMITTERS SHOULD DISCHARGE NO MORE THAN ONE GALLON PER HOUR. WATERING SHOULD BE CAREFULLY CONTROLLED TO PREVENT OVER WATERING. GRASSED AREAS ADJACENT TO STRUCTURES SHOULD BE SLOPED SO THAT EXCESS IRRIGATION WATER WILL RUN OFF PROMPTLY. SPRINKLER LINES AND DRIP IRRIGATION MAINS SHOULD BE LOCATED A MINIMUM OF FIVE FEET AWAY FROM FOUNDATIONS. MOWING STRIPS, PLANTERS AND SIDEWALKS SHOULD NO "DAM" WATER ADJACENT TO STRUCTURES.**



2 S31.A GENERAL TRENCH MONO
NTS



KEYED NOTES

1 REFER TO SOILS REPORT FOR VAPOR BARRIERS/ GRANULAR LAYER REQUIREMENTS FOR FOR MOISTURE SENSITIVE FLOORS.

2 EXISTING SUBGRADE PREPARE PROIR TO PLACEMENT OF FILL PER SOILS REPORT

THE ABOVE EARTHWORK INFORMATION IS BASED ON THE SOILS REPORT PROVIDED. THIS DOES NOT RELIEVE THE CONTRACTOR FROM THE COMPLETE REVIEW OF THE SOILS REPORT AND ALL REQUIREMENTS/RECOMMENDATIONS OF SUCH REPORT MUST BE FOLLOWED.

3 S31.A EARTHWORK REQ MONO
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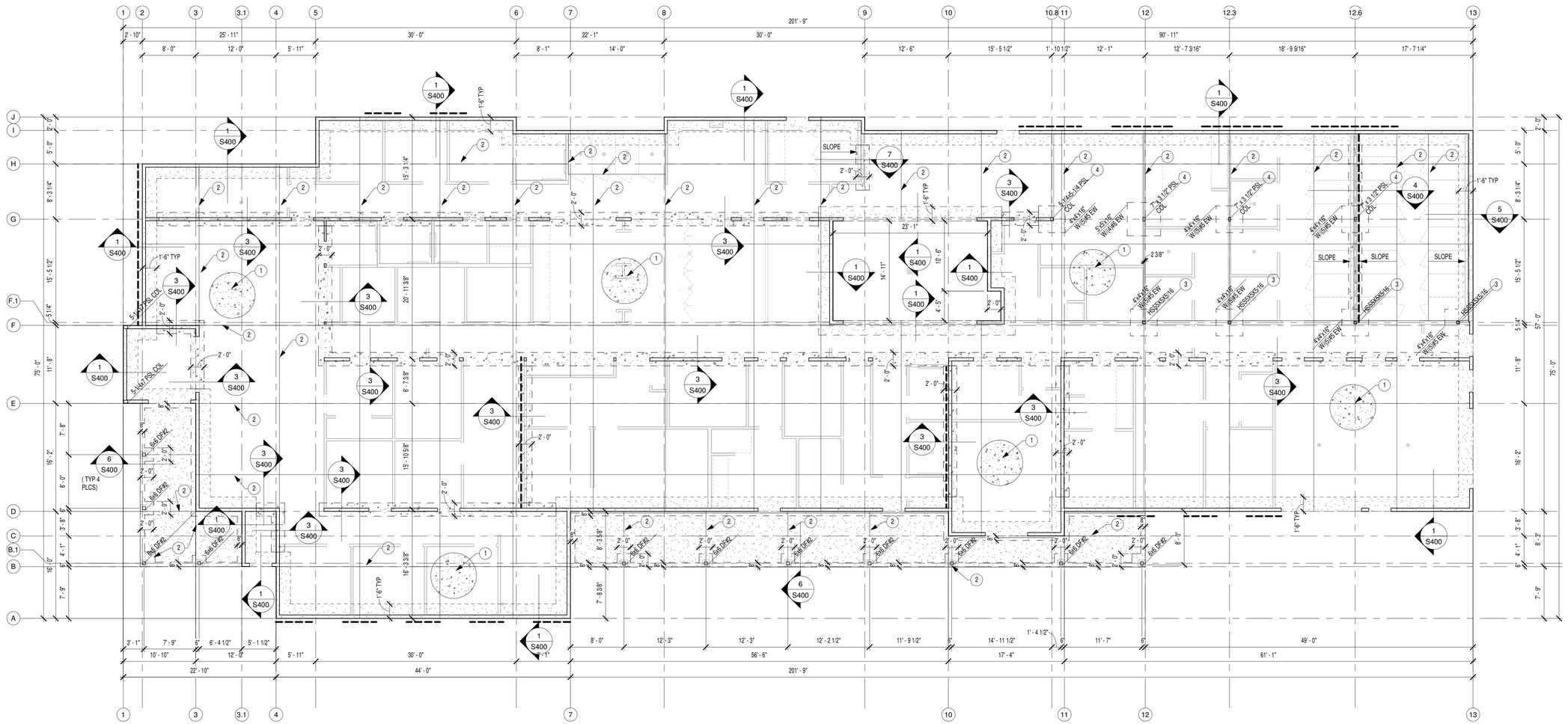
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1 S100 FOUNDATION AND CONTROL JOINT PLAN

1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO GENERAL NOTES SHEETS FOR ALL REQUIREMENTS.
2. REFERENCE DETAILS ON SHEETS S03.A FOR REINFORCING REQUIREMENTS.
3. SEE ARCHITECTURAL FOR ARCHITECTURAL CONCRETE FINISH LOCATIONS AND REQUIREMENTS, TYP.
4. REFER TO ARCHITECTURAL FOR DIMENSION PLAN PRIOR TO LAYOUT (VERIFY)
5. COORDINATE ARCHITECTURAL OPENING LOCATIONS AND REFER TO S03.B FOR DETAILING REQUIREMENTS.

KEYED NOTES:

1. 4" CONCRETE SLAB-ON-GRADE W/#4@18" O.C. E.W. PLACED @2" FROM TOP OVER PREPARED SUBGRADE PER SOILS REPORT.
2. CONTROL JOINT -SEE S03.B
3. SEE 8/S400 FOR STEEL COL BASE CONNECTION.
4. SEE 2/S400 FOR WOOD POST CONNECTION

LEGEND

SHEARWALL LOCATION -SEE SW1.0

CONCRETE SLAB-ON-GRADE

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FOUNDATION AND CONTROL JOINT PLAN

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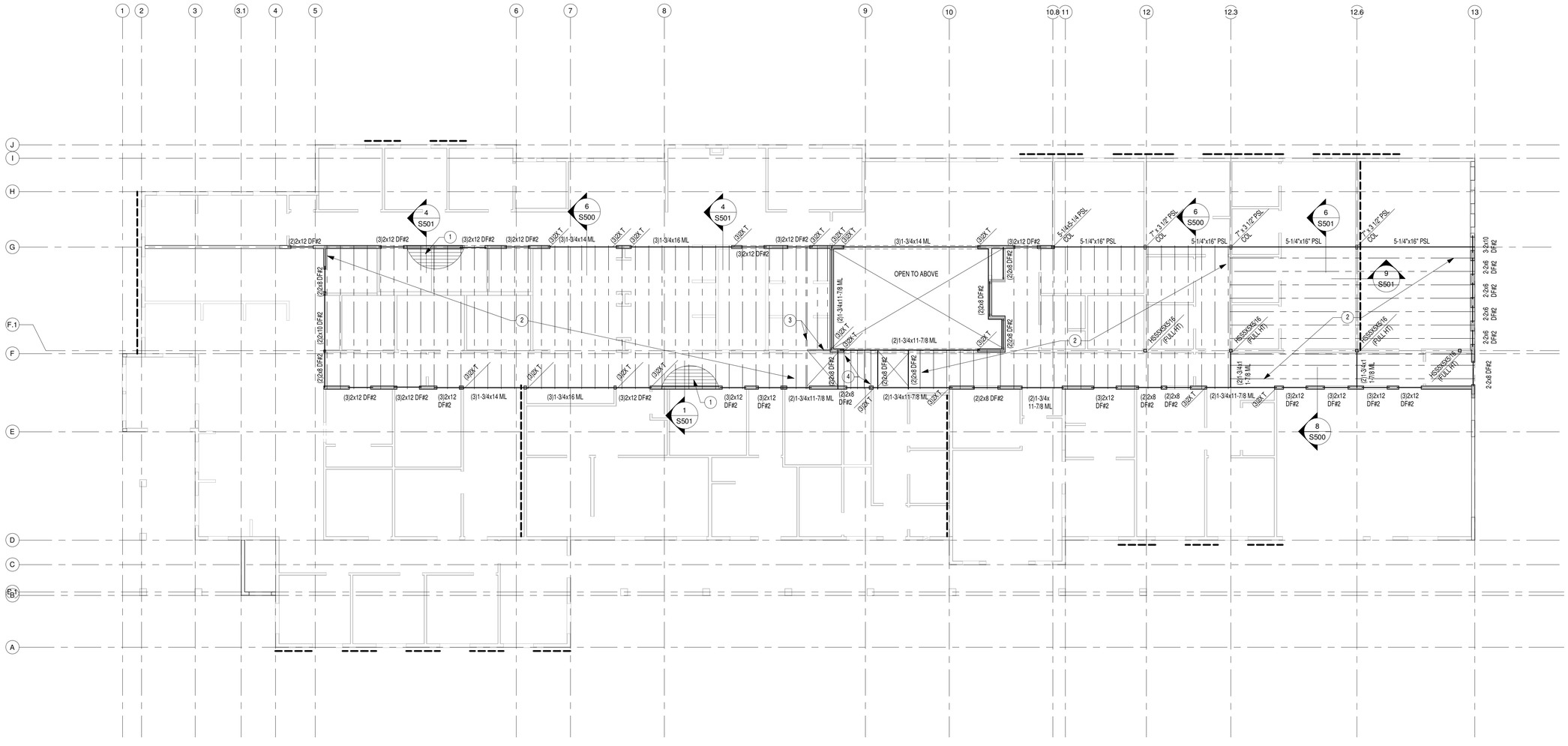
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1 S200 ATTIC FLOOR FRAMING PLAN

1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO GENERAL NOTES SHEETS FOR ALL REQUIREMENTS.
2. REFER TO ARCH. FOR ALL BEARING HEIGHTS AND ELEVATIONS.
3. CONTRACTOR TO PROVIDE APPLICABLE SHOP DRAWINGS AS DETAILED ON SHT. S01.A
4. PROVIDE (2)2x6 DF#2 BUILT-UP STUD TRIMMER (T) COLUMN @EA. END OF HEADER W/(1)FULL HEIGHT KING STUD (1) (U.O.N.).
5 REFER TO MECHANICAL PLANS FOR ROOF MOINTED EQUIPMENT DETAILS.
6. REFER TO S06.C FOR ALL WOOD CONNECTION DETAILS.

KEYED NOTES: (#)

1. 7/8" APA RATED FLOOR SHEATHING NAIL W/10d@ 4"O.C. BOUNDRY/ EDGES 12" O.C. FIELD (U.O.N.)
2. PRE-ENGINEERED FLOOR TRUSSES
3. PRE-ENGINEERED GIRDER TRUSS
4. 2x8 DF#2 FLOOR JOISTS @12"O.C.

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FLOOR FRAMING PLAN

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-	BDA TECH REV.

WATSON

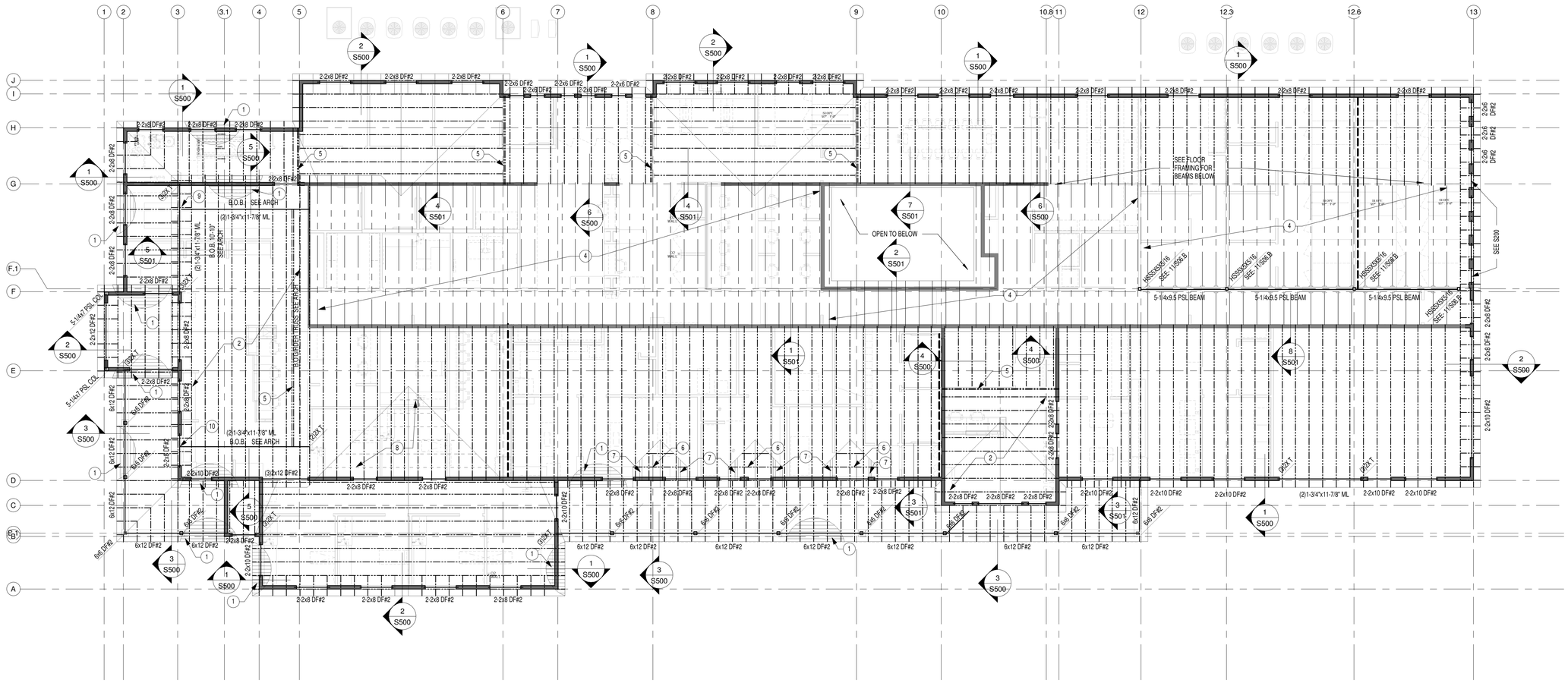
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1 S300 ROOF FRAMING PLAN

1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO GENERAL NOTES SHEETS FOR ALL REQUIREMENTS.
2. REFER TO ARCH. FOR ALL BEARING HEIGHTS AND ELEVATIONS.
3. CONTRACTOR TO PROVIDE APPLICABLE SHOP DRAWINGS AS DETAILED ON SHT. S01.A
4. PROVIDE (2)2x6 DF#2 BUILT-UP STUD TRIMMER (T) COLUMN @EA. END OF HEADER W/(1)FULL HEIGHT KING STUD (1) (U.O.N.).
5. REFER TO MECHANICAL PLANS FOR ROOF MOUNTED EQUIPMENT DETAILS.
6. TRUSS MANUF. TO VERIFY ALL ROOF MOUNTED EQUIPMENT WEIGHTS WITH MECHANICAL.
7. REFER TO S06.B AND S06.C FOR ALL WOOD CONNECTION DETAILS.
8. ALL ROOF FRAMING TO BE PRE-ENGINEERED ROOF TRUSSES @24"O.C. (U.O.N.)

KEYED NOTES: (#)

1. 5/8" APA RATED ROOF SHEATHING NAIL W/ 10d@6"O.C. BOUNDRY/ EDGES 12"O.C. FIELD. (U.O.N.)
2. PRE-ENGINEERED VAULTED TRUSS @24" O.C. (SEE ARCH)
3. WOOD POST CAP -SEE 8/S06.B
4. TJI 14" /360 SERIES @24" O.C. ROOF JOISTS
5. PRE-ENGINEERED GIRDER TRUSS
6. PRE-ENGINEERED TRUSSES FOR DORMERS @24" O.C.
7. 2X BLOCKING UNDER DORMER WALLS BETWEEN TRUSSES
8. PRE-ENGINEERED VALLEY SET TRUSSES @24"O.C.
9. SIMPSON TOP FLANGE HANGER
10. POST DOWN TO HEADER -SEE ARCH FOR BEARING HEIGHT

LEGEND

2x6 DF#2 @16"O.C. EXT. /INT. WOOD BEARING STUDS (U.O.N.)

SHEARWALL LOCATION -SEE SCHEDULE

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ROOF FRAMING PLAN

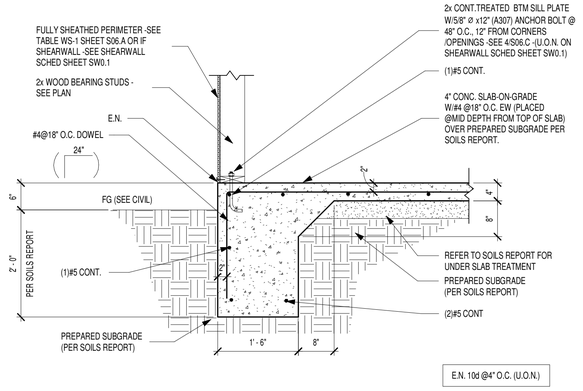
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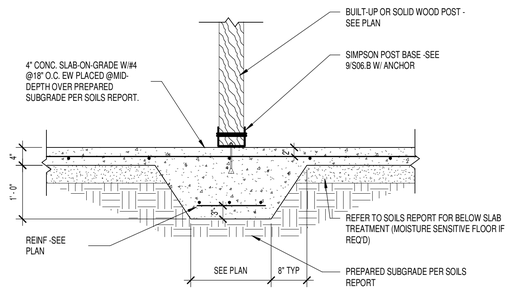
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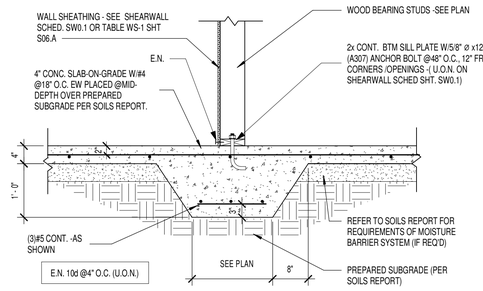
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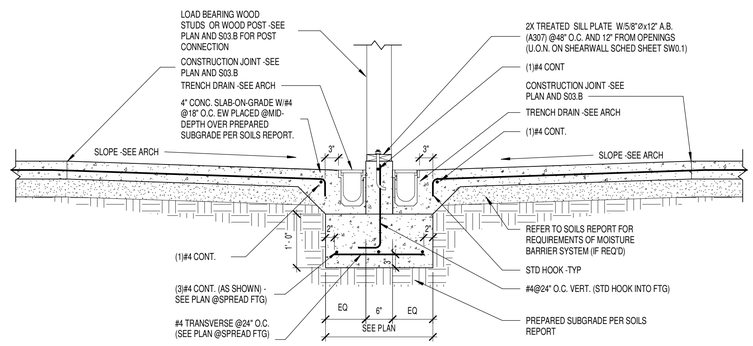
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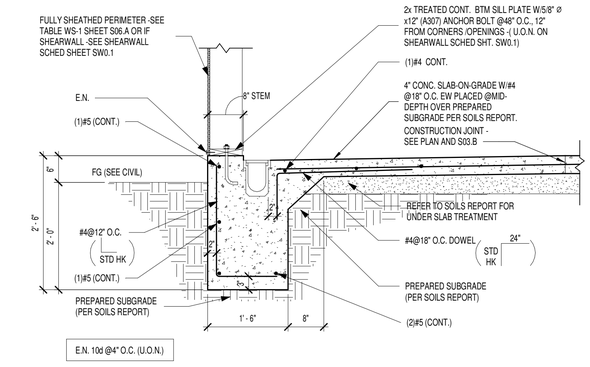
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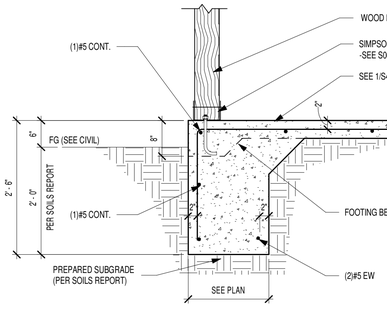
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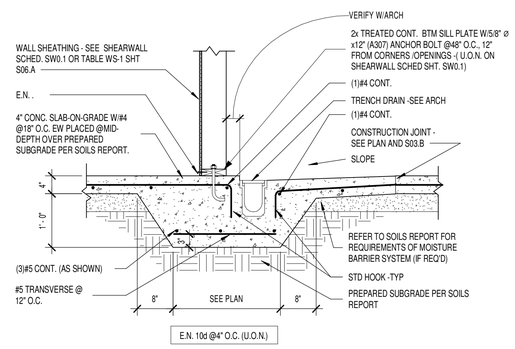
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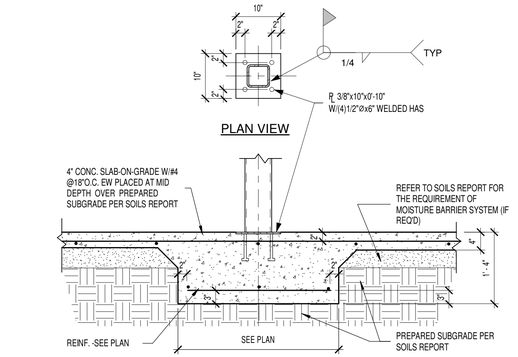
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3/4" = 1'-0"



6 S400 SECTION
3/4" = 1'-0"



7 S400 SECTION
3/4" = 1'-0"



8 S400 SECTION
3/4" = 1'-0"

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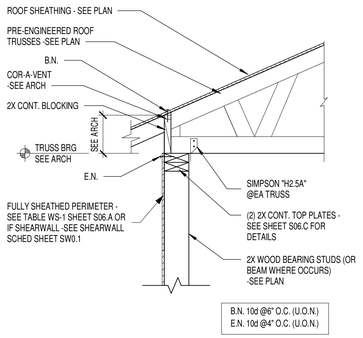
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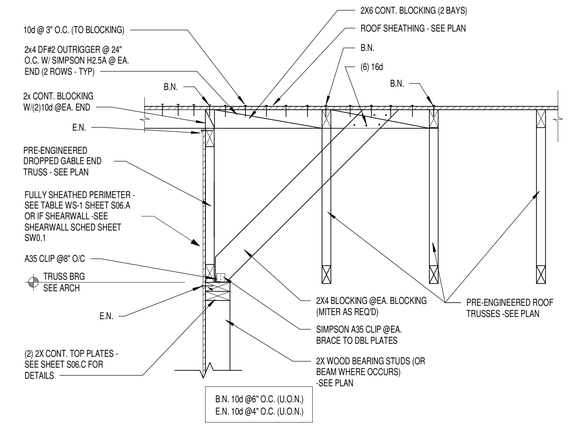
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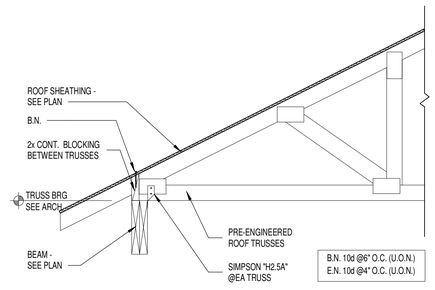
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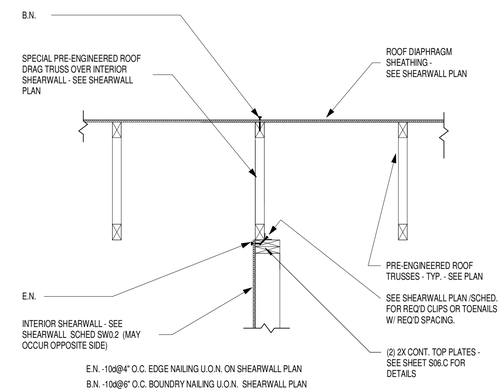
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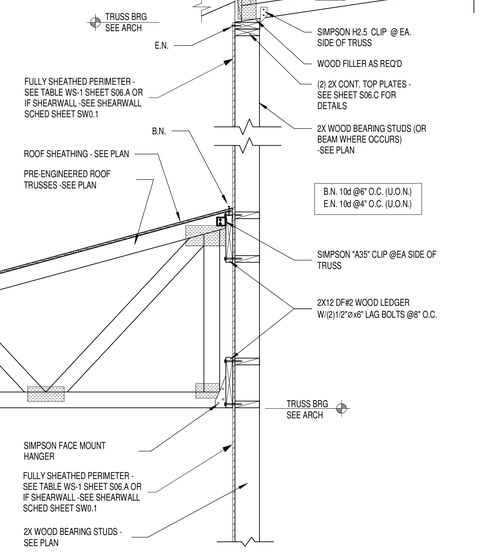
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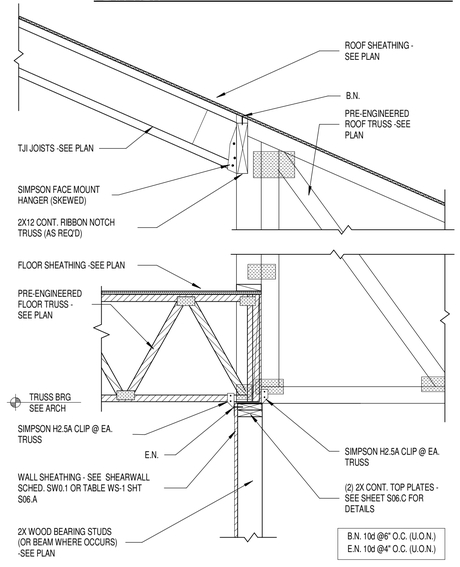
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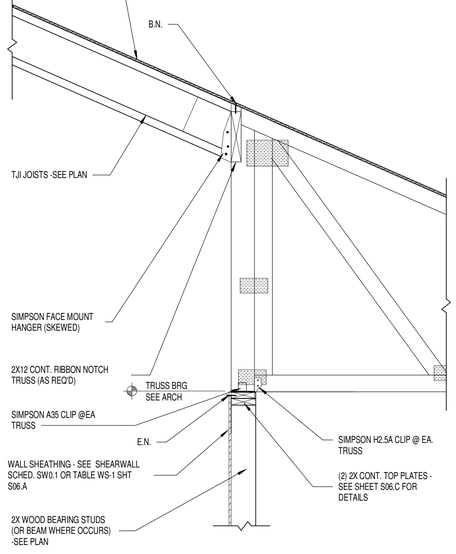
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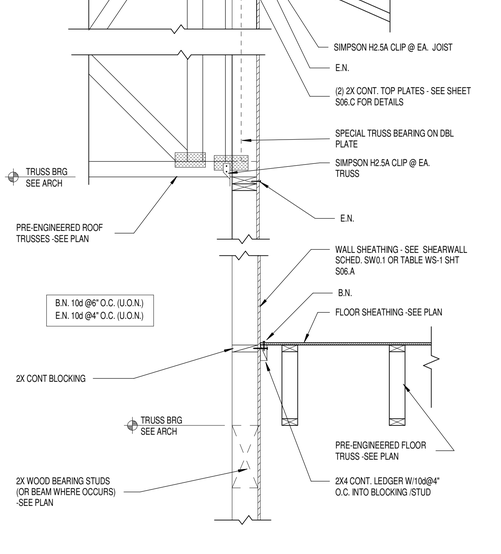
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6 S500 SECTION
3/4" = 1'-0"



7 S500 SECTION
3/4" = 1'-0"



8 S500 SECTION
3/4" = 1'-0"

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ROOF /FLOOR FRAMING SECTIONS

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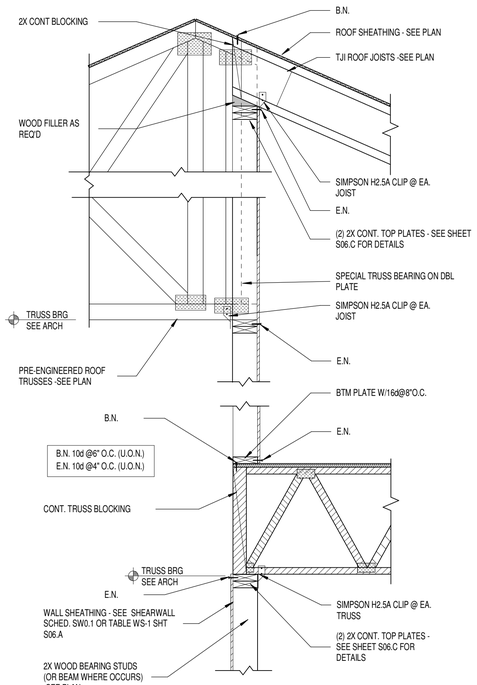
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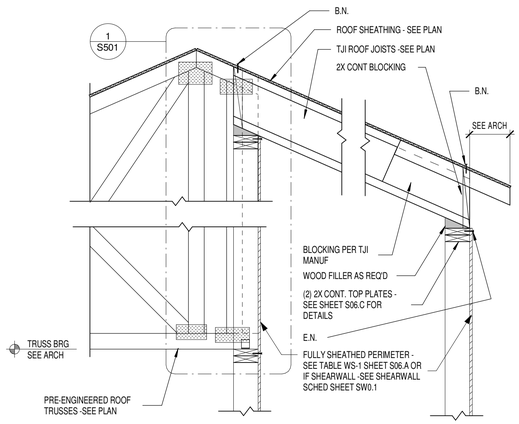
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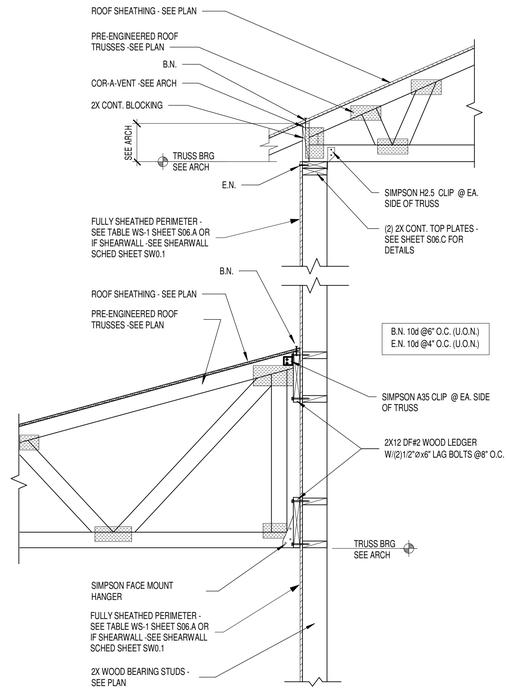
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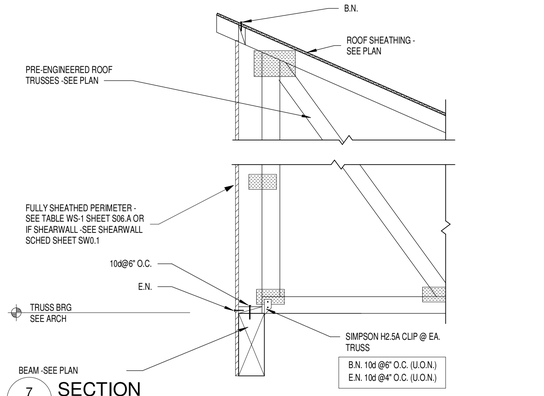
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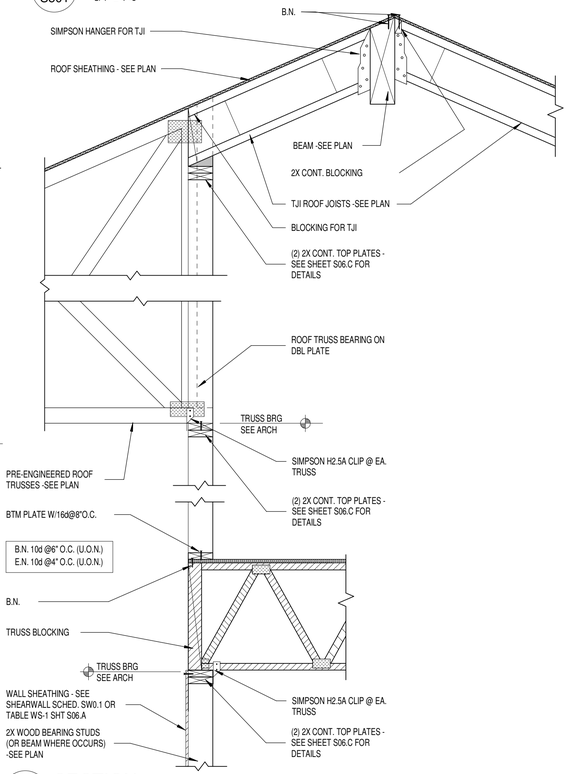
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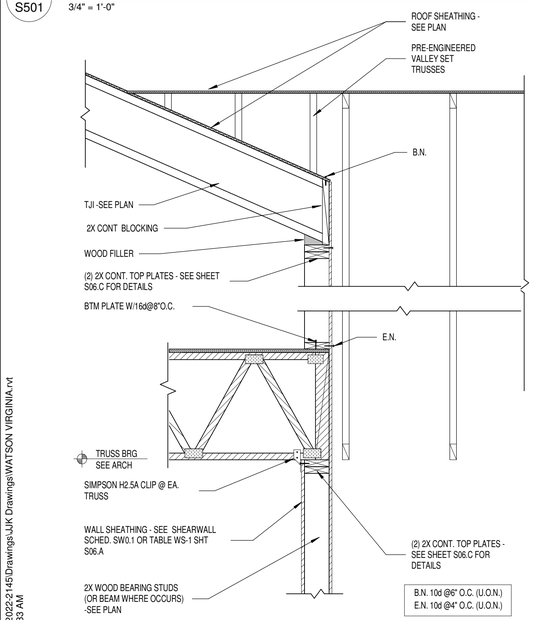
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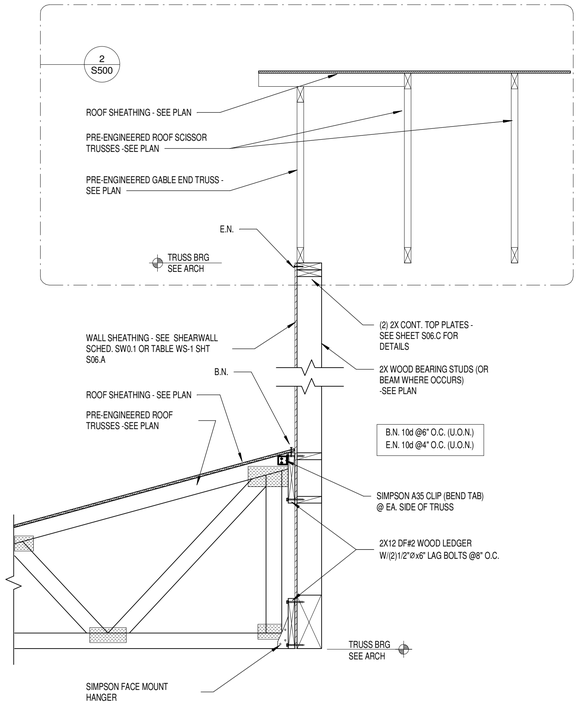
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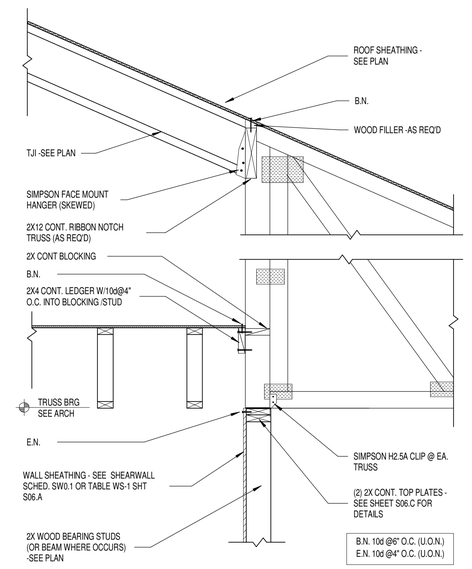
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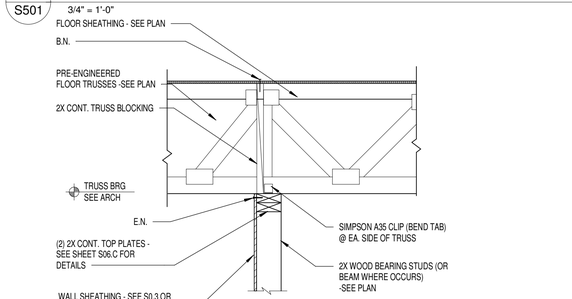
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5 S501 SECTION 3/4" = 1'-0"



6 S501 SECTION 3/4" = 1'-0"



9 S501 SECTION 3/4" = 1'-0"

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BRIAN WATSON, DVM

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ROOF /FLOOR FRAMING SECTIONS (2)

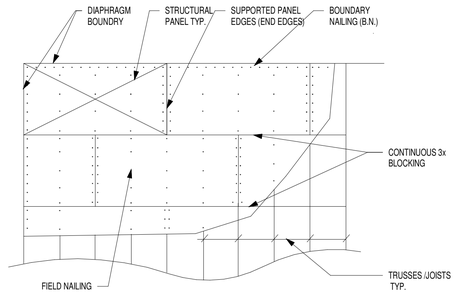
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UNBLOCKED DIAPHRAGM SCHEDULE (APA RATED SHEATHING)		WORST CASE OF WIND/SEISMIC AND LOAD CASES (1,2,3,4,5,6) ALLOWABLES PER TABLE 4.2A (SDPWS-2015)			
ACTUAL SIZE (THK)	NOMINAL SIZE (THK)	DIAPHRAGM TYPE	COMMON NAIL SIZE	CAPACITY (ASD) DF OR SOUTHERN PINE FRAMING MEMBERS (PLF) 6" O.C. BOUNDRY 12" O.C. FIELDS	*CAPACITY (ASD) SPF OR HEM FIR FRAMING MEMBERS (PLF) 6" O.C. BOUNDRY 12" O.C. FIELDS
19/32"	5/8"	UNBLOCKED	10d	215	198
					198
					198

*CAPACITY ADJUSTMENT [1- (.5 x SPECIFIC GRAVITY OF FRAMING MEMBER)]

GENERAL NOTES:

A) PANEL SHALL NOT BE LESS THAN 4'x8' EXECPT AT BOUNDARIES AND CHANGES IN FRAMING WHERE MINIMUM PANEL DIMENSION SHALL BE 24" UNLESS ALL EDGES OT THE UNDERSIZED PANELS ARE SUPPORTED BY AND FASTENED TO FRAMING MEMBERS OR BLOCKING.

B) NAILS SHALL BE LOCATED AT LEAST 3/8" FROM THE EDGES OF PANELS. MAXIMUM NAIL SPACING AT PANEL EDGES SHALL BE 6" ON CENTER. NAILS ALONG INTERMEDIATE FRAMING MEMBERS AND BLOCKING FOR PANELS SHALL BE THE SAME SIZE AS INSTALLED AT THE PANEL EDGES. MAXIMUM NAIL SPACING SHALL BE 6" ON CENTER WHEN SUPPORTED SPACING OF 48" ON THE CENTER IS SPECIFIED AND 12" ON CENTER FOR CLOSER SUPPORT EDGES.

C) WOOD STRUCTURAL PANELS SHALL CONFORM TO THE REQUIREMENTS FOR THEIR TYPE IN DOC PS1 OR PS2

UNBLOCKED DIAPHRAGM SCHEDULE (WOOD)

SHEARWALL SCHEDULE -16" O.C. MAX. SPACING OF STUDS								
SW ◇	SHEARWALL SHEATHING (THICK SIDE)	EDGE NAILING (IN O.C.)	ANCHOR BOLTS @ FND. (IN O.C.)	BOTTOM PLATE (IN O.C.)	RIM/BLK TP DBL TOP PLATES (IN O.C.)	ALLOW (ASD) SHEAR (KLF) DF/SP	ALLOW (ASD) SHEAR (KLF) HF/SPF	NOTES
1	15/32" RS (1)	10d @ 6	5/8" @ 40	16d @ 5	16d @ 3T	0.364	0.335	1
2								
3								
4								
5								
6								
7								

TABLE LEGEND:
T = TOENAIL (3T =3" O.C. TOE NAIL)
KLF = KIPS PER LINEAR FOOT
O.C. = ON -CENTER SPACING

GENERAL NOTES:

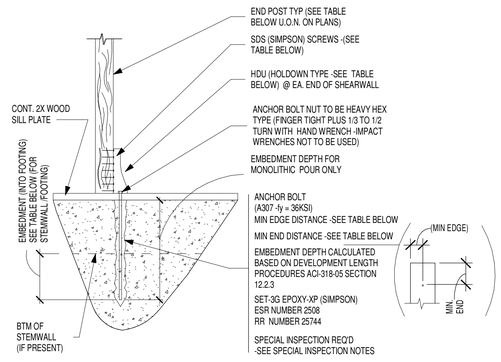
A) SPACE NAILS @12" O.C. ALONG INTERMEDIATE FRAMING MEMBERS (U.O.N.)
B) BLOCK ALL PANEL EDGES WITH MINIUM BLOCKING (UNLESS 3X BLOCKING IS REQ'D)
C) APPLY NAILING TO ALL STUDS, TOP AND BOTTOM PLATES AND BLOCKING
D) FRAMING TO BE A MAXIMUM OF 16" O.C.
E) FASTNERS SHALL BE DRIVEN FLUSH WITH SURFACE OF SHEATHING
F) PANELS MAY BE INSTALLED EITHER HORIZ. OR VERT.
G) ALL NAILS TO BE COMMON TYPE
H) ORIENTED STRAND STRUCTURAL PANELS (OSB) MAY BE SUBSTITUITED FOR PLYWOOD ONLY COMFORMING TO NER-180 PRODUCT STANDARD 2-92
I) 1-5/8" MIN. NAIL PENETRATION TO FRAMED MEMBERS

SPECIAL NOTES FOR SHEARWALLS :

1) APA RATED SHEATHING EXP1/EXP2/EXT OR C-C/C-D/STRUCT 1 PLYWOOD

WOOD STUD SHEARWALL SCHEDULE

(REFER TO SHEARWALL PLANS)



HOLDOWN SCHEDULE
(SIMPSON STRONG-TIE HOLDOWN TO SOLID CONCRETE FOUNDATION)

FOUNDATION LEVEL										
HD △	TYPE	END POST TYPE	FASTNER TO END POST	SET-3G EPOXY ANCHOR EMBEDMENT (IN) (STEMWALL TYPE FND)	MINIMUM EDGE DISTANCE (IN) (STEMWALL TYPE FND)	MINIMUM END DISTANCE (IN) (STEMWALL TYPE FND)	SET-3G EPOXY ANCHOR EMBEDMENT (IN) (MONOLITHIC TYPE FND)	MINIMUM EDGE DISTANCE (IN) (MONOLITHIC TYPE FND)	MINIMUM END DISTANCE (IN) (MONOLITHIC TYPE FND)	**ASD CAP. (LBS)
1	HDU2	(2) 2x	6-SDS 1/4"x2-1/2"	4	12"	4 5/16"	7	2-3/4	4 5/16	3,075
2										
3										
4										
5										
6										

**CAPACITY BASED ON LESSER ALLOWABLE VALUE OF HOLDOWN HARDWARE, A307 ANCHOR BOLT EMBEDMENT DEPTH (BASED ON DEVELOPMENT LENGTH PROCEDURES. ALL VALUES ARE BASED ON ASD (ALLOWABLE STRESS DESIGN) LOAD FACTORS FOR WIND/SEISMIC. TO CONVERT TO LRFD (LOAD RESISTANCE FACTOR DESIGN), MULTIPLY VALUES BY 1.4

GENERAL NOTES:

A) F'C = 4000 PSI (MIN)

B) SPECIAL INSPECTION REQUIRED FOR POST INSTALLED ANCHORS -SEE GENERAL STRUCTURAL NOTES.

C) SUBSTITUTION FOR SIMPSON STRONG-TIE PRODUCTS MUST BE EQUIVALENT AND APPROVED BY ENGINEER.

DRILLED /EPOXY HOLDOWN SCHEDULE (WOOD STUDS)

(4000 PSI -28 DAY CONCRETE COMPRESSIVE STRENGTH)

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SHEARWALL SCHEDULES

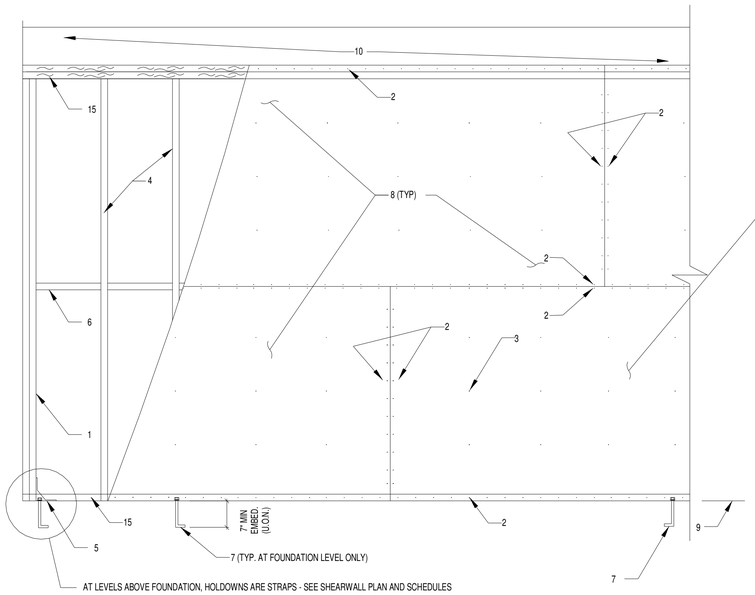
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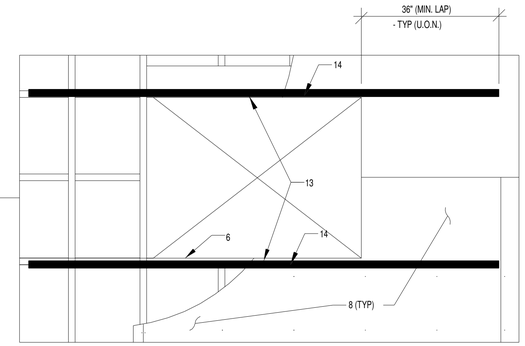
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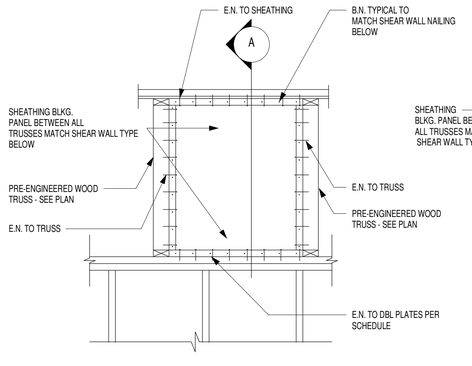
SPECIAL STRAPING @OPENINGS (SEE PLAN FOR LOCATION)

NOTES

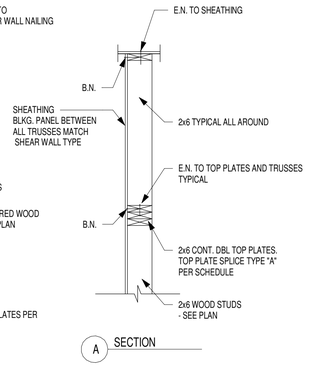
1. DOUBLE STUDS AT EACH END OF PANEL - TYPICAL U.O.N. ON HOLDOWN SCHED.
2. E.N. (EDGE NAILING) - SEE SHEARWALL SCHED.
3. FIELD NAILING @ 12" O.C.
4. WOOD STUDS @ 16" O.C. MAX.
5. HOLDOWN AT EA. END OF SHEARWALL ONLY- SEE HOLDOWN SCHED.
6. 2X or 3X BLOCKING AT UNSUPPORTED SHEATHING PANEL JOINTS -SEE SHEARWALL SCHED.
7. ANCHOR BOLTS OR DRILLED AND EPOXIED - FOR SIZE AND SPACING - SEE SHEARWALL SCHED.
8. SHEATHING MATERIAL - SEE SHEARWALL SCHED.
9. FLOOR LINE.
10. BLOCKING, FLOOR/ROOF JOIST, BEAM OR DRAG TRUSS.
11. NOT USED.
12. 2 - 2X TOP PLATES.
13. SIMPSON METAL STRAP TOP/BTM OF WINDOWS OPENING -SEE SHEARWALL PLAN/SCHED.
14. WINDOW SILL PLATE
15. 2X OR 3X BTM. PLATE - IF 3X BTM PLATE IS REQ'D AT LEVELS ABOVE FOUNDATION, PROVIDE FASTENERS W/ PENETRATION OF 2" INTO CONT. BLOCKING BELOW USING SPACING PER SHEARWALL SCHED.

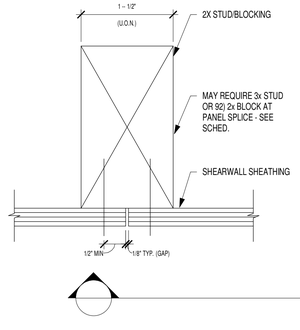
1 SW0.2 TYP WOOD SHEARWALL ELEV. AND NOTINGS

1/8" = 1'-0"

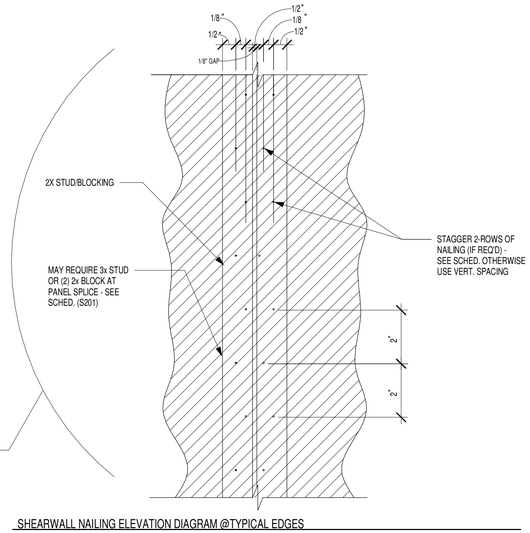


FIELD CONSTRUCTED BLOCKING PANEL (OPTION) BETWEEN TRUSSES





EDGE SPACING



SHEARWALL NAILING ELEVATION DIAGRAM @TYPICAL EDGES

2 SW0.2 MISC WOOD SHEARWALL DETAILS

1/8" = 1'-0"

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SHEARWALL ELEV. AND FRAMING DETAILS

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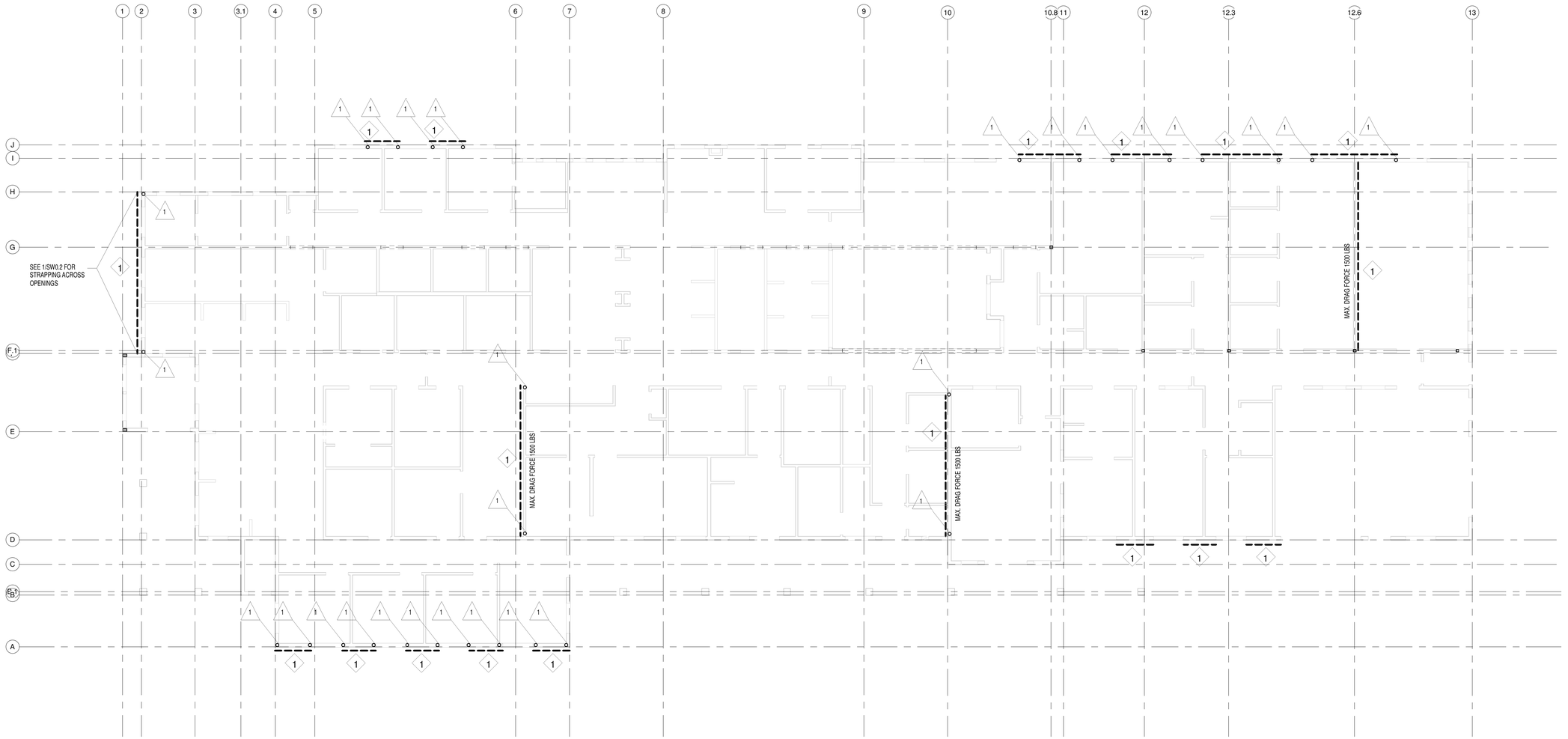
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1 SW1.0 ROOF TO FND SHEARWALL PLAN
1/8" = 1'-0"

SHEARWALL LEGEND

- 1 — SHEARWALL TYPE -SEE SW0.1 FOR SCHED. DETAILS
- 1 — HOLDDOWN TYPE -SEE SW0.1 FOR SCHED. DETAILS
- SHEARWALL LOCATION

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ROOF TO FOUNDATION SHEARWALL PLAN

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GENERAL NOTES

A. ALL INTERIOR WALLS TO BE WALL TYPE WT1, U.N.O.

B. ALL CASEWORK TO HAVE PLASTIC LAMINATE FINISH, U.N.O.

C. ALL EXPOSED COUNTERTOP CORNERS TO HAVE 2" RADIUS.

D. ALL EXPOSED COUNTERTOPS TO BE FACED WITH PVC EDGEBANDING.

E. ALL RUN AND CAGE BANK DIMENSIONS TO BE VERIFIED BEFORE INSTALLATION.

F. GROMMET LOCATIONS IN COUNTERTOPS TO BE VERIFIED WITH OWNER.

G. PROVIDE BLOCKING IN WALL FOR ALL WALL MOUNTED EQUIPMENT.

H. ALL EXPOSED OUTSIDE CORNERS OF INTERIOR WALLS SHALL HAVE CORNER GUARDS.

I. AT ALL VERTICAL TILE APPLICATIONS, INSTALL 'SCHLUTER' STRIPS ON OUTSIDE CORNERS.

REFERENCE KEYNOTES

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 10 53.05 - BUILT-IN BENCH SEATING
06 41 26.02 - PLASTIC LAMINATE RETAIL SHELVES
06 41 26.03 - BUILT-IN END TABLE
06 41 43.02 - 12" DEEP PLASTIC LAMINATE COUNTERTOP
06 41 43.03 - 18" DEEP PLASTIC LAMINATE COUNTERTOP
06 41 46.01 - SOLID SURFACE COUNTERTOP
06 41 46.05 - SOLID SURFACE

DIVISION 08 - OPENINGS

08 79 19.02 - ANCHORED METAL THRESHOLD SET IN SEALANT

DIVISION 09 - FINISHES

09 22 16.05 - PARTIAL HEIGHT INTERIOR METAL STUD PARTITION WALL

DIVISION 10 - SPECIALTIES

10 57 13.02 - APRON AND GLOVE HOOKS - O.F.C.I. - PROVIDE BLOCKING

DIVISION 11 - EQUIPMENT

11 81 19.05 - CENTRAL VACUUM
11 72 43.12 - CONTROLLED SUBSTANCE CABINET - O.F.C.I.
11 72 46.26 - SST. PASS-THRU CABINET - O.F.C.I.
11 72 56.03 - 4' SST. SHALLOW TUB TABLE - O.F.C.I.
11 72 56.05 - 5' SST. SHALLOW TUB TABLE - O.F.C.I.
11 72 56.26 - SST. BATHING TUB - O.F.C.I.
11 73 16.01 - CAGE BANK - O.F.C.I.
11 73 16.21 - SST. RUN GATE AND PARTITION - O.F.C.I.
11 73 16.30 - SST. RECOVERY RUN GATE - PARTIAL HEIGHT - O.F.C.I.
11 74 16.01 - DENTAL X-RAY - O.F.C.I.
11 77 16.07 - ENDOSCOPY CABINET

DIVISION 22 - PLUMBING

22 11 19.11 - HOSE BIBB
22 11 19.15 - HOT AND COLD HOSE BIBB STATION
22 14 26.01 - TRENCH DRAIN
22 14 26.21 - FLOOR DRAIN
22 42 36.01 - UTILITY SINK
22 42 36.21 - MOP SINK
22 42 36.31 - WASHER BOX
22 43 16.06 - DOUBLE SCRUB SINK - O.F.C.I.
22 45 16.01 - EYEWASH
22 47 13.01 - DRINKING WATER FOUNTAIN
22 47 13.05 - ADA DRINKING WATER FOUNTAIN
22 63 19.02 - OXYGEN MANIFOLD

DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING

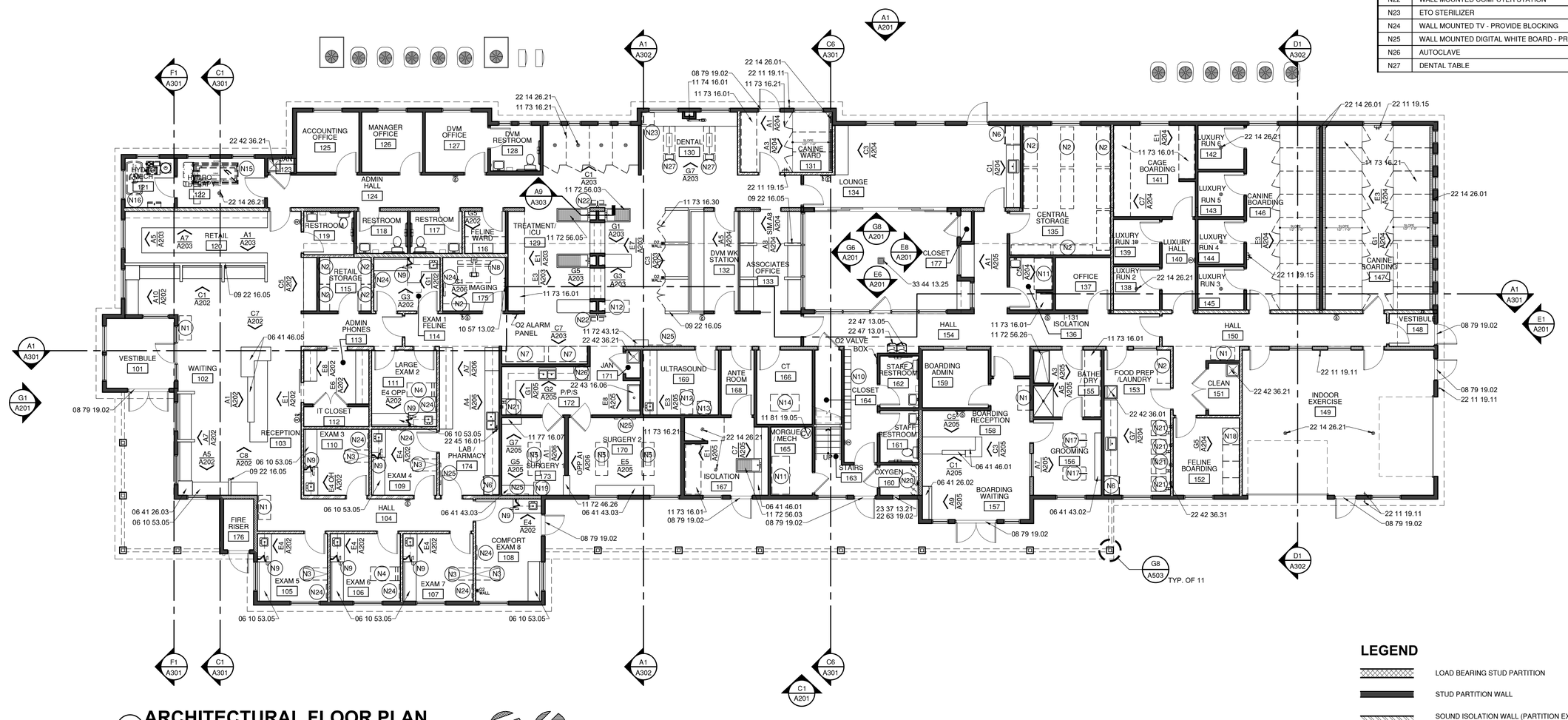
23 37 13.21 - VENTS FOR OXYGEN CLOSET - SEE MECHANICAL

DIVISION 33 - UTILITIES

33 44 13.25 - AREA DRAIN

N.I.C. EQUIP. SCHEDULE

MARK NO.	REMARKS
N1	FLOOR SCALE
N2	SHELVES
N3	FOLDING EXAM TABLE
N4	LIFT TABLE
N5	SURGERY TABLE
N6	REFRIGERATOR - FULL SIZE
N7	OXYGEN CAGES
N8	IMAGING TABLE
N9	COMPUTER MONITOR
N10	LOCKERS
N11	CHEST FREEZER
N12	GURNEY
N13	ULTRASOUND CART
N14	CT
N15	UNDERWATER TREADMILL
N16	TREADMILL EQUIPMENT
N17	GROOMING TABLES
N18	CAT CONDOS
N19	LAPAROSCOPIC TOWER
N20	OXYGEN TANKS
N21	STACKED WASHER AND DRYER
N22	WALL MOUNTED COMPUTER STATION
N23	ETO STERILIZER
N24	WALL MOUNTED TV - PROVIDE BLOCKING
N25	WALL MOUNTED DIGITAL WHITE BOARD - PROVIDE BLOCKING
N26	AUTOCLAVE
N27	DENTAL TABLE



B1 ARCHITECTURAL FLOOR PLAN

1/8"=1'-0" AREA = 11,679 SF

TRUE NORTH NORTH

LEGEND

- LOAD BEARING STUD PARTITION
- STUD PARTITION WALL
- SOUND ISOLATION WALL (PARTITION EXTENDED TO BOTTOM OF TRUSS)
- SOUND ISOLATION WALL (LOAD BEARING PARTITION EXTENDED TO BOTTOM OF TRUSS)
- (CV) CENTRAL VACUUM OUTLET
- CVP CENTRAL VACUUM PAN OUTLET

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ARCHITECTURAL FLOOR PLAN

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REFERENCE KEYNOTES

DIVISION 05 - METALS

05 12 00.01 - STEEL COLUMN - SEE STRUCTURAL

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 43 16.02 - WOOD RAILING

DIVISION 22 - PLUMBING

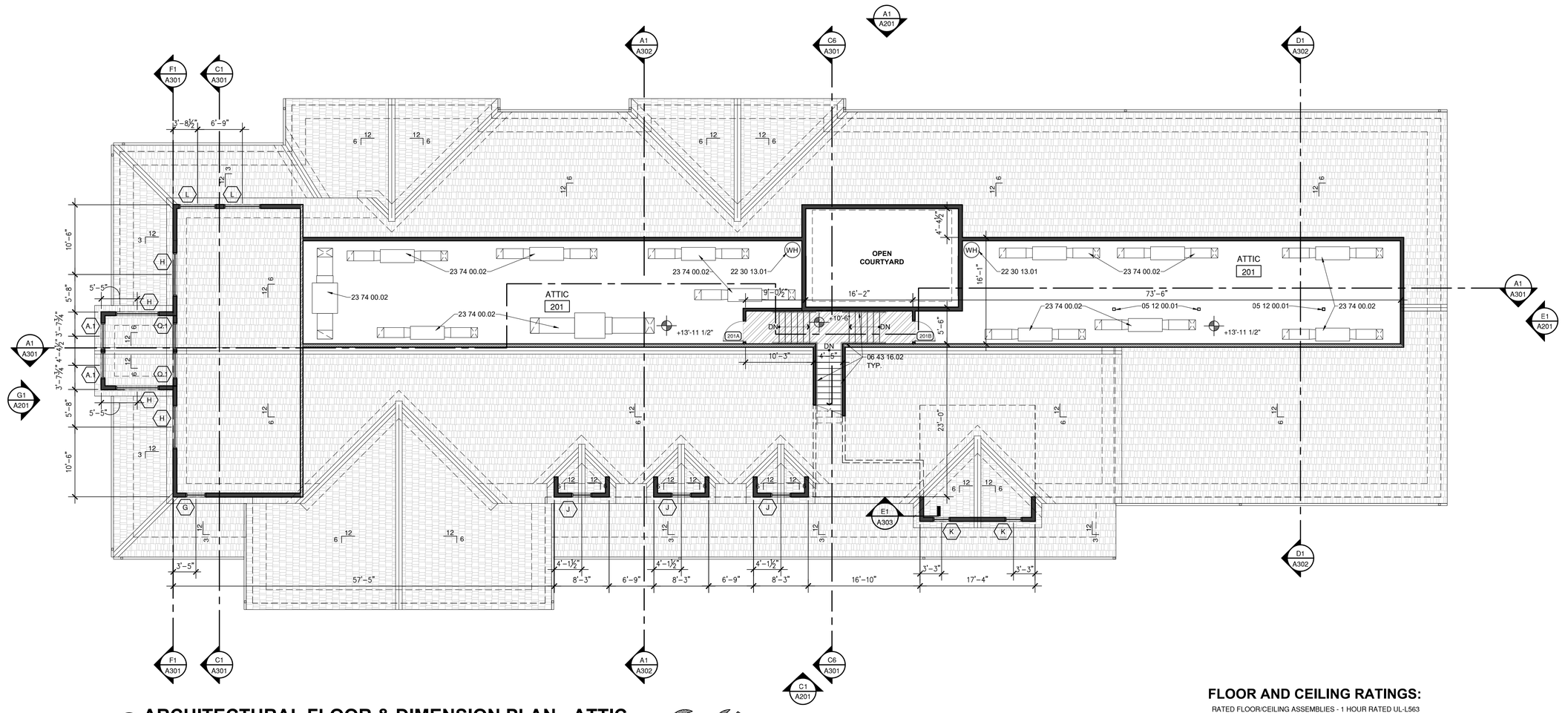
22 30 13.01 - WATER HEATER

DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING

23 74 00.02 - MECHANICAL UNIT - SEE MECHANICAL

LEGEND

1 HOUR RATED FLOOR ASSEMBLY PER UL-L563 - SEE FLOOR AND CEILING RATING



B1 ARCHITECTURAL FLOOR & DIMENSION PLAN - ATTIC

1/8"=1'-0" 2,313 SF

TRUE NORTH NORTH

FLOOR AND CEILING RATINGS:

RATED FLOOR/CEILING ASSEMBLIES - 1 HOUR RATED UL-L563
1 LAYER 5/8" TYPE "X" GYPSUM BOARD ATTACHED TO 1/2" RESILIENT
FURRING CHANNEL SPACED 12" O.C. SCREW FASTENED
PERPENDICULAR TO LOWER CHORD OF PARALLEL CHORD WOOD TRUSS
24" O.C. SUBFLOORING 22/32 IN. THICK T&G WOOD STRUCTURAL PANELS.
INSTALLED PERPENDICULAR TO TRUSSES WITH END JOINTS STAGGERED 4 FEET. PLYWOOD OR NON-VENEER
APA RATED PANELS SECURED TO TRUSSES WITH END JOINT STAGGERED 4 FEET. PLYWOOD OR NON-VENEER
APA RATED PANELS SECURED TO TRUSSES WITH CONSTRUCTION ADHESIVE AND #6D RINGED SHANK NAILS.
NAILS SPACED 12 IN. ON CENTER ALONG EACH TRUSS

GYP WALLBOARD ROOF/ CEILING - WOOD FRAMING (PITCHED ROOF) 1 HOUR RATED UL-P533
1 LAYER 5/8" TYPE "X" GYPSUM BOARD ATTACHED TO 1/2" RESILIENT
FURRING CHANNEL SPACED 12" O.C. SCREW FASTENED
PERPENDICULAR TO LOWER CHORD OF WOOD TRUSS
OF 2 X 4 LBR. WITH STEEL TRUSS PLATES, SPACED 24" O.C.

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ARCHITECTURAL FLOOR & DIMENSION PLAN - ATTIC

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GENERAL NOTES

A. ALL INTERIOR WALLS TO BE WALL TYPE WT1, U.N.O.

B. ALL EXTERIOR DIMENSIONS ARE TO FACE OF SHEATHING, OR FACE OF CMU, U.N.O.

C. FIELD VERIFY ALL DIMENSIONS PRIOR TO START OF CONSTRUCTION.

D. ALL RUN AND CAGE BANK DIMENSIONS TO BE VERIFIED BEFORE INSTALLATION.

E. ALL CLEAR DIMENSIONS ARE FROM FACE OF FINISH TO FACE OF FINISH.

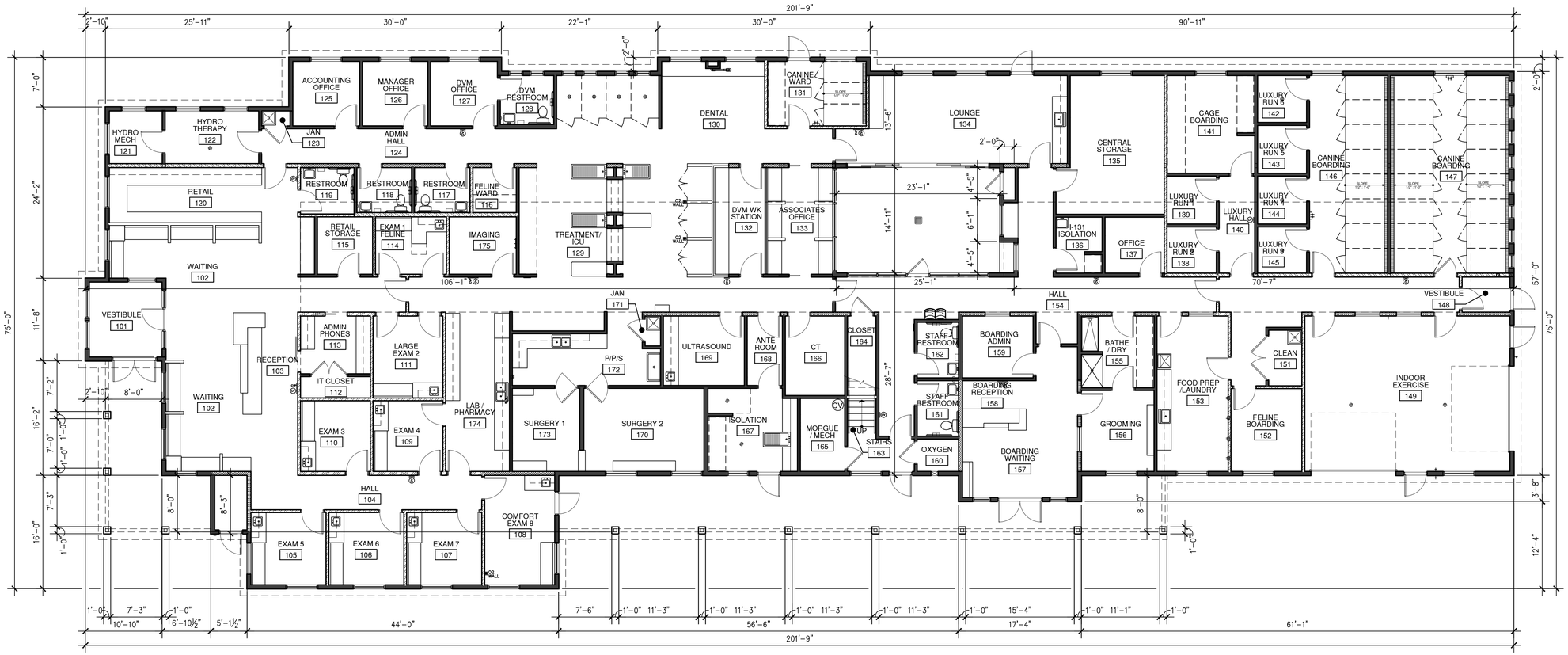
F. GROMMET LOCATIONS IN COUNTERTOPS TO BE VERIFIED WITH OWNER.

G. PROVIDE BLOCKING IN WALL FOR ALL WALL MOUNTED EQUIPMENT.

H. ALL DOORS OCCURRING AT AN ADJACENT WALL INTERIOR CORNER ALLOW 3" CLEARANCE TO ROUGH OPENING.

I. SEE SHEETS A104 AND A105 FOR WINDOW AND DOOR LOCATIONS.

J. SEE SHEETS A104 AND A105 FOR WALL TYPES.



B1 DIMENSION PLAN EXTERIOR

1/8"=1'-0"

TRUE NORTH

NORTH

LEGEND

- LOAD BEARING STUD PARTITION
- STUD PARTITION WALL
- SOUND ISOLATION WALL (PARTITION EXTENDED TO BOTTOM OF TRUSS)
- SOUND ISOLATION WALL (LOAD BEARING PARTITION EXTENDED TO BOTTOM OF TRUSS)

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DIMENSION PLAN EXTERIOR

REV.#	DATE	COMMENTS
REVISION: -		
REVISION: -		
REVISION: -		
REVISION: -		

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON

PROJECT NO.: 2004

DRAWN: -

DATE: 07/19/2022

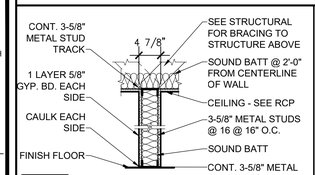
A103

- OF -

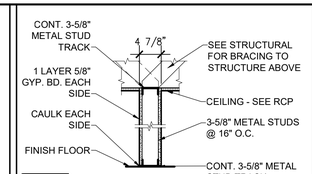
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Plot Date: July 20, 2022 - 10:46 AM
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WALL TYPES

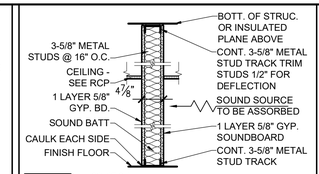
NOTE: FOR WET AREAS USE 5/8" DENSARMOR PLUS (WATERPROOF GYP. BD.) IN LIEU OF STANDARD GYP. BD. N.T.S.



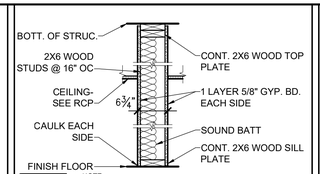
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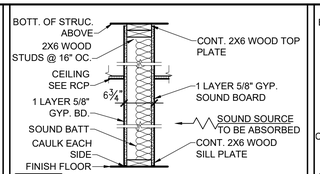
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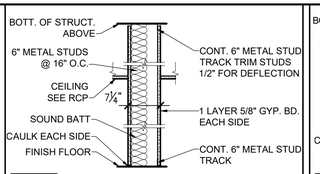
WT3 ACOUSTIC WALL
NOTE: WT3A 1 HOUR RATED - PER UL -U419 -NON BEARING WALL - PROVIDE FIRE BLOCKING AND ⅝" TYPE 'X' FIRE RATED GYP BD.



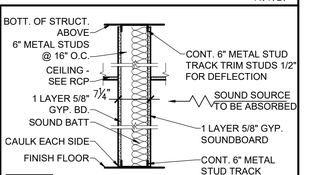
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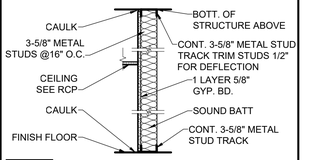
WT5 ACOUSTIC WALL
NOTE: BEARING WALL



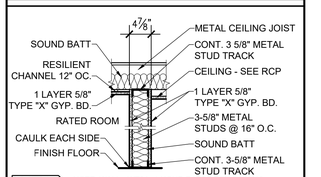
WT6 NOTE: PLUMBING WALL



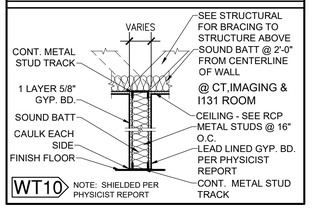
WT7 ACOUSTIC WALL
NOTE:



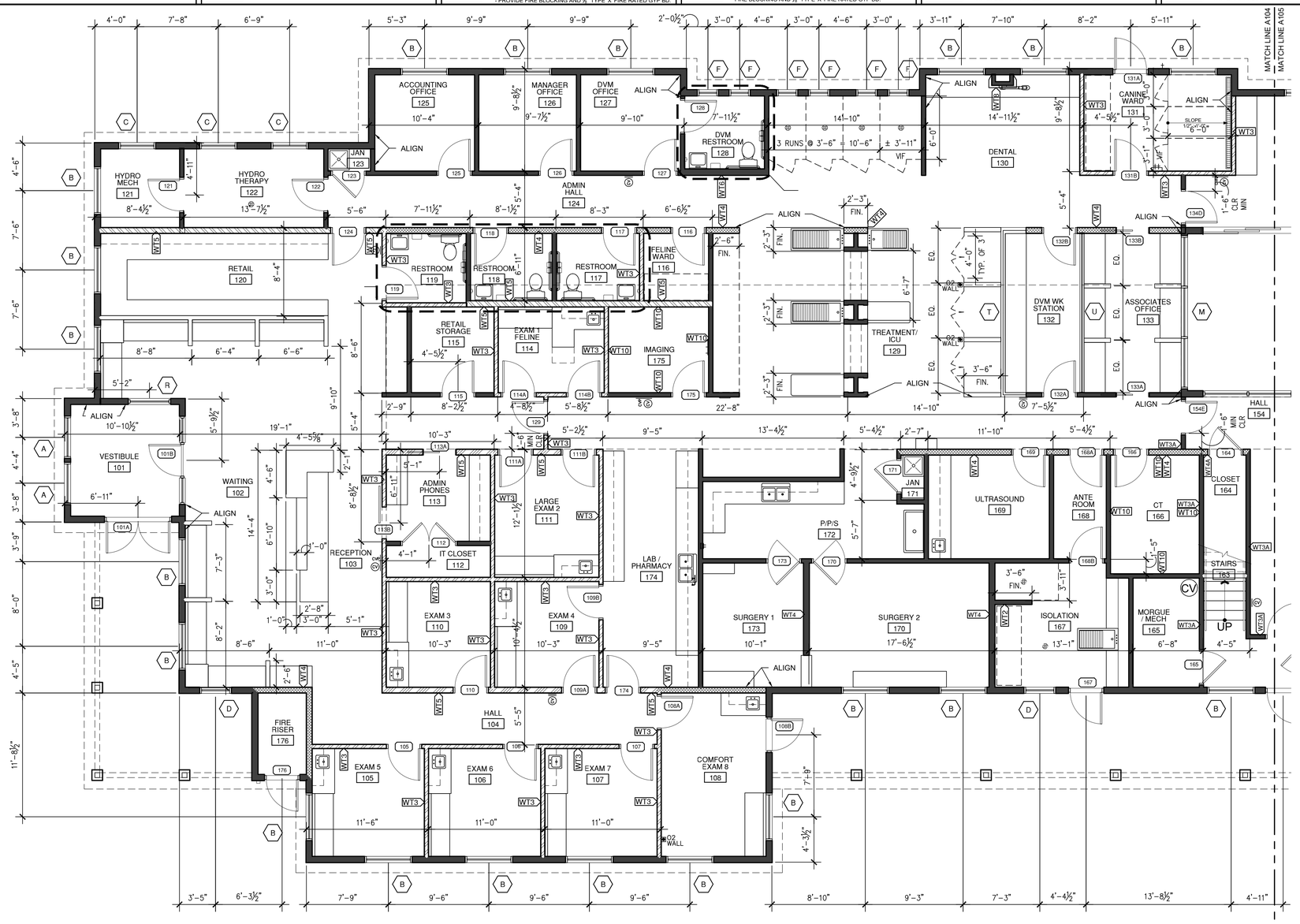
WT8



WT9 NOTE: WALL - WT3A -1 HOUR RATED PER UL U419
CEILING - 1 HOUR RATED PER UL P540



WT10 NOTE: SHIELDED PER PHYSICIST REPORT



B1 DIMENSION PLAN NORTH

3/16"=1'-0"

TRUE NORTH / NORTH

GENERAL NOTES

A. ALL INTERIOR WALLS TO BE WALL TYPE WT1, U.N.O.

B. ALL EXTERIOR DIMENSIONS ARE TO FACE OF SHEATHING, OR FACE OF CMU, U.N.O.

C. FIELD VERIFY ALL DIMENSIONS PRIOR TO START OF CONSTRUCTION.

D. ALL RUN AND CAGE BANK DIMENSIONS TO BE VERIFIED BEFORE INSTALLATION.

E. ALL CLEAR DIMENSIONS ARE FROM FACE OF FINISH TO FACE OF FINISH.

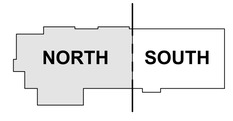
F. GROMMET LOCATIONS IN COUNTERTOPS TO BE VERIFIED WITH OWNER.

G. PROVIDE BLOCKING IN WALL FOR ALL WALL MOUNTED EQUIPMENT.

H. ALL DOORS OCCURRING AT AN ADJACENT WALL INTERIOR CORNER ALLOW 3" CLEARANCE TO ROUGH OPENING.

LEGEND

- LOAD BEARING STUD PARTITION
- STUD PARTITION WALL
- SOUND ISOLATION WALL (PARTITION EXTENDED TO BOTTOM OF TRUSS)
- SOUND ISOLATION WALL (LOAD BEARING PARTITION EXTENDED TO BOTTOM OF TRUSS)



KEY PLAN

SCALE: NTS

BDA Architecture, P.C.
Building Design for Animals, LLC
901 Lamberton Pl. NE
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BDA

COMMONWEALTH OF VIRGINIA
DAVID S. GASSER
Lic. No. 0401019577
ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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DIMENSION PLAN NORTH

REV.#	DATE	COMMENTS
-		
-		
-		
-		

REVISION: REVISION: REVISION: REVISION:

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON

PROJECT NO.: 2004

DRAWN: -

DATE: 07/19/2022

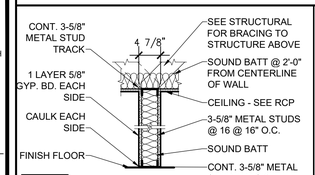
A104

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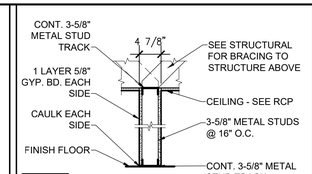
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WALL TYPES

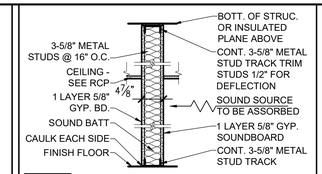
NOTE: FOR WET AREAS USE 5/8" DENSARMOR PLUS (WATERPROOF GYP. BD.) IN LIEU OF STANDARD GYP. BD. N.T.S.



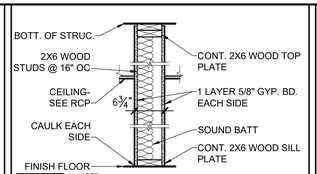
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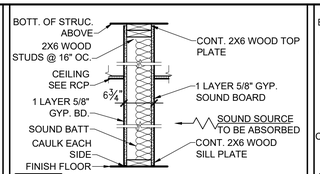
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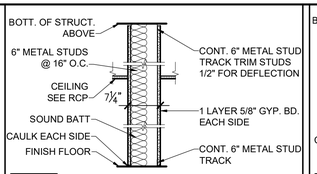
WT3 ACOUSTIC WALL
NOTE: WT3A 1 HOUR RATED - PER UL -U419 -NON BEARING WALL - PROVIDE FIRE BLOCKING AND ⅝" TYPE 'X' FIRE RATED GYP BD.



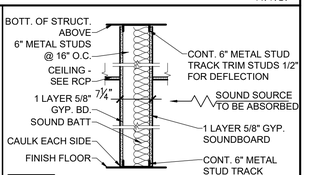
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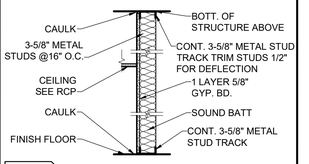
WT5 ACOUSTIC WALL
NOTE: BEARING WALL



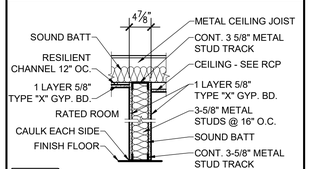
WT6 NOTE: PLUMBING WALL



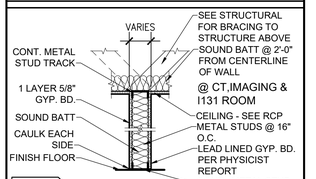
WT7 ACOUSTIC WALL
NOTE:



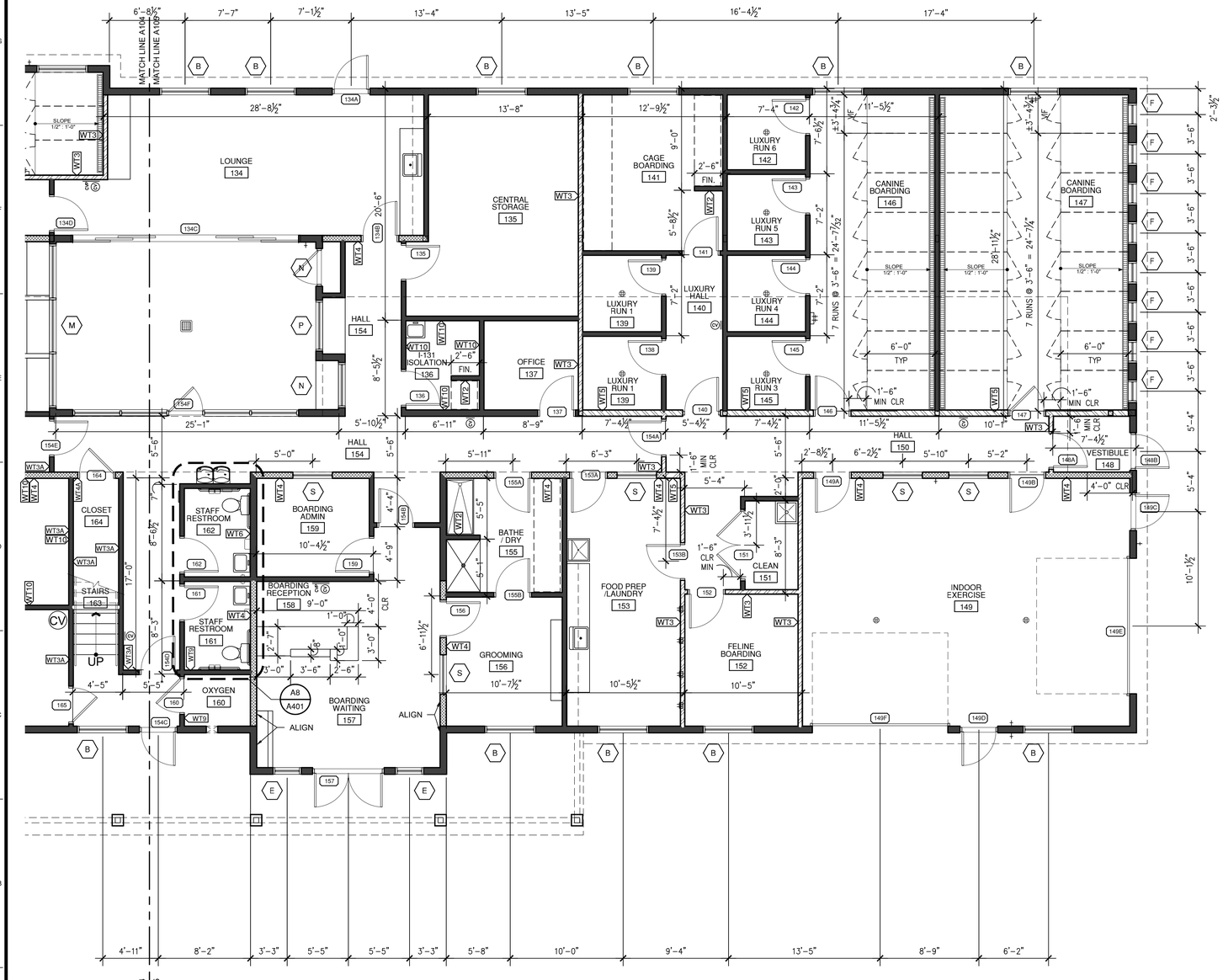
WT8



WT9 NOTE: WALL - WT3A -1 HOUR RATED PER UL U419
CEILING - 1 HOUR RATED PER UL P540



WT10 NOTE: SHIELDED PER PHYSICIST REPORT



B1 DIMENSION PLAN SOUTH

3/16"=1'-0"

TRUE NORTH

NORTH

GENERAL NOTES

A. ALL INTERIOR WALLS TO BE WALL TYPE WT1, U.N.O.

B. ALL EXTERIOR DIMENSIONS ARE TO FACE OF SHEATHING, OR FACE OF CMU, U.N.O.

C. FIELD VERIFY ALL DIMENSIONS PRIOR TO START OF CONSTRUCTION.

D. ALL RUN AND CAGE BANK DIMENSIONS TO BE VERIFIED BEFORE INSTALLATION.

E. ALL CLEAR DIMENSIONS ARE FROM FACE OF FINISH TO FACE OF FINISH.

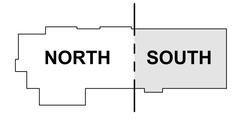
F. GROMMET LOCATIONS IN COUNTERTOPS TO BE VERIFIED WITH OWNER.

G. PROVIDE BLOCKING IN WALL FOR ALL WALL MOUNTED EQUIPMENT.

H. ALL DOORS OCCURRING AT AN ADJACENT WALL INTERIOR CORNER ALLOW 3" CLEARANCE TO ROUGH OPENING.

LEGEND

- LOAD BEARING STUD PARTITION
- STUD PARTITION WALL
- SOUND ISOLATION WALL (PARTITION EXTENDED TO BOTTOM OF TRUSS)
- SOUND ISOLATION WALL (LOAD BEARING PARTITION EXTENDED TO BOTTOM OF TRUSS)



KEY PLAN

SCALE: NTS

BDA Architecture, P.C.
Building Design for Animals, LLC
901 Lamberton Pl. NE
Albuquerque, NM 87107
Phone: (505) 888-0180
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Email: info@bdaarc.com

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COMMONWEALTH OF VIRGINIA
DAVID S. GASSER
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ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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DIMENSION PLAN SOUTH

REV.#	DATE	COMMENTS
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REVISION:
REVISION:
REVISION:
REVISION:

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON

PROJECT NO.: 2004

DRAWN: -

DATE: 07/19/2022

A105

- OF -

Save Date: July 20, 2022 - 10:52 AM Lawrence
Plot Date: July 20, 2022 - 10:53 AM
Drawing Name: G:\Archive\2020\2004 - Watson\BDA\DWGS\Construction Documents\Courthouse Veterinary\Sheets\2004-A105 Dimension Plan South.dwg

GENERAL NOTES

A. ALL CEILING HEIGHTS 9'-0" A.F.F. U.N.O.

B. VERIFY LOCATION AND QUANTITY OF CEILING MOUNTED I.V. TRACK STEMS WITH OWNER.

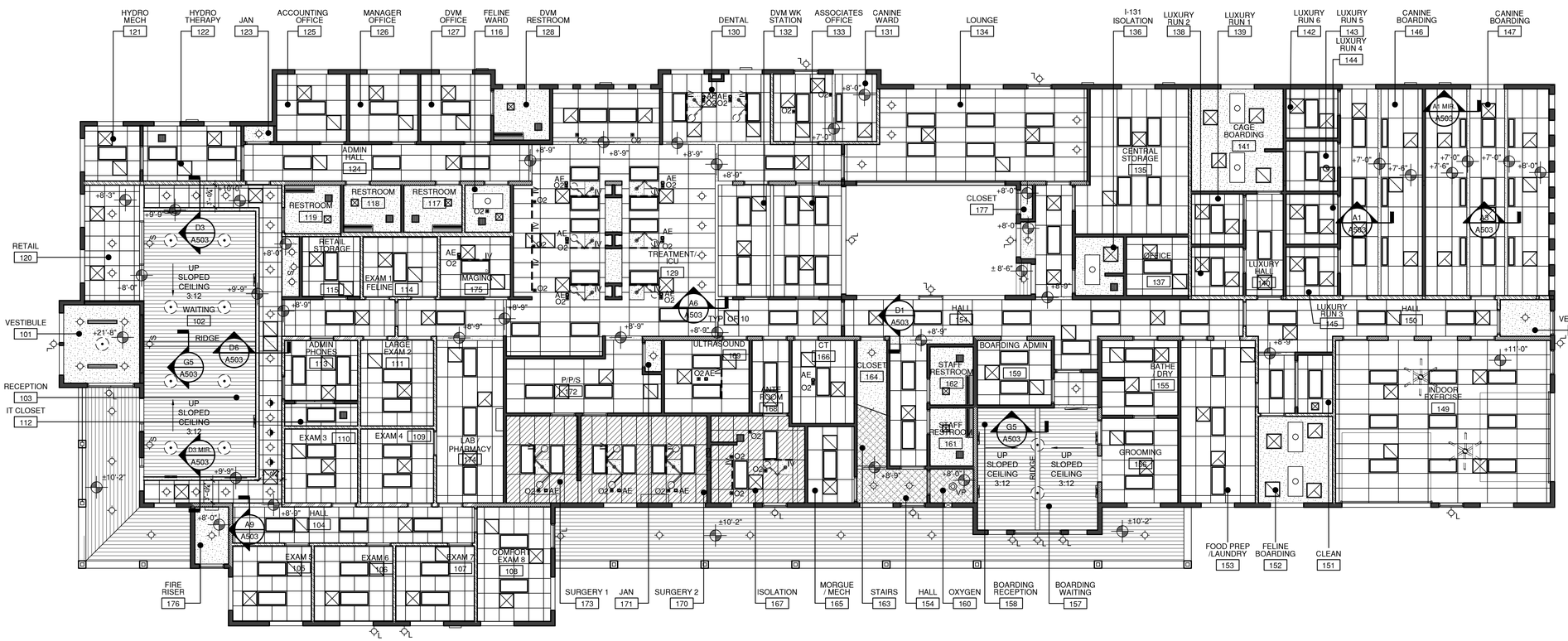
C. ALL ACOUSTIC WALLS TO EXTEND TO STRUCTURE ABOVE AND TO BE SEALED AROUND PERIMETER.

D. ALL LIGHTS TO BE MOUNTED FLUSH WITH CEILING U.N.O.

E. ALL EMERGENCY AND EXIT LIGHTS ARE SHOWN ON ELECTRICAL LIGHTING PLANS.

LEGEND

- ACOUSTICAL TILE CEILING SYSTEM TYPE No.1 24" X 24", ARMSTRONG, CIRRUS #584 (AT-1)
- ACOUSTICAL TILE CEILING SYSTEM TYPE No.2 24" X 48", ARMSTRONG, ULTIMA #1913 (AT-2)
- ACOUSTICAL TILE CEILING SYSTEM TYPE No.3 24" X 48", ARMSTRONG, CLEAN ROOM VL #870 (AT-3)
- TONGUE & GROOVE WOOD CEILING
- 5/8" PAINTED GYPSUM BOARD CEILING.
- 5/8" TYPE 'X' RATED GYPSUM BOARD CEILING - PAINTED - 1 HOUR RATED ASSEMBLY PER UL-P533 - SEE FLOOR AND CEILING RATING
- 2'x4' SURFACE MOUNTED LED LIGHT FIXTURE
- 2'x4' RECESSED LED LIGHT FIXTURE
- 2'x4' RECESSED DIMMABLE LED LIGHT FIXTURE
- 1' X 4' RECESSED LED LIGHT FIXTURE
- 1' X 4' INDIRECT WALL MOUNTED LED LIGHT FIXTURE
- SURFACE MOUNTED LED PORCH LIGHT FIXTURE
- SURFACE MOUNTED LED LIGHT FIXTURE
- RECESSED MOUNTED LED FIXTURE
- LED WALL WASHER LIGHT FIXTURE
- LARGE PENDANT FIXTURE
- VAPOR PROOF RECESSED LED DOWN LIGHT
- HVLS FAN
- CEILING MOUNTED I.V. TRACK SYSTEM WITH HOOKS BY 'INPRO CORP.' 1-(800) 437-2698
- CEILING MOUNTED SURGERY LIGHT O.F.C.I. (VERIFY WITH OWNER EXACT TYPE, PROVIDE J-BOX IN CEILING), MOUNT TO SECURE STRUCTURE PER MANUFACTURERS RECOMMENDATION - SEE DETAIL
- CEILING MOUNTED EXAM LIGHT O.F.C.I. (VERIFY WITH OWNER EXACT TYPE, PROVIDE J-BOX IN CEILING), MOUNT TO SECURE STRUCTURE PER MANUFACTURERS RECOMMENDATION - SEE DETAIL
- AE ANESTHESIA OUTLET
- O2 OXYGEN OUTLET
- SUPPLY AIR DIFFUSER - SEE MECHANICAL
- RETURN AIR GRILLE - SEE MECHANICAL
- EXHAUST FAN GRILLE - SEE MECHANICAL



B1 REFLECTED CEILING PLAN

1/8"=1'-0"

TRUE NORTH

NORTH

FLOOR AND CEILING RATINGS:

RATED FLOOR/CEILING ASSEMBLIES - 1 HOUR RATED UL-L563
1 LAYER 5/8" TYPE "X" GYPSUM BOARD ATTACHED TO 1/2" RESILIENT
FURRING CHANNEL SPACED 12" O.C. SCREW FASTENED
PERPENDICULAR TO LOWER CHORD OF PARALLEL CHORD WOOD TRUSS
24" O.C. SUBFLOORING 22/32 IN. THICK T&G WOOD STRUCTURAL PANELS.
INSTALLED PERPENDICULAR TO TRUSSES WITH END JOINTS STAGGERED 4 FEET. PLYWOOD OR NON-VENEER
APA RATED PANELS SECURED TO TRUSSES WITH END JOINT STAGGERED 4 FEET. PLYWOOD OR NON-VENEER
APA RATED PANELS SECURED TO TRUSSES WITH CONSTRUCTION ADHESIVE AND #6D RINGED SHANK NAILS.
NAILS SPACED 12 IN. ON CENTER ALONG EACH TRUSS

GYP WALLBOARD ROOF/ CEILING - WOOD FRAMING (PITCHED ROOF) 1 HOUR RATED UL-P533
1 LAYER 5/8" TYPE "X" GYPSUM BOARD ATTACHED TO 1/2" RESILIENT
FURRING CHANNEL SPACED 12" O.C. SCREW FASTENED
PERPENDICULAR TO LOWER CHORD OF WOOD TRUSS
OF 2 X 4 LBR. WITH STEEL TRUSS PLATES, SPACED 24" O.C.

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BDA

COMMONWEALTH OF VIRGINIA
DAVID S. GASSER
Lic. No. 0401019577
ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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REFLECTED CEILING PLAN

REV.#	DATE	COMMENTS
-		
-		
-		
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REVISION:
REVISION:
REVISION:
REVISION:

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON

PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

A106

- OF -

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Plot Date: July 20, 2022 - 11:18 AM
Drawing Name: G:\Archive\2020\2004 - Watson\BDA\DWGS\Construction Documents\Courthouse Veterinary\Sheets\2004-A106 Reflected Ceiling Plan.dwg

GENERAL NOTES

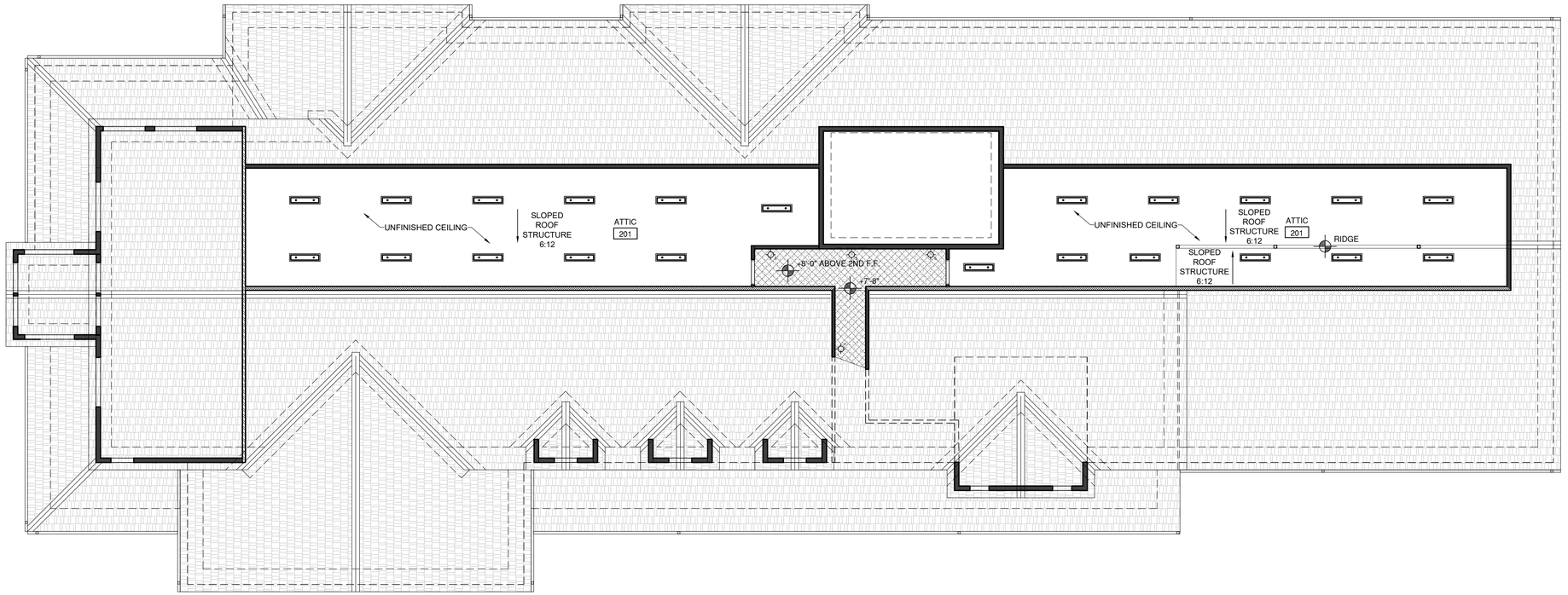
A. ALL EMERGENCY AND EXIT LIGHTS ARE SHOWN ON ELECTRICAL LIGHTING PLANS.

LEGEND

5/8" TYPE 'X' RATED GYPSUM BOARD CEILING - PAINTED - 1 HOUR RATED ASSEMBLY PER UL-P533 - SEE FLOOR AND CEILING RATING

1'x4' SUSPENDED LED LIGHT FIXTURE

S — SURFACE MOUNTED LED LIGHT FIXTURE



B1 REFLECTED CEILING PLAN - ATTIC

1/8"=1'-0"

TRUE NORTH

NORTH

FLOOR AND CEILING RATINGS:

RATED FLOOR/CEILING ASSEMBLIES - 1 HOUR RATED UL-L563
1 LAYER 5/8" TYPE "X" GYPSUM BOARD ATTACHED TO 1/2" RESILIENT FURRING CHANNEL SPACED 12" O.C. SCREW FASTENED PERPENDICULAR TO LOWER CHORD OF PARALLEL CHORD WOOD TRUSS 24" O.C. SUBFLOORING 22/32 IN. THICK T&G WOOD STRUCTURAL PANELS. INSTALLED PERPENDICULAR TO TRUSSES WITH END JOINTS STAGGERED 4 FEET. PLYWOOD OR NON-VENEER APA RATED PANELS SECURED TO TRUSSES WITH END JOINT STAGGERED 4 FEET. PLYWOOD OR NON-VENEER APA RATED PANELS SECURED TO TRUSSES WITH CONSTRUCTION ADHESIVE AND #6D RINGED SHANK NAILS. NAILS SPACED 12 IN. ON CENTER ALONG EACH TRUSS

GYP WALLBOARD ROOF/ CEILING - WOOD FRAMING (PITCHED ROOF) 1 HOUR RATED UL-P533
1 LAYER 5/8" TYPE "X" GYPSUM BOARD ATTACHED TO 1/2" RESILIENT FURRING CHANNEL SPACED 12" O.C. SCREW FASTENED PERPENDICULAR TO LOWER CHORD OF WOOD TRUSS OF 2 X 4 LBR. WITH STEEL TRUSS PLATES, SPACED 24" O.C.

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ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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REFLECTED CEILING PLAN ATTIC

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WATSON

PROJECT NO.: 2004

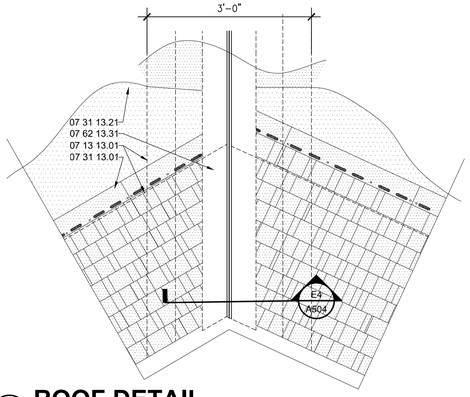
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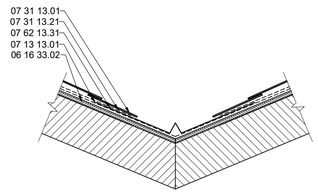
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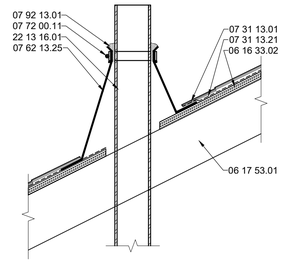
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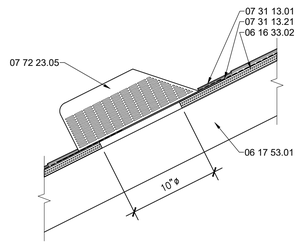
F1 ROOF DETAIL
1 1/2"=1'-0 @ VALLEY FLASHING



F4 ROOF SECTION
1 1/2"=1'-0 @ VALLEY FLASHING



F6 ROOF DETAIL
1 1/2"=1'-0 @ VENT STACK



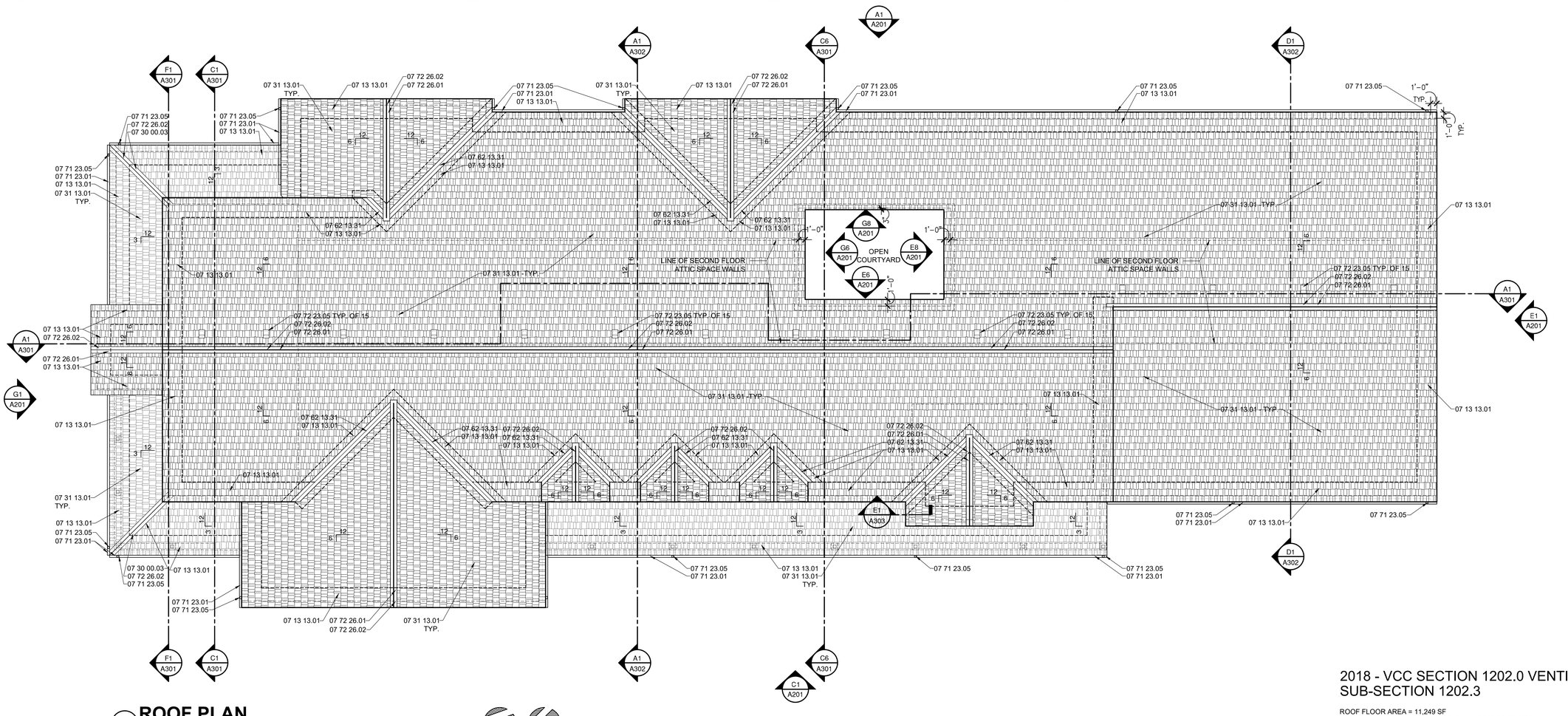
F8 ROOF DETAIL
1 1/2"=1'-0 @ ATTIC VENT

REFERENCE KEYNOTES

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
- 06 16 33.02 - SHEATHING - SEE STRUCTURAL
- 06 17 53.01 - WOOD TRUSS - SEE STRUCTURAL

DIVISION 07 - THERMAL AND MOISTURE PROTECTION
- 07 13 13.01 - ICE AND WATER SHIELD
- 07 30 00.03 - HIP
- 07 31 13.01 - ASPHALT SHINGLE ROOFING SYSTEM
- 07 31 13.21 - SHINGLE UNDERLAYMENT
- 07 62 13.25 - METAL FLASHING BOOT - SEE DETAIL F6/A110
- 07 62 13.31 - METAL VALLEY FLASHING - SEE DETAIL F1/A110
- 07 71 23.01 - ROOF GUTTER
- 07 71 23.05 - DOWNSPOUT
- 07 72 00.11 - SST. CLAMPING RING
- 07 72 23.05 - ATTIC VENT - SEE DETAIL F8/A110
- 07 72 26.01 - RIDGE VENT - SEE DETAIL C5/A504
- 07 72 26.02 - RIDGE CAP
- 07 92 13.01 - SEALANT

DIVISION 22 - PLUMBING
- 22 13 16.01 - VENT PIPE



B1 ROOF PLAN
1/8"=1'-0"

TRUE NORTH

NORTH

2018 - VCC SECTION 1202.0 VENTILATION: SUB-SECTION 1202.3

ROOF FLOOR AREA = 11,249 SF
1/150 REQUIRED = 75 SF x 144 SQ. IN. = 10,800 SQ.IN. NFA
5,400 SQ.IN. NFA MIN. INTAKE LOW.
5,400 SQ.IN. NFA MIN. EXHAUST HIGH.

PROVIDE: 429'-0" LF. OF VENTED FIBER CEMENT SOFFIT PANEL @ 12.6 SQ. IN. PER LF.
TOTAL PROVIDED: 5,405.4 SQ. IN. NFA INTAKE LOW.

PROVIDE: 277'-0" LF. OF RIDGE VENT @ 15 SQ. IN. PER LF. = 4,155 SQ. IN. NFA
PROVIDE: 15 - 10" Ø ROOF LOUVER @ 60 SQ. IN. NFA = 900 SQ. IN. NFA
PROVIDE: 7 - 22" ROUND GABLE END VENTS @ 50 SQ. IN. NFA = 350 SQ. IN. NFA
SEE EXTERIOR ELEVATIONS A201 FOR GABLE VENT LOCATIONS.
TOTAL PROVIDED: 5,405 SQ. IN. NFA EXHAUST HIGH.

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ROOF PLAN

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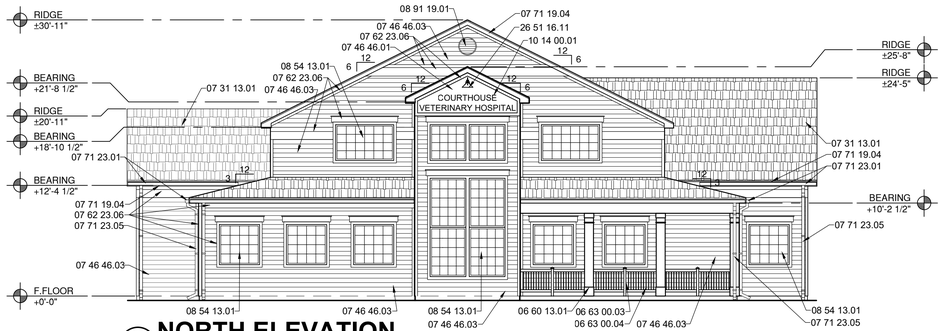
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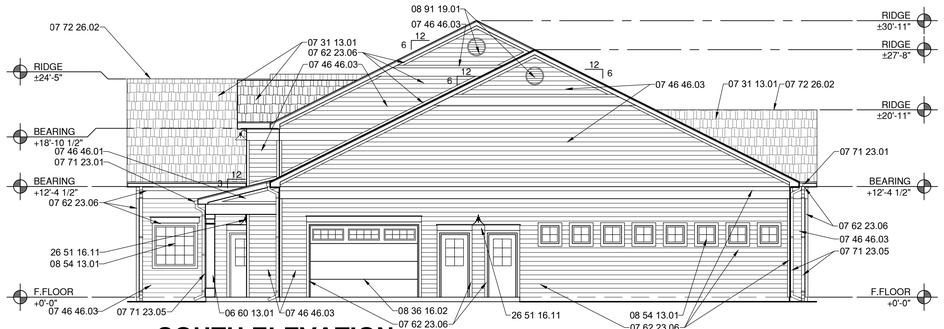
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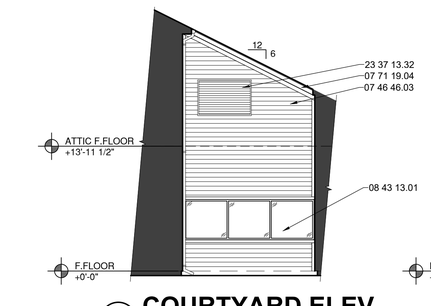
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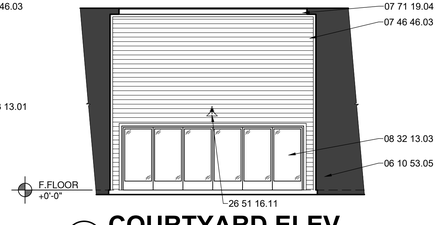
G1 NORTH ELEVATION
1/8"=1'-0"



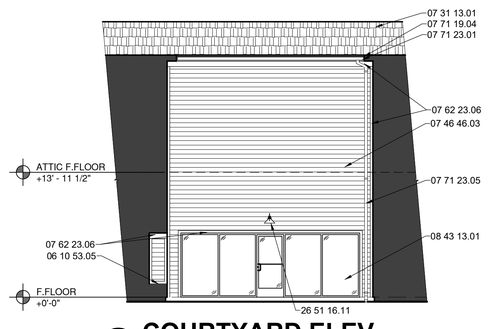
E1 SOUTH ELEVATION
1/8"=1'-0"



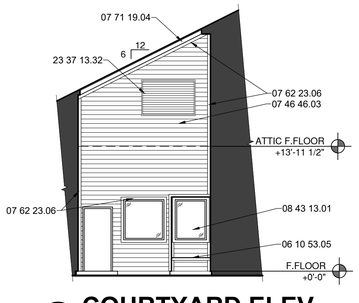
G6 COURTYARD ELEV.
1/8" = 1'-0" NORTH



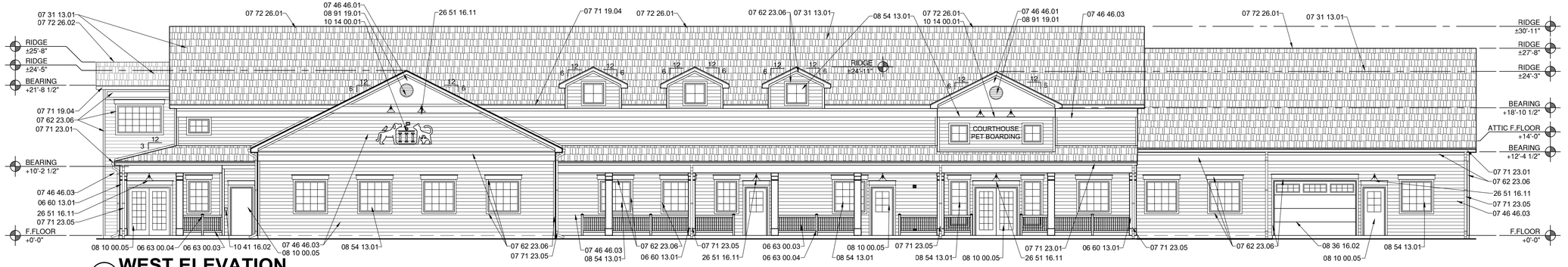
G8 COURTYARD ELEV.
1/8" = 1'-0" EAST



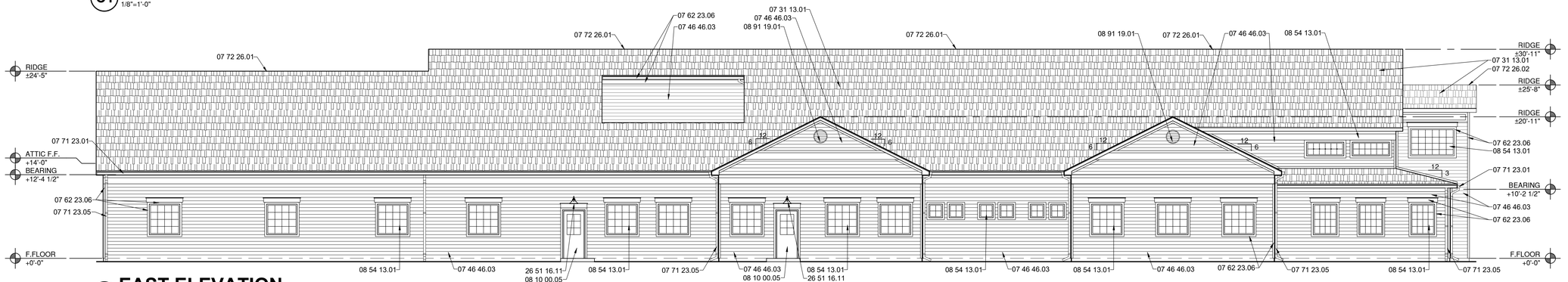
E6 COURTYARD ELEV.
1/8" = 1'-0" WEST



E8 COURTYARD ELEV.
1/8" = 1'-0" SOUTH



C1 WEST ELEVATION
1/8"=1'-0"



A1 EAST ELEVATION
1/8"=1'-0"

REFERENCE KEYNOTES

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
- 06 10 53.05 - BUILT-IN BENCH SEATING
- 06 60 13.01 - PVC COLUMN
- 06 63 00.03 - PVC RAILING SYSTEM
- 06 63 00.04 - PVC POST

DIVISION 07 - THERMAL AND MOISTURE PROTECTION
- 07 31 13.01 - ASPHALT SHINGLE ROOFING SYSTEM
- 07 46 46.01 - FIBER CEMENT BOARD PANEL SYSTEM
- 07 46 46.03 - FIBER CEMENT BOARD LAP SIDING
- 07 62 23.06 - FIBER CEMENT TRIM BOARD
- 07 71 19.04 - FIBER CEMENT BOARD FASCIA
- 07 71 23.01 - ROOF GUTTER
- 07 71 23.05 - DOWNSPOUT
- 07 72 26.01 - RIDGE VENT
- 07 72 26.02 - RIDGE CAP

DIVISION 08 - OPENINGS
- 08 10 00.05 - DOOR AND FRAME AS SCHEDULED
- 08 32 13.03 - SLIDING ALUMINUM FRAMED GLASS DOORS
- 08 36 16.02 - GLAZED SECTIONAL OVERHEAD DOOR AS SCHEDULED
- 08 43 13.01 - STOREFRONT SYSTEM
- 08 54 13.01 - EXTERIOR FIBERGLASS WINDOW AS SCHEDULED
- 08 91 19.01 - FIXED LOUVER

DIVISION 10 - SPECIALTIES
- 10 14 00.01 - SIGNAGE BY OWNER
- 10 41 16.02 - FIRE DEPARTMENT KNOX-BOX - VERIFY LOCATION WITH LOCAL FIRE MARSHAL

DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING
- 23 37 13.32 - LOUVER - SEE MECHANICAL

DIVISION 26 - ELECTRICAL
- 26 51 16.11 - WALL SCONCE LIGHT FIXTURE

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EXTERIOR ELEVATIONS

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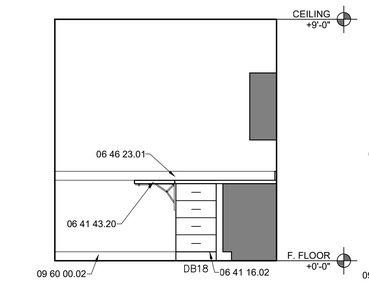
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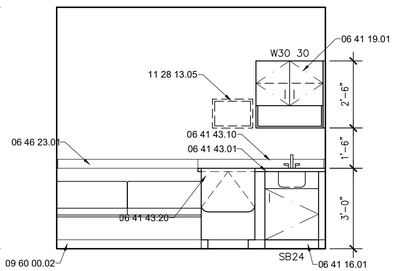
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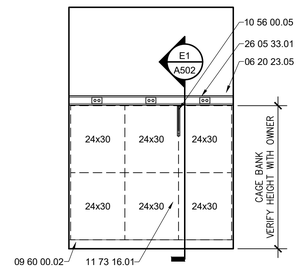
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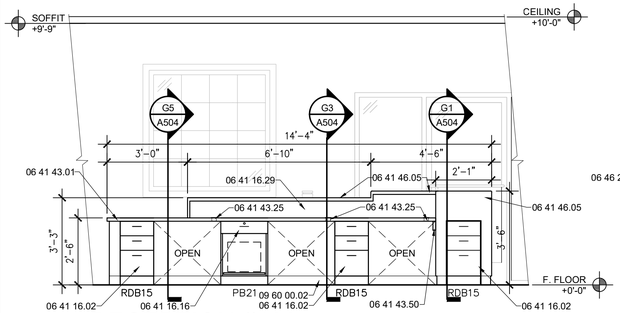
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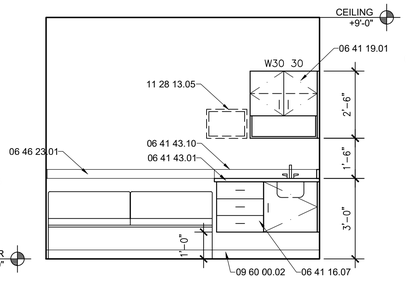
G3 FELINE EXAM 1 #114
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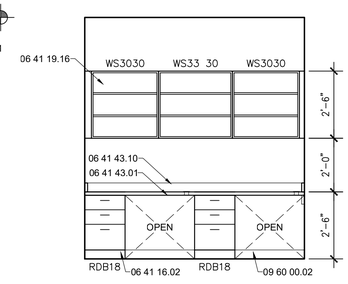
G5 FELINE WARD #116
3/8" = 1'-0"



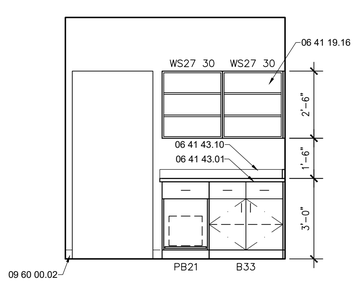
E1 RECEPTION #103
3/8" = 1'-0"



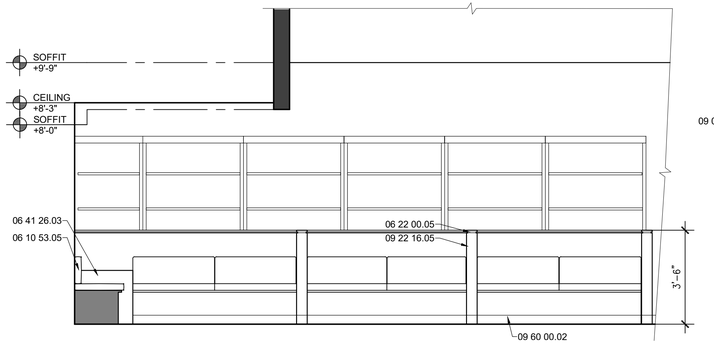
E4 TYP EXAM
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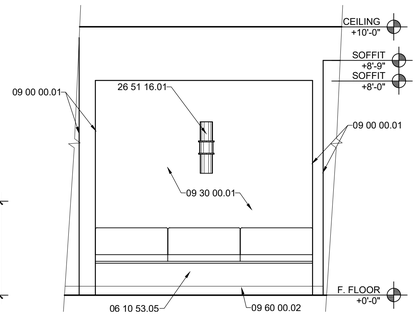
E6 ADMIN PHONES #113
3/8" = 1'-0"



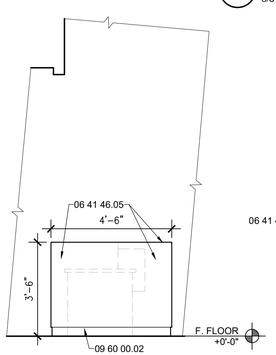
E8 ADMIN PHONES #113
3/8" = 1'-0"



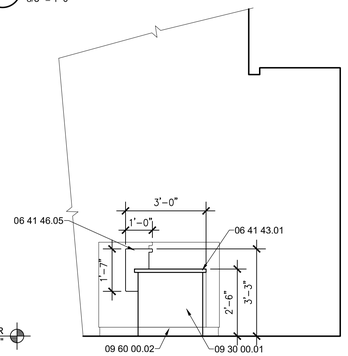
C1 WAITING #102
3/8" = 1'-0"



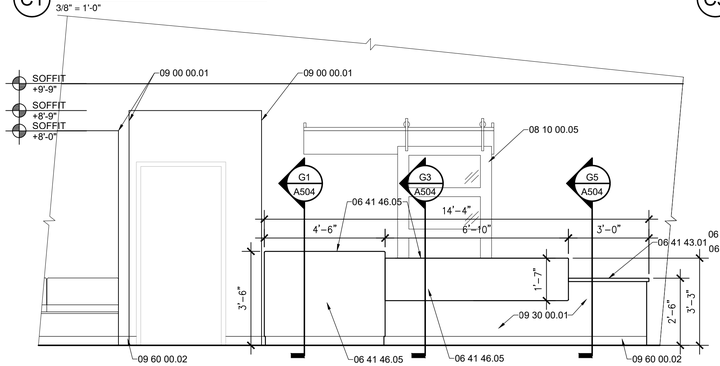
C5 WAITING #102
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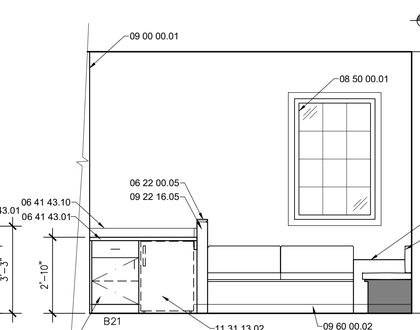
C7 RECEPTION #103
3/8" = 1'-0"



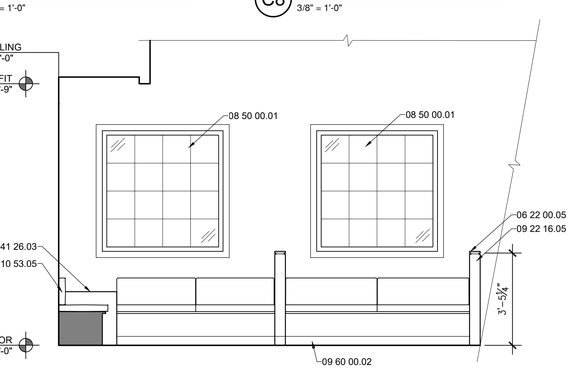
C8 RECEPTION #103
3/8" = 1'-0"



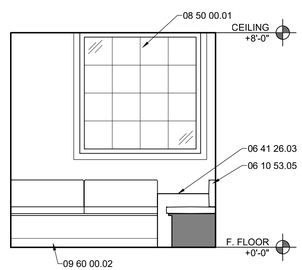
A1 WAITING #102
3/8" = 1'-0"



A5 WAITING #102
3/8" = 1'-0"



A7 WAITING #102
3/8" = 1'-0"



A10 WAITING #102
3/8" = 1'-0"

GENERAL NOTES

A. ALL CASEWORK TO HAVE PLASTIC LAMINATE FINISH, U.N.O.

B. ALL EXPOSED COUNTERTOP CORNERS TO HAVE 2" RADIUS.

C. ALL EXPOSED COUNTERTOPS TO BE FACED WITH PVC EDGEBANDING.

D. ALL RUN AND CAGE BANK DIMENSIONS TO BE VERIFIED BEFORE INSTALLATION.

E. GROMMET LOCATIONS IN COUNTERTOPS TO BE VERIFIED WITH OWNER.

F. PROVIDE BLOCKING IN WALL FOR ALL WALL MOUNTED EQUIPMENT.

G. ALL EXPOSED OUTSIDE CORNERS OF INTERIOR WALLS SHALL HAVE CORNER GUARDS.

H. AT ALL VERTICAL TILE APPLICATIONS, INSTALL 'SCHLUTER' STRIPS ON OUTSIDE CORNERS.

REFERENCE KEYNOTES

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 10 53.05 - BUILT-IN BENCH SEATING
06 20 23.05 - WOOD SHELF WITH MELAMINE TOP
06 22 00.05 - WOOD CAP AT PARTIAL HEIGHT WALL
06 41 16.01 - PLASTIC LAMINATE BASE CABINET
06 41 16.02 - PLASTIC LAMINATE DRAWER BASE
06 41 16.07 - WALL MOUNTED PLASTIC LAMINATE BASE CABINET
06 41 16.16 - PLASTIC LAMINATE PRINTER CABINET WITH LOCKING CASH DRAWER
06 41 16.29 - TACK BOARD
06 41 19.01 - PLASTIC LAMINATE WALL CABINET
06 41 19.16 - PLASTIC LAMINATE WALL CABINET WITH OPEN SHELF
06 41 26.03 - BUILT-IN END TABLE
06 41 43.01 - PLASTIC LAMINATE COUNTERTOP
06 41 43.10 - 4" HIGH PLASTIC LAMINATE BACKSPLASH
06 41 43.20 - PLASTIC LAMINATE FLIP-TOP COUNTERTOP
06 41 43.25 - GROMMET - VERIFY LOCATION WITH OWNER
06 41 43.50 - PLASTIC LAMINATE COUNTERTOP SUPPORT
06 41 46.05 - SOLID SURFACE
06 46 23.01 - WOOD CHAIR RAIL

DIVISION 08 - OPENINGS

08 10 00.05 - DOOR AND FRAME AS SCHEDULED
08 50 00.01 - EXTERIOR WINDOW

DIVISION 09 - FINISHES

09 00 00.01 - CHANGE IN WALL PLANE
09 22 16.05 - PARTIAL HEIGHT INTERIOR METAL STUD PARTITION WALL
09 30 00.01 - WALL TILE
09 60 00.02 - BASE AS SCHEDULED

DIVISION 10 - SPECIALTIES

10 56 00.05 - 30" DEEP SHELF SUPPORT BRACKET

DIVISION 11 - EQUIPMENT

11 28 13.05 - WALL MOUNTED COMPUTER MONITOR - N.I.C. - PROVIDE BLOCKING
11 31 13.02 - UNDER COUNTER REFRIGERATOR - N.I.C.
11 73 16.01 - CAGE BANK - O.F.C.I.

DIVISION 26 - ELECTRICAL

26 05 33.01 - PANDUIT RACEWAY
26 51 16.01 - WALL MOUNTED LIGHT FIXTURE

BDA Architecture, P.C.
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991 Lamberton Pl. NE
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COMMONWEALTH OF VIRGINIA
DAVID S. GASSER
Lic. No. 0401019577
ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

ARCHITECTURE PC.
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INTERIOR ELEVATIONS

REV.#	DATE	COMMENTS
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REVISION:
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REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

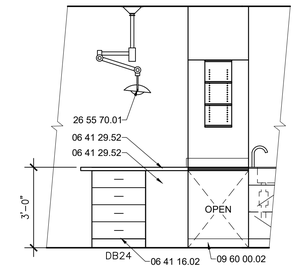
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DRAWN: -
DATE: 07/19/2022

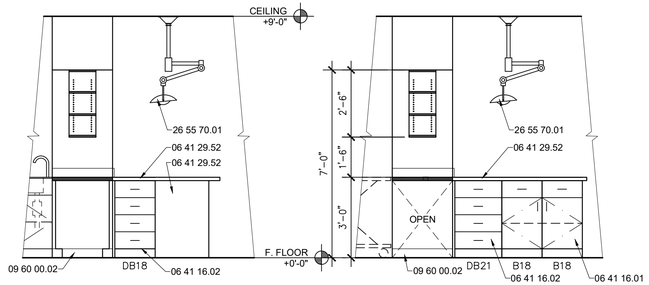
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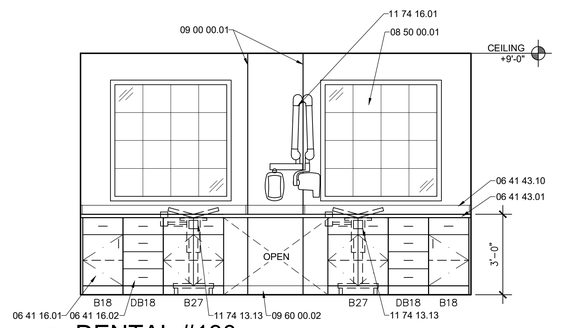


G1 TREATMENT #129
3/8" = 1'-0"

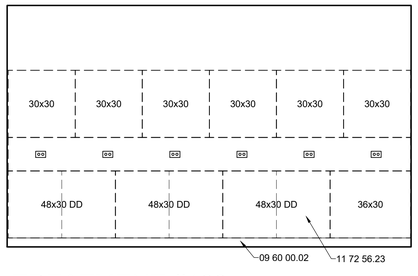


G3 TREATMENT #129
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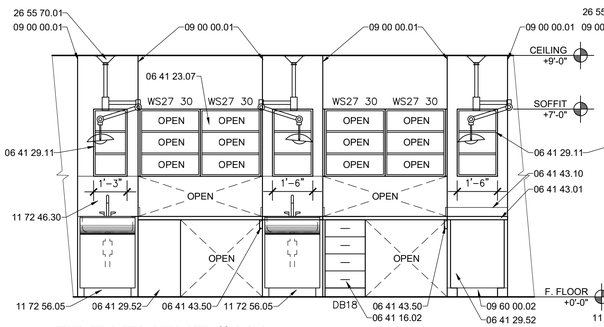
G5 TREATMENT #129
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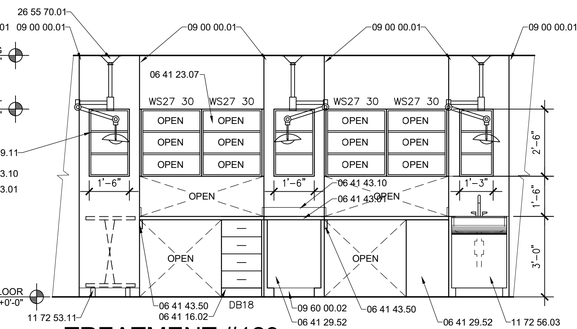
G7 DENTAL #130
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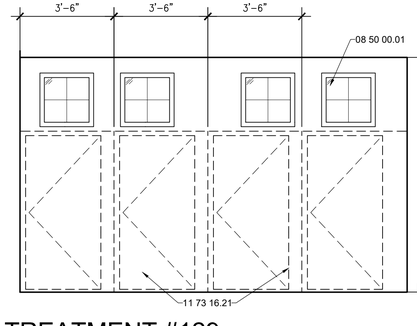
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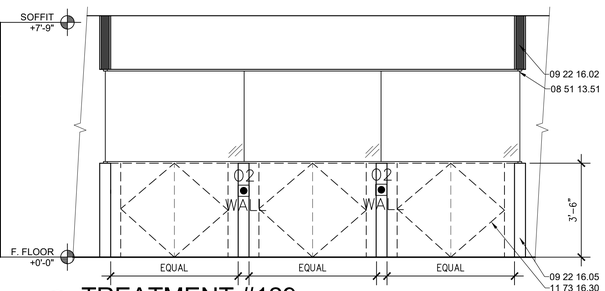
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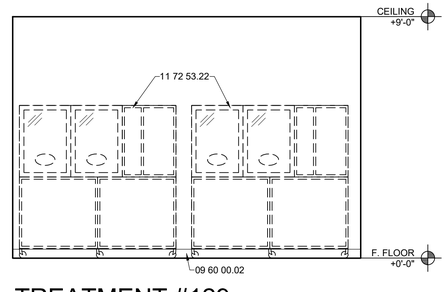
E7 TREATMENT #129
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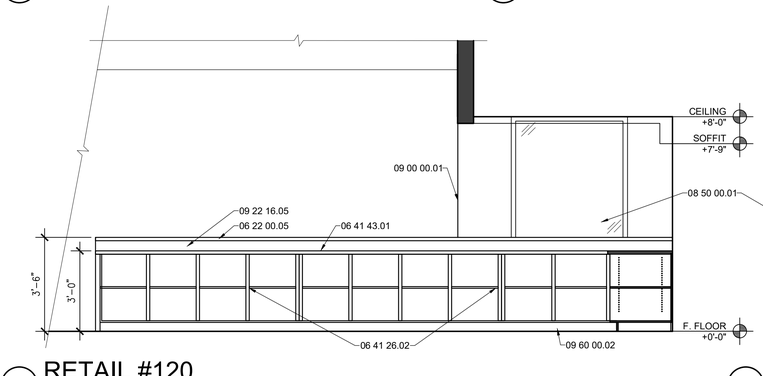
C1 TREATMENT #129
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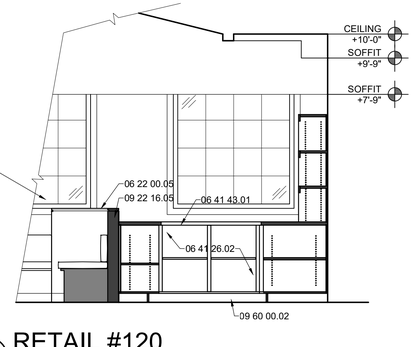
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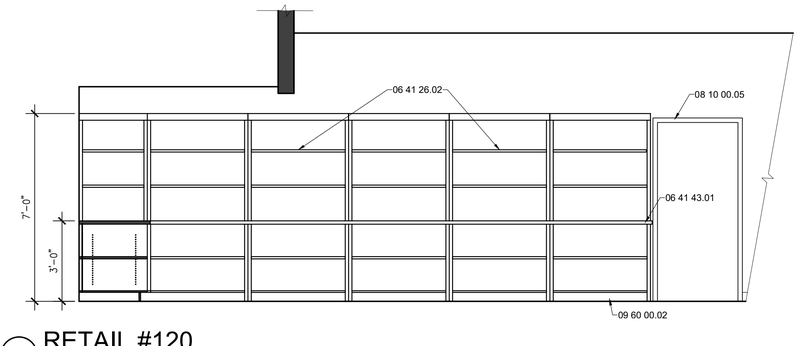
C7 TREATMENT #129
3/8" = 1'-0"



A1 RETAIL #120
3/8" = 1'-0"



A5 RETAIL #120
3/8" = 1'-0"



A7 RETAIL #120
3/8" = 1'-0"

GENERAL NOTES

A. ALL CASEWORK TO HAVE PLASTIC LAMINATE FINISH, U.N.O.

B. ALL EXPOSED COUNTERTOP CORNERS TO HAVE 2" RADIUS.

C. ALL EXPOSED COUNTERTOPS TO BE FACED WITH PVC EDGEBANDING.

D. ALL RUN AND CAGE BANK DIMENSIONS TO BE VERIFIED BEFORE INSTALLATION.

E. GROMMET LOCATIONS IN COUNTERTOPS TO BE VERIFIED WITH OWNER.

F. PROVIDE BLOCKING IN WALL FOR ALL WALL MOUNTED EQUIPMENT.

G. ALL EXPOSED OUTSIDE CORNERS OF INTERIOR WALLS SHALL HAVE CORNER GUARDS.

H. AT ALL VERTICAL TILE APPLICATIONS, INSTALL 'SCHLUTER' STRIPS ON OUTSIDE CORNERS.

REFERENCE KEYNOTES

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
06 22 00.05 - WOOD CAP AT PARTIAL HEIGHT WALL
06 41 16.01 - PLASTIC LAMINATE BASE CABINET
06 41 16.02 - PLASTIC LAMINATE DRAWER BASE
06 41 23.07 - PLASTIC LAMINATE PASS-THRU WALL CABINET
06 41 26.02 - PLASTIC LAMINATE RETAIL SHELVES
06 41 29.11 - PLASTIC LAMINATE BUILT-IN SHELVES
06 41 29.52 - PLASTIC LAMINATE END PANEL
06 41 43.01 - PLASTIC LAMINATE COUNTERTOP
06 41 43.10 - 4" HIGH PLASTIC LAMINATE BACKSPLASH
06 41 43.50 - PLASTIC LAMINATE COUNTERTOP SUPPORT

DIVISION 08 - OPENINGS
08 10 00.05 - DOOR AND FRAME AS SCHEDULED
08 50 00.01 - EXTERIOR WINDOW
08 51 13.51 - INTERIOR ALUMINUM WINDOW AS SCHEDULED

DIVISION 09 - FINISHES
09 00 00.01 - CHANGE IN WALL PLANE
09 22 16.02 - METAL STUD FRAMING - SEE WALL TYPES FOR STUDS
09 22 16.05 - PARTIAL HEIGHT INTERIOR METAL STUD PARTITION WALL
09 60 00.02 - BASE AS SCHEDULED

DIVISION 11 - EQUIPMENT
11 72 46.30 - 18" HIGH SST. BACKSPLASH
11 72 53.11 - ROLLING GURNEY - N.I.C.
11 72 53.22 - ROLLING OXYGEN CAGE BANK - N.I.C.
11 72 56.03 - 4' SST. SHALLOW TUB TABLE - O.F.C.I.
11 72 56.05 - 5' SST. SHALLOW TUB TABLE - O.F.C.I.
11 72 56.23 - ICU CAGES - O.F.C.I.
11 73 16.21 - SST. RUN GATE AND PARTITION - O.F.C.I.
11 73 16.30 - SST. RECOVERY RUN GATE - PARTIAL HEIGHT - O.F.C.I.
11 74 13.13 - ADJUSTABLE HEIGHT MOBILE DENTAL TABLE - N.I.C.
11 74 16.01 - DENTAL X-RAY - O.F.C.I.

DIVISION 26 - ELECTRICAL
26 55 70.01 - EXAM LIGHT FIXTURE - O.F.C.I.

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INTERIOR ELEVATIONS

REV.#	DATE	COMMENTS
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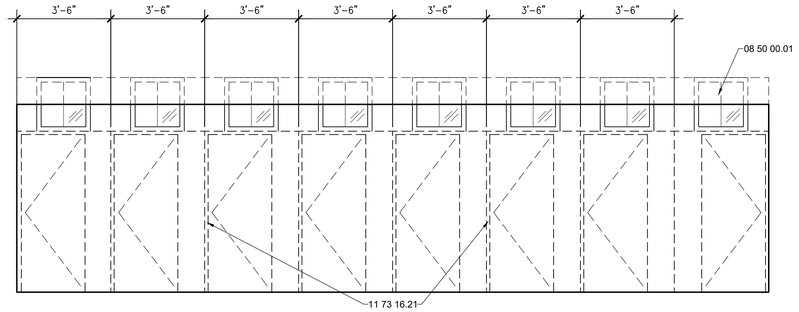
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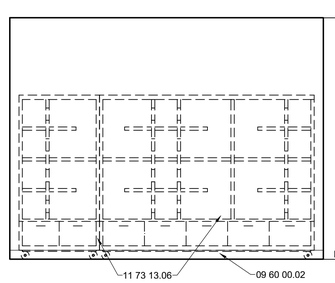
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A203
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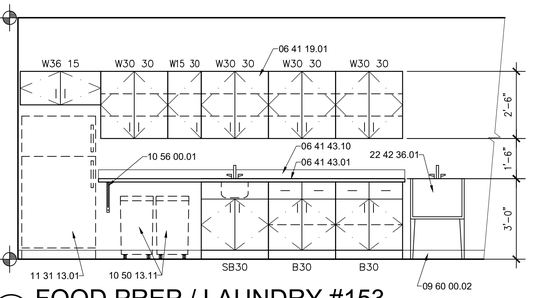
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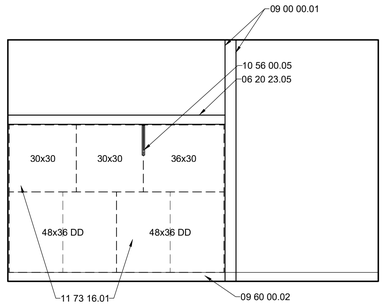
G1 CANINE WARD #147
3/8" = 1'-0"



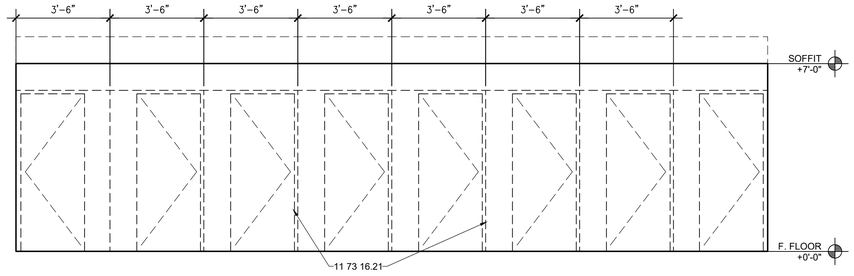
G5 FELINE BOARDING #152
3/8" = 1'-0"



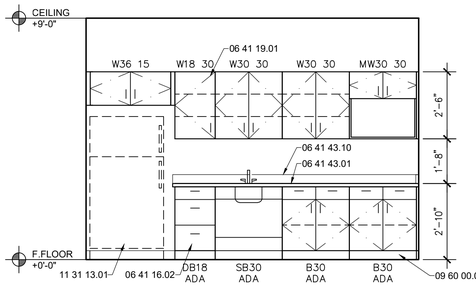
G7 FOOD PREP / LAUNDRY #153
3/8" = 1'-0"



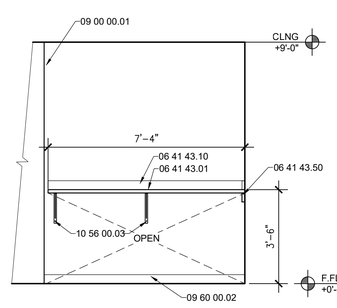
E1 CAGE BOARDING #141
3/8" = 1'-0"



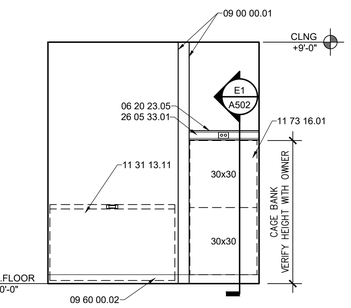
E3 CANINE WARD #146
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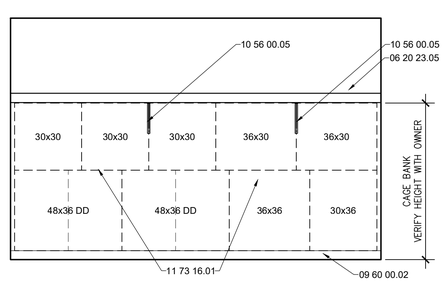
C1 LOUNGE #134
3/8" = 1'-0"



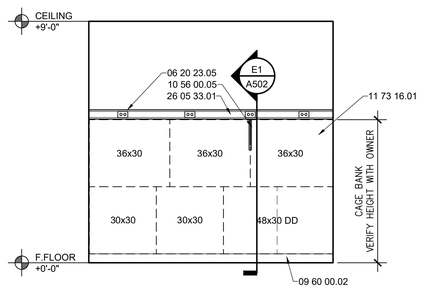
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3/8" = 1'-0"



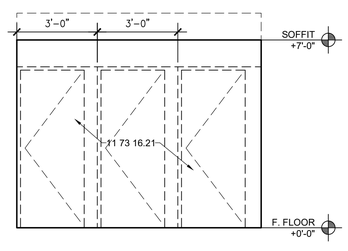
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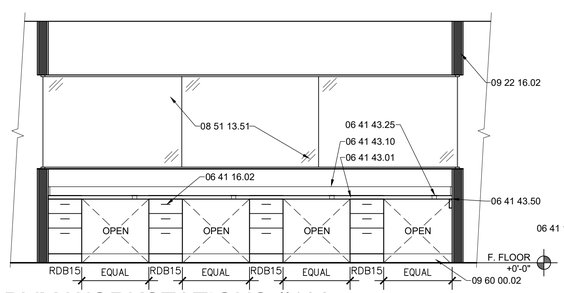
C7 CAGE BOARDING #141
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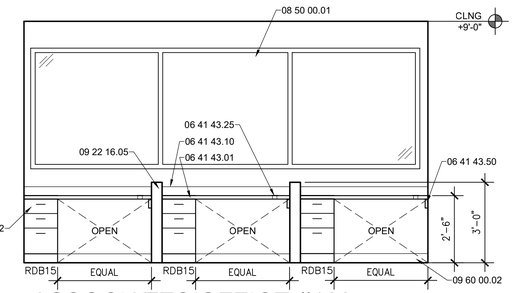
A1 CANINE WARD #131
3/8" = 1'-0"



A3 CANINE WARD #131
3/8" = 1'-0"



A5 DVM WORKSTATIONS #132
3/8" = 1'-0"



A8 ASSOCIATES OFFICE #133
3/8" = 1'-0"

GENERAL NOTES

A. ALL CASEWORK TO HAVE PLASTIC LAMINATE FINISH, U.N.O.

B. ALL EXPOSED COUNTERTOP CORNERS TO HAVE 2" RADIUS.

C. ALL EXPOSED COUNTERTOPS TO BE FACED WITH PVC EDGEBANDING.

D. ALL RUN AND CAGE BANK DIMENSIONS TO BE VERIFIED BEFORE INSTALLATION.

E. GROMMET LOCATIONS IN COUNTERTOPS TO BE VERIFIED WITH OWNER.

F. PROVIDE BLOCKING IN WALL FOR ALL WALL MOUNTED EQUIPMENT.

G. ALL EXPOSED OUTSIDE CORNERS OF INTERIOR WALLS SHALL HAVE CORNER GUARDS.

H. AT ALL VERTICAL TILE APPLICATIONS, INSTALL 'SCHLUTER' STRIPS ON OUTSIDE CORNERS.

REFERENCE KEYNOTES

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
- 06 20 23.05 - WOOD SHELF WITH MELAMINE TOP
- 06 41 16.02 - PLASTIC LAMINATE DRAWER BASE
- 06 41 19.01 - PLASTIC LAMINATE WALL CABINET
- 06 41 43.01 - PLASTIC LAMINATE COUNTERTOP
- 06 41 43.10 - 4" HIGH PLASTIC LAMINATE BACKSPLASH
- 06 41 43.25 - GROMMET - VERIFY LOCATION WITH OWNER
- 06 41 43.50 - PLASTIC LAMINATE COUNTERTOP SUPPORT

DIVISION 08 - OPENINGS
- 08 50 00.01 - EXTERIOR WINDOW
- 08 51 13.51 - INTERIOR ALUMINUM WINDOW AS SCHEDULED

DIVISION 09 - FINISHES
- 09 00 00.01 - CHANGE IN WALL PLANE
- 09 22 16.02 - METAL STUD FRAMING - SEE WALL TYPES FOR STUDS
- 09 22 16.05 - PARTIAL HEIGHT INTERIOR METAL STUD PARTITION WALL
- 09 60 00.02 - BASE AS SCHEDULED

DIVISION 10 - SPECIALTIES
- 10 50 13.11 - FOOD STORAGE BIN - N.I.C.
- 10 56 00.01 - KV BRACKET
- 10 56 00.03 - COUNTERTOP SUPPORT BRACKET
- 10 56 00.05 - 30" DEEP SHELF SUPPORT BRACKET

DIVISION 11 - EQUIPMENT
- 11 31 13.01 - FULL SIZE REFRIGERATOR - N.I.C.
- 11 31 13.11 - CHEST FREEZER - N.I.C.
- 11 73 13.06 - CAT CONDOS - N.I.C.
- 11 73 16.01 - CAGE BANK - O.F.C.I.
- 11 73 16.21 - SST. RUN GATE AND PARTITION - O.F.C.I.

DIVISION 22 - PLUMBING
- 22 42 36.01 - UTILITY SINK

DIVISION 26 - ELECTRICAL
- 26 05 33.01 - PANDUIT RACEWAY

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INTERIOR ELEVATIONS

REV.#	DATE	COMMENTS
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REVISION:
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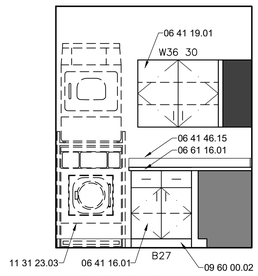
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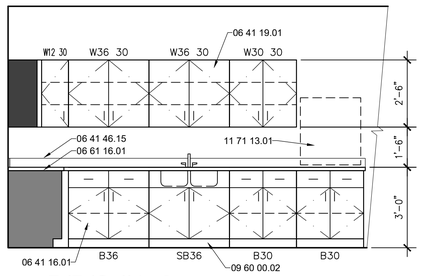
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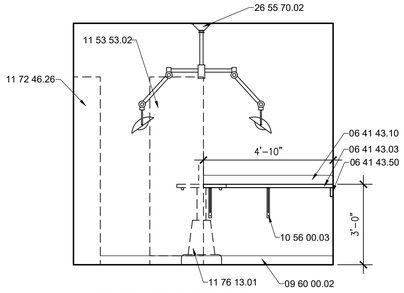
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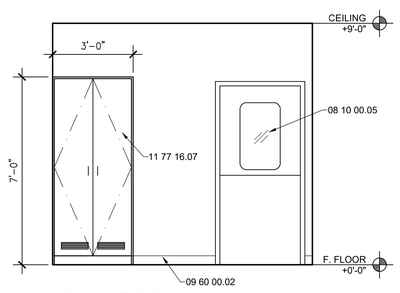
G1 P/P/S #172
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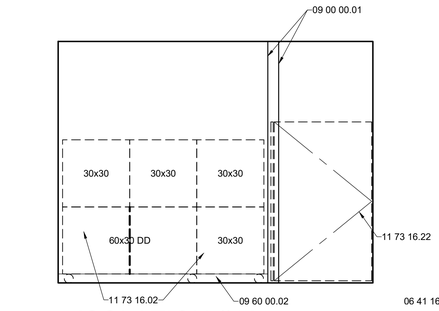
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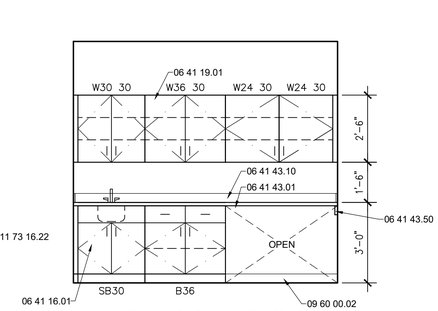
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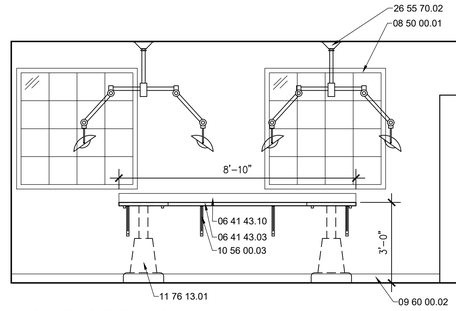
G7 SURGERY #173
3/8" = 1'-0"



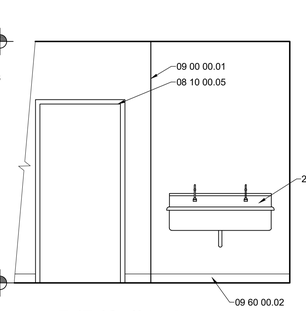
E1 ISOLATION #167
3/8" = 1'-0"



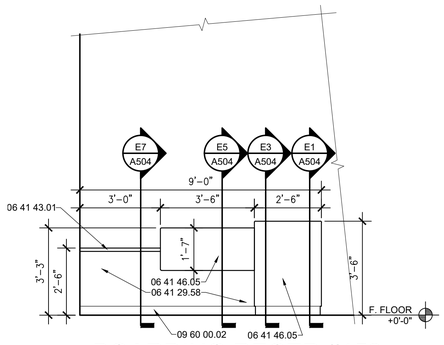
E3 ULTRASOUND #169
3/8" = 1'-0"



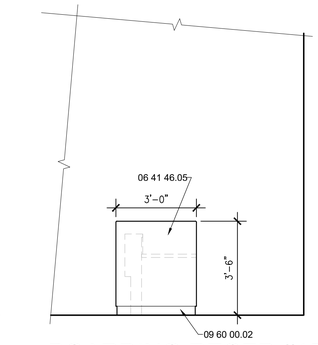
E5 SURGERY #170
3/8" = 1'-0"



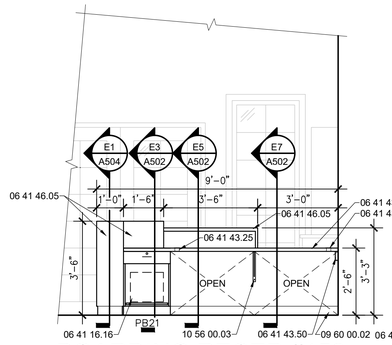
E8 P/P/S #172
3/8" = 1'-0"



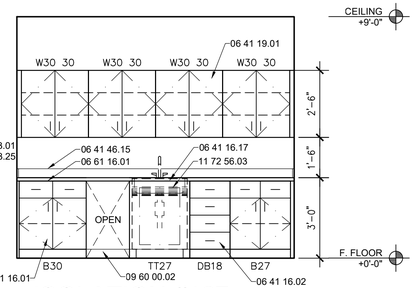
C1 BOARDING RECEP #158
3/8" = 1'-0"



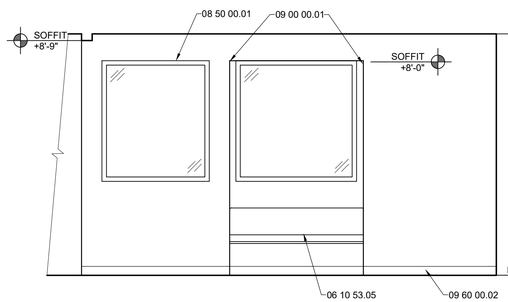
C3 BOARDING RECEP #158
3/8" = 1'-0"



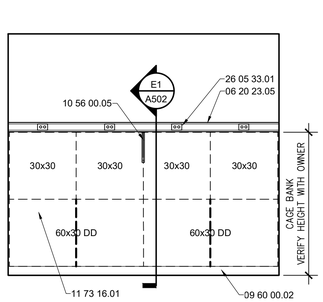
C5 BOARDING RECEP #158
3/8" = 1'-0"



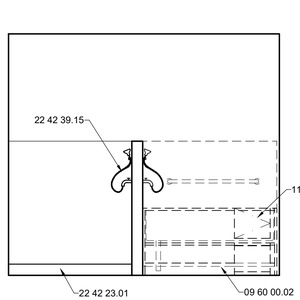
C7 ISOLATION #167
3/8" = 1'-0"



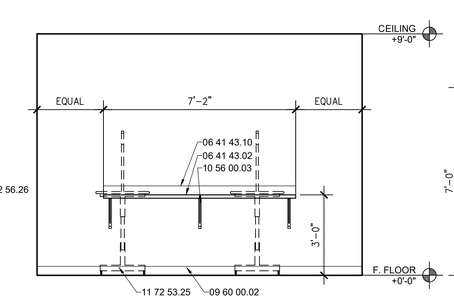
A1 HALL #154
3/8" = 1'-0"



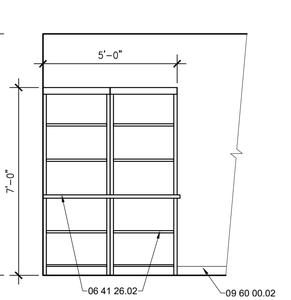
A3 BATHE / DRY #155
3/8" = 1'-0"



A5 BATHE / DRY #155
3/8" = 1'-0"



A7 GROOMING #156
3/8" = 1'-0"



A9 BOARDING WAITING #157
3/8" = 1'-0"

GENERAL NOTES

A. ALL CASEWORK TO HAVE PLASTIC LAMINATE FINISH, U.N.O.

B. ALL EXPOSED COUNTERTOP CORNERS TO HAVE 2" RADIUS.

C. ALL EXPOSED COUNTERTOPS TO BE FACED WITH PVC EDGEBANDING.

D. ALL RUN AND CAGE BANK DIMENSIONS TO BE VERIFIED BEFORE INSTALLATION.

E. GROMMET LOCATIONS IN COUNTERTOPS TO BE VERIFIED WITH OWNER.

F. PROVIDE BLOCKING IN WALL FOR ALL WALL MOUNTED EQUIPMENT.

G. ALL EXPOSED OUTSIDE CORNERS OF INTERIOR WALLS SHALL HAVE CORNER GUARDS.

H. AT ALL VERTICAL TILE APPLICATIONS, INSTALL 'SCHLUTER' STRIPS ON OUTSIDE CORNERS.

REFERENCE KEYNOTES

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
06 10 53.05 - BUILT-IN BENCH SEATING
06 20 23.05 - WOOD SHELF WITH MELAMINE TOP
06 41 16.01 - PLASTIC LAMINATE BASE CABINET
06 41 16.02 - PLASTIC LAMINATE DRAWER BASE
06 41 16.16 - PLASTIC LAMINATE PRINTER CABINET WITH LOCKING CASH DRAWER
06 41 16.17 - PLASTIC LAMINATE TUB TABLE PLUMBING ACCESS CABINET
06 41 19.01 - PLASTIC LAMINATE WALL CABINET
06 41 26.02 - PLASTIC LAMINATE RETAIL SHELVES
06 41 29.58 - PLASTIC LAMINATE FACE
06 41 43.01 - PLASTIC LAMINATE COUNTERTOP
06 41 43.02 - 12" DEEP PLASTIC LAMINATE COUNTERTOP
06 41 43.03 - 18" DEEP PLASTIC LAMINATE COUNTERTOP
06 41 43.10 - 4" HIGH PLASTIC LAMINATE BACKSPLASH
06 41 43.25 - GROMMET - VERIFY LOCATION WITH OWNER
06 41 43.50 - PLASTIC LAMINATE COUNTERTOP SUPPORT
06 41 46.05 - SOLID SURFACE
06 41 46.15 - SOLID SURFACE BACKSPLASH
06 61 16.01 - SOLID SURFACE COUNTERTOP

DIVISION 08 - OPENINGS
08 10 00.05 - DOOR AND FRAME AS SCHEDULED
08 50 00.01 - EXTERIOR WINDOW

DIVISION 09 - FINISHES
09 00 00.01 - CHANGE IN WALL PLANE
09 60 00.02 - BASE AS SCHEDULED

DIVISION 10 - SPECIALTIES
10 56 00.03 - COUNTERTOP SUPPORT BRACKET
10 56 00.05 - 30" DEEP SHELF SUPPORT BRACKET

DIVISION 11 - EQUIPMENT
11 31 23.03 - FULL SIZE STACKABLE WASHER AND DRYER - N.I.C.
11 53 53.02 - LAPAROSCOPIC CABINET - N.I.C.
11 71 13.01 - AUTOCLAVE - N.I.C.
11 72 46.26 - SST. PASS-THRU CABINET - O.F.C.I.
11 72 53.25 - GROOMING STATION - N.I.C.
11 72 56.03 - 4' SST. SHALLOW TUB TABLE - O.F.C.I.
11 72 56.26 - SST. BATHING TUB - O.F.C.I.
11 73 16.01 - CAGE BANK - O.F.C.I.
11 73 16.02 - ROLLING CAGE BANK - O.F.C.I.
11 73 16.22 - SST. RUN GATE - O.F.C.I.
11 76 13.01 - SURGERY TABLE - N.I.C.
11 77 16.07 - ENDOSCOPY CABINET

DIVISION 22 - PLUMBING
22 42 23.01 - SHOWER PAN
22 42 39.15 - HAND HELD SHOWER HEAD
22 43 16.06 - DOUBLE SCRUB SINK - O.F.C.I.

DIVISION 26 - ELECTRICAL
26 05 33.01 - PANDUIT RACEWAY
26 55 70.02 - SURGERY LIGHT FIXTURE - O.F.C.I.

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ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

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Brian Watson, DVM

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INTERIOR ELEVATIONS

REV.#	DATE	COMMENTS
REVISION: -		
REVISION: -		
REVISION: -		
REVISION: -		

REVIEWS	
INITIALS	
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-	BDA TECH REV.

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DATE: 07/19/2022

A205
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GENERAL NOTES

A. ALL CASEWORK TO HAVE PLASTIC LAMINATE FINISH, U.N.O.

B. ALL EXPOSED COUNTERTOP CORNERS TO HAVE 2" RADIUS.

C. ALL EXPOSED COUNTERTOPS TO BE FACED WITH PVC EDGEBANDING.

D. ALL RUN AND CAGE BANK DIMENSIONS TO BE VERIFIED BEFORE INSTALLATION.

E. GROMMET LOCATIONS IN COUNTERTOPS TO BE VERIFIED WITH OWNER.

F. PROVIDE BLOCKING IN WALL FOR ALL WALL MOUNTED EQUIPMENT.

G. ALL EXPOSED OUTSIDE CORNERS OF INTERIOR WALLS SHALL HAVE CORNER GUARDS.

H. AT ALL VERTICAL TILE APPLICATIONS, INSTALL 'SCHLUTER' STRIPS ON OUTSIDE CORNERS.

REFERENCE KEYNOTES

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 41 16.12 - PLASTIC LAMINATE OPEN BASE CABINET
06 41 19.02 - PLASTIC LAMINATE WALL CABINET WITH GLASS IN DOORS
06 41 19.16 - PLASTIC LAMINATE WALL CABINET WITH OPEN SHELF
06 41 19.25 - PLASTIC LAMINATE HOOD ENCLOSURE
06 41 23.14 - PLASTIC LAMINATE NARCOTICS CABINET - DOUBLE LOCK
06 41 29.25 - PLASTIC LAMINATE LOCKING DRAWER
06 41 43.01 - PLASTIC LAMINATE COUNTERTOP
06 41 43.10 - 4" HIGH PLASTIC LAMINATE BACKSPLASH
06 41 43.25 - GROMMET - VERIFY LOCATION WITH OWNER

DIVISION 08 - OPENINGS

08 10 00.05 - DOOR AND FRAME AS SCHEDULED

DIVISION 09 - FINISHES

09 00 00.01 - CHANGE IN WALL PLANE
09 60 00.02 - BASE AS SCHEDULED

DIVISION 10 - SPECIALTIES

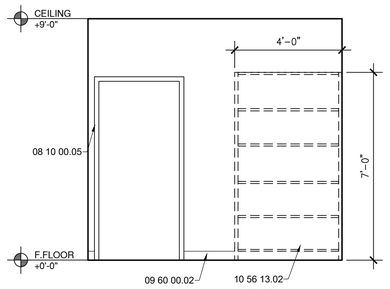
10 56 00.03 - COUNTERTOP SUPPORT BRACKET
10 56 13.02 - METAL STORAGE SHELVING - N.I.C.

DIVISION 11 - EQUIPMENT

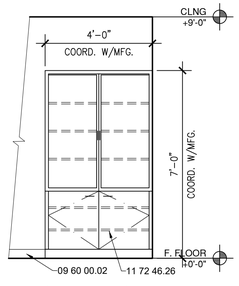
11 31 13.01 - FULL SIZE REFRIGERATOR - N.I.C.
11 72 46.26 - SST. PASS-THRU CABINET - O.F.C.I.

DIVISION 22 - PLUMBING

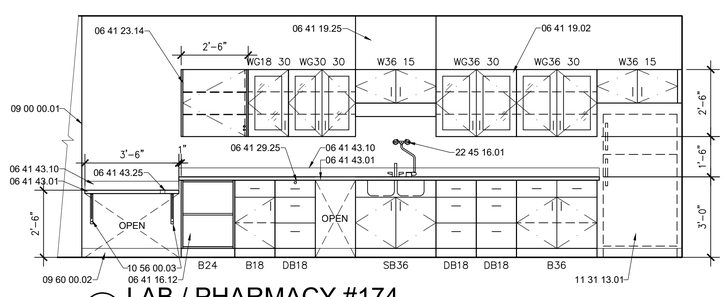
22 45 16.01 - EYEWASH



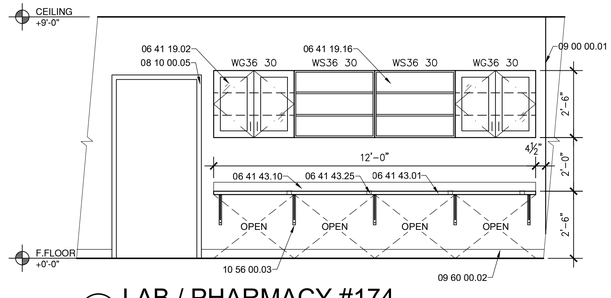
C1 IMAGING #175
3/8" = 1'-0"



A1 SURGERY #173
3/8" = 1'-0"



A4 LAB / PHARMACY #174
3/8" = 1'-0"



A7 LAB / PHARMACY #174
3/8" = 1'-0"

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INTERIOR ELEVATIONS

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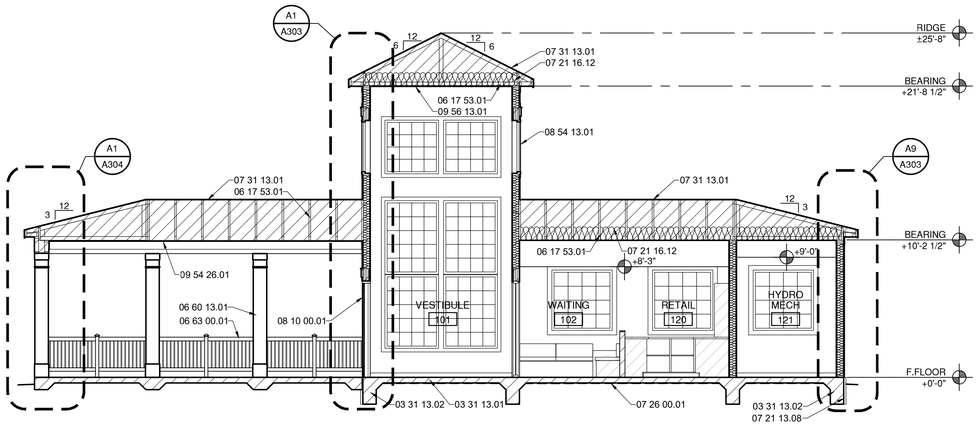
REVIEWS	
INITIALS	
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-	BDA TECH REV.

WATSON
PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

A206

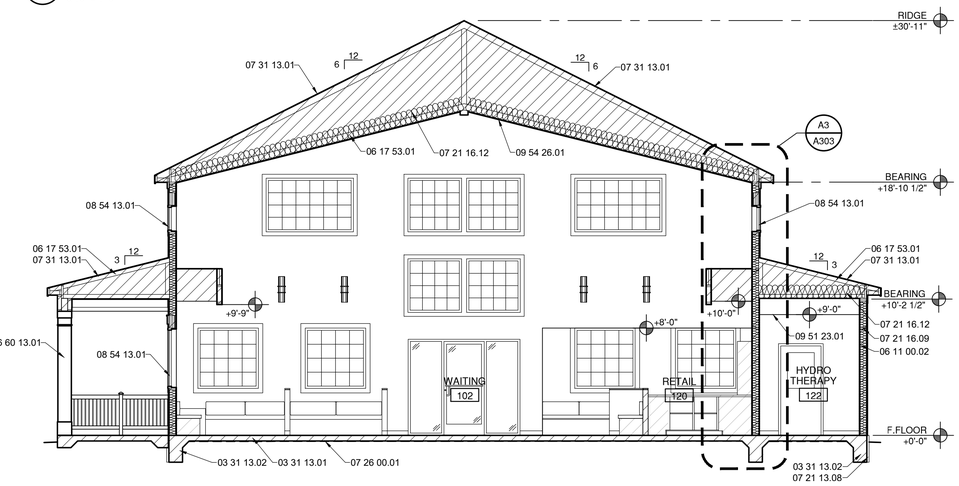
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Plot Date: July 20, 2022 - 11:40 AM
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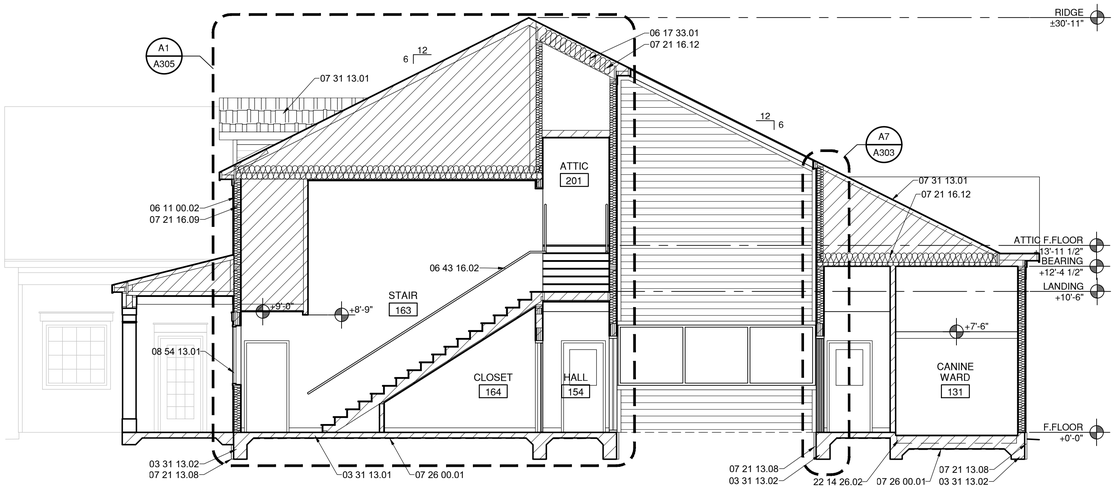
F1 BUILDING SECTION

3/16" = 1'-0"



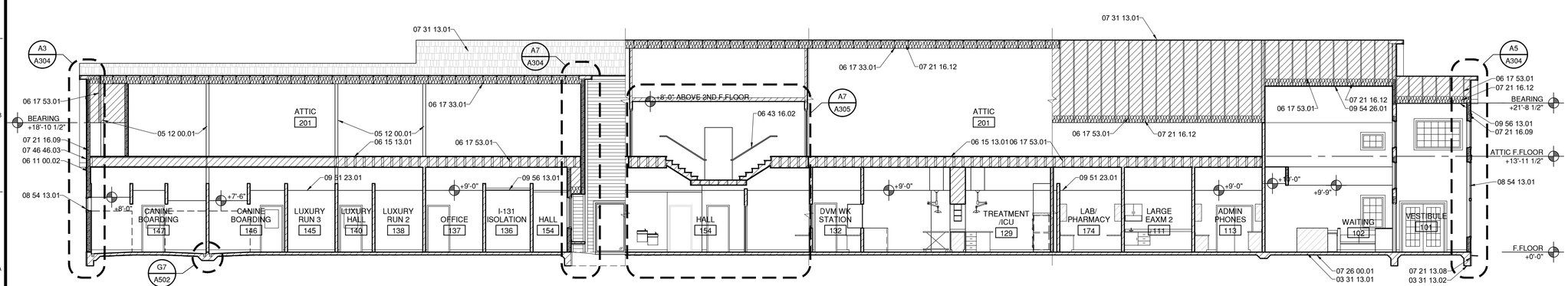
C1 BUILDING SECTION

3/16" = 1'-0"



C6 BUILDING SECTION

3/16" = 1'-0"



A1 BUILDING SECTION

1/8" = 1'-0"

GENERAL NOTES

A. PROVIDE DRAFT STOPS PER LOCAL CODE.

B. PROVIDE FIRE BLOCKING.

REFERENCE KEYNOTES

DIVISION 03 - CONCRETE

03 31 13.01 - CONCRETE SLAB - SEE STRUCTURAL
03 31 13.02 - CONCRETE FOOTING - SEE STRUCTURAL

DIVISION 05 - METALS

05 12 00.01 - STEEL COLUMN - SEE STRUCTURAL

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 11 00.02 - 2X6 WOOD STUD
06 15 13.01 - WOOD DECKING - SEE STRUCTURAL
06 17 33.01 - WOOD I-JOIST - SEE STRUCTURAL
06 17 53.01 - WOOD TRUSS - SEE STRUCTURAL
06 43 16.02 - WOOD RAILING
06 60 13.01 - PVC COLUMN
06 63 00.01 - VINYL RAILING SYSTEM

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 21 13.08 - 2" RIGID INSULATION
07 21 16.09 - R-21 BATT INSULATION
07 21 16.12 - R-38 BATT INSULATION
07 26 00.01 - VAPOR BARRIER
07 31 13.01 - ASPHALT SHINGLE ROOFING SYSTEM
07 46 46.03 - FIBER CEMENT BOARD LAP SIDING

DIVISION 08 - OPENINGS

08 10 00.01 - DOOR AS SCHEDULED
08 54 13.01 - EXTERIOR FIBERGLASS WINDOW AS SCHEDULED

DIVISION 09 - FINISHES

09 51 23.01 - SUSPENDED ACOUSTIC CEILING SYSTEM
09 54 26.01 - TONGUE AND GROOVE WOOD CEILING
09 56 13.01 - GYPSUM BOARD CEILING

DIVISION 22 - PLUMBING

22 14 26.02 - PREMANUFACTURED TRENCH DRAIN

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BUILDING SECTIONS

REV. #	DATE	COMMENTS
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REVISION:		
REVISION:		

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

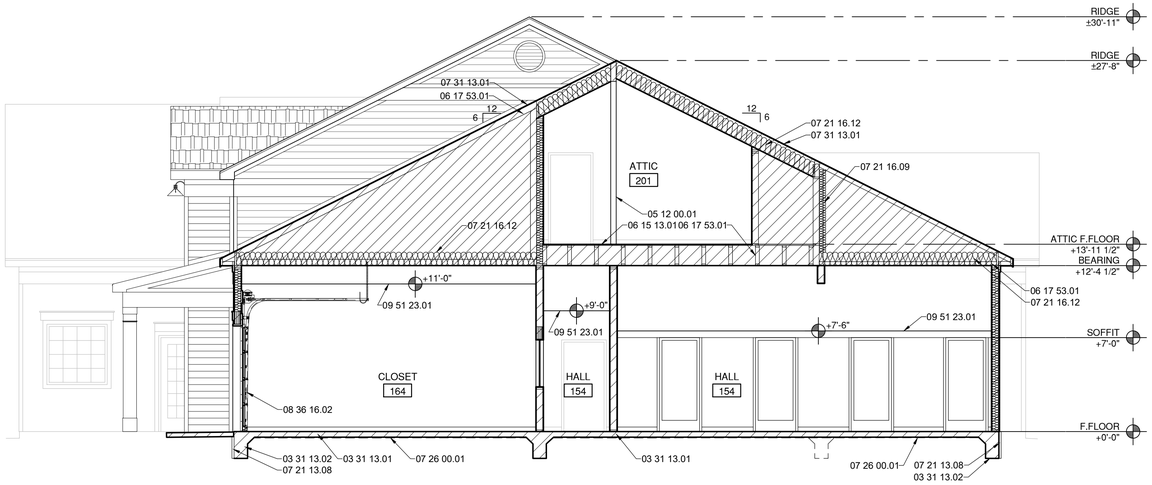
WATSON

PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

A301

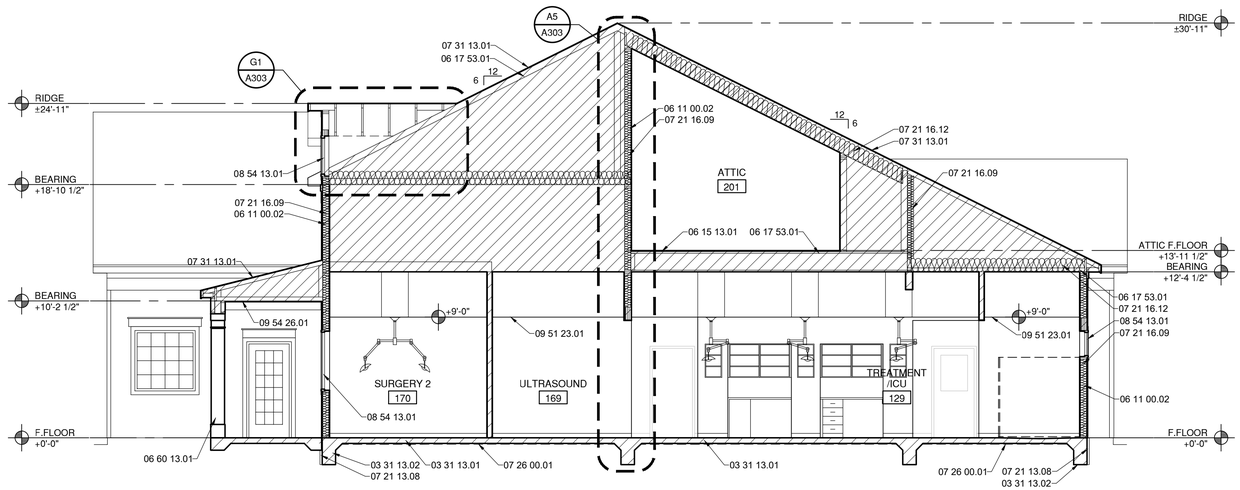
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Plot Date: July 20, 2022 - 11:42 AM
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D1 BUILDING SECTION

3/16" = 1'-0"



A1 BUILDING SECTION

3/16" = 1'-0"

GENERAL NOTES

A. PROVIDE DRAFT STOPS PER LOCAL CODE.

B. PROVIDE FIRE BLOCKING.

REFERENCE KEYNOTES

DIVISION 03 - CONCRETE

03 31 13.01 - CONCRETE SLAB - SEE STRUCTURAL

03 31 13.02 - CONCRETE FOOTING - SEE STRUCTURAL

DIVISION 05 - METALS

05 12 00.01 - STEEL COLUMN - SEE STRUCTURAL

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 11 00.02 - 2X6 WOOD STUD

06 15 13.01 - WOOD DECKING - SEE STRUCTURAL

06 17 53.01 - WOOD TRUSS - SEE STRUCTURAL

06 60 13.01 - PVC COLUMN

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 21 13.08 - 2" RIGID INSULATION

07 21 16.09 - R-21 BATT INSULATION

07 21 16.12 - R-38 BATT INSULATION

07 26 00.01 - VAPOR BARRIER

07 31 13.01 - ASPHALT SHINGLE ROOFING SYSTEM

DIVISION 08 - OPENINGS

08 36 16.02 - GLAZED SECTIONAL OVERHEAD DOOR AS SCHEDULED - HIGH LIFT

08 54 13.01 - EXTERIOR FIBERGLASS WINDOW AS SCHEDULED

DIVISION 09 - FINISHES

09 51 23.01 - SUSPENDED ACOUSTIC CEILING SYSTEM

09 54 26.01 - TONGUE AND GROOVE WOOD CEILING

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BUILDING SECTIONS

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REVIEWS	
INITIALS	
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WATSON

PROJECT NO.: 2004

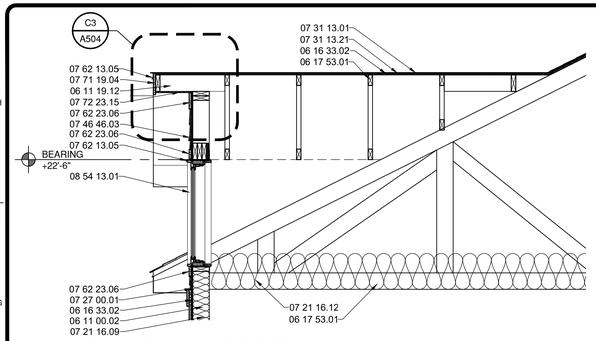
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DATE: 07/19/2022

A302

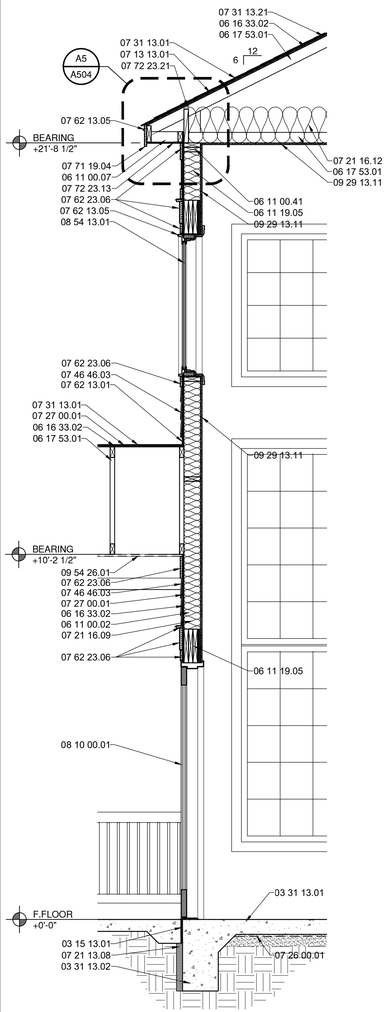
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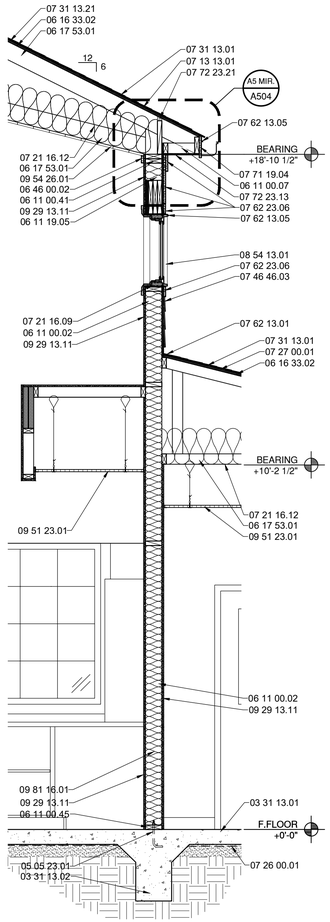
G1 PARTIAL SECTION

1/2" = 1'-0" @ ATTIC DORMER



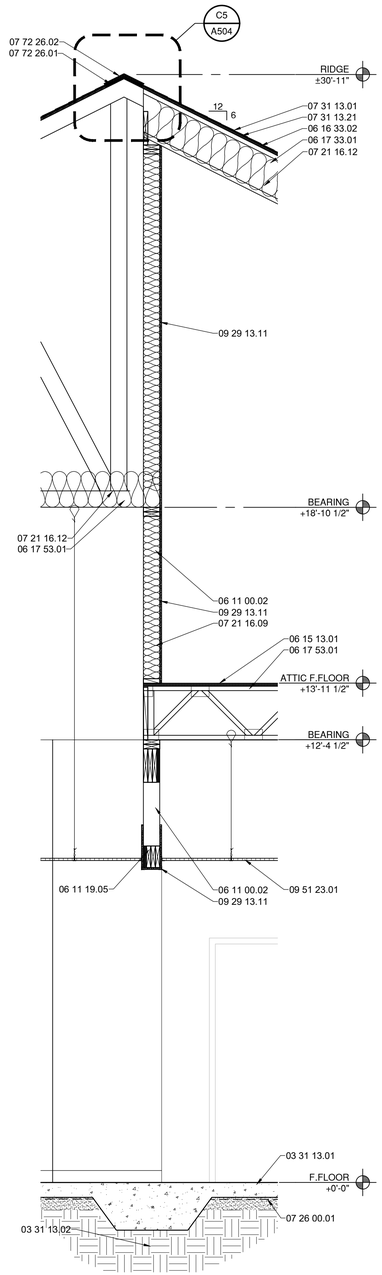
A1 WALL SECTION

1/2" = 1'-0"



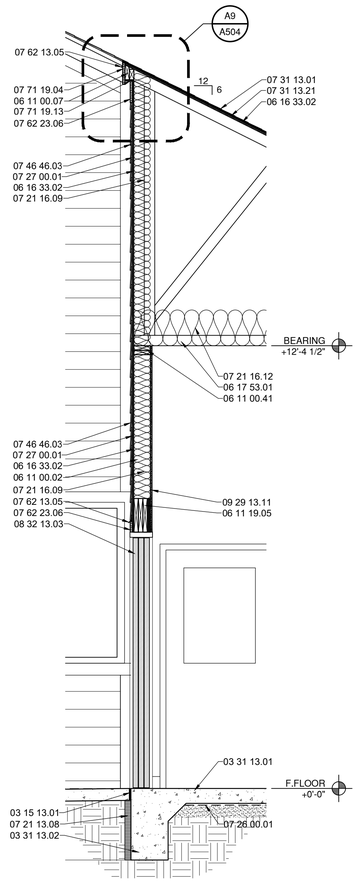
A3 WALL SECTION

1/2" = 1'-0"



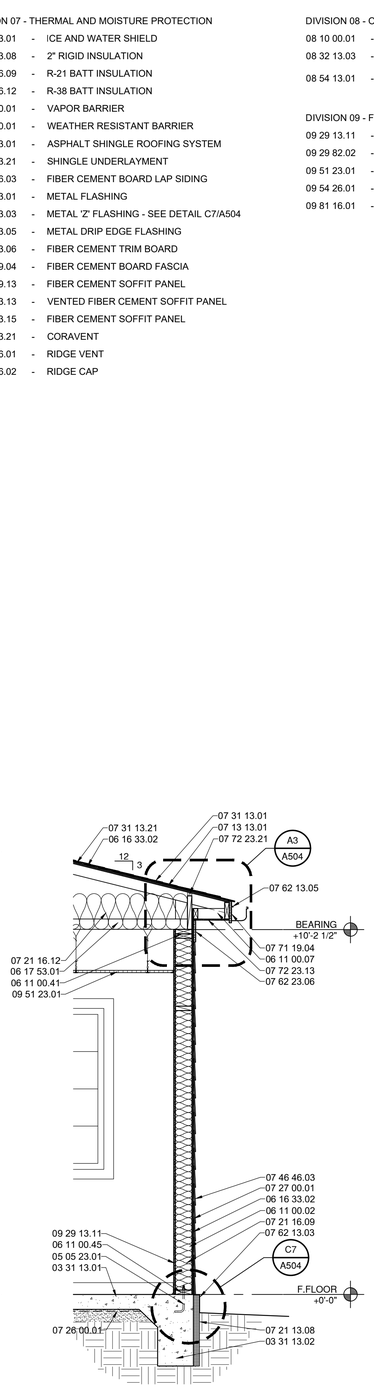
A5 WALL SECTION

1/2" = 1'-0"



A7 WALL SECTION

1/2" = 1'-0"



A9 WALL SECTION

1/2" = 1'-0"

GENERAL NOTES

A. PROVIDE DRAFT STOPS PER LOCAL CODE.

B. PROVIDE FIRE BLOCKING.

REFERENCE KEYNOTES

DIVISION 03 - CONCRETE

03 15 13.01 - 1/2" EXPANSION JOINT
03 31 13.01 - CONCRETE SLAB - SEE STRUCTURAL
03 31 13.02 - CONCRETE FOOTING - SEE STRUCTURAL

DIVISION 05 - METALS

05 05 23.01 - ANCHOR BOLT - SEE STRUCTURAL

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 11 00.02 - 2X6 WOOD STUD
06 11 00.07 - 2X WOOD FRAMING
06 11 00.41 - DOUBLE TOP PLATE
06 11 00.45 - TREATED SILL PLATE
06 11 19.05 - WOOD HEADER - SEE STRUCTURAL
06 11 19.12 - OUTRIGGER - SEE STRUCTURAL
06 15 13.01 - WOOD DECKING - SEE STRUCTURAL
06 16 33.02 - SHEATHING - SEE STRUCTURAL
06 17 33.01 - WOOD I-JOIST - SEE STRUCTURAL
06 17 53.01 - WOOD TRUSS - SEE STRUCTURAL
06 46 00.02 - WOOD TRIM

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 13 13.01 - ICE AND WATER SHIELD
07 21 13.08 - 2" RIGID INSULATION
07 21 16.09 - R-21 BATT INSULATION
07 21 16.12 - R-38 BATT INSULATION
07 26 00.01 - VAPOR BARRIER
07 27 00.01 - WEATHER RESISTANT BARRIER
07 31 13.01 - ASPHALT SHINGLE ROOFING SYSTEM
07 31 13.21 - SHINGLE UNDERLAYMENT
07 46 46.03 - FIBER CEMENT BOARD LAP SIDING
07 62 13.01 - METAL FLASHING
07 62 13.03 - METAL 'Z' FLASHING - SEE DETAIL C7/A504
07 62 13.05 - METAL DRIP EDGE FLASHING
07 62 23.06 - FIBER CEMENT TRIM BOARD
07 71 19.04 - FIBER CEMENT BOARD FASCIA
07 71 19.13 - FIBER CEMENT SOFFIT PANEL
07 72 23.13 - VENTED FIBER CEMENT SOFFIT PANEL
07 72 23.15 - FIBER CEMENT SOFFIT PANEL
07 72 23.21 - CORAVENT
07 72 26.01 - RIDGE VENT
07 72 26.02 - RIDGE CAP

DIVISION 08 - OPENINGS

08 10 00.01 - DOOR AS SCHEDULED
08 32 13.03 - SLIDING ALUMINUM FRAMED GLASS DOORS
08 54 13.01 - EXTERIOR FIBERGLASS WINDOW AS SCHEDULED

DIVISION 09 - FINISHES

09 29 13.11 - 5/8" GYPSUM BOARD
09 29 82.02 - 5/8" FIRE RATED GYPSUM BOARD
09 51 23.01 - SUSPENDED ACOUSTIC CEILING SYSTEM
09 54 26.01 - TONGUE AND GROOVE WOOD CEILING
09 81 16.01 - SOUND ATTENUATION BATT

BDA Architecture, P.C.
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ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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WALL SECTIONS

REV.#	DATE	COMMENTS
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REVISION:
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REVISION:
REVISION:

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON

PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

A303

- OF -

Save Date: July 7, 2022 - 1:05 PM - Lawrence
Plot Date: July 20, 2022 - 11:49 AM
Drawing Name: G:\Archive\2020\2004 - Watson\BDA\DWGS\Construction Documents\Courthouse Veterinary\Sheets\2004-A303 Wall Sections.dwg

GENERAL NOTES

A. PROVIDE DRAFT STOPS PER LOCAL CODE.

B. PROVIDE FIRE BLOCKING.

REFERENCE KEYNOTES

DIVISION 03 - CONCRETE

03 31 13.01 - CONCRETE SLAB - SEE STRUCTURAL
03 31 13.02 - CONCRETE FOOTING - SEE STRUCTURAL

DIVISION 05 - METALS

05 05 23.01 - ANCHOR BOLT - SEE STRUCTURAL

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 11 00.02 - 2X6 WOOD STUD
06 11 00.07 - 2X WOOD FRAMING
06 11 00.20 - 2X WOOD FURRING
06 11 00.41 - DOUBLE TOP PLATE
06 11 00.45 - TREATED SILL PLATE
06 11 19.01 - WOOD BEAM - SEE STRUCTURAL
06 11 19.05 - WOOD HEADER - SEE STRUCTURAL
06 11 19.12 - OUTRIGGER - SEE STRUCTURAL
06 15 13.01 - WOOD DECKING - SEE STRUCTURAL
06 16 33.02 - SHEATHING - SEE STRUCTURAL
06 17 33.01 - WOOD I-JOIST - SEE STRUCTURAL
06 17 53.01 - WOOD TRUSS - SEE STRUCTURAL
06 41 29.11 - PLASTIC LAMINATE BUILT-IN SHELVES
06 60 13.01 - PVC COLUMN
06 63 00.01 - VINYL RAILING SYSTEM

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

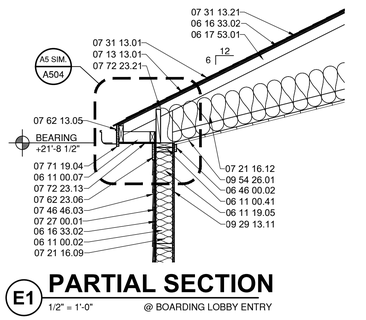
07 13 13.01 - ICE AND WATER SHIELD
07 21 13.08 - 2" RIGID INSULATION
07 21 16.09 - R-21 BATT INSULATION
07 21 16.12 - R-38 BATT INSULATION
07 26 00.01 - VAPOR BARRIER
07 27 00.01 - WEATHER RESISTANT BARRIER
07 31 13.01 - ASPHALT SHINGLE ROOFING SYSTEM
07 31 13.21 - SHINGLE UNDERLAYMENT
07 46 46.01 - FIBER CEMENT BOARD PANEL SYSTEM
07 46 46.03 - FIBER CEMENT BOARD LAP SIDING
07 62 13.03 - METAL 'Z' FLASHING - SEE DETAIL C7/A504
07 62 13.05 - METAL DRIP EDGE FLASHING
07 62 23.06 - FIBER CEMENT TRIM BOARD
07 71 19.04 - FIBER CEMENT BOARD FASCIA
07 71 19.13 - FIBER CEMENT SOFFIT PANEL

DIVISION 08 - OPENINGS

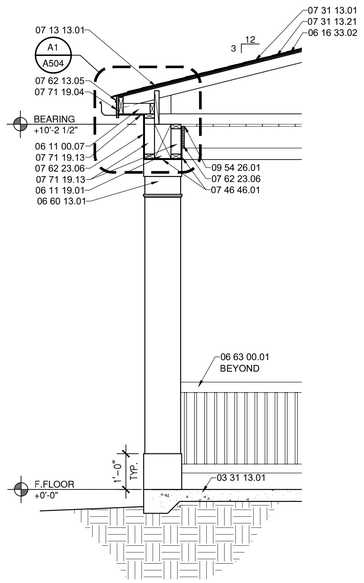
08 43 13.11 - STOREFRONT WINDOW SYSTEM
08 54 13.01 - EXTERIOR FIBERGLASS WINDOW AS SCHEDULED

DIVISION 09 - FINISHES

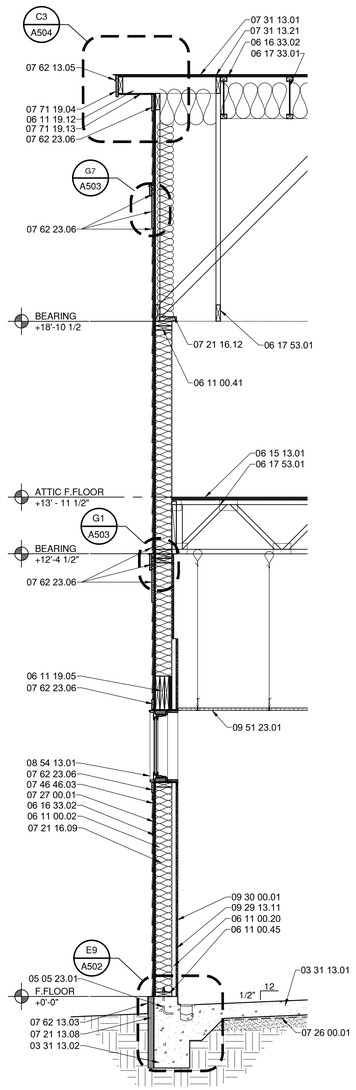
09 22 16.16 - 3 5/8" METAL STUD
09 22 16.22 - 6" METAL STUD
09 29 13.11 - 5/8" GYPSUM BOARD
09 30 00.01 - WALL TILE
09 51 23.01 - SUSPENDED ACOUSTIC CEILING SYSTEM
09 54 26.01 - TONGUE AND GROOVE WOOD CEILING



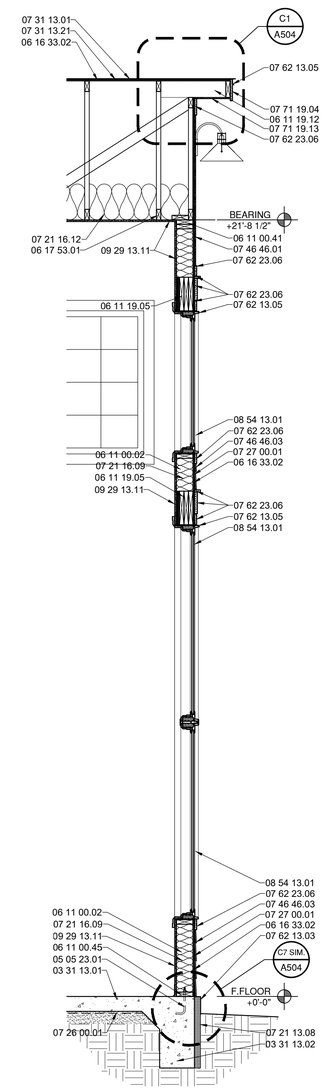
E1 **PARTIAL SECTION**
1/2" = 1'-0" @ BOARDING LOBBY ENTRY



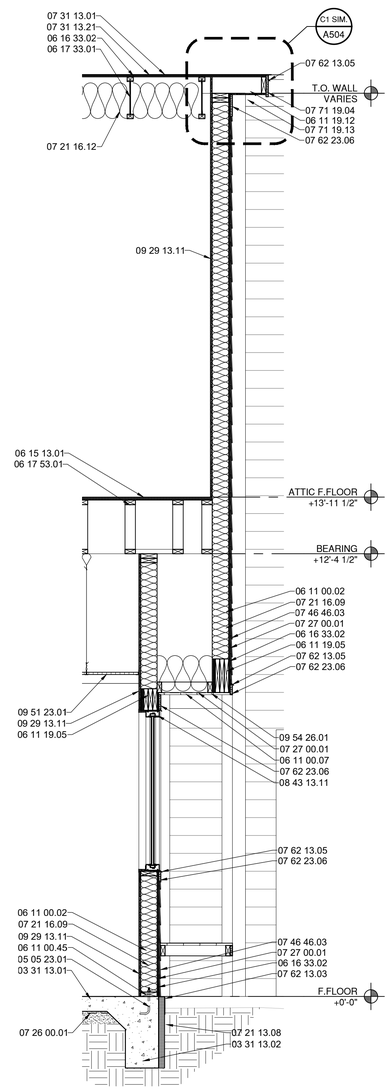
A1 **WALL SECTION**
1/2" = 1'-0"



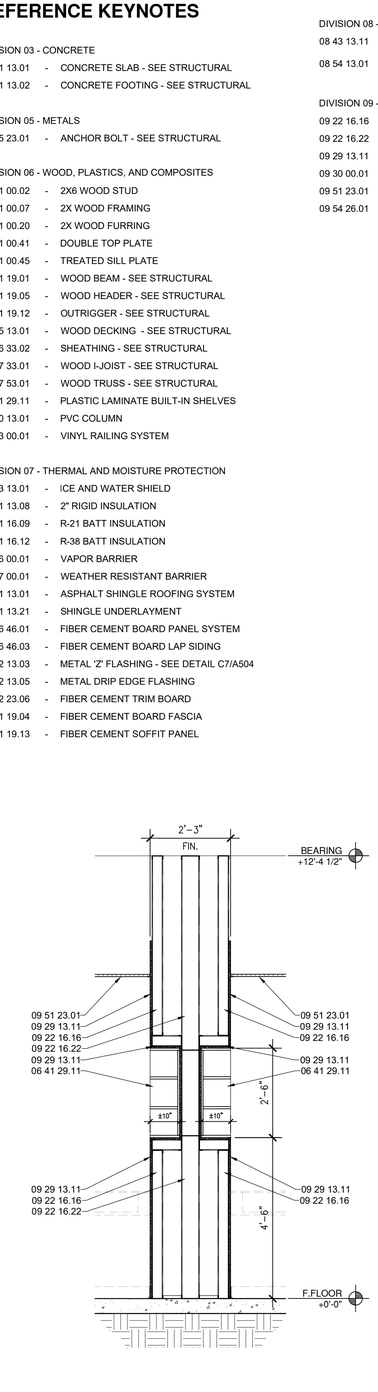
A3 **WALL SECTION**
1/2" = 1'-0"



A5 **WALL SECTION**
1/2" = 1'-0"



A7 **WALL SECTION**
1/2" = 1'-0"



A9 **TREATMENT TOWER SECTION**
1/2" = 1'-0"

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WALL SECTIONS

REV.#	DATE	COMMENTS
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REVISION:	-	-
REVISION:	-	-
REVISION:	-	-

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON

PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

A304

- OF -

Start Date: July 20, 2022 - 11:56 AM - Lawrence
Plot Date: July 20, 2022 - 11:56 AM
Drawing Name: G:\Archive\2020\2004 - Watson\BDA\DWGS\Construction Documents\Courthouse Veterinary\Sheets\2004-A304 Wall Sections.dwg

GENERAL NOTES

A. PROVIDE DRAFT STOPS PER LOCAL CODE.

B. PROVIDE FIRE BLOCKING.

REFERENCE KEYNOTES

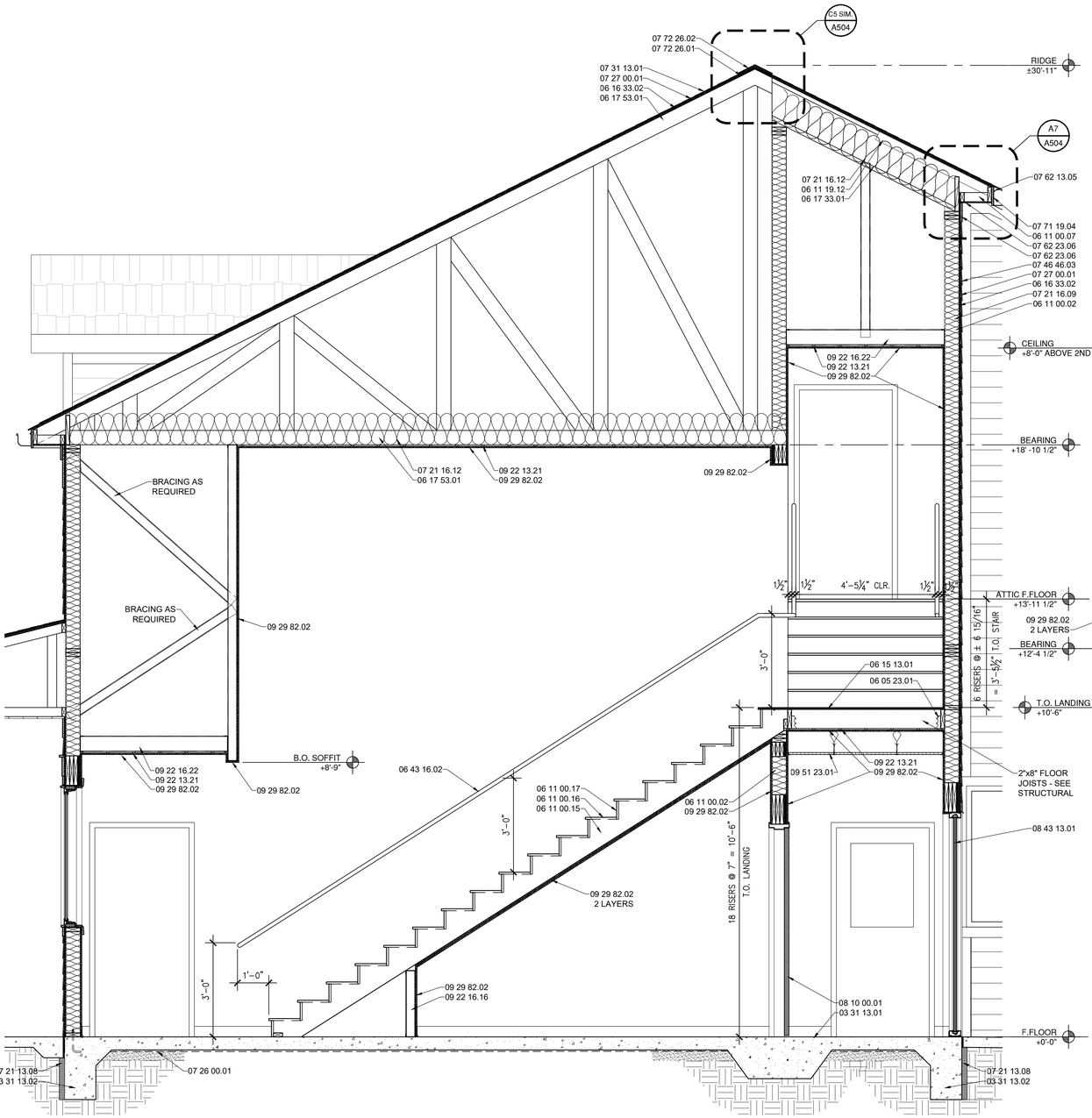
DIVISION 03 - CONCRETE
- 03 31 13.01 - CONCRETE SLAB - SEE STRUCTURAL
- 03 31 13.02 - CONCRETE FOOTING - SEE STRUCTURAL

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
- 06 05 23.01 - METAL HANGER - SEE STRUCTURAL
- 06 11 00.02 - 2X6 WOOD STUD
- 06 11 00.07 - 2X WOOD FRAMING
- 06 11 00.15 - WOOD STRINGER
- 06 11 00.16 - WOOD TREAD
- 06 11 00.17 - WOOD STAIR RISER
- 06 11 19.12 - OUTRIGGER - SEE STRUCTURAL
- 06 15 13.01 - WOOD DECKING - SEE STRUCTURAL
- 06 16 33.02 - SHEATHING - SEE STRUCTURAL
- 06 17 33.01 - WOOD I-JOIST - SEE STRUCTURAL
- 06 17 53.01 - WOOD TRUSS - SEE STRUCTURAL
- 06 43 16.02 - WOOD RAILING

DIVISION 07 - THERMAL AND MOISTURE PROTECTION
- 07 21 13.08 - 2" RIGID INSULATION
- 07 21 16.09 - R-21 BATT INSULATION
- 07 21 16.12 - R-38 BATT INSULATION
- 07 26 00.01 - VAPOR BARRIER
- 07 27 00.01 - WEATHER RESISTANT BARRIER
- 07 31 13.01 - ASPHALT SHINGLE ROOFING SYSTEM
- 07 46 46.03 - FIBER CEMENT BOARD LAP SIDING
- 07 62 13.05 - METAL DRIP EDGE FLASHING
- 07 62 23.06 - FIBER CEMENT TRIM BOARD
- 07 71 19.04 - FIBER CEMENT BOARD FASCIA
- 07 72 26.01 - RIDGE VENT
- 07 72 26.02 - RIDGE CAP

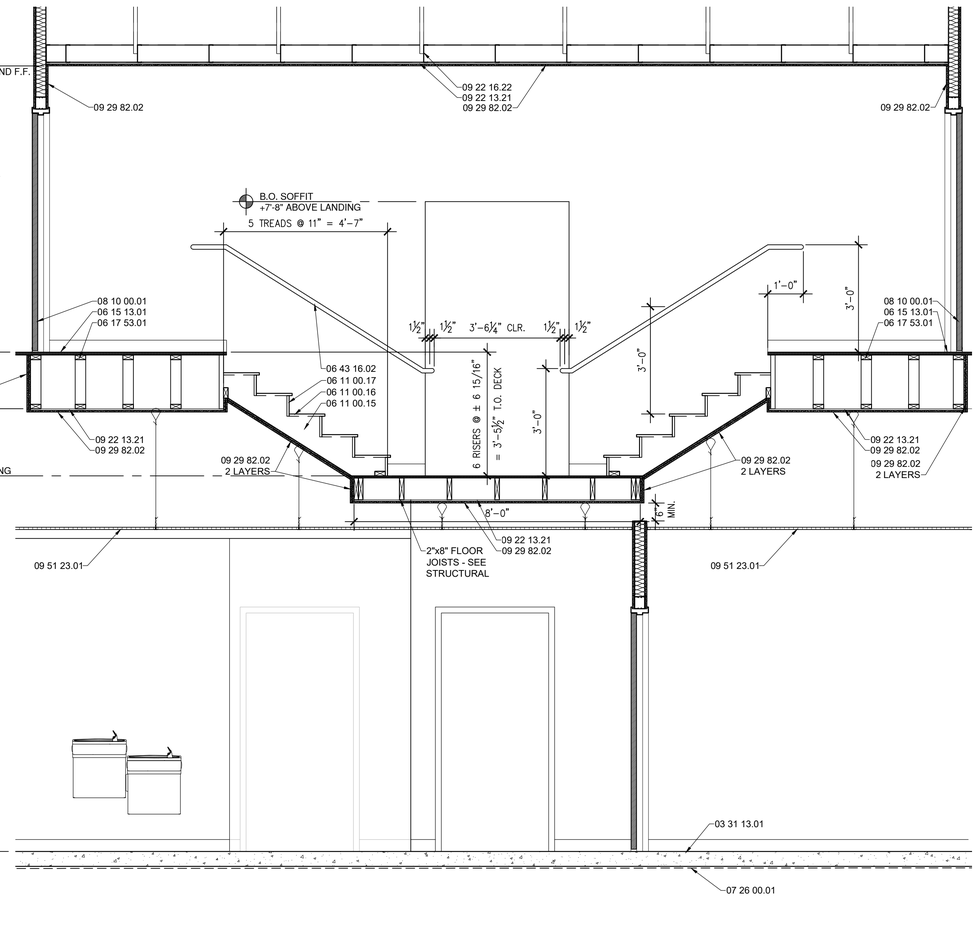
DIVISION 08 - OPENINGS
- 08 10 00.01 - DOOR AS SCHEDULED
- 08 43 13.01 - STOREFRONT SYSTEM

DIVISION 09 - FINISHES
- 09 22 13.21 - 1/2" RESILIENT FURRING CHANNEL
- 09 22 16.16 - 3 5/8" METAL STUD
- 09 22 16.22 - 6" METAL STUD
- 09 29 82.02 - 5/8" FIRE RATED GYPSUM BOARD
- 09 51 23.01 - SUSPENDED ACOUSTIC CEILING SYSTEM



A1 STAIR SECTION

1/2" = 1'-0"



A7 ATTIC STAIR SECTION

1/2" = 1'-0"

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07-19-22

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Brian Watson, DVM

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WALL SECTIONS

REV.#	DATE	COMMENTS
-	-	-
REVISION:	REVISION:	REVISION:

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON

PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

A305

- OF -

Save Date: July 20, 2022 - 11:59 AM - Lawrence
Plot Date: July 20, 2022 - 12:00 PM
Drawing Name: G:\Archive\2020\2004 - Watson\BDA\DWGS\Construction Documents\Courthouse Veterinary\Sheets\2004-A305 Wall Sections.dwg

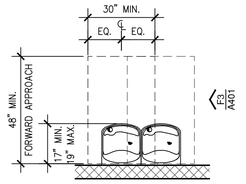
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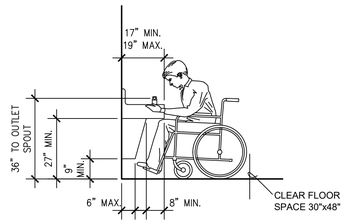
DIVISION 01 - GENERAL REQUIREMENTS

01 92 16.11	-	T-SHAPED TURNING CLEARANCE
01 92 16.12	-	MANEUVERING CLEARANCE AT DOOR
01 92 16.15	-	CLEARANCE FOR WATER CLOSET
01 92 16.16	-	CLEARANCE FOR LAVATORY

DIVISION 10 - SPECIALTIES

10 28 13.01	-	GRAB BAR
10 28 13.28	-	TOILET PAPER DISPENSER
10 28 13.29	-	SANITARY NAPKIN DISPOSAL
10 28 13.31	-	PAPER TOWEL DISPENSER
10 28 13.38	-	VANITY MIRROR WITH FRAME
10 28 13.41	-	SOAP DISPENSER

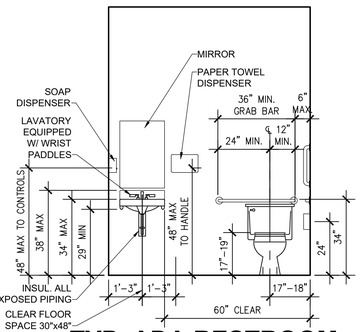




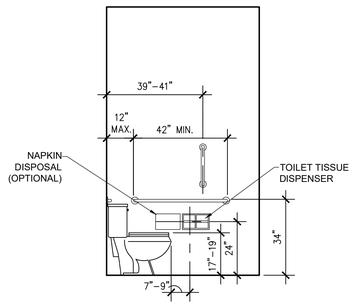
SIDE ELEVATION DRINKING FOUNTAIN

F1 FOUNTAIN CLEARANCE
3/8" = 1'-0"

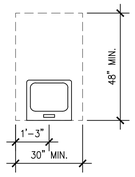
F3 FOUNTAIN MOUNTING HEIGHT
3/8" = 1'-0"



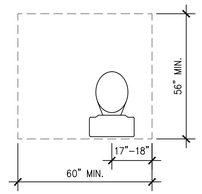
D1 TYP. ADA RESTROOM
3/8" = 1'-0"



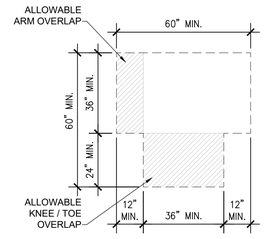
D3 TYP. ADA RESTROOM
3/8" = 1'-0"



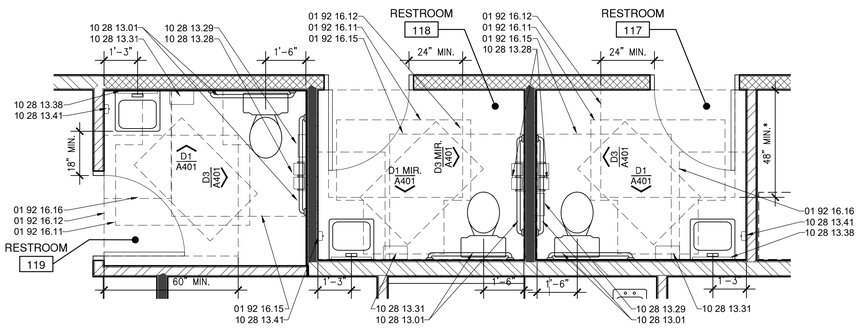
D5 SINK CLEARANCE
3/8" = 1'-0"



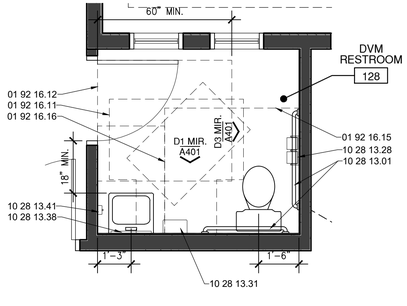
D7 TOILET CLEARANCE
3/8" = 1'-0"



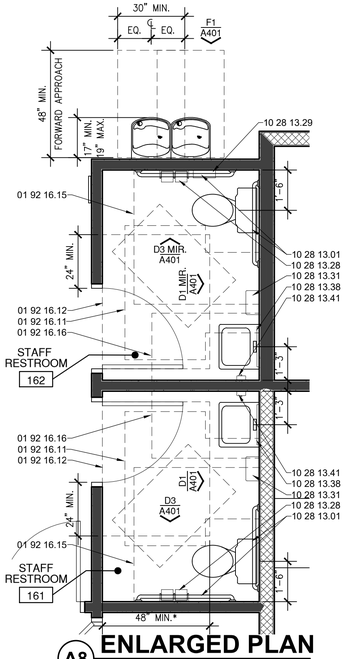
D9 T-TURN CLEARANCE
3/8" = 1'-0"



A1 ENLARGED PLAN
3/8"=1'-0"



A6 ENLARGED PLAN
3/8"=1'-0"



A8 ENLARGED PLAN
3/8"=1'-0"

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07-19-22

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Brian Watson, DVM

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ENLARGED PLANS

REV.#	DATE	COMMENTS
-	REVISION:	
-	REVISION:	
-	REVISION:	
-	REVISION:	

REVIEWS	
INITIALS	
	BDA DSGN. REV.
-	BDA TECH REV.

WATSON

PROJECT NO.: 2004

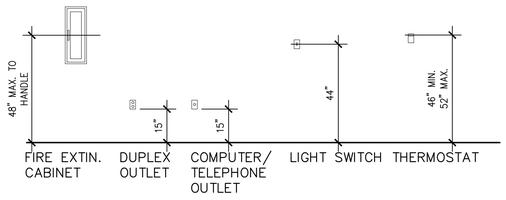
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DATE: 07/19/2022

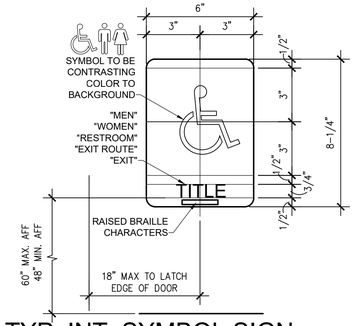
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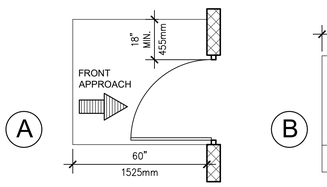
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Plot Date: July 20, 2022 - 12:06 PM
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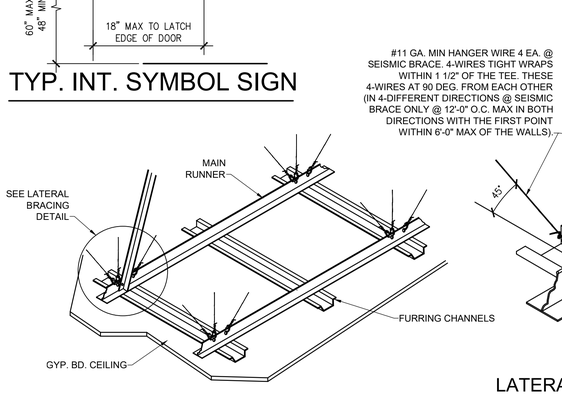
TYPICAL MECHANISM MOUNTING HEIGHTS



TYP. INT. SYMBOL SIGN



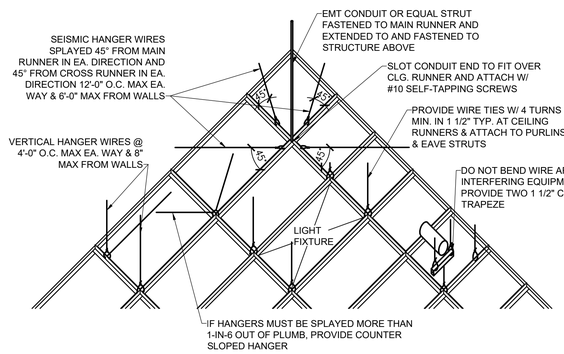
TYPICAL ADA DOOR MANEUVERING CLEARANCES DETAILS



LATERAL BRACING DETAIL

TYPICAL SUSPENDED GYP. BD. BRACING DETAIL

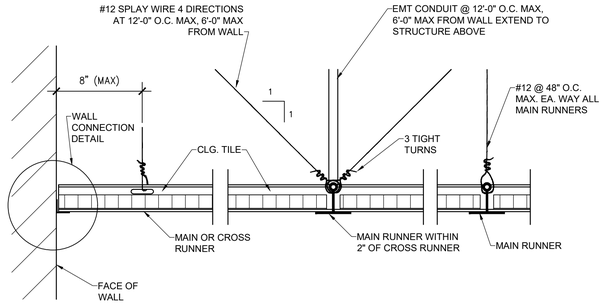
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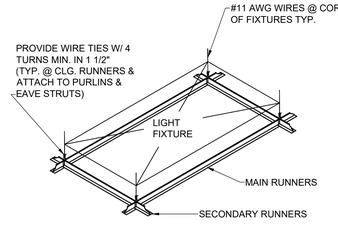
1. HANGER WIRES MUST BE NO. 12 GA. MIN. SOFT-ANNEALED, MILD STEEL WIRE. WIRES SHALL BE WRAPPED TIGHTLY AT RUNNERS AND SUPPORTS AND TIES WITH A MIN. OF 3 TURNS.
2. CLIPS SHALL HOLD RUNNERS TIGHTLY TOGETHER. SPLICE CLIPS SHALL BE CAPABLE OF RESISTING AT LEAST 50 LBS. IN TENSION OR COMPRESSION.
3. FOR MANUFACTURED SYSTEMS, SUBMIT SUBSTANTIATION IN ACCORDANCE WITH CURRENT BUILDING CODES.
4. RUNNER SHALL BE CAPABLE OF SUPPORTING CEILING SYSTEM WITH DEFLECTIONS LESS THAN 0.133 INCH.
5. LOCAL KINKS AND BENDS SHALL NOT BE MADE IN HANGER WIRES FOR LEVELING.

TYPICAL REINFORCED SUSPENDED CEILING BRACING DETAIL

N.T.S.

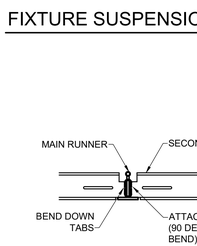


SUSPENDED CEILING

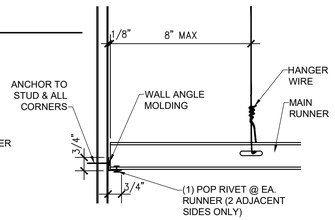


STRUT SCHEDULE	
EMT SIZE (NOMINAL)	LENGTH (L/r≤ 200)
1/2"	≤ 3'-10"
3/4"	≤ 5'-0"
1"	≤ 6'-6"
1 1/4"	≤ 8'-6"
1 1/2"	≤ 9'-10"

FIXTURE SUSPENSION



RUNNER ATTACHMENT



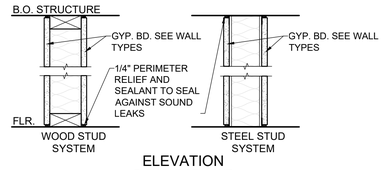
T-BAR MAIN/CROSS MEMBER TO WALL CONNECTION

TYPICAL SUSPENDED CEILING BRACING DETAIL

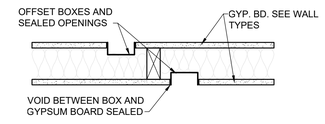
N.T.S.

SOUND CONTROL

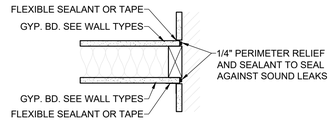
- RECESSED FIXTURES THAT PENETRATE GYPSUM BOARD SHALL NOT BE LOCATED BACK-TO-BACK OR IN SAME STUD CAVITY.
- ANY OPENING FOR FIXTURES OR PIPES SHALL BE CUT TO THE PROPER SIZE AND SEALED.
- ENTIRE PERIMETER OF SOUND INSULATING SYSTEM SHALL BE MADE AIRTIGHT TO PREVENT SOUND FLANKING, INCLUDING JOINT TO STRUCTURE ABOVE.
- FLEXIBLE SEALANT OR AN ACOUSTICAL GASKET SHALL BE USED TO SEAL BETWEEN THE STC RATED SYSTEM AND ALL DISSIMILAR SURFACES AND BETWEEN THE SYSTEM AND SIMILAR SURFACES WHERE PERIMETER RELIEF IS REQUIRED.
- TAPE GYPSUM BOARD WALL AND CEILING INTERSECTIONS TO PROVIDE AN AIRTIGHT SEAL.



ELEVATION
FLEXIBLE SEALANT



PLAN
BOXES OFFSET ONE STUD SPACE AND SEALING OF OPENINGS THROUGH PARTITIONS



PLAN
INTERSECTION WITH INTERIOR WALL

SOUND ISOLATION CONSTRUCTION

N.T.S.

GENERAL NOTES:

1. IF THERE ARE ANY CONFLICTS BETWEEN INFORMATION PROVIDED ON THIS SHEET AND INFORMATION PROVIDED ON OTHER CONTRACT DOCUMENTS, THE ARCHITECT IS TO BE NOTIFIED IMMEDIATELY.
2. THESE ARE TO BE CONSIDERED MINIMUM REQUIREMENTS. LOCAL ORDINANCES MAY HAVE REQUIREMENTS CONTRADICTING INFORMATION CONTAINED ON THIS SHEET. IF THIS IS THE CASE, THE ARCHITECT IS TO BE NOTIFIED IMMEDIATELY. IN ANY CASE, THE LOCAL ORDINANCE REQUIREMENTS APPLY.
3. SEISMIC BRACING REQUIREMENTS AND DETAILS ARE BASED ON THE INTERNATIONAL BUILDING CODE. FOR JURISDICTIONS NOT COVERED BY THE IBC, LOCAL REQUIREMENTS WILL APPLY.

DOORS:

CLEAR WIDTH: DOORWAY SHALL HAVE A CLEAR OPENING OF 32" (815mm) MINIMUM WITH DOOR OPEN 90 DEG. CLEAR OPENING SHALL BE MEASURED BETWEEN THE FACE OF DOOR AND STOP (ICC A117.1–2009 404.2.2)

MANEUVERING CLEARANCES AT DOORS:
FRONT APPROACHES TO PULL SIDE OF SWINGING DOORS SHALL HAVE MANEUVERING SPACE THAT EXTENDS 18" (455mm) MINIMUM BEYOND THE LATCH SIDE OF THE DOOR AND 60" (1525mm) MINIMUM PERPENDICULAR TO THE DOORWAY, SEE DETAIL 'A' THIS SHEET. (ICC A117.1–2009 404.2.3)

FRONT APPROACHES TO PUSH SIDE OF SWINGING DOORS, EQUIPPED WITH BOTH CLOSER AND LATCH, SHALL HAVE MANEUVERING SPACE THAT EXTENDS 12" (305mm) MINIMUM BEYOND THE LATCH SIDE OF THE DOOR AND 48" (1220mm) MINIMUM PERPENDICULAR TO THE DOORWAY, SEE DETAIL 'B' THIS SHEET. (ICC A117.1–2009 404.2.3)

FRONT APPROACHES TO PUSH SIDE OF SWINGING DOORS, NOT EQUIPPED WITH LATCH AND CLOSER, SHALL HAVE MANEUVERING SPACE THAT IS THE SAME WIDTH AS DOOR OPENING AND EXTENDS 48" (1220mm) MINIMUM PERPENDICULAR TO THE DOORWAY, SEE DETAIL 'B' THIS SHEET. (ICC A117.1–2009 404.2.3)

TWO DOORS IN SERIES:
SPACE BETWEEN TWO HINGED OR PIVOTED DOORS IN SERIES SHALL BE 48" (1220mm) PLUS THE WIDTH OF ANY DOOR SWINGING INTO THE SPACE. DOORS IN SERIES SHALL SWING EITHER IN SAME DIRECTION OR AWAY FROM SPACE BETWEEN DOORS, SEE DETAIL 'C' THIS SHEET. (ICC A117.1–2009 404.2.5)

THRESHOLDS AT DOORWAYS:
THRESHOLDS, IF PROVIDED, AT DOORWAYS SHALL BE 1/2" (13mm) HIGH MAXIMUM EXCEPT THAT THRESHOLDS FOR EXTERIOR RESIDENTIAL SLIDING DOORS SHALL BE 3/4" (19mm) HIGH MAXIMUM. (ICC A117.1–2009 404.2.4)

DOOR HARDWARE:
HANDLES, PULLS, LATCHES, LOCKS, AND OTHER OPERABLE PARTS ON ACCESSIBLE DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, TIGHT PINCHING, OR TWISTING OF THE WRIST TO OPERATE. OPERABLE PARTS OF SUCH HARDWARE SHALL BE 34" (865mm) MINIMUM AND 48" (1220mm) MAXIMUM ABOVE THE FLOOR. (ICC A117.1–2009 404.2.6) [GENERALLY LEVER HANDLE STYLE]

DOOR CLOSERS:
DOOR CLOSERS SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 90 DEG., THE TIME REQUIRED TO MOVE THE DOOR TO AN OPEN POSITION OF 12 DEG. WILL BE 5 SECONDS MINIMUM. (ICC A117.1–2009 404.2.7)

DOOR–OPENING FORCE:
FIRE DOORS SHALL HAVE THE MINIMUM OPENING FORCE ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY. THE REQUIRED FORCE FOR PUSHING OR PULLING OPEN DOORS OTHER THAN FIRE DOORS SHALL BE AS FOLLOWS
–INTERIOR HINGED DOOR: 5.0lb. (22.2N) MAX.
–SLIDING/FOLDING DOOR: 5.0lb. (22.2N) MAX.
THESE FORCES DO NOT APPLY TO THE FORCE REQUIRED TO RETRACT LATCH BOLTS OR DISENGAGE OTHER DEVICES THAT HOLD THE DOOR IN A CLOSED POSITION. (ICC A117.1–2009 404.2.8)

CHANGES IN LEVEL:

CHANGES IN LEVEL OF 1/4" (6mm) HIGH MAXIMUM SHALL BE PERMITTED TO BE VERTICAL AND WITHOUT EDGE TREATMENT (ICC A117.1–2009 303.2) CHANGES IN LEVEL BETWEEN 1/4" (6mm) HIGH MINIMUM AND 1/2" (13mm) HIGH MAXIMUM SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1:2. (ICC A117.1–2009 303.3)

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BDA

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ARCHITECT
07-19-22
COMMONWEALTH OF VIRGINIA

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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MISC DETAILS

REV#	DATE	COMMENTS
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REVISION:

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON

PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

A501

- OF -

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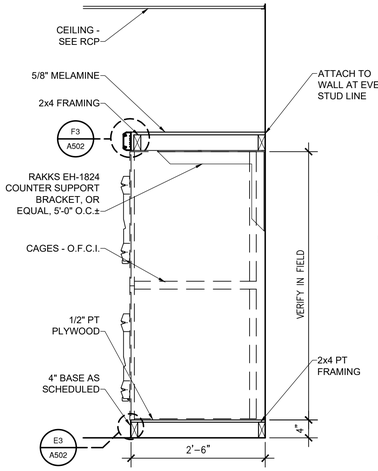
GENERAL NOTES:

A. GROMMET LOCATIONS IN COUNTER TOPS TO BE COORDINATED WITH THE OWNER.

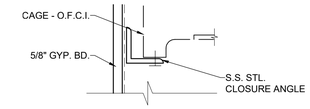
B. ALL EXPOSED OUTSIDE CORNERS OF INTERIOR WALLS SHALL HAVE CORNER GUARDS, U.N.O.

C. ALL EXPOSED COUNTER TOP CORNERS (AS SEEN PLAN VIEW) SHALL HAVE 2" RADIUS.

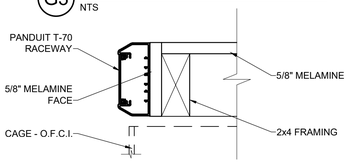
D. PROVIDE ADEQUATE SUPPORT BRACING IN WALL AT CABINETS AS REQUIRED.



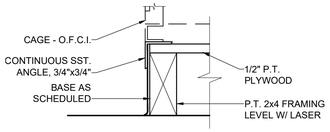
E1 CAGE BANK SECTION
3/4" = 1'-0"



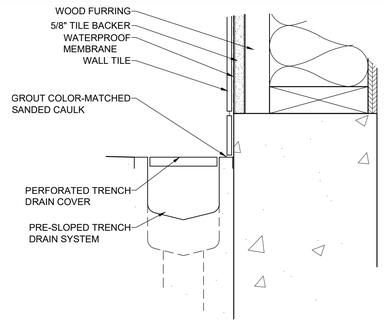
G3 CAGE BANK SIDE
NTS



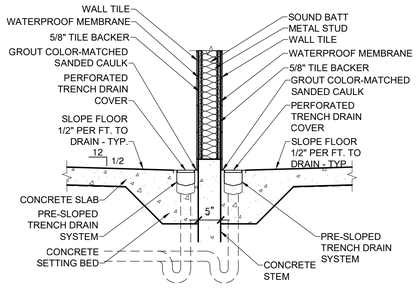
F3 CAGE BANK TOP
NTS



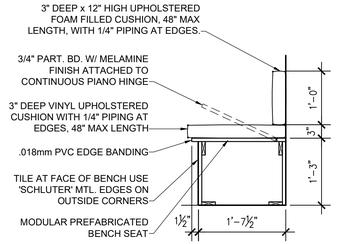
E3 CAGE BANK BASE
NTS



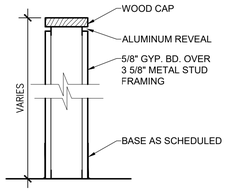
G5 TRENCH DRAIN DETAIL
3" = 1'-0"



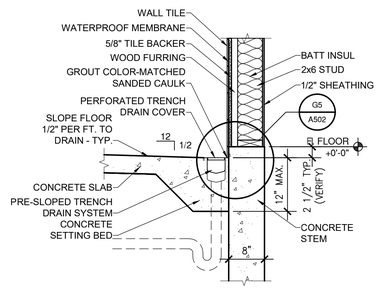
G7 TRENCH DRAIN DETAIL
3/4" = 1'-0"



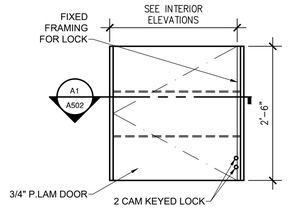
E5 BENCH SECTION
3/4" = 1'-0"



E7 HALF WALL SECTION
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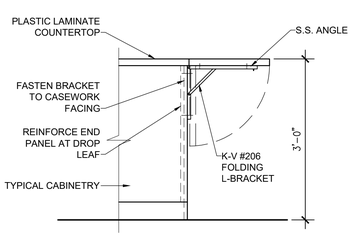


E9 TRENCH DRAIN DETAIL
3/4" = 1'-0"

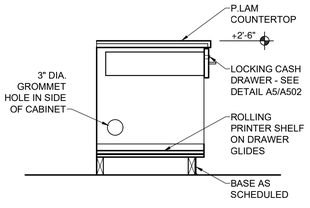


NOTE: FRONT DOOR NOT SHOWN FOR CLARITY

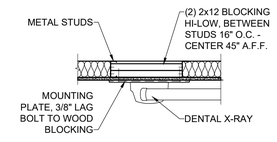
C1 NARCOTICS CABINET
3/4" = 1'-0"



C3 DROP LEAF DETAIL
3/4" = 1'-0"

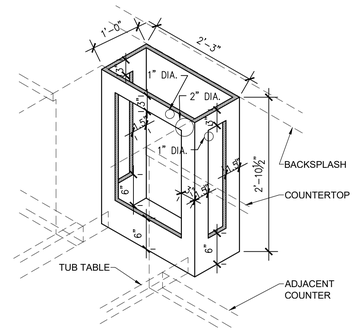


C5 PRINTER CABINET
3/4" = 1'-0"

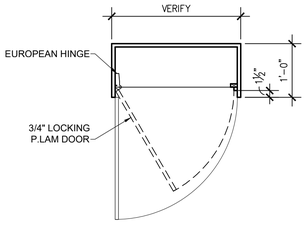


WALL MOUNTED
C7 DENTAL X-RAY
3/4" = 1'-0"

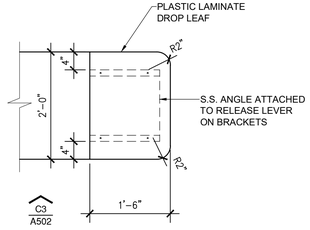
METAL STUD



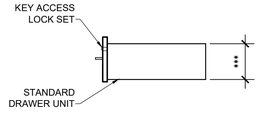
C9 TUB TABLE CABINET
3/4" = 1'-0"



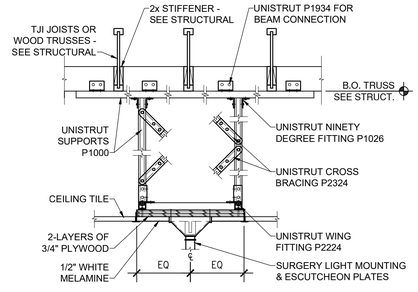
A1 NARCOTICS CABINET
3/4" = 1'-0"



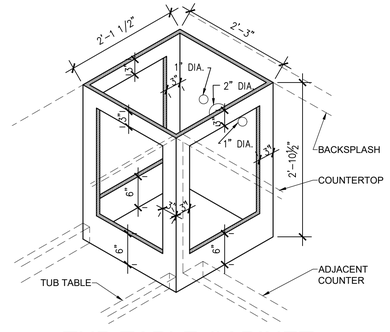
A3 DROP LEAF PLAN DTL
3/4" = 1'-0"



A5 LOCKING DRAWER
3/4" = 1'-0"



CLG MOUNTED
A7 SURGERY/EXAM LIGHT
1" = 1'-0"



A9 TUB TABLE CABINET
3/4" = 1'-0"

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DAVID S. GASSER
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ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

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Virginia Beach, Virginia 23456
Brian Watson, DVM

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MISC DETAILS

REV.#	DATE	COMMENTS
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REVIEWS	
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-	BDA TECH REV.

WATSON

PROJECT NO.: 2004

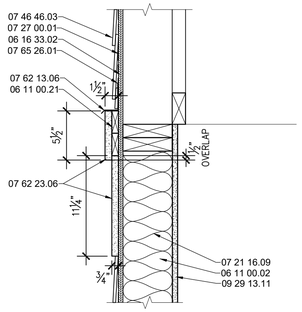
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DATE: 07/19/2022

A502

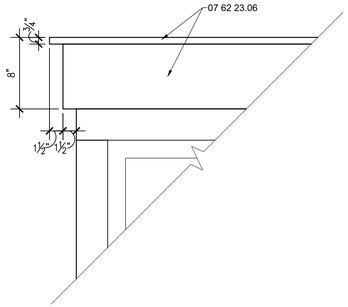
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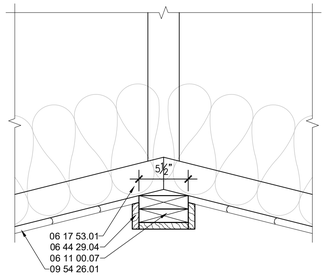
G1 TRIM BOARD DETAIL

1 1/2"=1'-0



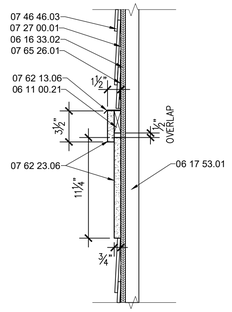
G3 WINDOW LINTEL DETAIL

1 1/2"=1'-0"



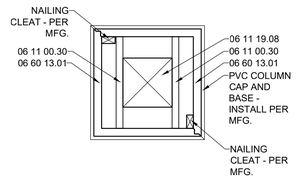
G5 RIDGE BEAM SECTION

1 1/2"=1'-0 @ VAULTED CEILING



G7 GABLE BAND BD. DETAIL

1 1/2"=1'-0



G8 COLUMN WRAP DETAIL

1 1/2"=1'-0" INSTALL PER. MFG. REQUIREMENTS

REFERENCE KEYNOTES

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

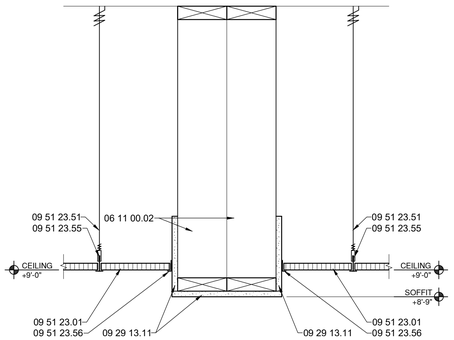
06 11 00.02	-	2X6 WOOD STUD
06 11 00.07	-	2X WOOD FRAMING
06 11 00.21	-	WOOD FURRING
06 11 00.30	-	WOOD BLOCKING
06 11 19.08	-	WOOD COLUMN - SEE STRUCTURAL
06 16 33.02	-	SHEATHING - SEE STRUCTURAL
06 17 53.01	-	WOOD TRUSS - SEE STRUCTURAL
06 18 13.01	-	GLU-LAM BEAM - SEE STRUCTURAL
06 44 29.04	-	1X WOOD BEAM WRAP
06 60 13.01	-	PVC COLUMN

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 21 16.09	-	R-21 BATT INSULATION
07 27 00.01	-	WEATHER RESISTANT BARRIER
07 46 46.03	-	FIBER CEMENT BOARD LAP SIDING
07 62 13.06	-	THRU WALL FLASHING
07 62 23.06	-	FIBER CEMENT TRIM BOARD
07 65 26.01	-	FLASHING TAPE

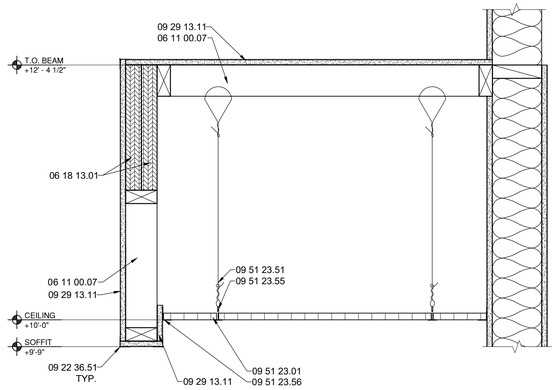
DIVISION 09 - FINISHES

09 22 16.16	-	3 5/8" METAL STUD
09 22 36.51	-	CORNER BEAD
09 29 13.11	-	5/8" GYPSUM BOARD
09 51 23.01	-	SUSPENDED ACOUSTIC CEILING SYSTEM
09 51 23.51	-	SUSPENDED CEILING SUPPORT
09 51 23.55	-	SUSPENSION TEE
09 51 23.56	-	SUSPENSION WALL ANGLE
09 54 26.01	-	TONGUE AND GROOVE WOOD CEILING



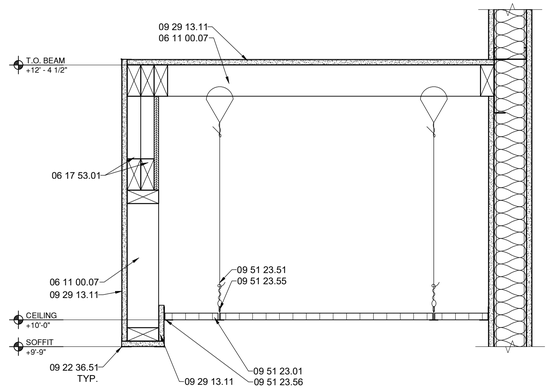
D1 SOFFIT DETAIL

1 1/2"=1'-0"



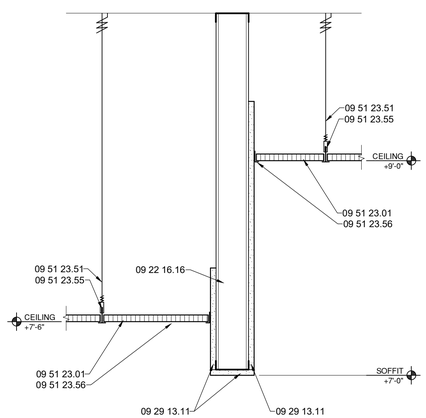
D3 SOFFIT DETAIL

1 1/2"=1'-0"



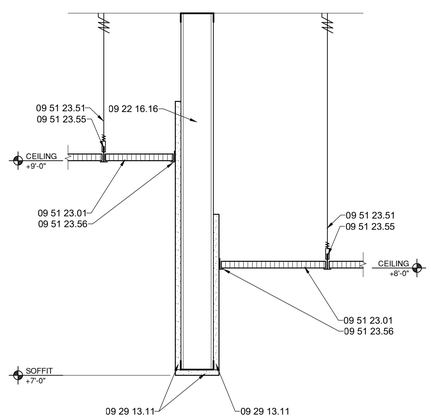
D6 SOFFIT DETAIL

1 1/2"=1'-0"



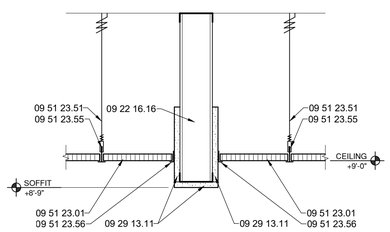
A1 SOFFIT DETAIL

1 1/2"=1'-0" @ RUNS



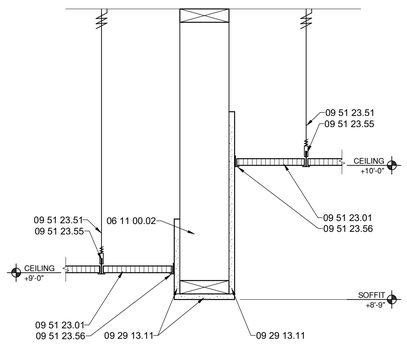
A3 SOFFIT DETAIL

1 1/2"=1'-0" @ RUNS



A6 SOFFIT DETAIL

1 1/2"=1'-0"



A9 SOFFIT DETAIL

1 1/2"=1'-0"

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07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

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Virginia Beach, Virginia 23456
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MISC DETAILS

REV.#	DATE	COMMENTS
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REVIEWS

INITIALS	
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-	BDA TECH REV.

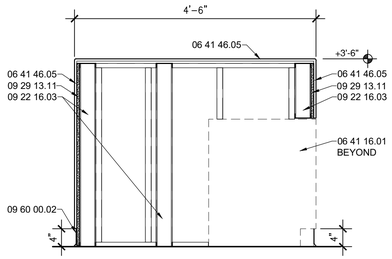
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DRAWN: -
DATE: 07/19/2022

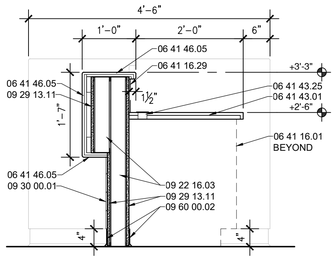
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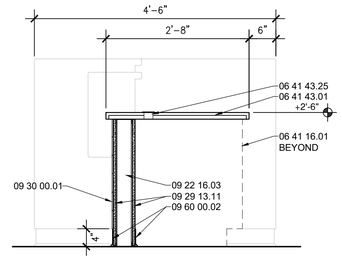
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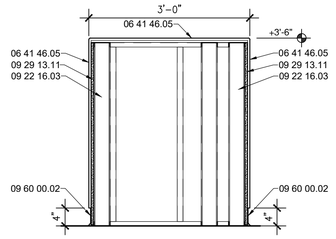
G1 RECEPTION DESK
3/4" = 1'-0" @ RECEPTION RM#103



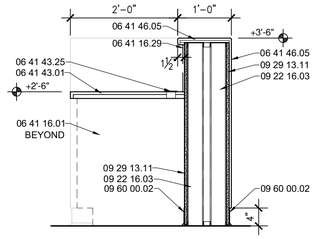
G3 RECEPTION DESK
3/4" = 1'-0" @ RECEPTION RM#103



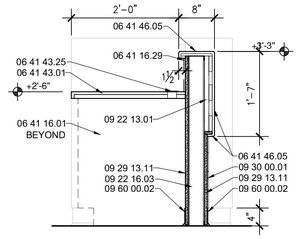
G5 RECEPTION DESK
3/4" = 1'-0" @ RECEPTION RM#103



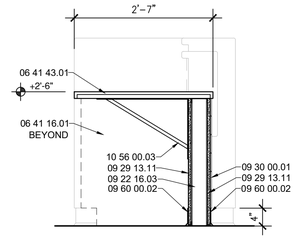
E1 RECEPTION DESK
3/4" = 1'-0" @ BOARDING RECEPTION RM#158



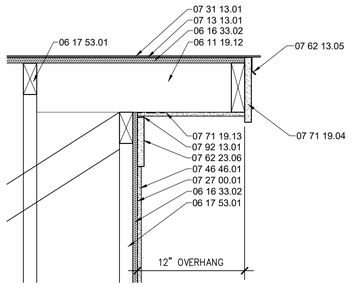
E3 RECEPTION DESK
3/4" = 1'-0" @ BOARDING RECEPTION RM#158



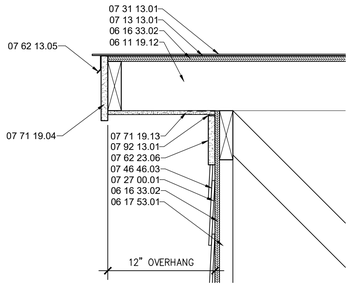
E5 RECEPTION DESK
3/4" = 1'-0" @ BOARDING RECEPTION RM#158



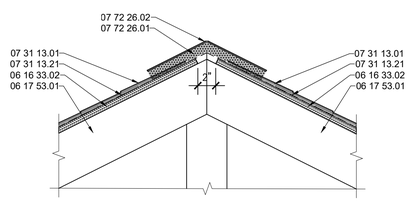
E7 RECEPTION DESK
3/4" = 1'-0" @ BOARDING RECEPTION RM#158



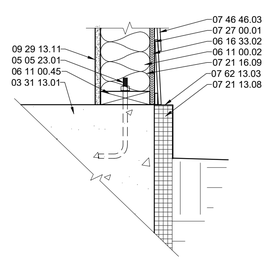
C1 EAVE DETAIL
1 1/2"=1'-0



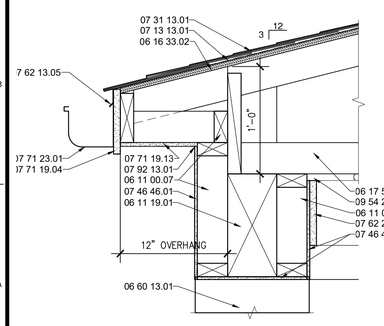
C3 EAVE DETAIL
1 1/2"=1'-0



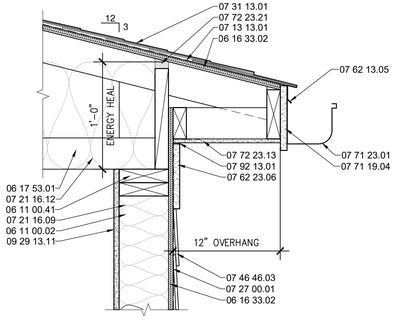
C5 RIDGE DETAIL
1 1/2"=1'-0 @ RIDGE VENT



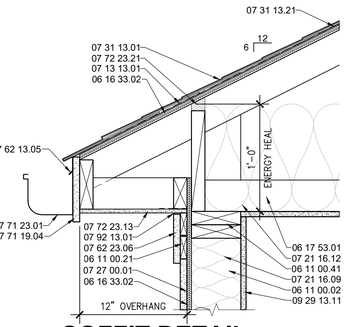
C7 FOUNDATION DETAIL
1 1/2"=1'-0" @ FOUNDATION 'Z' FLASHING



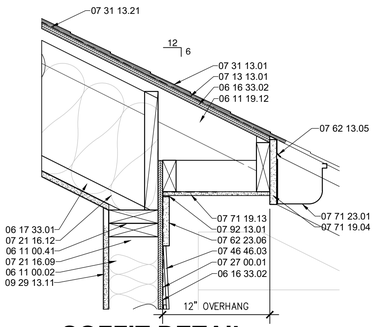
A1 SOFFIT DETAIL
1 1/2"=1'-0



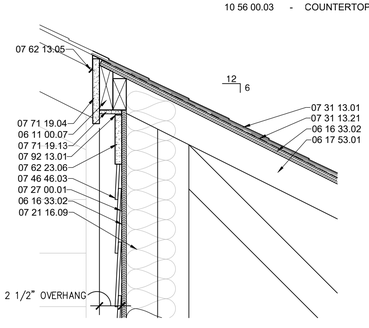
A3 SOFFIT DETAIL
1 1/2"=1'-0



A5 SOFFIT DETAIL
1 1/2"=1'-0



A7 SOFFIT DETAIL
1 1/2"=1'-0



A9 SOFFIT DETAIL
1 1/2"=1'-0

GENERAL NOTES:

A. GROMMET LOCATIONS IN COUNTER TOPS TO BE COORDINATED WITH THE OWNER.

B. ALL EXPOSED OUTSIDE CORNERS OF INTERIOR WALLS SHALL HAVE CORNER GUARDS, U.N.O.

C. ALL EXPOSED COUNTER TOP CORNERS (AS SEEN PLAN VIEW) SHALL HAVE 2" RADIUS.

D. PROVIDE ADEQUATE SUPPORT BRACING IN WALL AT CABINETS AS REQUIRED.

REFERENCE KEYNOTES

DIVISION 03 - CONCRETE
03 31 13.01 - CONCRETE SLAB - SEE STRUCTURAL

DIVISION 05 - METALS
05 05 23.01 - ANCHOR BOLT - SEE STRUCTURAL

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
06 11 00.02 - 2X6 WOOD STUD
06 11 00.07 - 2X WOOD FRAMING
06 11 00.21 - WOOD FURRING
06 11 00.41 - DOUBLE TOP PLATE
06 11 00.45 - TREATED SILL PLATE
06 11 19.01 - WOOD BEAM - SEE STRUCTURAL
06 11 19.12 - OUTRIGGER - SEE STRUCTURAL
06 16 33.02 - SHEATHING - SEE STRUCTURAL
06 17 33.01 - WOOD I-JOIST - SEE STRUCTURAL
06 17 53.01 - WOOD TRUSS - SEE STRUCTURAL
06 41 16.01 - PLASTIC LAMINATE BASE CABINET
06 41 16.29 - TACK BOARD
06 41 43.01 - PLASTIC LAMINATE COUNTERTOP
06 41 43.25 - GROMMET - VERIFY LOCATION WITH OWNER
06 41 46.05 - SOLID SURFACE
06 60 13.01 - PVC COLUMN

DIVISION 07 - THERMAL AND MOISTURE PROTECTION
07 13 13.01 - ICE AND WATER SHIELD
07 21 13.08 - 2" RIGID INSULATION
07 21 16.09 - R-21 BATT INSULATION
07 21 16.12 - R-38 BATT INSULATION
07 27 00.01 - WEATHER RESISTANT BARRIER
07 31 13.01 - ASPHALT SHINGLE ROOFING SYSTEM
07 31 13.21 - SHINGLE UNDERLAYMENT
07 46 46.01 - FIBER CEMENT BOARD PANEL SYSTEM
07 46 46.03 - FIBER CEMENT BOARD LAP SIDING
07 62 13.03 - METAL 'Z' FLASHING
07 62 13.05 - METAL DRIP EDGE FLASHING
07 62 23.06 - FIBER CEMENT TRIM BOARD
07 71 19.04 - FIBER CEMENT BOARD FASCIA
07 71 19.13 - FIBER CEMENT SOFFIT PANEL
07 71 23.01 - ROOF GUTTER
07 72 23.13 - VENTED FIBER CEMENT SOFFIT PANEL
07 72 23.21 - CORAVENT
07 72 26.01 - RIDGE VENT
07 72 26.02 - RIDGE CAP
07 92 13.01 - SEALANT

DIVISION 09 - FINISHES
09 22 13.01 - METAL FURRING
09 22 16.03 - METAL STUD FRAMING
09 29 13.11 - 5/8" GYPSUM BOARD
09 30 00.01 - WALL TILE
09 54 26.01 - TONGUE AND GROOVE WOOD CEILING
09 60 00.02 - BASE AS SCHEDULED

DIVISION 10 - SPECIALTIES
10 56 00.03 - COUNTERTOP SUPPORT BRACKET

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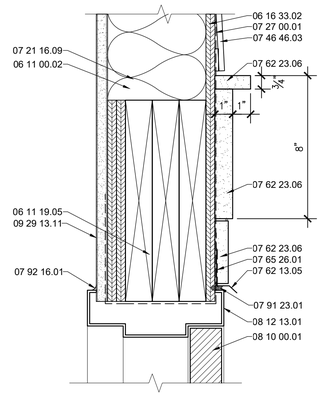
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PROJECT NO.: 2004
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DATE: 07/19/2022

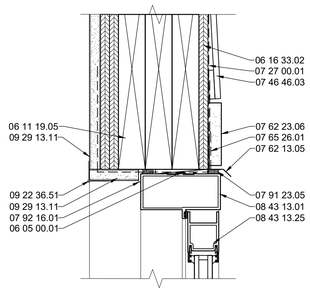
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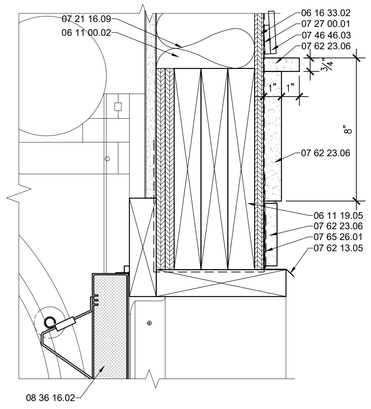
E1 EXT. DOOR HEAD

3"=1'-0" HOLLOW METAL



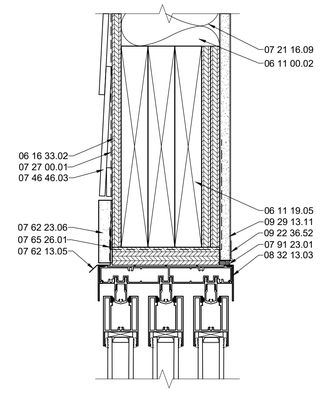
E3 EXT. DOOR HEAD

3"=1'-0" ALUMINUM STOREFRONT



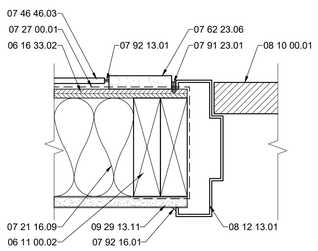
E5 EXT. DOOR HEAD

3"=1'-0" SECTIONAL OVERHEAD DOOR



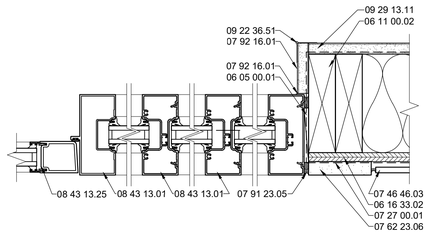
E7 EXT. DOOR HEAD

3"=1'-0" BI-PARTING GLASS DOORS



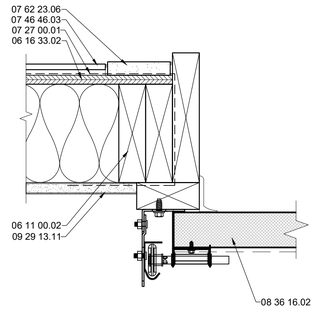
C1 EXT. DOOR JAMB

3"=1'-0" HOLLOW METAL



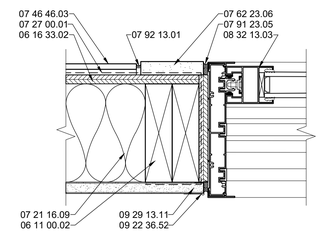
C3 EXT. DOOR JAMB

3"=1'-0" ALUMINUM STOREFRONT



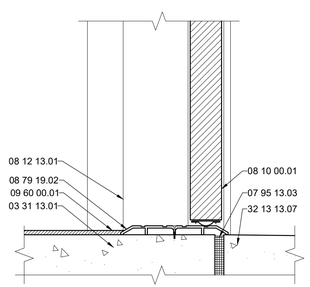
C5 EXT. DOOR JAMB

3"=1'-0" SECTIONAL OVERHEAD DOOR



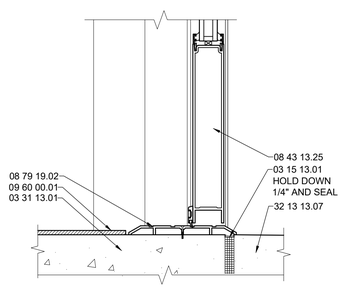
C7 EXT. DOOR JAMB

3"=1'-0" BI-PARTING GLASS DOORS



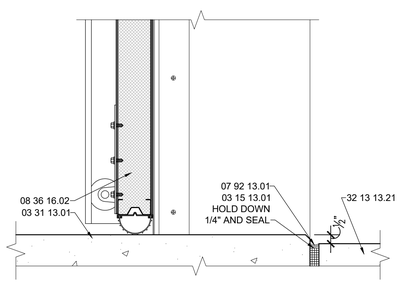
A1 EXT. DOOR SILL

3"=1'-0"



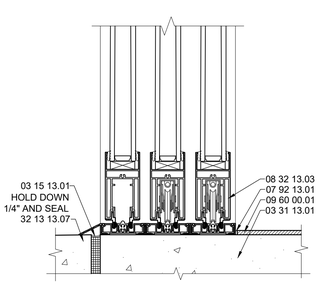
A3 EXT. DOOR SILL

3"=1'-0" ALUMINUM STOREFRONT



A5 EXT. DOOR SILL

3"=1'-0" SECTIONAL OVERHEAD DOOR



A7 EXT. DOOR SILL

3"=1'-0" BI-PARTING GLASS DOORS

REFERENCE KEYNOTES

DIVISION 03 - CONCRETE
- 03 15 13.01 - 1/2" EXPANSION JOINT
- 03 31 13.01 - CONCRETE SLAB - SEE STRUCTURAL

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
- 06 05 00.01 - SHIM
- 06 11 00.02 - 2X6 WOOD STUD
- 06 11 19.05 - WOOD HEADER - SEE STRUCTURAL
- 06 16 33.02 - SHEATHING - SEE STRUCTURAL

DIVISION 07 - THERMAL AND MOISTURE PROTECTION
- 07 21 16.09 - R-21 BATT INSULATION
- 07 27 00.01 - WEATHER RESISTANT BARRIER
- 07 46 46.03 - FIBER CEMENT BOARD LAP SIDING
- 07 62 13.05 - METAL DRIP EDGE FLASHING
- 07 62 23.06 - FIBER CEMENT TRIM BOARD
- 07 65 26.01 - FLASHING TAPE
- 07 91 23.01 - BACKER ROD AND SEALANT
- 07 91 23.05 - BACKER ROD AND SEALANT EACH SIDE TYP.
- 07 92 13.01 - SEALANT
- 07 92 16.01 - CAULK
- 07 95 13.03 - 1/2" EXPANSION JOINT

DIVISION 08 - OPENINGS
- 08 10 00.01 - DOOR AS SCHEDULED
- 08 12 13.01 - HOLLOW METAL FRAME AS SCHEDULED
- 08 32 13.03 - SLIDING ALUMINUM FRAMED GLASS DOORS
- 08 36 16.02 - GLAZED SECTIONAL OVERHEAD DOOR AS SCHEDULED - HIGH LIFT
- 08 43 13.01 - STOREFRONT SYSTEM
- 08 43 13.25 - STOREFRONT DOOR
- 08 79 19.02 - ANCHORED METAL THRESHOLD SET IN SEALANT

DIVISION 09 - FINISHES
- 09 22 36.51 - CORNER BEAD
- 09 22 36.52 - J-CASING BEAD
- 09 29 13.11 - 5/8" GYPSUM BOARD
- 09 60 00.01 - FLOOR FINISH AS SCHEDULED

DIVISION 32 - EXTERIOR IMPROVEMENTS
- 32 13 13.07 - CONCRETE STOOP
- 32 13 13.21 - SLOPE SLAB AWAY FROM EXTERIOR DOORS

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COMMONWEALTH OF VIRGINIA
DAVID S. GASSER
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ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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DOOR DETAILS

REV. #	DATE	COMMENTS
REVISION: -		
REVISION: -		
REVISION: -		
REVISION: -		

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

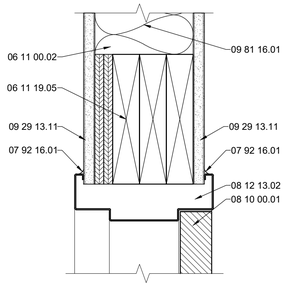
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PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

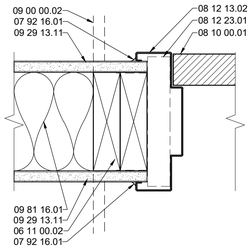
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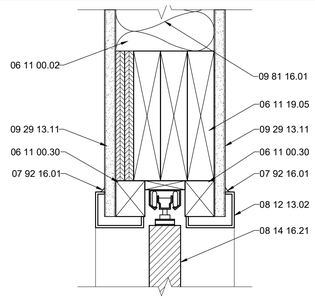
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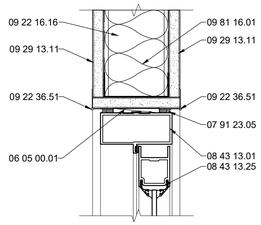
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3"=1'-0" KNOCK-DOWN STEEL FRAME



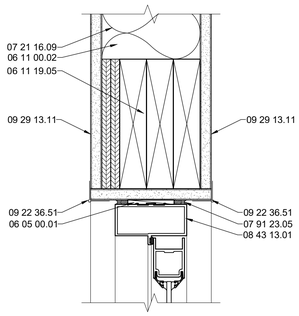
G3 INT. DOOR JAMB
3"=1'-0" KNOCK-DOWN STEEL FRAME



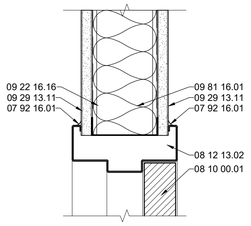
G5 INT. DOOR HEAD
3"=1'-0" POCKET DOOR



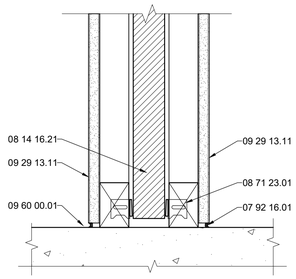
G7 INT. DOOR HEAD
3"=1'-0" ALUMINUM STOREFRONT



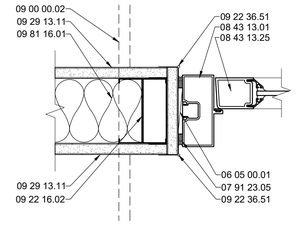
E1 INT. DOOR HEAD
3"=1'-0" ALUMINUM STOREFRONT



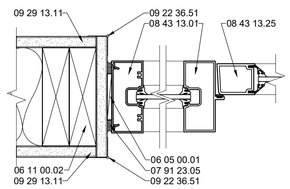
E3 INT. DOOR HEAD
3"=1'-0" KNOCK-DOWN STEEL FRAME



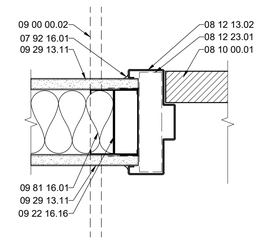
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3"=1'-0" POCKET DOOR



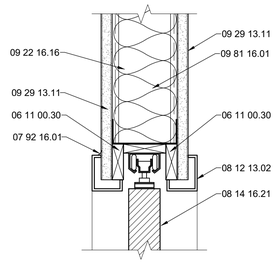
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3"=1'-0" ALUMINUM STOREFRONT



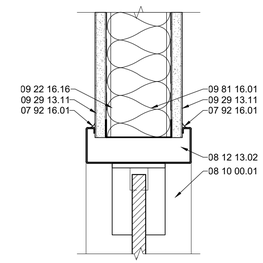
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3"=1'-0" ALUMINUM STOREFRONT



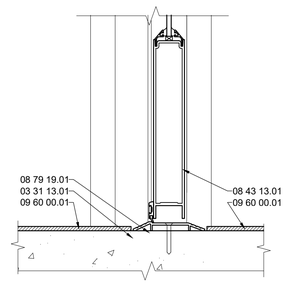
C3 INT. DOOR JAMB
3"=1'-0" KNOCK-DOWN STEEL FRAME



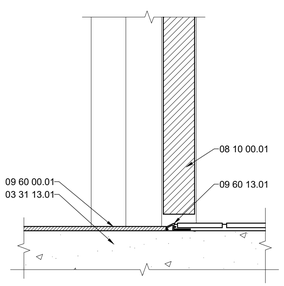
C5 INT. DOOR HEAD
3"=1'-0" POCKET DOOR



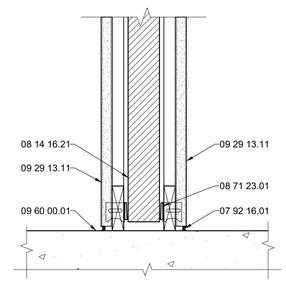
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3"=1'-0" ELIASON DOOR



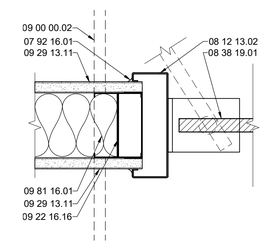
A1 INT. DOOR SILL
3"=1'-0" ALUMINUM STOREFRONT



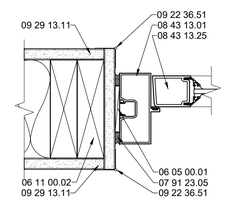
A3 INT. DOOR SILL
3"=1'-0" KNOCK-DOWN STEEL FRAME



A5 INT. DOOR SILL
3"=1'-0" POCKET DOOR



A7 INT. DOOR JAMB
3"=1'-0" ELIASON DOOR



A9 INT. DOOR JAMB
3"=1'-0" ALUMINUM STOREFRONT

REFERENCE KEYNOTES

DIVISION 03 - CONCRETE
- 03 31 13.01 - CONCRETE SLAB - SEE STRUCTURAL

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
- 06 05 00.01 - SHIM
- 06 11 00.02 - 2X6 WOOD STUD
- 06 11 00.30 - WOOD BLOCKING
- 06 11 19.05 - WOOD HEADER - SEE STRUCTURAL

DIVISION 07 - THERMAL AND MOISTURE PROTECTION
- 07 21 16.09 - R-21 BATT INSULATION
- 07 91 23.05 - BACKER ROD AND SEALANT EACH SIDE TYP.
- 07 92 16.01 - CAULK

DIVISION 08 - OPENINGS
- 08 10 00.01 - DOOR AS SCHEDULED
- 08 12 13.02 - KNOCK-DOWN STEEL FRAME AS SCHEDULED
- 08 12 23.01 - DOOR FRAME ANCHOR - 3 PER JAMB
- 08 14 16.21 - POCKET DOOR AS SCHEDULED
- 08 38 19.01 - ELIASON DOOR AS SCHEDULED
- 08 43 13.01 - STOREFRONT SYSTEM
- 08 43 13.25 - STOREFRONT DOOR
- 08 71 23.01 - POCKET DOOR BUMPERS - INSTALL PER MANUFACTURER
- 08 79 19.01 - DOOR THRESHOLD

DIVISION 09 - FINISHES
- 09 00 00.02 - LINE OF ADJACENT WALL
- 09 22 16.16 - 3 5/8" METAL STUD
- 09 22 36.51 - CORNER BEAD
- 09 29 13.11 - 5/8" GYPSUM BOARD
- 09 60 00.01 - FLOOR FINISH AS SCHEDULED
- 09 60 13.01 - TRANSITION STRIP
- 09 81 16.01 - SOUND ATTENUATION BATT

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07-19-22

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Virginia Beach, Virginia 23456
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DOOR DETAILS

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REVIEWS	
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-	BDA TECH REV.

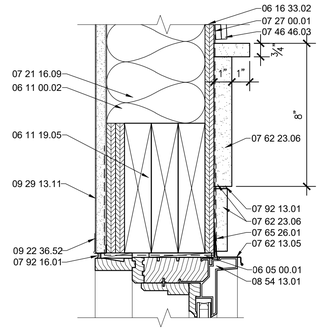
WATSON

PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

A506

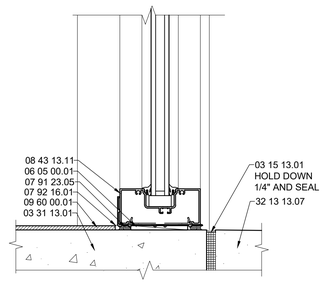
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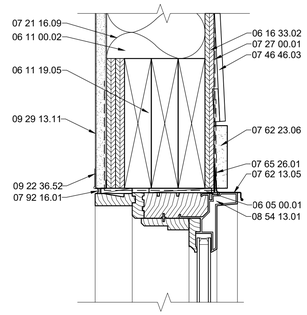
G1 EXT. WINDOW HEAD

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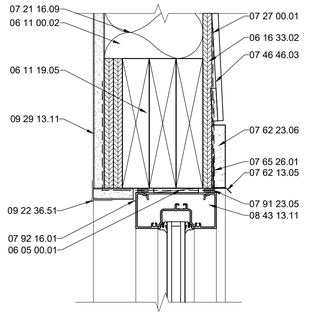
G3 EXT. WINDOW SILL

3"=1'-0" ALUMINUM STOREFRONT



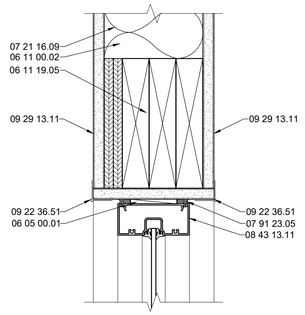
E1 EXT. WINDOW HEAD

3"=1'-0"



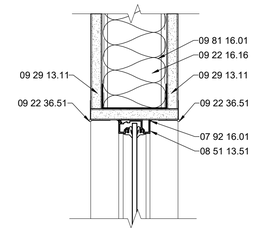
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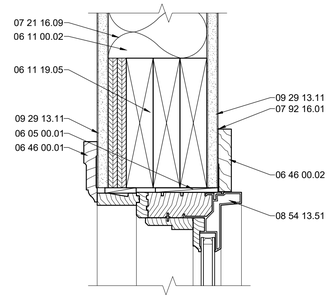
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3"=1'-0" ALUMINUM STOREFRONT



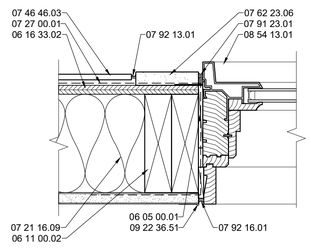
E7 INT. WINDOW HEAD

3"=1'-0" INTERIOR ALUMINUM



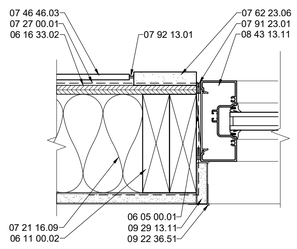
E9 INT. WINDOW HEAD

3"=1'-0"



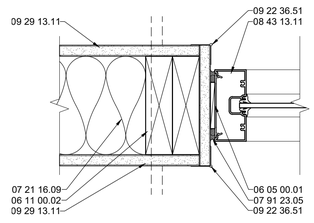
C1 EXT. WINDOW JAMB

3"=1'-0"



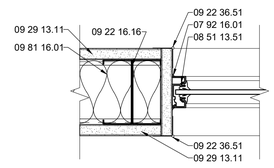
C3 EXT. WINDOW JAMB

3"=1'-0" ALUMINUM STOREFRONT



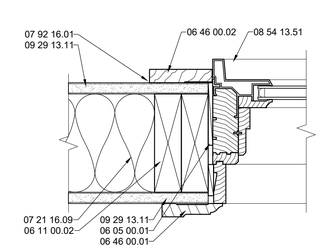
C5 INT. WINDOW JAMB

3"=1'-0" ALUMINUM STOREFRONT



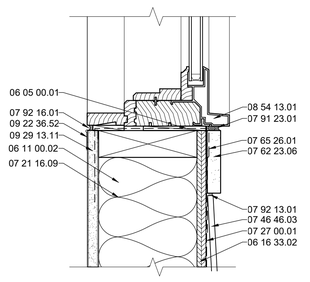
C7 INT. WINDOW JAMB

3"=1'-0" INTERIOR ALUMINUM



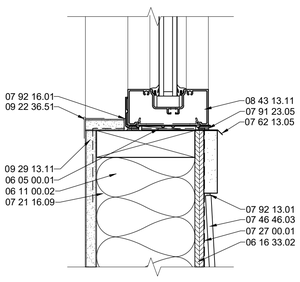
C9 INT. WINDOW JAMB

3"=1'-0"



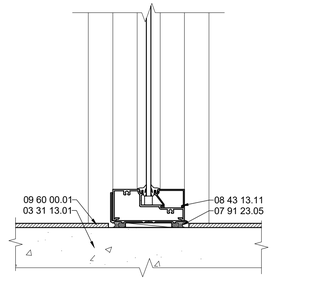
A1 EXT. WINDOW SILL

3"=1'-0"



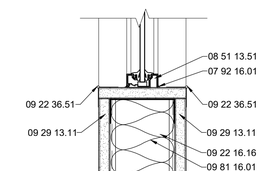
A3 EXT. WINDOW SILL

3"=1'-0" ALUMINUM STOREFRONT



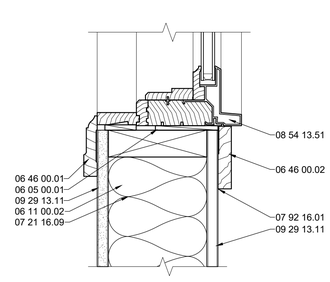
A5 INT. WINDOW SILL

3"=1'-0" ALUMINUM STOREFRONT



A7 INT. WINDOW SILL

3"=1'-0" INTERIOR ALUMINUM



A9 INT. WINDOW SILL

3"=1'-0"

REFERENCE KEYNOTES

DIVISION 03 - CONCRETE
- 03 15 13.01 - 1/2" EXPANSION JOINT
- 03 31 13.01 - CONCRETE SLAB - SEE STRUCTURAL

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
- 06 05 00.01 - SHIM
- 06 11 00.02 - 2X6 WOOD STUD
- 06 11 19.05 - WOOD HEADER - SEE STRUCTURAL
- 06 16 33.02 - SHEATHING - SEE STRUCTURAL
- 06 46 00.01 - ARCHITECTURAL TRIM
- 06 46 00.02 - WOOD TRIM

DIVISION 07 - THERMAL AND MOISTURE PROTECTION
- 07 21 16.09 - R-21 BATT INSULATION
- 07 27 00.01 - WEATHER RESISTANT BARRIER
- 07 46 46.03 - FIBER CEMENT BOARD LAP SIDING
- 07 62 13.05 - METAL DRIP EDGE FLASHING
- 07 62 23.06 - FIBER CEMENT TRIM BOARD
- 07 65 26.01 - FLASHING TAPE
- 07 91 23.01 - BACKER ROD AND SEALANT
- 07 91 23.05 - BACKER ROD AND SEALANT EACH SIDE TYP.
- 07 92 13.01 - SEALANT
- 07 92 16.01 - CAULK

DIVISION 08 - OPENINGS
- 08 43 13.11 - STOREFRONT WINDOW SYSTEM
- 08 51 13.51 - INTERIOR ALUMINUM WINDOW AS SCHEDULED
- 08 53 13.01 - EXTERIOR VINYL WINDOW AS SCHEDULED
- 08 54 13.01 - EXTERIOR FIBERGLASS WINDOW AS SCHEDULED
- 08 54 13.51 - INTERIOR FIBERGLASS WINDOW AS SCHEDULED

DIVISION 09 - FINISHES
- 09 22 16.16 - 3 5/8" METAL STUD
- 09 22 36.51 - CORNER BEAD
- 09 22 36.52 - J-CASING BEAD
- 09 29 13.11 - 5/8" GYPSUM BOARD
- 09 60 00.01 - FLOOR FINISH AS SCHEDULED
- 09 81 16.01 - SOUND ATTENUATION BATT

DIVISION 32 - EXTERIOR IMPROVEMENTS
- 32 13 13.07 - CONCRETE STOOP

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COMMONWEALTH OF VIRGINIA
DAVID S. GASSER
Lic. No. 0401019577
ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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WINDOW DETAILS

REV.#	DATE	COMMENTS
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REVISION:
REVISION:
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REVISION:

REVIEWS

INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON

PROJECT NO.: 2004
DRAWN: -
DATE: 07/19/2022

A507

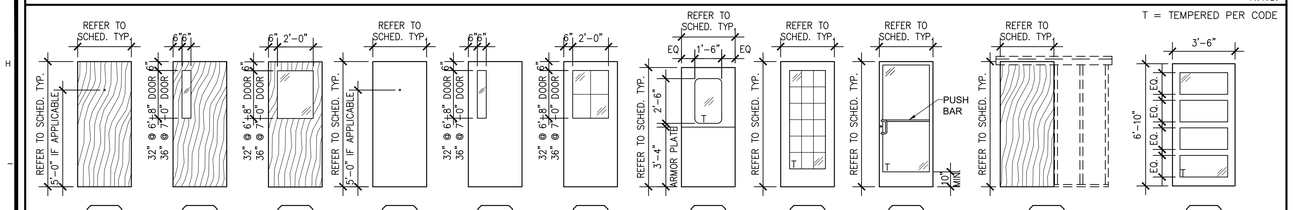
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Plot Date: July 20, 2022 - 12:24 PM
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DOOR AND FRAME TYPES, HARDWARE LOCK SET GROUPS

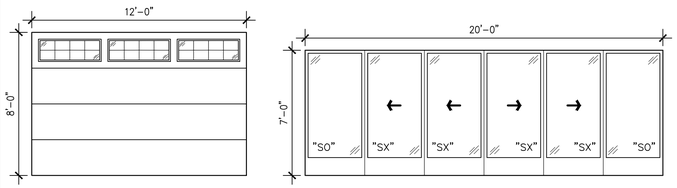
N.T.S.

T = TEMPERED PER CODE



DOOR TYPES

NOTES: VERIFY ALL DOOR TYPES PRIOR TO CONST.



INSULATED–STEEL / GLAZED OVERHEAD SECTIONAL R=13.35

SLIDING ALUMINUM FRAMED GLASS DOORS U = .213

DOOR TYPES

NOTES: VERIFY ALL DOOR TYPES PRIOR TO CONST.

HARDWARE SET GROUPS

NOTES:
1. VERIFY LOCKING REQ'S w/ OWNER.
2. ALL DOORS TO HAVE WALL MOUNTED STOPS. (FLOOR MOUNTED ONLY IF APPROVED PRIOR TO INSTALLATION)
3. ALL DOORS TO RECEIVE SILENCERS.

1. ENTRY:
   - SINGLE CYLINDER DEADBOLT / THUMBTURN
   - 1 1/2 PR NRP BUTTS
   - PUSH / PULL PLATE AND HANDLE
   - CLOSER
   - WEATHER STRIPPING
   - PEMCO 315 NEOPRENE DOOR SWEEP
   - THRESHOLD

2. ENTRANCE / EXIT:
   - ENTRY LOCK
   - PUSH / PULL PLATE AND HANDLE
   - 1 1/2 PR NRP BUTTS
   - CLOSER
   - WEATHER STRIPPING
   - PEMCO 315 NEOPRENE DOOR SWEEP
   - THRESHOLD

3. PASSAGE:
   - PASSAGE LATCH SET / LEVER HANDLE
   - 1 1/2 PR BUTTS
   * PROVIDE DOUBLE SIDED THUMB TURN LOCKS @ DOOR NUMBERS: 138,139,142,143,144 & 145

4. POCKET DOOR:
   - POCKET LOCK SET
   - HEADER ASSEMBLY
   - DOOR HANGERS
   - SELF ADJUSTING FLOOR ANCHORS
   - STEEL WRAPPED SPLIT STUDS
   - ADA HANDICAP PULLS
   - DOOR STOP
   - BALL BEARING HANGERS

5. ZONE WALL DOORS:
   - PASSAGE LATCH SET / LEVER HANDLE
   - 1 1/2 PR BUTTS
   - CLOSER
   - SMOKE SEAL
   - PEMCO 315 NEOPRENE DOOR SWEEP

6. RESTROOM:
   - PRIVACY LATCH SET / LEVER HANDLE
   - 1 1/2 PR BUTTS

7. PUSH / PULL:
   - PUSH / PULL PLATE AND HANDLE
   - 1 1/2 PR BUTTS
   - CLOSER

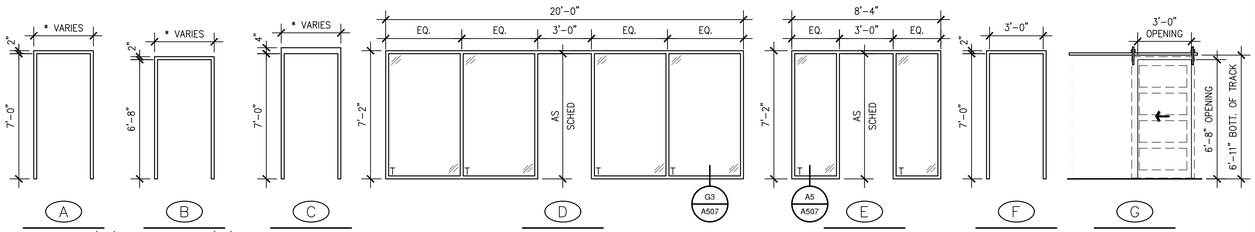
8. STORERROOM:
   - STORERROOM LATCH SET / LEVER HANDLE
   - 1 1/2 PR NRP BUTTS
   - CLOSER
   - WEATHER STRIP @ OXYGEN CLO.
   - THRESHOLD @ OXYGEN CLO.

9. OFFICE:
   - OFFICE LOCK SET / LEVER HANDLE
   - 1 1/2 PR BUTTS

10. PUSH / PULL ZONE WALL DOOR:
    - PUSH / PULL PLATE AND HANDLE
    - 1 1/2 PR BUTTS
    - CLOSER
    - SMOKE SEAL
    - PEMCO 315 NEOPRENE DOOR SWEEP

11. SLIDING PANEL DOOR:
    - 1 TRACKSET–CLASSIC STYLE BARN DOOR HARDWARE
    - 1 HANDLE–STANDARD LOFT BARN DOOR HANDLE SET

*NOTE: PROVIDE ACCESS CONTROL CARD READER DEVICES @ DOOR NUMBERS: 101A,101B,109B,111B,114B,124,131A,134A,135 148B,149C,149D,154C & 167



DOOR FRAME TYPES

NOTES:
1. VERIFY ALL DOOR FRAME TYPES PRIOR TO CONST.
2. * DENOTES DOOR SIZE + 4" – SEE DOOR SCHED.
3. ALL EXTERIOR WELDED HOLLOW METAL FRAMES SHALL BE MADE OF 18 GA. GALVANIZED STEEL.
4. ALL INTERIOR KNOCK–DOWN FRAMES SHALL BE 20 GA. GALVANIZED STEEL FRAME, SHOP PRIMERED AND FIELD FINISHED WITH ALKYD–ENAMEL PAINT.

DOOR AND FRAME SCHEDULE

NO.	NAME	DOOR SIZE WTH	DOOR SIZE HGT	DOOR SIZE THK	DOOR TYPE	DOOR MAT.	FRAME TYPE	FRAME MAT.	FRAME DETAIL HEAD	FRAME DETAIL JAMB	FRAME DETAIL SILL	HARDWARE SET NO.	NOTES
101A	VESTIBULE	PR 3'-0"	7'-0"	1 3/4"	H	HM	A	HM	E1/A505	C1/A505	A1/A505	2	* ACCESS CONTROL DEVICE
101B	VESTIBULE	3'-0"	6'-8"	1 3/4"	J	AL	E	AL	E1/A506	C1/A506	A1/A506	7	* ACCESS CONTROL DEVICE
105	EXAM 5	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	E3/A506	C3/A506	--	3	--
106	EXAM 6	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	E3/A506	C3/A506	--	3	--
107	EXAM 7	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	E3/A506	C3/A506	--	3	--
108A	COMFORT EXAM 8	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	E3/A506	C3/A506	--	3	--
108B	COMFORT EXAM 8	3'-0"	7'-0"	1 3/4"	F	HM	A	HM	E1/A505	C1/A505	A1/A505	1	--
109A	EXAM 4	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	G1/A506	G3/A506	--	3	--
109B	EXAM 4	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	3	* ACCESS CONTROL DEVICE-DOOR VIEWER
110	EXAM 3	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	G1/A506	G3/A506	--	3	--
111A	LARGE EXAM 2	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	G1/A506	G3/A506	--	3	--
111B	LARGE EXAM 2	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	G1/A506	G3/A506	--	3	*ACCESS CONTROL DEVICE-DOOR VIEWER
112	IT CLOSET	PR 2'-6"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	3	--
113A	ADMIN PHONES	3'-0"	6'-8"	1 3/8"	K	HC	MANUF.	MANUF.	G5/A506	--	E5/A506	4	POCKET DOOR
113B	ADMIN PHONES	3'-6"	6'-10"	1 3/4"	L	SC	G	MANUF.	--	--	--	11	SLIDING PANEL DOOR
114A	EXAM 1 FELINE	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	E3/A506	C3/A506	--	3	--
114B	EXAM 1 FELINE	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	3	*ACCESS CONTROL DEVICE-DOOR VIEWER
115	RETAIL STORAGE	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	9	--
116	FELINE WARD	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	G1/A506	G3/A506	--	3	--
117	RESTROOM	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	G1/A506	G3/A506	--	6	--
118	RESTROOM	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	G1/A506	G3/A506	--	6	--
119	RESTROOM	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	6	--
121	HYDRO MECH	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	3	--
122	HYDRO THERAPY	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	E3/A506	C3/A506	--	3	--
123	JAN	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	3	--
124	ADMIN HALL	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	G1/A506	G3/A506	--	5	*ACCESS CONTROL DEVICE
125	ACCOUNTING OFFICE	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	9	--
126	MANAGER OFFICE	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	9	--
127	DVM OFFICE	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	9	--
128	DVM RESTROOM	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	6	--
129	TREATMENT/ ICU	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	E3/A506	C3/A506	--	5	*ACCESS CONTROL DEVICE
131A	CANINE WARD	3'-0"	7'-0"	1 3/4"	F	HM	A	HM	E1/A505	C1/A505	A1/A505	1	*ACCESS CONTROL DEVICE
131B	CANINE WARD	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	E3/A506	C3/A506	--	3	--
132A	DVM WK STATION	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	E3/A506	C3/A506	--	3	--
132B	DVM WK STATION	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	G1/A506	G3/A506	--	3	--
133A	ASSOCIATES OFFICE	3'-0"	6'-8"	1 3/8"	K	HC	MANUF.	MANUF.	C5/A506	--	A5/A506	4	POCKET DOOR
133B	ASSOCIATES OFFICE	3'-0"	6'-8"	1 3/8"	K	HC	MANUF.	MANUF.	G5/A506	--	E5/A506	4	POCKET DOOR
134A	LOUNGE	3'-0"	7'-0"	1 3/4"	F	HM	A	HM	E1/A505	C1/A505	A1/A505	1	*ACCESS CONTROL DEVICE
134B	LOUNGE	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	G1/A506	G3/A506	--	3	--
134C	LOUNGE	20'-0"	7'-0"	1 3/4"	N	AL-GL	MANUF.	MANUF.	E7/A505	C7/A505	A5/A505	MANUF.	BI-PARTING 6 PANEL SLIDING GLASS DOOR
134D	LOUNGE	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	E3/A506	C3/A506	--	3	--
135	CENTRAL STORAGE	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	9	*ACCESS CONTROL DEVICE
136	I-131 ISOLATION	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	9	SHIELDED PER PHYSICIST REPORT
137	OFFICE	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	G1/A506	G3/A506	--	9	--
138	LUXURY RUN 2	3'-0"	7'-0"	1 3/4"	J	AL	F	AL	G7/A506	E7/A506	--	3	*PROVIDE THUMB TURN LOCK
139	LUXURY RUN 1	3'-0"	7'-0"	1 3/4"	J	AL	F	AL	G7/A506	E7/A506	--	3	*PROVIDE THUMB TURN LOCK
140	LUXURY HALL	3'-0"	7'-0"	1 3/4"	J	AL	F	AL	E1/A506	A9/A506	--	5	--
141	CAGE BOARDING	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	E3/A506	C3/A506	--	3	--
142	LUXURY RUN 6	3'-0"	7'-0"	1 3/4"	J	AL	F	AL	G7/A506	E7/A506	--	3	*PROVIDE THUMB TURN LOCK
143	LUXURY RUN 5	3'-0"	7'-0"	1 3/4"	J	AL	F	AL	G7/A506	E7/A506	--	3	*PROVIDE THUMB TURN LOCK
144	LUXURY RUN 4	3'-0"	7'-0"	1 3/4"	J	AL	F	AL	G7/A506	E7/A506	--	3	*PROVIDE THUMB TURN LOCK
145	LUXURY RUN 3	3'-0"	7'-0"	1 3/4"	J	AL	F	AL	G7/A506	E7/A506	--	3	*PROVIDE THUMB TURN LOCK
146	CANINE BOARDING	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	G1/A506	G3/A506	--	5	--
147	CANINE BOARDING	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	G1/A506	G3/A506	--	5	--
148A	VESTIBULE	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	E3/A506	C3/A506	--	10	--
148B	VESTIBULE	3'-0"	7'-0"	1 3/4"	F	HM	A	HM	E1/A505	C1/A505	A1/A505	1	*ACCESS CONTROL DEVICE
149A	INDOOR EXERCISE	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	G1/A506	G3/A506	--	5	--
149B	INDOOR EXERCISE	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	G1/A506	G3/A506	--	5	--
149C	INDOOR EXERCISE	3'-0"	7'-0"	1 3/4"	F	HM	A	HM	E1/A505	C1/A505	A1/A505	1	*ACCESS CONTROL DEVICE
149D	INDOOR EXERCISE	3'-0"	7'-0"	1 3/4"	F	HM	A	HM	E1/A505	C1/A505	A1/A505	1	*ACCESS CONTROL DEVICE
149E	INDOOR EXERCISE	12'-0"	8'-0"	2"	M	STL	--	STL	E5/A505	C5/A505	A5/A505	MANUF.	OVERHEAD SECTIONAL DOOR
149F	INDOOR EXERCISE	12'-0"	8'-0"	2"	M	STL	--	STL	E5/A505	C5/A505	A5/A505	MANUF.	OVERHEAD SECTIONAL DOOR
151	CLEAN	PR 3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	3	--
152	FELINE BOARDING	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	E3/A506	C3/A506	--	3	--
153A	FOOD PREP /LAUNDRY	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	G1/A506	G3/A506	--	3	--
153B	FOOD PREP /LAUNDRY	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	E3/A506	C3/A506	--	3	--
154A	HALL	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	10	--
154B	HALL	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	3	--
154C	HALL	3'-0"	7'-0"	1 3/4"	F	HM	A	HM	E1/A505	C1/A505	A1/A505	1	*ACCESS CONTROL DEVICE
154D	HALL	3'-0"	6'-8"	1 3/4"	A	SC	B	HM	E3/A506	C3/A506	--	5	45 MIN. RATED
154E	HALL	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	E3/A506	C3/A506	--	10	--
154F	HALL	3'-0"	7'-0"	1 3/4"	J	AL	D	AL	E3/A505	C3/A505	A3/A505	2	--
155A	BATHE / DRY	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	G1/A506	G3/A506	--	3	--
155B	BATHE / DRY	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	E3/A506	C3/A506	--	3	--
156	GROOMING	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	G1/A506	G3/A506	--	3	--
157	BOARDING WAITING	PR 3'-0"	7'-0"	1 3/4"	H	HM	A	HM	E1/A505	C1/A505	A1/A505	2	--
159	BOARDING ADMIN	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	E3/A506	C3/A506	--	9	--
160	OXYGEN	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	5	45 MIN. RATED
161	STAFF RESTROOM	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	6	--
162	STAFF RESTROOM	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	6	--
164	CLOSET	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	G1/A506	G3/A506	--	5	45 MIN. RATED
165	MORGUE / MECH	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	5	45 MIN. RATED
166	CT	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	G1/A506	G3/A506	--	3	SHIELDED PER PHYSICIST REPORT
167	ISOLATION	3'-0"	7'-0"	1 3/4"	F	HM	A	HM	E1/A505	C1/A505	A1/A505	1	*ACCESS CONTROL DEVICE
168A	ANTE ROOM	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	G1/A506	G3/A506	--	3	--
168B	ANTE ROOM	3'-0"	6'-8"	1 3/4"	C	SC	B	KD	E3/A506	C3/A506	--	3	--
169	ULTRASOUND	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	G1/A506	G3/A506	--	3	--
170	SURGERY 2	3'-0"	6'-8"	1 3/4"	G	MANUF.	B	KD	C7/A506	A7/A506	--	MANUF.	ELIASON DOOR
171	JAN	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	3	--
173	SURGERY 1	3'-0"	6'-8"	1 3/4"	G	MANUF.	B	KD	C7/A506	A7/A506	--	MANUF.	ELIASON DOOR
174	LAB / PHARMACY	3'-0"	6'-8"	1 3/4"	B	SC	B	KD	G1/A506	G3/A506	--	3	--
175	IMAGING	3'-0"	6'-8"	1 3/4"	A	SC	B	KD	E3/A506	C3/A506	--	3	SHIELDED PER PHYSICIST REPORT
176	FIRE RISER	3'-0"	7'-0"	1 3/4"	D	HM	A	HM	E1/A505	C1/A505	A1/A505	1	--
177	CLOSET	3'-0"	7'-0"	1 3/4"	D	HM	A	HM	E1/A505	C1/A505	A1/A505	1	--
201A	ATTIC	3'-0"	6'-8"	1 3/4"	A	SC	B	HM	E3/A506	C3/A506	--	5	45 MIN. RATED
201B	ATTIC	3'-0"	6'-8"	1 3/4"	A	SC	B	HM	E3/A506	C3/A506	--	5	45 MIN. RATED

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07-19-22

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DOOR SCHEDULE AND TYPES

REV.#	DATE	COMMENTS
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REVISION: REVISION: REVISION: REVISION:

REVIEWS	
INITIALS	
-	BDA DSGN. REV.
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WATSON

PROJECT NO.: 2004

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ROOM FINISH SCHEDULE

ROOM		FLOOR		NORTH	EAST	SOUTH	WEST	WALL COVER		REMARKS
NUMBER	NAME	MAT'L	BASE	FINISH	FINISH	FINISH	FINISH	MAT'L	HT.	
101	VESTIBULE	PT	PT	PGB	PGB	PGB	PGB	--	--	--
102	WAITING	PT	PT	PGB	PGB	PGB	PGB	--	--	--
103	RECEPTION	PT	PT	PGB	PGB	PGB	PGB	--	--	--
104	HALL	PT	PT	PGB	PGB	PGB	PGB	--	--	--
105	EXAM 5	PT	PT	PGB	PGB	PGB	PGB	VWC	+54"	--
106	EXAM 6	PT	PT	PGB	PGB	PGB	PGB	VWC	+54"	--
107	EXAM 7	PT	PT	PGB	PGB	PGB	PGB	VWC	+54"	--
108	COMFORT EXAM 8	PT	PT	PGB	PGB	PGB	PGB	VWC	+54"	--
109	EXAM 4	PT	PT	PGB	PGB	PGB	PGB	VWC	+54"	--
110	EXAM 3	PT	PT	PGB	PGB	PGB	PGB	VWC	+54"	--
111	LARGE EXAM 2	PT	PT	PGB	PGB	PGB	PGB	VWC	+54"	--
112	IT CLOSET	SF	RB	PGB	PGB	PGB	PGB	--	--	--
113	ADMIN PHONES	SF	RB	PGB	PGB	PGB	PGB	--	--	--
114	EXAM 1 FELINE	PT	PT	PGB	PGB	PGB	PGB	VWC	+54"	--
115	RETAIL STORAGE	PT	RB	PGB	PGB	PGB	PGB	--	--	--
116	FELINE WARD	EPF-SF	RB	PGB	PGB	PGB	PGB	WT	+78"	EPF AND WT AT RUNS
117	RESTROOM	SF	RB	PGB	PGB	PGB	PGB	--	--	--
118	RESTROOM	SF	RB	PGB	PGB	PGB	PGB	--	--	--
119	RESTROOM	PT	WT	PGB	PGB	PGB	PGB	WT	FULL	WT GRAB BAR WALLS ONLY
120	RETAIL	PT	PT	PGB	PGB	PGB	PGB	--	--	--
121	HYDRO MECH	SC	RB	PGB	PGB	PGB	PGB	--	--	--
122	HYDRO THERAPY	EPF	FC	PGB	PGB	PGB	PGB	--	--	--
123	JAN	PT	PT	PGB	PGB	PGB	PGB	WT	+48"	WT AT SINK ONLY
124	ADMIN HALL	SF	RB	PGB	PGB	PGB	PGB	--	--	--
125	ACCOUNTING OFFICE	SF	RB	PGB	PGB	PGB	PGB	--	--	--
126	MANAGER OFFICE	SF	RB	PGB	PGB	PGB	PGB	--	--	--
127	DVM OFFICE	SF	RB	PGB	PGB	PGB	PGB	--	--	--
128	DVM RESTROOM	SF	RB	PGB	PGB	PGB	PGB	--	--	--
129	TREATMENT/ ICU	SF	RB	PGB	PGB	PGB	PGB	--	--	--
130	DENTAL	SF	RB	PGB	PGB	PGB	PGB	--	--	--
131	CANINE WARD	EPF-SF	RB	PGB	PGB	PGB	PGB	WT	+78"	EPF AND WT AT RUNS
132	DVM WK STATION	SF	RB	PGB	PGB	PGB	PGB	--	--	--
133	ASSOCIATES OFFICE	SF	RB	PGB	PGB	PGB	PGB	--	--	--
134	LOUNGE	SF	RB	PGB	PGB	PGB	PGB	--	--	--
135	CENTRAL STORAGE	SC	RB	PGB	PGB	PGB	PGB	--	--	--
136	I-131 ISOLATION	SF	FC	PGB	PGB	PGB	PGB	WT	FULL	--
137	OFFICE	PT	WT	PGB	PGB	PGB	PGB	WT	+72"	--
138	LUXURY RUN 2	PT	PT	PGB	PGB	PGB	PGB	--	--	--
139	LUXURY RUN 1	PT	PT	PGB	PGB	PGB	PGB	--	--	--
140	LUXURY HALL	SF	RB	PGB	PGB	PGB	PGB	--	--	--
141	CAGE BOARDING	EPF-SF	RB	PGB	PGB	PGB	PGB	WT	+78"	EPF AND WT AT RUNS
142	LUXURY RUN 6	PT	PT	PGB	PGB	PGB	PGB	--	--	--
143	LUXURY RUN 5	PT	PT	PGB	PGB	PGB	PGB	--	--	--
144	LUXURY RUN 4	PT	PT	PGB	PGB	PGB	PGB	--	--	--
145	LUXURY RUN 3	PT	PT	PGB	PGB	PGB	PGB	--	--	--
146	CANINE BOARDING	EPF-SF	RB	PGB	PGB	PGB	PGB	WT	+78"	EPF AND WT AT RUNS
147	CANINE BOARDING	EPF-SF	RB	PGB	PGB	PGB	PGB	WT	+78"	EPF AND WT AT RUNS
148	VESTIBULE	PT	PT	PGB	PGB	PGB	PGB	--	--	--
149	INDOOR EXERCISE	RF	WT	PGB	PGB	PGB	PGB	WT	+72"	--
150	HALL	SF	RB	PGB	PGB	PGB	PGB	--	--	--
151	CLEAN	SF	RB	PGB	PGB	PGB	PGB	WT	+48"	WT AT SINK ONLY
152	FELINE BOARDING	PT	PT	PGB	PGB	PGB	PGB	--	--	--
153	FOOD PREP /LAUNDRY	SF	RB	PGB	PGB	PGB	PGB	--	--	--
154	HALL	SF	RB	PGB	PGB	PGB	PGB	--	--	--
155	BATHE / DRY	EPF	FC	PGB	PGB	PGB	PGB	--	--	--
156	GROOMING	SF	RB	PGB	PGB	PGB	PGB	WT	+72"	--
157	BOARDING WAITING	PT	PT	PGB	PGB	PGB	PGB	--	--	--
158	BOARDING RECEPTION	PT	PT	PGB	PGB	PGB	PGB	--	--	--
159	BOARDING ADMIN	SF	RB	PGB	PGB	PGB	PGB	--	--	--
160	OXYGEN	SC	RB	PGB	PGB	PGB	PGB	--	--	--
161	STAFF RESTROOM	SF	RB	PGB	PGB	PGB	PGB	--	--	--
162	STAFF RESTROOM	SF	RB	PGB	PGB	PGB	PGB	--	--	--
163	STAIRS	SF	RB	PGB	PGB	PGB	PGB	--	--	RUBBER TREADS AND RISERS
164	CLOSET	SF	RB	PGB	PGB	PGB	PGB	--	--	--
165	MORGUE / MECH	SF	RB	PGB	PGB	PGB	PGB	--	--	--
166	CT	SF	RB	PGB	PGB	PGB	PGB	--	--	--
167	ISOLATION	SF	FC	PGB	PGB	PGB	PGB	WT	FULL	--
168	ANTE ROOM	SF	FC	PGB	PGB	PGB	PGB	WT	FULL	--
169	ULTRASOUND	SF	RB	PGB	PGB	PGB	PGB	--	--	--
170	SURGERY 2	SF	FC	PGB	PGB	PGB	PGB	--	--	--
171	JAN	SF	RB	PGB	PGB	PGB	PGB	--	--	--
172	P/P/S	SF	RB	PGB	PGB	PGB	PGB	--	--	--
173	SURGERY 1	SF	FC	PGB	PGB	PGB	PGB	--	--	--
174	LAB / PHARMACY	SF	RB	PGB	PGB	PGB	PGB	--	--	--
175	IMAGING	SF	RB	PGB	PGB	PGB	PGB	--	--	--
176	FIRE RISER	SC	RB	PGB	PGB	PGB	PGB	--	--	--
177	CLOSET	SC	RB	PGB	PGB	PGB	PGB	--	--	--
201	ATTIC	--	--	PGB	PGB	PGB	PGB	--	--	--

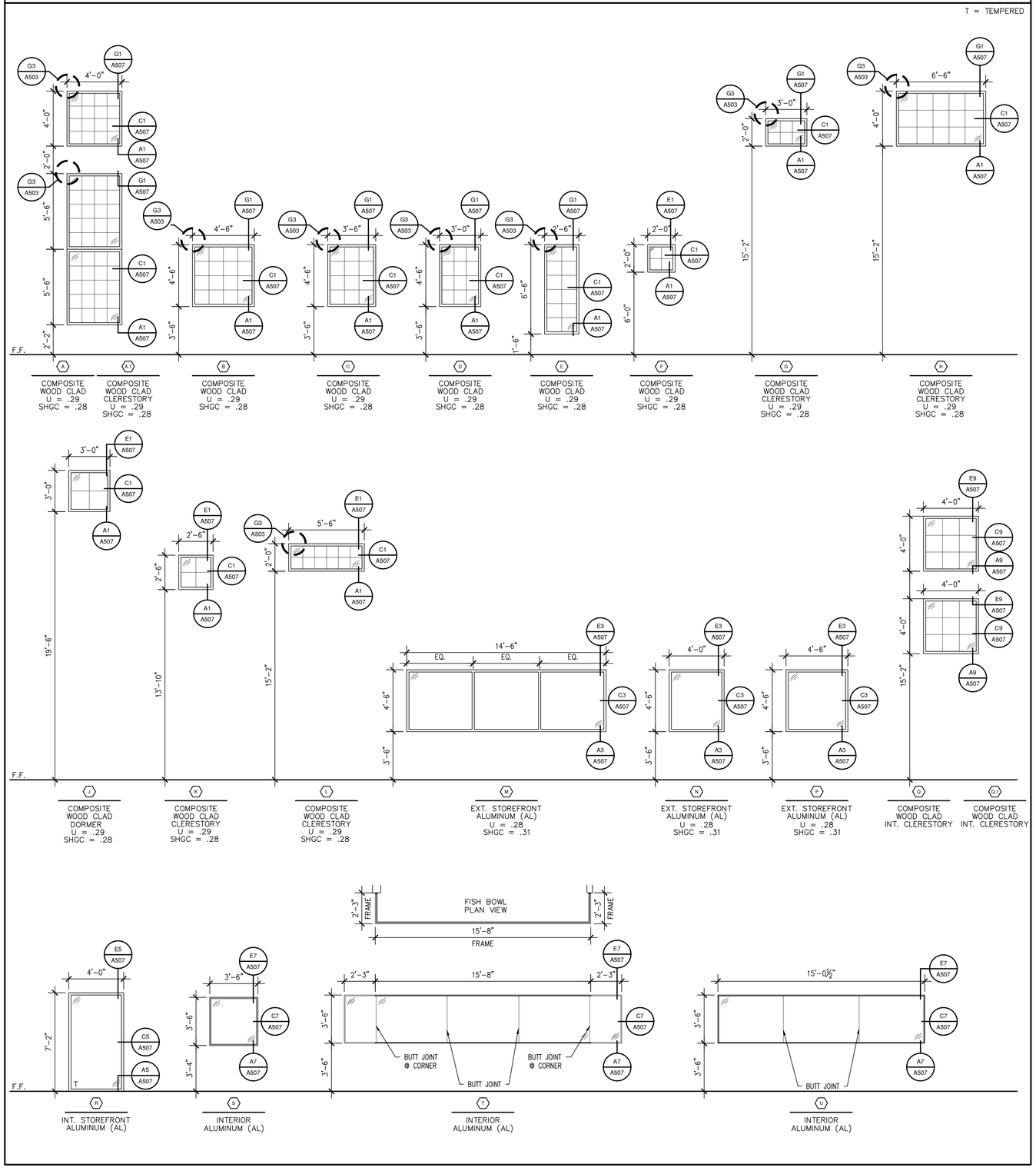
ROOM FINISH LEGEND

CT	- CERAMIC TILE	PGB	- PAINTED GYPSUM BOARD	RF	- RUBBER FLOORING	VWC	- VINYL WALL COVERING
EPF	- EPOXY FLOORING SYSTEM	PT	- PORCELAIN TILE	SC	- SEALED CONCRETE	WT	- WALL TILE
FC	- FLASH COVE	RB	- RUBBER BASE	SF	- SHEET FLOORING		

WINDOW TYPES

N.T.S.

T = TEMPERED



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07-19-22

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ROOM FINISH SCHEDULE AND WINDOW TYPES

REV.#	DATE	COMMENTS
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REVIEWS	
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WATSON

PROJECT NO.: 2004

DRAWN: -

DATE: 07/19/2022

A602

- OF -

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Plot Date: July 20, 2022 - 12:49 PM -
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INTERIOR SPECIFICATION SCHEDULE

2004	NO.	MANUFACTURER	MATERIAL	SERIES	COLOR	SIZE	NUMBER	REMARKS	CONTACT
FLOOR	F1	DALTILE	PORCELINE TILE	SADDLE BROOK XT	FARMHOUSE	6"X36"	SD84		JAMIE OCKSRIDER 505-850-6209
	F2	ALTRO	VINYL SHEET	ALTRO WOOD	VINTAGE CHERRY	6' 7" X 65' 5"	WSA2002		
	F3	ALTRO	SHEET VYNIL FLOORING	ALTRO SYMPHONIA	SWORDFISH	6'7" X 66'	PH2037		
	F4	MONDO	RUBBER SHEET	RAMFLEX	BLUE	6MM	G710		
	F5	DUR-A-FLEX	RESIONUS	SEE ARCH. SPEC	COBALT				
	F6	SOLOMON COLOR	CONCRETE SEALER	SEE ARCH. SPEC	CLEAR				
	F7	ROPPE	RUBBER STAIR	RUBBER TREAD	SMOKE		174	STAIR TREAD AND RISERS	
BASE	B1	DALTILE	PORCELINE TILE	SADDLE BROOK XT	FARMHOUSE	CUT TO 4" HEIGHT	SD84	USE WITH F1	JAMIE OCKSRIDER 505-850-6209
	B2	ROPPE	RUBBER BASE	700 SERIES	FIG	4" HEIGHT	125	USE WITH F2	
	B3	ROPPE	RUBBER BASE	700 SERIES	SMOKE	4" HEIGHT	174	USE WITH F3/F4/F7	
GROUT	GR1	MAPEI	GROUT	COLORFLEX CQ	CHAMOIS		5	USE WITH F1	
	GR2	MAPEI	GROUT	COLORFLEX CQ	AVALANCHE		38	USE WITH WALL TILE	
PAINT	P1	SHERWIN WILLIAMS	INTERIOR FIELD PAINT	SEE ARCH. SPEC	ANEW GREY		SW7030		
	P2	SHERWIN WILLIAMS	INTERIOR ACCENT PAINT	SEE ARCH. SPEC	BLUEBIRD FEATHER		SW9062		
	P3	SHERWIN WILLIAMS	INTERIOR ACCENT PAINT	SEE ARCH. SPEC	TBD		TBD		
	P4	SHERWIN WILLIAMS	INTERIOR ACCENT PAINT	SEE ARCH. SPEC	LOYAL BLUE		SW6510		
	P5	SHERWIN WILLIAMS	INTERIOR TRIM AND FRAME	SEE ARCH. SPEC	ICE CUBE		SW6252		
	P6	SHERWIN WILLIAMS	WOOD STAIN	SEE ARCH. SPEC	GREENWOOD		MW413		
WALL- COVERING	W1	AMERICAN OLEAN	GLASS TILE	COLOR APPEAL	POWDER	2X6	C109	FACE OF RECEPTION	JAMIE OCKSRIDER 505-850-6209
	W2	DALTILE	PORCELAIN TILE	ARTICULO	EDITORIAL WHITE	12X24	AR06		JAMIE OCKSRIDER 505-850-6209
	W3	MDC	VINYL WALL PAPER	MODERN INDUSTRY	GUNMETAL	53 X 54"	3063MI		
	W4	KOROGUARD		WALL PROTECTION SYSTEM	SERENE GREY			TEXTURE P1 DUNE	
PLASTIC LAMINATE	PL1	FORMICA	PLASTIC LAMINATE	MATTE FINISH	HAZEL WALNUT		5788- NG		
	PL2	WILSONART	PLASTIC LAMINATE	PREMIUM LAMINATE	MARMO BIANCO		1885K-07		
	PL3	FORMICA	PLASTIC LAMINATE	MATTE FINISH	FOG		961-58		
EDGE BANDING	E1	FRAMA-TECH	PVC EDGE BANDING		HAZEL WALNUT	3 MIL	5788- NG		TYSON STOUS (214) 803-7404
	E1	FRAMA-TECH	PVC EDGE BANDING		MARMO BIANCO	3 MIL	1885K-07		TYSON STOUS (214) 803-7404
	E2	FRAMA-TECH	PVC EDGE BANDING		FOG	1 MIL	961-58		TYSON STOUS (214) 803-7404
									TYSON STOUS (214) 803-7404
UPHOLSTERY	FB1	ARC COM	UPHOLSTERY	TASK FORCE	MIDNIGHT		AC-61270		
	FB2	ARC COM	UPHOLSTERY	INTAGLIO 2	COCOA		AC-61413		
GENERAL	SS1	AVONITE	SOLID SURFACE	STUDIO COLLECTION	BLUEBELL		8605		
	SS2	WILSONART	SOLID SURFACE		ARTIC DUNE		9253CM		
	G1	MASONITE	DOOR	ASPIRO-WHITE BIRCH	ROTARY-COCOA BEAN				
	LF1	TBD	TBD	TBD	TBD	TBD	TBD		
	LF2	TBD	TBD	TBD	TBD	TBD	TBD		
TRIM	TR1	SCHLUTER	FLOOR TANSITION	RENO-U	ANODIZED ALUMINUM		AEU100		
	TR2	ROPPE	FLOOR TANSITION	#59	SMOKE				
	TR3	ROPPE	FLOOR TANSITION	#21	SMOKE				
	TR4	ROPPE	FLOOR TANSITION	#50	SMOKE				

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07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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INTERIOR SPECIFICATIONS

REV.#	DATE	COMMENTS
-		
-		
-		

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REVIEWS

INITIALS	
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-	BDA TECH REV.

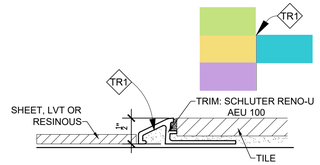
WATSON

PROJECT NO.: 2004
DRAWN: CF
DATE: 8/11/2022

I001

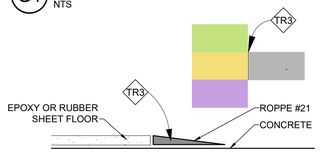
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Plot Date: August 11, 2022 - 10:49 AM
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G1 FLOOR TRANSITION
NTS

G2 FLOOR TRANSITION
NTS



F1 FLOOR TRANSITION
NTS

F2 FLOOR TRANSITION
NTS

F5 FLOOR TILE PATTERN
3/4" = 1'-0"

SHEET KEYNOTES

1. ISO A1/I201 – CABINETS TYP.
2. ISO A5/I201 – PASS THRU.
3. RETAIL CABINET –ISO D4/I202
4. RECEPTION DESK
   4.1. ISO A7/I201 – RECEPTION DESK
   4.2. SOFFIT ABOVE REGISTRATION DESK – PAINT (P3)
   4.3. SEE RENDERING – D8/I202
5. DOG RUNS – ISO A9/I201
   5.1. WALL ELEVATION A1/I202
6. HALF WALL – ISO D1/I201
7. WING WALL W/ DESK – ISO D3/I201
8. CT AT SINK ONLY – ISO D5/I201
9. T AT WET WALLS, RUBBER BASE AT WALLS WITHOUT WALL TILE
10. EXAM ROOM
    10.1. TABLE – ISO D7/I201
    10.2. SEE RENDERING – D6/I202
11. SHELF/COUNTER – ISO G5/I201
12. BENCH – ISO G7/I201
13. SEE I102 FOR PAINT LOCATIONS
14. NOT USED
15. ELEVATION A1/I202 – FULL WALL TILE PATTERN
16. ELEVATION A4/I202 – +78 TILE PATTERN
17. ELEVATION D8/I202 – +72" TILE PATTERN
18. ELEVATION A6/I202 – RESTROOM TILE LAYOUT
    18.1. TILE AT GRAB BAR WALLS ONLY
19. ELEVATION A8/I202 – +48" WALL TILE LAYOUT
20. TUB TOWER – ISO D1/I202
21. BENCH TABLE – ISO D9/I201

GENERAL NOTES

A. SEE SHEET I001 FOR INTERIOR FINISHES AND SPECIFICATIONS SCHEDULE
B. ALL WALLS TO BE PAINTED P1 U.N.O.
   B.A. VERIFY ALL ACCENT PAINT COLORS WIHT OWNER PRIOR TO PAINTING
C. ALL PGB CEILINGS TO BE PAINTED P1 U.N.O.
D. SCHLUTER - TO MATCH TILE THICKNESS, FINISHED IN SATIN ANODIZED ALUMINUM
E. ALL TRANSITIONS SHALL BE ACCESSIBLE PER THE ADA

INTERIOR FINISHES

- F1 - PORCELAIN TILE
  B1 - MATCHING WALL BASE
  SEE A10/I101 FOR TILE PATTERN
- F2 - SHEET FLOORING
  B2 - RUBBER BASE OR FLASH COVE
- F3 - SHEET FLOORING
  B3 - RUBBER BASE OR FLASH COVE
- F4 - RUBBER FLOORING
  B2 - RUBBER BASE
- F5 - EPOXY FLOORING
  FLASH COVE BASE
- SEALED CONCRETE
  B2 - RUBBER BASE
- F7 - RUBBER FLOORING
  B2 - RUBBER BASE



A1 FINISHES FLOOR PLAN
1/8" = 1'-0"

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REFERENCE FLOOR PLAN

REV #	DATE	COMMENTS
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-	-	-
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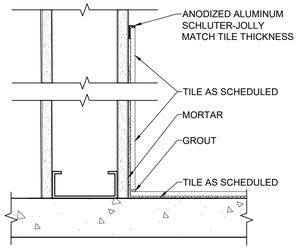
REVIEWS	
INITIALS	
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PROJECT NO.: 2004
DRAWN: CF
DATE: 8/11/2022

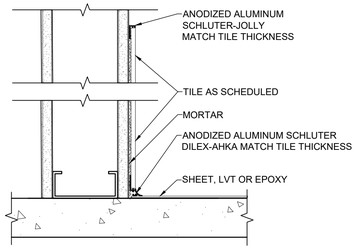
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2 OF 4

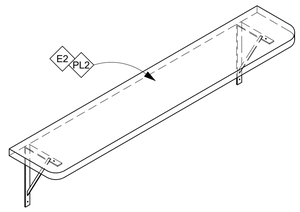
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Plot Date: August 11, 2022 - 10:48 AM
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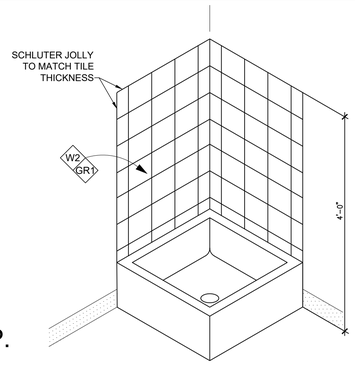
G6 TYPICAL TILE EDGE
3" = 1'-0"



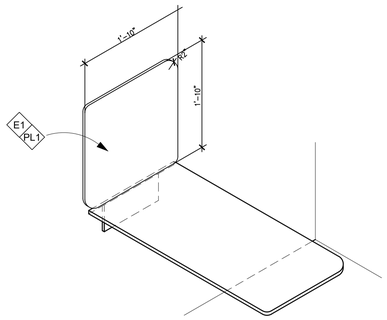
G7 TYPICAL TILE EDGE
3" = 1'-0"



G4 SHELF COUNTER TYP.
3/4" = 1'-0"



F6 JANITORIAL TYP.
3/4" = 1'-0"



F8 WALL PROTECTION AT EXAM TABLE
3/4" = 1'-0"

GENERAL NOTES

A. REFER TO ARCHITECTURAL DRAWINGS FOR CABINET TYPE, SIZES, LOCATIONS, AND MOUNTING HEIGHTS

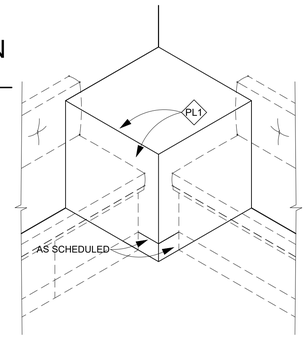
B. SEE I001 - INTERIOR FINISHES SCHEDULE AND SPECIFICATION SCHEDULE

C. EXPOSED SHELVES ARE FINISHED TO MATCH FACE OF CABINETS

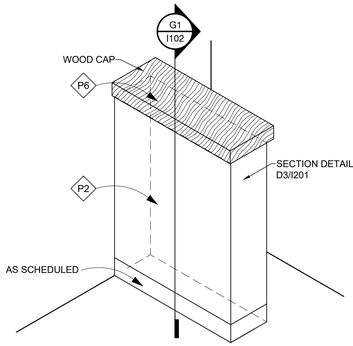
D. CABINETS INTERIOR TO BE FINISHED IN MELAMINE

E. EDGEBANDING USED SHALL MATCH PLASTIC LAMINATE FACE

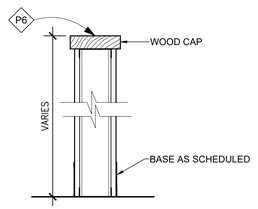
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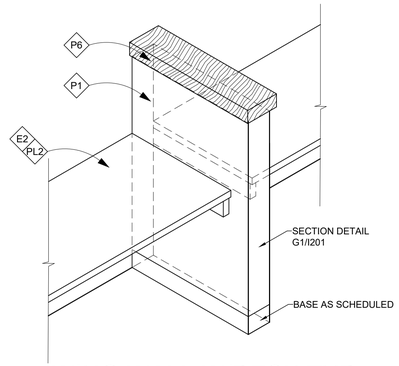
E1 END TABLE AT BENCH TYP.
1/2" = 1'-0"



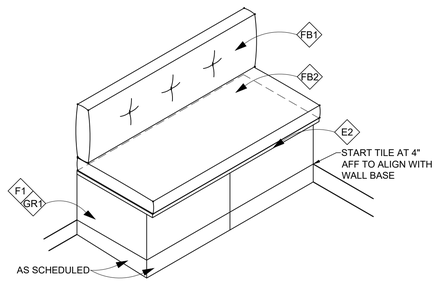
D1 HALF WALLTYP.
3/4" = 1'-0"



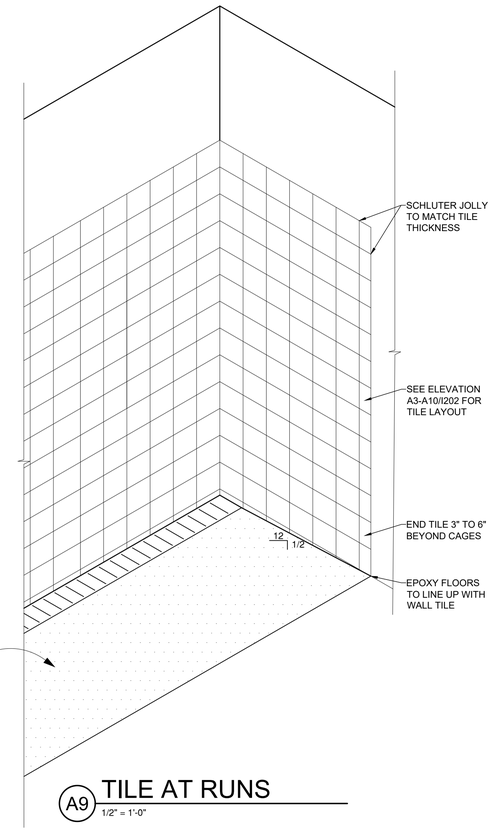
D3 HALF WALL SECTION
N.T.S.



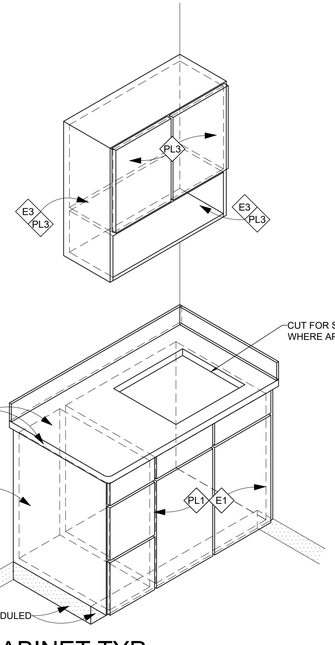
D4 WING WALL W/DESK TYP.
3/4" = 1'-0"



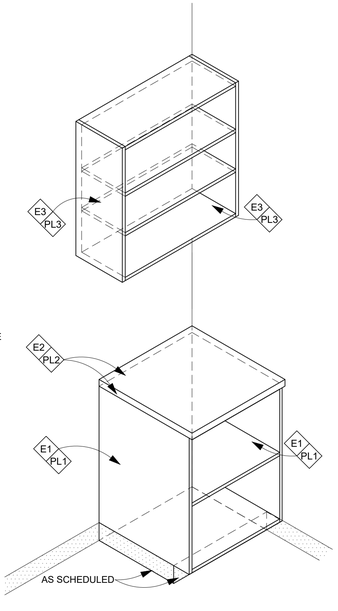
D7 BENCH TYP.
3/4" = 1'-0"

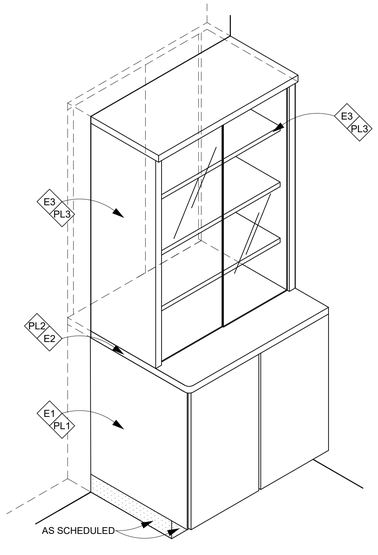


A9 TILE AT RUNS
1/2" = 1'-0"

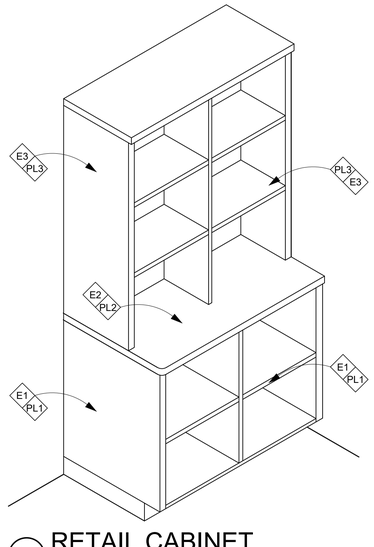


A1 CABINET TYP.
3/4" = 1'-0"





A5 PASS THRU
3/4" = 1'-0"



A7 RETAIL CABINET
3/4" = 1'-0"

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ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

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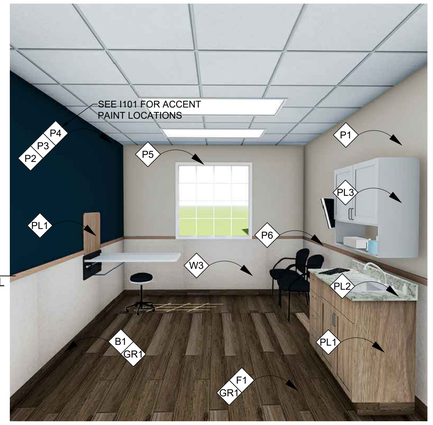
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DATE: 8/11/2022

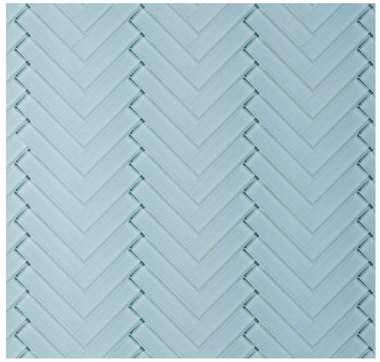
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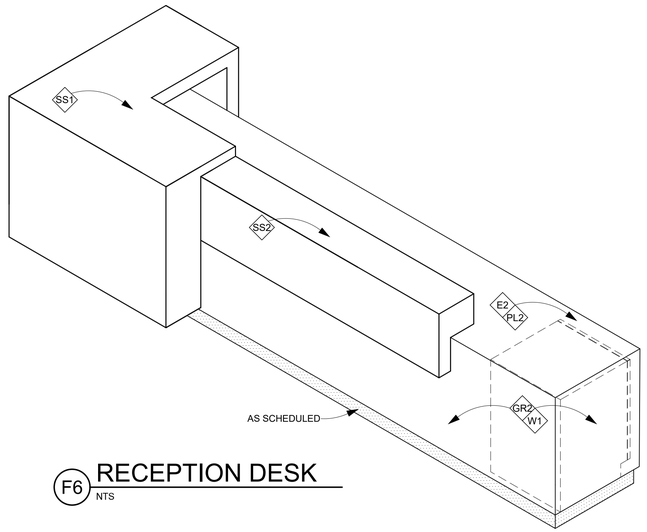
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F1 EXAM ROOM
NTS RENDERING



F4 HARRING BONE TILE PATTERN
NTS RECEPTION DESK AND NOOK WALL



F6 RECEPTION DESK
NTS

GENERAL NOTES

A. REFER TO ARCHITECTURAL DRAWINGS FOR CABINET TYPE, SIZES, LOCATIONS, AND MOUNTING HEIGHTS

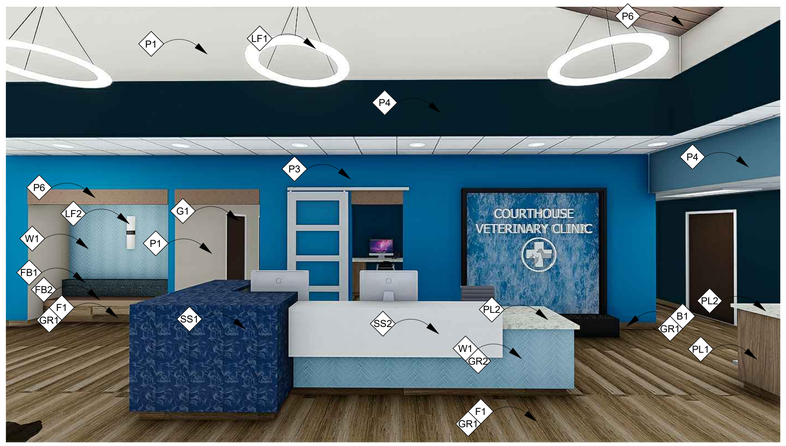
B. SEE I001 - INTERIOR FINISHES SCHEDULE AND SPECIFICATION SCHEDULE

C. EXPOSED SHELVES ARE FINISHED TO MATCH FACE OF CABINETS

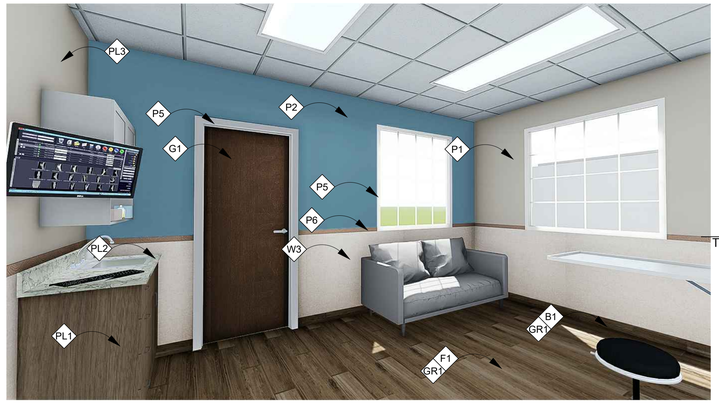
D. CABINETS INTERIOR TO BE FINISHED IN MELAMINE

E. EDGEBANDING USED SHALL MATCH PLASTIC LAMINATE FACE

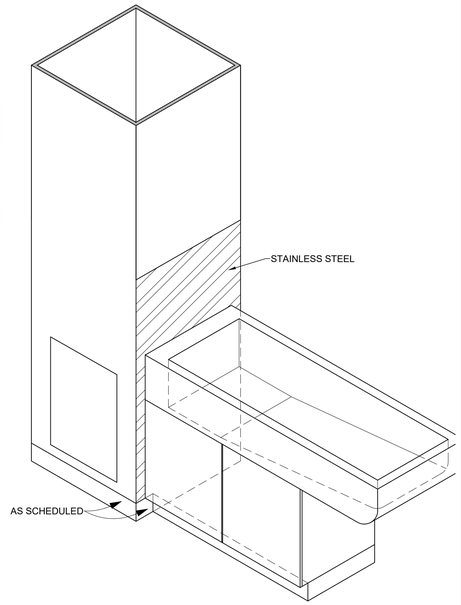
F. SCHLUTER - FINISHED IN SATIN/MAT ANODIZED ALUMINUM



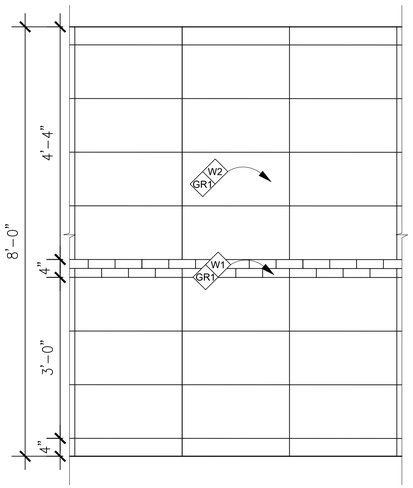
D1 RECEPTION
NTS RENDERING



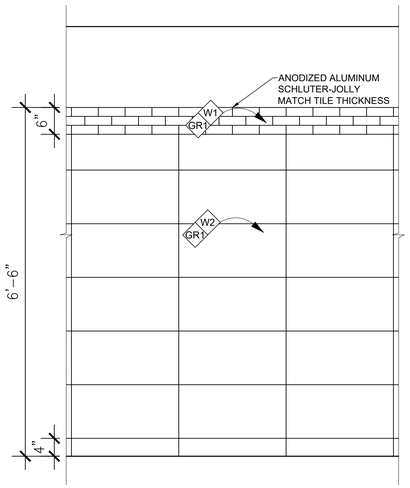
D5 COMFORT EXAM
NTS RENDERING



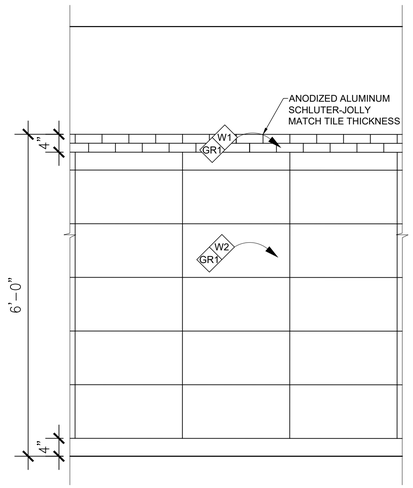
D9 TUB AT TREATMENT
3/4" = 1'-0"



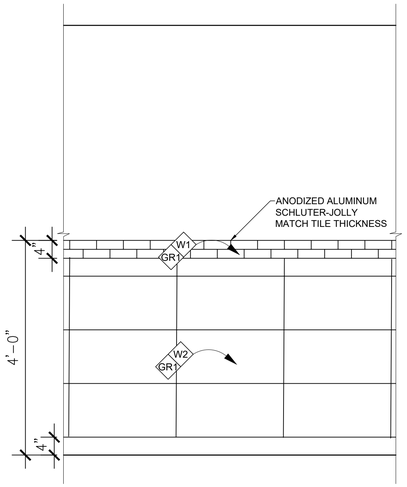
A1 TILE PATTERN
3/4" = 1'-0" FULL HEIGHT



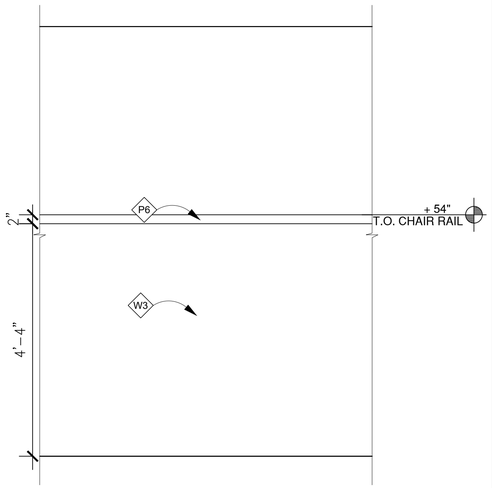
A3 TILE PATTERN
3/4" = 1'-0" +78 HEIGHT



A5 TILE PATTERN
3/4" = 1'-0" +72 HEIGHT



A7 TILE PATTERN
3/4" = 1'-0" + 48" HEIGHT



A9 WALLPAPER PATTERN
3/4" = 1'-0" +54 HEIGHT

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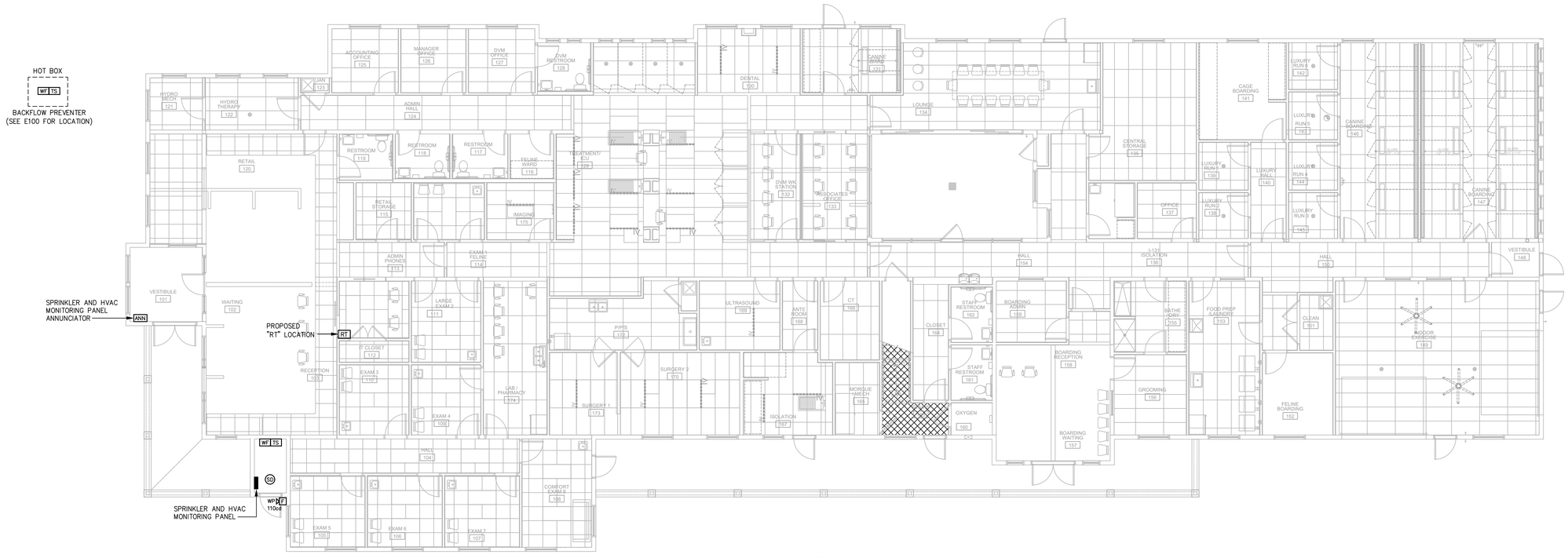
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SYMBOL SCHEDULE

▬	SPRINKLER AND HVAC MONITORING PANEL.
ANN	REMOTE ANNUNCIATOR 66" AFF TO MIDDLE OF DEVICE.
SD	PHOTO-ELECTRIC TYPE SMOKE DETECTOR.
F	AUDIBLE & VISUAL SIGNAL STROBE LIGHT MOUNTED @ 80" AFF. OR 6" BELOW CEILING WHICHEVER IS LOWER.
RT	REMOTE INDICATOR STATION.
WF	WATER FLOW SWITCH CONNECTED TO SPRINKLER PIPING.
TS	TAMPER SWITCH CONNECTED TO SPRINKLER VALVE.



1 MAIN FLOOR PLAN – SPRINKLER AND HVAC MONITORING SYSTEM

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

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07/18/2022

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Brian Watson, DVM

MAIN FLOOR PLAN - SPRINKLER AND HVAC MONITORING SYSTEM

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FA101

14 OF 16

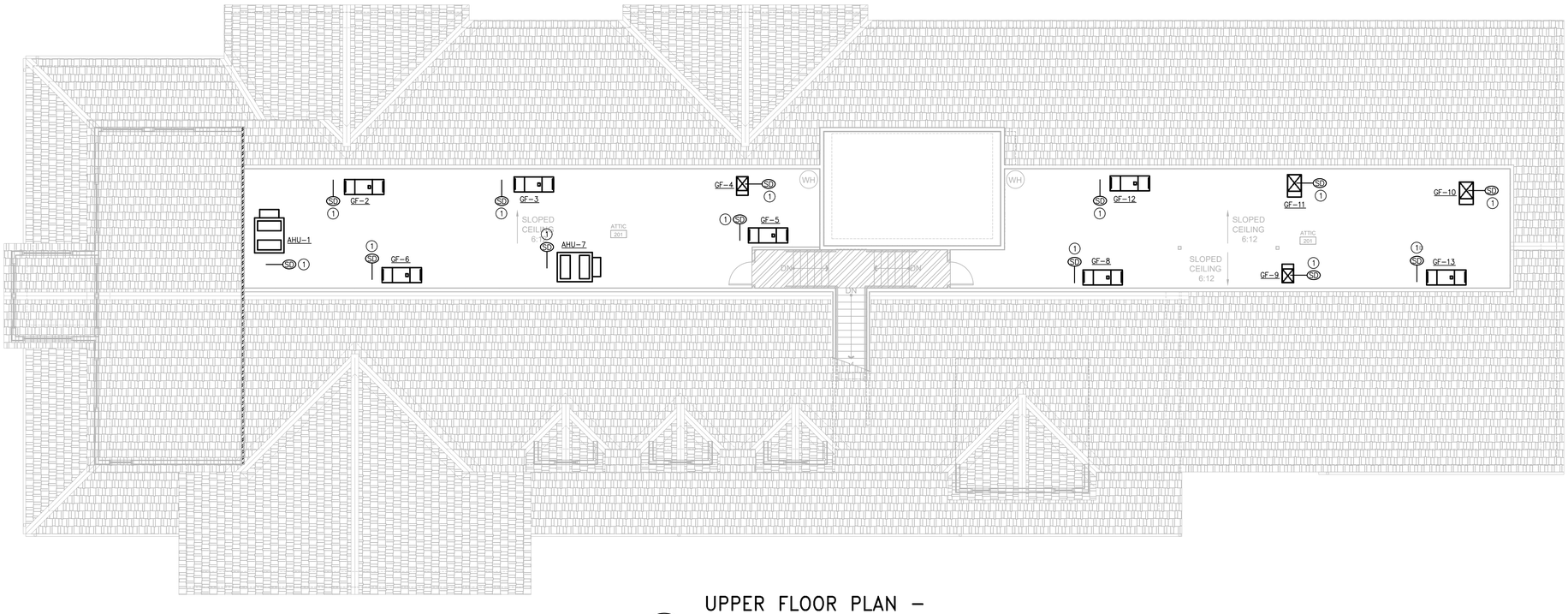
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SYMBOL SCHEDULE

SD	DUCT MOUNT SMOKE DETECTOR WITH RELAY BASE IN AIR DUCT.

DRAWING KEYNOTES

1. DUCT MOUNTED SMOKE DETECTOR(S) PROVIDED AND INSTALLED IN THE DUCT BY MECHANICAL CONTRACTOR. THE SMOKE DETECTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR TO HVAC MONITORING PANEL (PANEL PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR).



1 UPPER FLOOR PLAN – HVAC MONITORING SYSTEM

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

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UPPER FLOOR PLAN - HVAC MONITORING SYSTEM

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REV/SION:	-		

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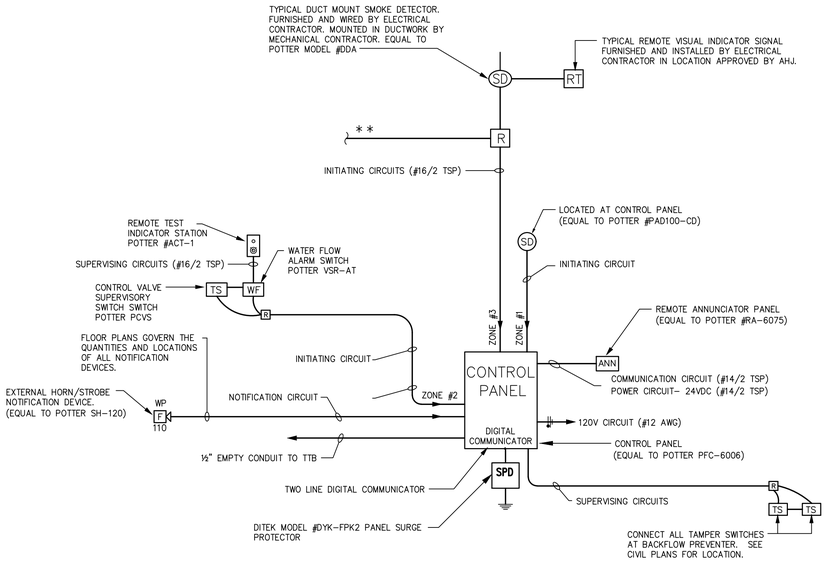
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FA102

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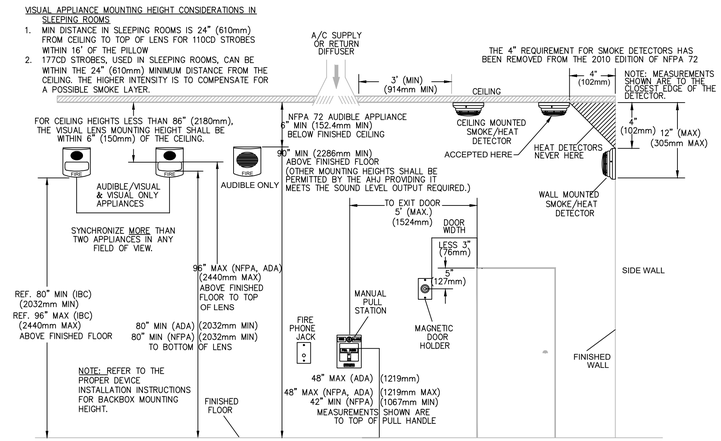
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1 FIRE SPRINKLER & HVAC MONITORING SYSTEM RISER

DIAGRAMMATIC

** FLOOR PLAN GOVERNS THE QUANTITY AND LOCATIONS OF ALL INITIATION AND NOTIFICATION DEVICES.



2 DEVICE MOUNTING HEIGHT DETAIL (NFPA 72)

DIAGRAMMATIC

SYMBOL SCHEDULE

▬	SPRINKLER AND HVAC MONITORING PANEL.
ANN	REMOTE ANNUNCIATOR 66" AFF TO MIDDLE OF DEVICE.
SD	PHOTO-ELECTRIC TYPE SMOKE DETECTOR.
SD	DUCT MOUNT SMOKE DETECTOR WITH RELAY BASE IN AIR DUCT.
F	AUDIBLE & VISUAL SIGNAL STROBE LIGHT MOUNTED @ 80" AFF. OR 6" BELOW CEILING WHICHEVER IS LOWER.
R	ADDRESSABLE CONTROL MODULE.
RT	REMOTE INDICATOR MODULE
WF	WATER FLOW SWITCH CONNECTED TO SPRINKLER PIPING.
TS	TAMPER SWITCH CONNECTED TO SPRINKLER VALVE.

FIRE ALARM SYSTEM MATRIX

BUILDING SYSTEM OUTPUTS | CENTRAL COMM

EVACUATION TONE SHALL BE THREE PULSE TEMPORAL PATTERN.

	ACTUATE COMMON ALARM SIGNAL INDICATOR	ACTUATE AUDIBLE ALARM SIGNAL	ACTUATE COMMON SUPERVISORY SIGNAL INDICATOR	ACTUATE AUDIBLE SUPERVISORY SIGNAL	ACTUATE COMMON TROUBLE SIGNAL INDICATOR	ACTUATE AUDIBLE TROUBLE SIGNAL	ACTUATE GENERAL EVACUATION SIGNAL	DISPLAY CHANGE OF STATUS	ACTIVATE EXTERNAL HORN STROBE	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL COMM	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL COMM	TRANSMIT TROUBLE SIGNAL TO CENTRAL COMM	RELEASE MAGNETIC DOOR HOLD OPEN DEVICES	UNLOCK EXIT DOORS	SHUT DOWN RESPECTIVE HVAC	SHOW CHANGE OF STATUS ON ANNUNCIATOR	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	TRANSMIT TROUBLE SIGNAL TO CENTRAL STATION
MANUAL FIRE ALARM PULL BOXES	X	X					X	X	X			X			X		X	X	X		
BUILDING SMOKE DETECTOR	X	X					X	X	X	X			X			X		X	X	X		
SPRINKLER WATER FLOW	X	X					X	X	X	X			X			X		X	X	X		
SPRINKLER TAMPER SWITCH			X	X				X			X							X	X		X	
FIRE ALARM AC POWER FAILURE					X	X		X				X						X	X			X
FIRE ALARM SYSTEM LOW BATTERY					X	X		X				X						X	X			X
OPEN CIRCUIT					X	X		X				X						X	X			X
GROUND FAULT					X	X		X				X						X	X			X
NOTIFICATION APPLIANCE CIRCUIT SHORT					X	X		X				X						X	X			X
DUCT DETECTORS			X	X				X			X					X	X	X		X		

SPRINKLER & HVAC MONITORING SYSTEM SPECIFICATIONS

1. FURNISH AND INSTALL A SUPERVISED, LOW VOLTAGE, HVAC MONITORING SYSTEM. THE SYSTEM SHALL INCLUDE, BUT NOT BE LIMITED TO, CONTROL PANEL WITH ALL REQUIRED COMPONENTS, POWER SUPPLIES, STANDBY BATTERY SYSTEM, INTEGRAL ALARM, CONDUIT, OUTLETS AND WIRE, END-OF-LINE DEVICES, POWER CIRCUIT, 120 VOLT POWER CIRCUIT, ACCESS TO TELEPHONE EQUIPMENT, AUTOMATIC DIALER, ETC.
2. ALL COMPONENTS SHALL BE U.L. LISTED AND COMPLY WITH NFPA 72. WIRING SHALL COMPLY WITH NEC ARTICLE 760.
3. CATALOG NUMBERS GIVEN ARE THOSE OF POTTER AND DENOTE THE MINIMUM QUALITY AND PERFORMANCE REQUIRED. EQUAL EQUIPMENT BY FCI, SIMPLEX, ADT, AUTOCALL, GAMEWELL, PYROTRONICS OR OTHER APPROVED MANUFACTURER WILL BE ACCEPTABLE.
4. WIRING SHALL BE CLASS-B, COPPER SINGLE STRANDED CONDUCTORS, #16AWG, COLOR CODED AS REQUIRED BY EQUIPMENT SUPPLIER. SYSTEM SHALL HAVE NO MORE THAN 50 ADDRESSABLE DEVICES ON EACH INITIATING CIRCUIT. CONDUCTORS SHALL BE RUN IN EMT CONDUIT, ½" MINIMUM SIZE. RUN INITIATING AND NOTIFICATION DEVICES WITH #16-2TSP AND POWER WITH #12 AWG. AT THE CONTRACTORS OPTION, FIRE RETARDANT (2-HR CI RATED) AND LOW SMOKE PRODUCING FIRE ALARM CABLE UL LISTED FOR THE PURPOSE MAY BE USED WITHOUT CONDUIT, PROVIDING ALL CABLES ARE RUN CONCEALED FROM VIEW IN WALLS OR ABOVE CEILINGS. EACH AND ALL ITEMS OF THE MONITORING SYSTEM SHALL BE LISTED AS A PRODUCT OF A SINGLE MANUFACTURER UNDER THE APPROPRIATE CATEGORY BY "UL". ALL DEVICES BY ANOTHER MANUFACTURER SHALL NOT BE ACCEPTABLE. THE ENTIRE SYSTEM SHALL BE INSTALLED BY A CURRENTLY LICENSED CONTRACTOR TRAINED & CERTIFIED BY THE MANUFACTURER. INSTALLER SHALL BE A NICET-CERTIFIED TECHNICIAN LEVEL IV MINIMUM.
5. THE CONTROL PANEL SHALL BE SEMI-FLUSH MOUNTED. THE PANEL SHALL BE COMPLETE WITH POWER SUPPLY MODULES, MASTER PANEL CONTROLS, SIGNAL CIRCUIT MODULES FOR AUDIBLE/VISUAL DEVICES, ALARM RECEIVING MODULES, SMOKE DETECTOR ALARM RECEIVING/POWER MODULES, REMOTE STATION MONITOR MODULE CAPABLE, 24 HOUR STANDBY BATTERY WITH INTERFACE MODULE AND CHARGER MODULE, AUXILIARY MODULES, TROUBLE MODULES, ALL REQUIRED TERMINAL STRIPS AND BLOCKS AND ACCESSORY RELAYS, AND ALL OTHER NECESSARY FEATURES FOR A COMPLETE SYSTEM. PROVIDE TRANSIENT SUPPRESSION WIRED IN SERIES TO THE POWER SUPPLY AND MUNICIPAL CONNECTION CIRCUITS. THE SPD SHALL HAVE A MINIMUM PEAK SURGE CURRENT OF 54,000 AMPS AND A RESPONSE TIME OF 5 NANOSECONDS.
6. THE REMOTE ANNUNCIATOR SHALL DUPLICATE FUNCTIONS OF THE CONTROL PANEL FOR ALARM, SUPERVISORY, AND TROUBLE INDICATIONS. ALSO DUPLICATE MANUAL SWITCHING FUNCTIONS OF THE CONTROL PANEL, INCLUDING ACKNOWLEDGING, SILENCING, RESETTING AND TESTING. ALPHANUMERIC DISPLAY SHALL BE THE SAME AS THE CONTROL PANEL. CABINET SHALL BE FLUSH MOUNTED IN WALL AND LOCATED AT A CONSTANTLY ATTENDED LOCATION APPROVED BY THE FIRE MARSHAL.
7. THE SYSTEM SHALL BE FULLY SUPERVISED SUCH THAT CIRCUIT OPENS OR GROUNDS, POWER FAILURES, OR DISARRANGEMENT OF SYSTEM COMPONENTS AND WIRING SHALL BE INDICATED AT THE CONTROL PANEL.
8. THE SYSTEM SHALL HAVE PROVISIONS FOR CENTRAL STATION MONITORING VIA A DIGITAL COMMUNICATOR. CENTRAL STATION MONITORING SHALL BE DONE BY A U.L. LISTED STATION.
9. THE SYSTEM SHALL BE PROVIDED WITH SUFFICIENT BATTERY TO OPERATE THE ENTIRE SYSTEM UPON LOSS OF NORMAL 120 VAC POWER IN A NORMAL SUPERVISORY MODE FOR A PERIOD OF TWENTY-FOUR (24) HOURS WITH FIVE (5) MINUTES OF ALARM INDICATION AT THE END OF THIS PERIOD OR AS REQUIRED.
10. AREA SMOKE DETECTOR SHALL BE REQUIRED BY THE APPLICATION FOR DETECTION. DETECTOR SHALL INCLUDE DRY CONTACTS WHERE REQUIRED FOR CONTROL FUNCTIONS. DETECTORS SHALL BE PHOTOELECTRIC TYPE.
11. DUCT MOUNT SMOKE DETECTORS SHALL BE PHOTOELECTRIC TYPE WITH APPROPRIATE SAMPLING TUBE, REMOTE MONITOR STATION, AND DRY CONTACTS FOR AHU SHUT-DOWN, (ADDITIONAL CONTACTS FOR AHU SHUT-DOWN WHERE MULTIPLE UNITS ARE SERVICING A COMMON AREA), SELF-RESTORING, WHITE COLOR. AIR DUCT HOUSING WITH SAMPLING TUBE RUN ENTIRE WIDTH OF DUCT. DETECTORS TO BE SUPPLIED BY THE ELECTRICAL CONTRACTOR, INSTALLED IN THE DUCT WORK BY THE MECHANICAL CONTRACTOR, AND WIRED BY THE ELECTRICAL CONTRACTOR.
12. FLOW AND TAMPER SWITCHES TO BE SUPPLIED AND INSTALLED IN THE PIPING BY THE PLUMBING CONTRACTOR, AND WIRED BY THE ELECTRICAL CONTRACTOR.
13. THE COMPLETED SYSTEM SHALL BE FULLY TESTED BY THE CONTRACTOR AND THE MANUFACTURER'S CERTIFIED TECHNICAL REPRESENTATIVE IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE.
14. PROVIDE 12 MONTH GUARANTEE ON ALL WORKMANSHIP AND MATERIALS EFFECTIVE THE DATE OF BENEFICIAL USE.
15. THE SYSTEM SHALL OPERATE ON 120 VOLT POWER. FAILURE TO THE NORMAL POWER SOURCE SHALL AUTOMATICALLY TRANSFER TO THE STANDBY BATTERY.
16. SYSTEM OPERATION:
    A) ACTIVATION OF A WATER FLOW DEVICE SHALL OPERATE AUDIBLE HORN AND VISUAL SIGNAL IN CONTROL PANEL AND INDICATE WHERE THE SIGNAL ORIGINATED. IT SHALL TRANSMIT AN ALARM SIGNAL TO AN OFF PREMISE SECURITY MONITORING COMPANY (APPROVED SUPERVISING STATION).
    B) ACTIVATION OF A DUCT MOUNTED SMOKE DETECTOR SHALL OPERATE AUDIBLE HORN AND VISUAL SIGNAL IN CONTROL PANEL AND INDICATE WHERE THE SIGNAL ORIGINATED. CONTROL PANEL SHALL TRANSMIT A SUPERVISORY SIGNAL TO THE OFF PREMISE SECURITY MONITORING COMPANY.
    C)ALL AUDIBLE SIGNAL DEVICES SHALL SOUND CONTINUOUSLY UNTIL ACKNOWLEDGED AND VISUAL SIGNALS SHALL ILLUMINATE UNTIL RESET.
17. THE SYSTEM SHALL BE FULLY SUPERVISED SUCH THAT ANY CIRCUIT OPENS OR GROUNDS, POWER FAILURES, OR DISARRANGEMENT OF SYSTEM COMPONENTS OR WIRING SHALL BE INDICATED AT THE CONTROL PANEL.
18. THE SYSTEM SHALL HAVE MONITORING VIA A DIGITAL COMMUNICATOR.

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SPRINKLER AND HVAC MONIT. SYSTEM RISER AND NOTES

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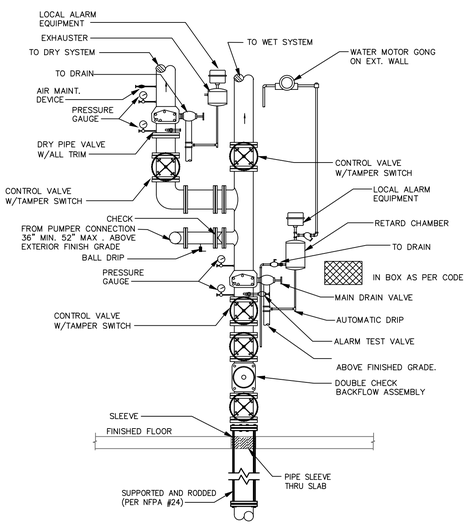
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PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

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16 OF 16

Save Date: July 18, 2022 - 10:00 AM - ZR
Plot Date: July 18, 2022 - 10:02 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018FA103_SPRINKLER AND HVAC MONITORING SYSTEM RISER AND NOTES.dwg



2 WET/DRY RISER DETAIL

NOT TO SCALE

GENERAL NOTES

A. ALL PIPING IN EXPOSED AREAS TO BE RUN TIGHT TO THE ROOF DECK & RUN THROUGH JOIST WEBBING.

B. ALL ABOVE CEILING PIPING TO BE COORDINATED WITH OTHER TRADES TO PROVIDE FOR THE REQUIRED CLEARANCES.

DRAWING KEYNOTES

1. COORDINATE EXACT LOCATION OF UPRIGHT HEADS IN STORAGE WITH SHELVING TO AVOID CONFLICTS. MAINTAIN 18" CLEAR DISTANCE BETWEEN HEADS AND SHELVES.
2. NO SPRINKLER MAIN OR BRANCH PIPING INSIDE OR OVER IDF, MDF OR COMPUTER ROOMS. PROVIDE CAGES OVER SPRINKLER HEADS.
3. PROVIDE FIRE PROTECTION IN STAIRWELLS PER NFPA 13.

DEFERRED SUBMITTAL NOTE

FIRE PROTECTION SYSTEM IS A DEFERRED SUBMITTAL. ALL INFORMATION SHOWN IS FOR REFERENCE ONLY. FIRE PROTECTION CONTRACTOR TO PROVIDE A COMPLETE FIRE PROTECTION SYSTEM, INCLUDING SHOP DRAWINGS, HYDRAULIC CALCULATIONS, DEVICES LAYOUT, SPRINKLER HEAD LOCATIONS, RISER(S), BACKFLOW PREVENTER, FITTINGS, VALVES, SIESMIC BRACING, ETC. AND SUBMIT TO FIRE MARSHAL OR AHJ FOR REVIEW AND APPROVAL AS REQUIRED.

DESIGN CRITERIA

OFFICES, PUBLIC SPACES

OCCUPANCY CLASSIFICATION – LIGHT HAZARD
DENSITY – .10 GPM/1500 SQ.FT.
SYSTEM – WET PIPE

MATERIALS, VALVES, HANGERS SHALL BE PER NFPA 13, 24 AND 25.

MAXIMUM HEAD COVERAGE 168 SQ.FT.
DESIGN SHALL BE PER NFPA 13, 24 AND 25.

COMMON AREAS INCLUDE: CORRIDORS, OFFICES, PLAY ROOMS, RESTROOMS, EAVES AND OVERHANGS WITH COMBUSTIBLE CONSTRUCTION.

O2 CLOSET

OCCUPANCY CLASSIFICATION – EXTRA HAZARD GROUP 1
DENSITY – .3 GPM/2500 SQ.FT.
SYSTEM – WET PIPE

MATERIALS, VALVES, HANGERS SHALL BE PER NFPA 13.

COVERED EXTERIOR SPACES

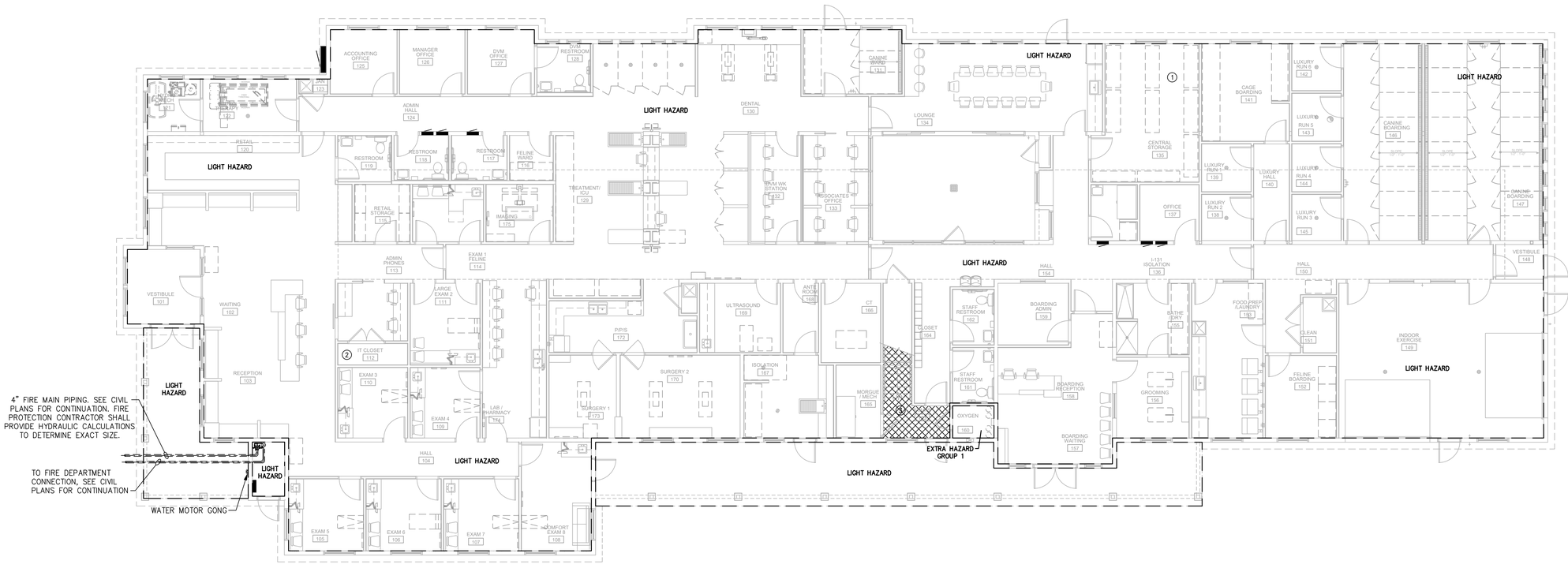
OCCUPANCY CLASSIFICATION – ORDINARY HAZARD GROUP 1
DENSITY – .15 GPM/1950 SQ.FT.
SYSTEM – DRY PIPE

MATERIALS, VALVES, HANGERS SHALL BE PER NFPA 13.

MAXIMUM HEAD COVERAGE 130 SQ.FT. (STD. HEADS)
DESIGN SHALL BE PER NFPA 13, 24 AND 25.

FIRE PROTECTION NOTES

1. FIRE PROTECTION CONTRACTOR SHALL COORDINATE WORK PRIOR TO INSTALLATION WITH MECHANICAL, ELECTRICAL, STRUCTURAL, PLUMBING & ARCHITECTURAL SYSTEMS TO AVOID CONFLICTS.
2. FIRE PROTECTION CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL FIRE RATINGS WHERE PIPES PENETRATE FIRE RATED ASSEMBLIES. FIRE SAFING MATERIAL SHALL BE UL LISTED.
3. SUBMIT FIRE PROTECTION SHOP DRAWINGS TO LOCAL FIRE MARSHALL AND OWNER'S INSURANCE UNDERWRITER FOR APPROVAL.
4. ALL SPRINKLER PIPING INSTALLATION SHALL CONFORM TO NFPA 13, NFPA 24 AND NFPA 25. MOST CURRENT EDITIONS SHALL APPLY.
5. ALL SPRINKLER HEADS SHALL BE CENTERED IN CEILING TILE WHERE APPLICABLE.
6. FIRE PROTECTION CONTRACTOR SHALL PROVIDE HEADS BELOW OBSTRUCTIONS 48" AND WIDER PER. NFPA 13. MOST CURRENT EDITION SHALL APPLY.
7. FIRE PROTECTION CONTRACTOR SHALL COORDINATE HEAD LOCATIONS AND ELEVATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN.
8. THE INSTALLED SPRINKLER SYSTEM SHALL BE TESTED IN ACCORDANCE TO NFPA-25, INSPECTION, TESTING AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEM.
9. FIRE PROTECTION CONTRACTOR SHALL ROUTE ALL EXPOSED PIPING PERPENDICULAR AND PARALLEL TO STRUCTURE. ALL WORKMANSHIP SHALL BE NEAT AND CLEAN IN APPEARANCE.
10. PIPE MATERIALS, HANGERS, ETC. SHALL BE IN ACCORDANCE TO NFPA 13, NFPA 24 AND NFPA 25. MOST CURRENT EDITIONS SHALL APPLY.
11. FIRE PROTECTION CONTRACTOR SHALL REFER TO FIRE PROTECTION SPECIFICATIONS, WET-PIPE FIRE SUPPRESSION SPRINKLERS, FOR ADDITIONAL INFORMATION.
12. SEE ELECTRICAL DRAWINGS & FIRE ALARM RISER DETAIL FOR ADDITIONAL INFORMATION RELATING TO SYSTEM ACTIVATION, CONTROLS, INTERLOCKS, FIRE ALARM STROBES, ALARMS, ETC.
13. SEE CIVIL SITE UTILITY DRAWINGS FOR PIPE ROUTING AND CONNECTION TO CITY UTILITIES, BACKFLOW PREVENTION, ETC. THIS DRAWING IS FOR INFORMATIONAL PURPOSES ONLY.



1 MAIN LEVEL PLAN – FIRE SPRINKLER

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

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MAIN FLOOR PLAN - FIRE SPRINKLER

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PROJECT NO.: 22018
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1 OF 2

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Plot Date: July 14, 2022 - 6:17 PM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018FS101 MAIN LEVEL PLAN - FIRE SPRINKLER.dwg

GENERAL NOTES

A. ALL PIPING IN EXPOSED AREAS TO BE RUN TIGHT TO THE ROOF DECK & RUN THROUGH JOIST WEBBING.

B. ALL ABOVE CEILING PIPING TO BE COORDINATED WITH OTHER TRADES TO PROVIDE FOR THE REQUIRED CLEARANCES.

DRAWING KEYNOTES

1. COORDINATE EXACT LOCATION OF UPRIGHT HEADS IN STORAGE WITH SHELVING TO AVOID CONFLICTS. MAINTAIN 18" CLEAR DISTANCE BETWEEN HEADS AND SHELVES.
2. NO SPRINKLER MAIN OR BRANCH PIPING INSIDE OR OVER IDF, MDF OR COMPUTER ROOMS. PROVIDE CAGES OVER SPRINKLER HEADS.
3. PROVIDE FIRE PROTECTION IN STAIRWELLS PER NFPA 13.

DEFERRED SUBMITTAL NOTE

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DESIGN CRITERIA

OFFICES, PUBLIC SPACES

OCCUPANCY CLASSIFICATION – LIGHT HAZARD
DENSITY – .10 GPM/1500 SQ.FT.
SYSTEM – WET PIPE

MATERIALS, VALVES, HANGERS SHALL BE PER NFPA 13, 24 AND 25.

MAXIMUM HEAD COVERAGE 168 SQ.FT.
DESIGN SHALL BE PER NFPA 13, 24 AND 25.

COMMON AREAS INCLUDE: CORRIDORS, OFFICES, PLAY ROOMS, RESTROOMS, EAVES AND OVERHANGS WITH COMBUSTIBLE CONSTRUCTION.

COVERED EXTERIOR SPACES

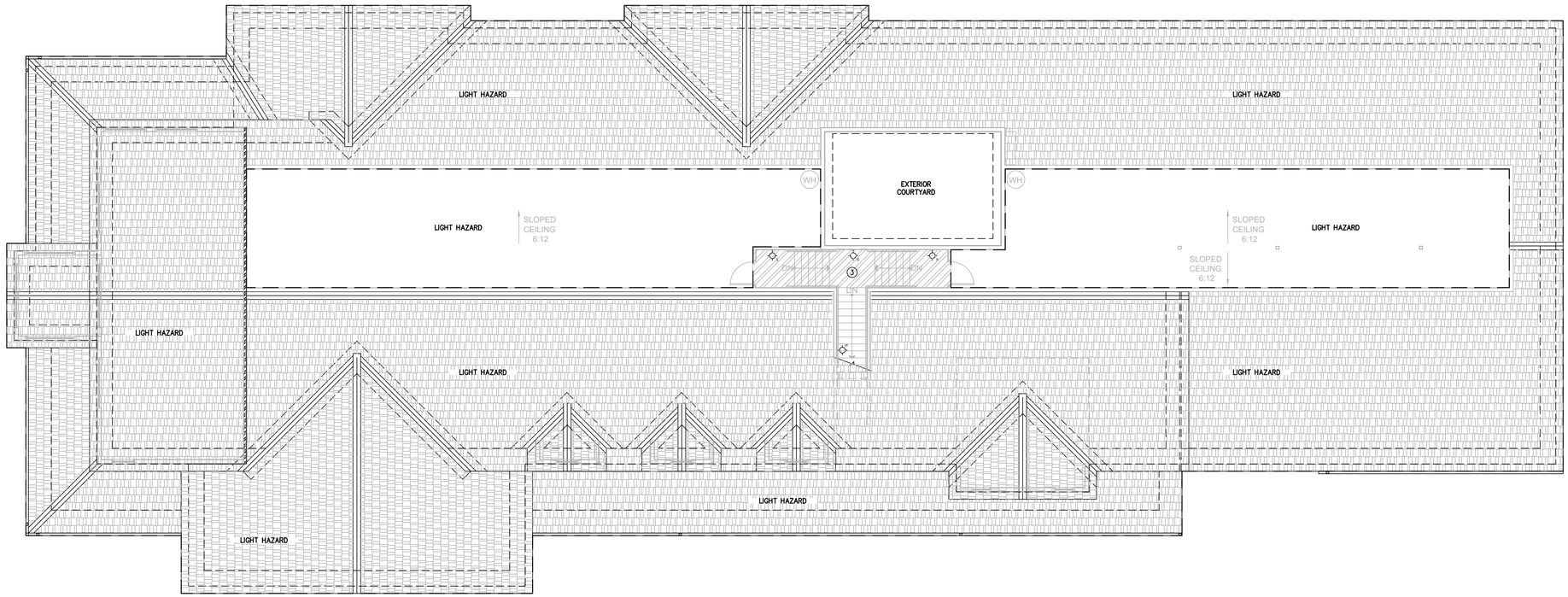
OCCUPANCY CLASSIFICATION – ORDINARY HAZARD GROUP 1
DENSITY – .15 GPM/1950 SQ.FT.
SYSTEM – DRY PIPE

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3. SUBMIT FIRE PROTECTION SHOP DRAWINGS TO LOCAL FIRE MARSHALL AND OWNER'S INSURANCE UNDERWRITER FOR APPROVAL.
4. ALL SPRINKLER PIPING INSTALLATION SHALL CONFORM TO NFPA 13, NFPA 24 AND NFPA 25. MOST CURRENT EDITIONS SHALL APPLY.
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6. FIRE PROTECTION CONTRACTOR SHALL PROVIDE HEADS BELOW OBSTRUCTIONS 48" AND WIDER PER. NFPA 13. MOST CURRENT EDITION SHALL APPLY.
7. FIRE PROTECTION CONTRACTOR SHALL COORDINATE HEAD LOCATIONS AND ELEVATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN.
8. THE INSTALLED SPRINKLER SYSTEM SHALL BE TESTED IN ACCORDANCE TO NFPA-25, INSPECTION, TESTING AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEM.
9. FIRE PROTECTION CONTRACTOR SHALL ROUTE ALL EXPOSED PIPING PERPENDICULAR AND PARALLEL TO STRUCTURE. ALL WORKMANSHIP SHALL BE NEAT AND CLEAN IN APPEARANCE.
10. PIPE MATERIALS, HANGERS, ETC. SHALL BE IN ACCORDANCE TO NFPA 13, NFPA 24 AND NFPA 25. MOST CURRENT EDITIONS SHALL APPLY.
11. FIRE PROTECTION CONTRACTOR SHALL REFER TO FIRE PROTECTION SPECIFICATIONS, WET-PIPE FIRE SUPPRESSION SPRINKLERS, FOR ADDITIONAL INFORMATION.
12. SEE ELECTRICAL DRAWINGS & FIRE ALARM RISER DETAIL FOR ADDITIONAL INFORMATION RELATING TO SYSTEM ACTIVATION, CONTROLS, INTERLOCKS, FIRE ALARM STROBES, ALARMS, ETC.
13. SEE CIVIL SITE UTILITY DRAWINGS FOR PIPE ROUTING AND CONNECTION TO CITY UTILITIES, BACKFLOW PREVENTION, ETC. THIS DRAWING IS FOR INFORMATIONAL PURPOSES ONLY.



1 UPPER LEVEL PLAN – FIRE SPRINKLER
SCALE: 1/8" = 1'-0"

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UPPER FLOOR PLAN - FIRE SPRINKLER

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DATE: 07/18/22

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2 OF 2

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Plot Date: July 14, 2022 - 6:17 PM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018FS102_UPPER LEVEL PLAN - FIRE SPRINKLER.dwg

PLUMBING SPECIFICATIONS

01 GENERAL CONDITIONS

GENERAL AND SPECIAL CONDITIONS ARE HEREBY MADE AN INTEGRAL PART OF THIS DIVISION OF THE SPECIFICATIONS IN THAT THEY ARE APPLICABLE TO THE WORK UNDER THIS DIVISION UNLESS OTHERWISE NOTED.

PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL SYSTEMS IN THIS SECTION OF WORK IN ACCORDANCE WITH ALL APPLICABLE CODES.

PERMITS: APPLY FOR AND PAY FOR ALL NECESSARY PERMITS, FEES, AND INSPECTIONS REQUIRED BY ANY PUBLIC AUTHORITY HAVING JURISDICTION. ACREAGE CHARGES, BOND PROPERTY ASSESSMENTS AND FACILITIES CHARGE ARE NOT TO BE CONSTRUED TO BE A PART OF THIS CONTRACT.

WARRANTY: PROVIDE ALL MATERIALS AND EQUIPMENT UNDER THIS SECTION OF THE SPECIFICATIONS WITH A ONE YEAR WARRANTY FROM THE DATE OF ACCEPTANCE OF WORK BY THE OWNER.

THE CONTRACTOR SHALL TIE INTO CIVIL PROVIDED TAP AS INDICATED ON PLANS. ALL COSTS FOR THIS SERVICE SHALL BE PART OF HIS BID CONTRACT PRICE.

PROTECT COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS, AND CLIPS SHALL BE COPPER OR COPPER PLATED.

PROTECT COPPER PIPING AGAINST CONTACT WITH ALL MASONRY. WHERE COPPER IS SLEEVED THROUGH MASONRY, PROVIDE COPPER OR RED BRASS SLEEVES.

MAKE SURE PROVISIONS ARE INSTALLED IN ALL PIPING SO NO STRAIN OR BREAKAGE RESULTS FROM EXPANSION OR CONTRACTION.

INSTALL WATER PIPING IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.

PITCH ALL WATER PIPES SO THAT ALL PARTS MAY BE DRAINED. THE FORMATION OF SAGS AND TRAPS SHALL BE AVOIDED.

PROVIDE SHOCK ARRESTORS WHERE SHOWN ON PLANS FOR THE COMPLETE ELIMINATION OF WATER HAMMER.

STERILIZE DOMESTIC WATER PIPING IN ACCORDANCE WITH THE AMERICAN WATER WORKS ASSOCIATION'S SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.

SANITARY PIPING 2.5" OR LESS SHALL BE SLOPED AT 1/4" PER FOOT. SANITARY PIPING 3" OR LARGER SHALL BE SLOPED AT 1/8" PER FOOT, UNLESS OTHERWISE REQUIRED BY CODE OR NOTED.

WHERE WASTE PIPING IS EXPOSED IN REST ROOM AREAS, PROVIDE CHROME PLATED BRASS PIPING, WITH MATCHING STOPS AND ESCUTCHEONS.

PROVIDE REMOVABLE TRAPS WITH INTEGRAL CLEAN-OUT PLUG FOR ALL LAVATORIES. INSTALL CLEAN-OUTS IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.

INSTALL CLEAN-OUTS IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.

02 MATERIALS AND EQUIPMENT

ALL NEW WORK SHALL BE OF MATERIALS LISTED BELOW OR SHALL MATCH EXISTING. IF A CONFLICT EXISTS BETWEEN MATERIALS AND/OR EQUIPMENT, THE MORE STRINGENT SHALL APPLY AS ADJUDGED BY THE ARCHITECT/ENGINEER. THE CONTRACTOR SHALL FIELD VERIFY MATERIAL TYPE AND EQUIPMENT.

A. SANITARY SEWER PIPE AND FITTINGS – BELOW GRADE:
SCHEDULE 40 PVC DWV PIPE, (ASTM D1784 – D1785), PVC SOCKET FITTINGS AND SOLVENT CEMENTED FITTINGS. (ASTM D2665)

B. SANITARY SEWER/VENT PIPE AND FITTINGS – ABOVE GRADE:
SCHEDULE 40 PVC DWV PIPE, (ASTM D1784 – D1785), PVC SOCKET FITTINGS AND SOLVENT CEMENTED FITTINGS. (ASTM D2665)

C. DOMESTIC WATER PIPING BELOW GRADE:
3" AND BELOW.
CROSSLINKED POLYETHYLENE (PEX A) BY WIRSBO AQUAPEX (ASTM F876 AND ASTM F877) WITH PEX-A COLD EXPANSION FITTINGS, PROPEX INSERT WITH CORRESPONDING PROPEX RING. (ASTM F1960)
MINIMUM BEND RADIUS (COLD BENDING): NO LESS THAN SIX TIMES THE OUTSIDE DIAMETER. USE A BEND SUPPORT AS SUPPLIED BY THE PEX TUBING MANUFACTURER FOR TUBING WITH A BEND RADIUS LESS THAN STATED.
MANIFOLDS: UPONOR PROPEX 1 OR UPONOR ENGINEERED PLASTIC (EP) MANIFOLDS. ALL MANIFOLDS MANUFACTURED WITH THE APPROPRIATE SIZED PROPEX FITTINGS.
PROVIDE RED PEX PIPE FOR HOT WATER, BLUE PEX PIPE FOR COLD WATER SYSTEMS.

D. DOMESTIC WATER PIPING AND JOINTS ABOVE GRADE:
3" AND BELOW.
CROSSLINKED POLYETHYLENE (PEX A) BY WIRSBO AQUAPEX (ASTM F876 AND ASTM F877) WITH PEX-A COLD EXPANSION FITTINGS, PROPEX INSERT WITH CORRESPONDING PROPEX RING. (ASTM F1960)
MINIMUM BEND RADIUS (COLD BENDING): NO LESS THAN SIX TIMES THE OUTSIDE DIAMETER. USE A BEND SUPPORT AS SUPPLIED BY THE PEX TUBING MANUFACTURER FOR TUBING WITH A BEND RADIUS LESS THAN STATED.
MANIFOLDS: UPONOR PROPEX 1 OR UPONOR ENGINEERED PLASTIC (EP) MANIFOLDS. ALL MANIFOLDS MANUFACTURED WITH THE APPROPRIATE SIZED PROPEX FITTINGS.
PROVIDE RED PEX PIPE FOR HOT WATER, BLUE PEX PIPE FOR COLD WATER SYSTEMS.

E. OXYGEN PIPING AND JOINTS ABOVE GRADE:
COPPER MEDICAL GAS TUBING, TYPE 'L', STANDARD COLOR MARKING "OXY" (ASTM B 819) WITH WROUGHT-COPPER JOINTS (ASME B16.22), PRESSURE TYPE OR MSS-SP-73 WITH DIMENSIONS FOR BRAZED JOINTS; COPPER UNIONS, WROUGHT-COPPER OR CAST-COPPER ALLOY (ASME B16.22).

F. ANESTHIA EVACUATION PIPE AND FITTINGS – ABOVE GRADE:
SCHEDULE 40 PVC DWV PIPE, (ASTM D1784 – D1785), PVC SOCKET FITTINGS AND SOLVENT CEMENTED FITTINGS. (ASTM D2665)

03 INSULATION

INSULATE DOMESTIC WATER PIPING ABOVE GRADE (EXCEPT EXPOSED CONNECTIONS TO PLUMBING FIXTURES) WITH PREFORMED FIBERGLASS OR ENGINEERED POLYMER FOAM INSULATION. FOLLOW THIS SCHEDULE:

SERVICE	PIPE SIZE	THICKNESS
DOMESTIC HOT WATER (105 –140 F)	ALL	1"
DOMESTIC HOT WATER RETURN	ALL	1"
DOMESTIC COLD WATER	ALL	1/2"

PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES ARE REQUIRED TO MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY (ASTM E84/NFPA 255) METHOD.
INSULATE HORIZONTAL STORM DRAIN PIPING ABOVE GRADE AND ROOF DRAIN BODIES WITH 1.5" PREFORMED FIBERGLASS OR ENGINEERED POLYMER FOAM INSULATION

04 VALVES

SHUT OFF VALVES: BRASS/BRONZE, BALL TYPE, FULL PORT, TWO-PIECE, 125 PSI WORKING PRESSURE, NSF 61 APPROVED.
CHECK VALVES: BRASS/BRONZE, SWING TYPE, 125 PSI WORKING PRESSURE, NSF 61 APPROVED.
INSTALL IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS. PROVIDE ACCESS DOORS IF REQUIRED.

05 TESTS

ALL SOIL, WASTE, VENT AND WATER PIPING SHALL BE TESTED BY THE CONTRACTOR IN THE PRESENCE OF THE PLUMBING INSPECTOR AND SHALL BE APPROVED BY THE ENGINEER BEFORE ACCEPTANCE. ALL PIPING LOCATED UNDERGROUND OR CONCEALED IN BUILDING CONSTRUCTION SHALL BE TESTED BEFORE BACKFILLING OR CONCEALING PIPE. ALL TESTS REQUIRED FOR EQUIPMENT SHALL BE FURNISHED BY THE CONTRACTOR WITHOUT ADDITIONAL CHARGE TO THE OWNER.

06 SEISMIC REQUIREMENTS

PROPERLY SUPPORT AND BRACE VERTICALLY AND HORIZONTALLY ALL PIPING, APPARATUS, EQUIPMENT, ETC. IN ACCORDANCE WITH APPLICABLE CODES TO PREVENT EXCESSIVE MOVEMENT DURING SEISMIC CONDITIONS.

07 GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THE COMPLETE PLUMBING SYSTEM AGAINST DEFECTS DUE TO FAULTY MATERIALS, WORKMANSHIP OR FAILURE DUE TO NEGLIGENCE OF THE CONTRACTOR. THIS GUARANTEE SHALL EXTEND 12 MONTHS FROM DATE OF FINAL ACCEPTANCE. ALL SERVICE CALLS DURING THIS PERIOD SHALL BE PROVIDED BY THE CONTRACTOR.

PLUMBING LEGEND

NEW WORK

- DOMESTIC COLD WATER
- E — DOMESTIC EXISTING COLD WATER
- DOMESTIC 120° WATER
- E — DOMESTIC EXISTING 120° WATER
- DOMESTIC 120° WATER RETURN
- E — DOMESTIC EXISTING 120° WATER RETURN
- 140 — DOMESTIC 140° WATER
- 140HWR — DOMESTIC 140° WATER RETURN
- F — FILTERED WATER
- SANITARY
- E — EXISTING SANITARY
- SANITARY VENT
- E — EXISTING SANITARY VENT
- RL — STORM DRAIN (ABOVE SLAB)
- ORL — OVERFLOW STORM DRAIN (ABOVE SLAB)
- SD — STORM DRAIN (BELOW SLAB OR GRADE)
- ESD — EXISTING STORM DRAIN (BELOW SLAB OR GRADE)
- CD — CONDENSATE
- D — DRAIN
- P — PUMPED DISCHARGE
- A — COMPRESSED AIR
- G — NATURAL GAS
- O — OXYGEN
- AE — ANESTHESIA EVACUATION
- V — SURGICAL SUCTION (MEDICAL VACUUM)
- N — NITROGEN
- PIPE TURNING DOWN
- PIPE TURNING UP
- PIPE CAP
- FIXTURE SUPPLY WITH SHUT-OFF
- SHUT-OFF VALVE
- CHECK VALVE
- EXPANSION VALVE
- BALANCING VALVE
- GAS COCK AND GAS REGULATOR
- PRESSURE REDUCING/REGULATING VALVE
- STRAINER
- UNION
- SAFETY OR RELIEF VALVE
- SOLENOID VALVE
- OS&Y VALVE
- FD — FLOOR DRAIN
- HD — HUB DRAIN
- FLOOR SINK
- TRENCH DRAIN
- RD — ROOF DRAIN
- OD — OVERFLOW ROOF DRAIN
- FCO — FLOOR CLEANOUT
- PCO — END-OF-LINE CLEANOUT
- WCO — WALL CLEANOUT
- PRESSURE GAGE
- THERMOMETER
- SA-"A" — SHOCK ARRESTER (SUFFIX INDICATES PDI SIZE)
- BACKFLOW PREVENTER (REDUCED PRESSURE)
- BACKFLOW PREVENTER (DOUBLE CHECK)
- M — METER (GAS OR WATER)
- PUMP
- FPH — FREEZE PROOF WALL HYDRANT
- FPHB — FREEZE PROOF WALL HYDRANT BOX
- HB — HOSE BIB
- TRAP PRIMER
- FS — TP — FLOW SWITCH – FS#1
- DIRECTION OF FLOW
- EJ — EXPANSION JOINT
- PIPE ANCHOR
- PIPE SLEEVE
- FLEXIBLE CONNECTION
- 1 — REVISION NOTES
- POINT OF CONNECTION NEW TO EXISTING
- W-1 — DOMESTIC WATER RISER DESIGNATION
- W-1 — WASTE RISER DESIGNATION
- 1 / P001 — SECTION OR DETAIL NO. SECTION OR DETAIL LOCATED ON THIS SHT.

ABBREVIATIONS

AAV	AIR ADMITTANCE VALVE
AC	ABOVE CEILING
ADB	AUXILIARY DRAIN BOX
AFF	ABOVE FINISH FLOOR
BF-1	BACKFLOW PREVENTER
BFF	BELOW FINISH FLOOR
BG	BELOW GRADE
BTUH	BRITISH THERMAL UNIT/HOUR
BS	BELOW SLAB
BS-1	BREAK ROOM SINK
BV	BALANCING VALVE
℄	CENTER LINE
C-1	WATER COOLER/FOUNTAIN
CA	COMPRESSED AIR
CB-1	CATCH BASIN
CO	CLEANOUT
CV	CHECK VALVE
CW	COLD WATER
DC	DOWNSPOUT COVER
DN	DOWN
DW	DISHWASHER
EC	ELECTRICAL CONTRACTOR
ECO	EXISTING CLEANOUT
ES	EMERGENCY SHOWER/EYEWASH
ET-1	THERMAL EXPANSION TANK
EW	EMERGENCY EYEWASH
EX	EXISTING
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FPH	FREEZE PROOF HYDRANT
FS	FLOOR SINK
G	NATURAL GAS
GC	GENERAL CONTRACTOR
GCO	GRADE CLEANOUT
GI	GREASE INTERCEPTOR
GW	GREASE WASTE SANITARY
HB	HOSE BIBB
HCP	HANDICAP
HW	HOT WATER
HWR	HOT WATER RETURN
INV:	INVERT ELEVATION
IMB	ICE MAKER BOX
KW	KITCHEN WASTE
L-1	LAVATORY
MBH	MILLION BTU
MC	MECHANICAL CONTRACTOR
MS-1	MOP SINK
N	NITROGEN
NIC	NOT IN CONTRACT
PC	PLUMBING CONTRACTOR
OD	OVERFLOW ROOF DRAIN
ORL	OVERFLOW ROOF LEADER
OW	OIL WASTE SANITARY
OWS	OIL WASTE SEPATATOR
RCP-1	RECIRCULATION PUMP
RD	ROOF DRAIN
RL	ROOF LEADER
S-1	SINK
SA	SHOCK ARRESTOR
SS	SANITARY
SH-1	SHOWER
SD	STORM DRAIN
TD-1	TRENCH DRAIN
TP	TRAP PRIMER
T&P	TEMPERATURE AND PRESSURE
TW	TEMPERED WATER
TYP	TYPICAL
U-1	URINAL
V	VENT
VB	VACUUM BREAKER
VLV	VALVE
VS	VENT STACK
VP	VENT PIPE
VTR	VENT THRU ROOF
W-1	WATER CLOSET
WCO	WALL CLEANOUT
WH-1	WATER HEATER
WP	WASTE PIPE
WS	WASTE STACK

PLUMBING NOTES

1. ALL PLUMBING SHALL BE INSTALLED IN ACCORDANCE WITH THE 2018 VIRGINIA PLUMBING CODE AND THE NATIONAL FIRE CODES WHICH APPLY.
2. ALL PLUMBING PIPING SHALL BE CLOSELY COORDINATED WITH STRUCTURAL SYSTEM, MECHANICAL SYSTEM AND ELECTRICAL SYSTEM TO INSURE PROPER COMPLIANCE WITH CODES AND INSURE THAT ALL TRADES WILL NOT CONFLICT WITH EACH OTHER.
3. IF ANY SUBSTITUTED EQUIPMENT IS SUBMITTED AND APPROVED WITH PLUMBING CONNECTIONS OTHER THAN THAT SHOWN ON THE DRAWINGS AND SCHEDULES, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE PROPER PLUMBING CONNECTIONS TO THIS EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER.
4. DO NOT SCALE DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF DOORS, WINDOWS, WALLS, FIXTURES, ETC.
5. ALL CLEANOUTS SHALL HAVE TOPS ESPECIALLY DESIGNED FOR SPECIFIC FLOOR FINISHES SUCH AS CARPET, TILE, ETC. UNLESS OTHERWISE SPECIFIED.
6. ALL FLOOR CLEANOUT, FLOOR DRAIN AND CATCH BASIN TOPS SHALL BE COVERED DURING CONSTRUCTION TO PREVENT DAMAGE.
7. VENTS WILL BE COLLECTED ABOVE THE CEILING AND EXTENDED THROUGH THE ROOF AT AS FEW POINTS AS POSSIBLE. VENT PENETRATIONS SHALL AVOID MECHANICAL EQUIPMENT INTAKE AIR LOCATIONS PER CODE REQUIREMENTS.
8. EXCEPT WHERE PIPE SPACE IS PROVIDED OR UNLESS OTHERWISE NOTED, ALL SUPPLY, WASTE AND VENT RISERS SHALL BE RUN IN WALLS AND PARTITIONS.
9. PROVIDE ACCESS PANELS AS REQUIRED AT VALVE LOCATIONS TO PROVIDE ACCESS TO CONTROL VALVES. COORDINATE TYPE AND LOCATION WITH GENERAL CONTRACTOR.
10. PROVIDE FOR ACCESS TO ALL EQUIPMENT REQUIRING CLEANING OR ADJUSTMENT.
11. P.C. SHALL PROVIDE A PRESSURE REDUCING VALVE WHERE WATER MAIN ENTERS BUILDING IF PRESSURE EXCEEDS 80 PSI. SET PRV @ 75 PSI.

PIPE LABEL LEGEND

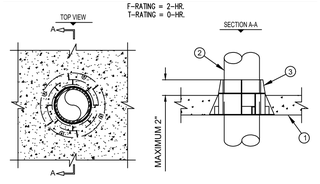
PLAN DESIGNATION	PIPE LABEL
CW	DOMESTIC WATER
HW	DOMESTIC HOT WATER
HWR	DOMESTIC HOT WATER RETURN
SS	SANITARY SEWER
SV	SANITARY VENT
O	OXYGEN
AE	ANESTHESIA EVACUATION

NOTES:
ALL PIPING WITH THE DESIGNATIONS ABOVE WILL BE LABELED PER ANSI/ASME A13.1 NON-POTABLE SYSTEMS WILL BE LABELED PER IPC SECTION 608.8

PLUMBING DRAWING SCHEDULE

DRAWING NUMBER	DESCRIPTION
P001	PLUMBING SPECIFICATIONS, LEGEND, GENERAL NOTES
P002	PLUMBING SCHEDULES
P003	PLUMBING DETAILS
P101	MAIN FLOOR PLAN – WASTE
P102	UPPER FLOOR PLAN – WASTE
P201	MAIN FLOOR PLAN – WATER
P202	UPPER FLOOR PLAN – WATER
P301	MAIN FLOOR PLAN – MED GAS

UL SYSTEM NO. FA-2053
PLASTIC PIPE THROUGH CONCRETE FLOOR OR CONCRETE OVER METAL DECKING
F-RATING = 2-HR.
T-RATING = 0-HR.



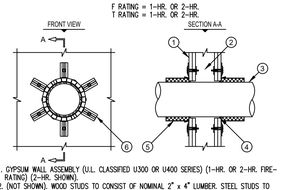
1. CONCRETE FLOOR ASSEMBLY (2-HR. FIRE-RATING) :
   A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MIN. 2-1/2" THICK).
   B. STEEL FLOOR UNIT/FLOOR ASSEMBLY – NORMAL WEIGHT CONCRETE FLOOR (MIN. 2-1/2" THICK) OVER METAL DECKING.
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING (SEE TABLE BELOW) :
   A. MAXIMUM 6" NOMINAL DIAMETER PVC PLASTIC PIPE (CELLULAR AND SOLID CORE).
   B. MAXIMUM 6" NOMINAL DIAMETER CPVC PLASTIC PIPE.
3. HILTI CP 680 CAST-IN FIRESTOP DEVICE, CAST OR GROUTED INTO CONCRETE FLOOR (SEE TABLE BELOW).

NOM. PIPE DIAMETER	TYPE OF PIPE	PRODUCT DESCRIPTION
1-1/2" TO 2"	PVC, CPVC	CP680 75/2.5"
3" TO 4"	PVC, CPVC	CP680 110/4"
6"	PVC, CPVC	CP680 160/6"

NOTES: 1. CLOSED OR VENTED PIPING SYSTEMS (PVC = SCHEDULE 40, CPVC = SDR 17).
2. FOR CONCRETE FLOOR OVER METAL DECKING APPLICATIONS, A CP 680 METAL DECK ADAPTER IS REQUIRED.
3. PLASTIC PIPES USED IN CONJUNCTION WITH HILTI CP 680 110/4" AND CP 680 160/6" MUST BE INSTALLED FROM THE TOP SIDE OF THE ASSEMBLY.

1 FIRE STOP DETAIL
SCALE: NONE

U.L. SYSTEM NO. WL2078
PLASTIC PIPE THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY
F RATING = 1-HR. OR 2-HR.
T RATING = 1-HR. OR 2-HR.



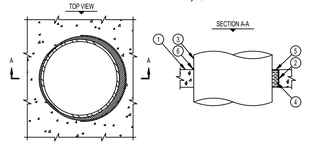
1. GYPSUM WALL ASSEMBLY (U.L. CLASSIFIED U300 OR U400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. (NOT SHOWN). WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING (SEE NOTE NO. 3 BELOW) :
   A. MAXIMUM 6" NOMINAL DIAMETER PVC PLASTIC PIPE (CELLULAR OR SOLID CORE).
   B. MAXIMUM 6" NOMINAL DIAMETER ABS PLASTIC PIPE (CELLULAR OR SOLID CORE).
   C. MAXIMUM 6" NOMINAL DIAMETER FRPP PLASTIC PIPE.
   D. MAXIMUM 6" NOMINAL DIAMETER CPVC PLASTIC PIPE.
4. SEE NOTE NO. 1 BELOW.
5. HILTI CP 642 OR HILTI CP 643 FIRESTOP COLLAR (SEE TABLE BELOW).
6. FASTEN EACH MOUNTING TAB TO WALL ASSEMBLY WITH APPROPRIATE HILTI ANCHORS.

NOM. PIPE DIA.	PRODUCT DESCRIPTION	NO. OF MOUNTING TABS	MAX. HOLE SIZE
1-1/2"	CP 643 50/1.5"	2	2-1/8"
2"	CP 643 63/2"	2	2-5/8"
3"	CP 643 90/3"	3	4"
4"	CP 643 110/4"	3	5"
6"	CP 642 160/6"	6	7"

NOTES : 1. TO IMPEDE COLD SMOKE, PROVIDE 1/4" DEPTH HILTI FS-ONE INTUMESCENT FIRE-STOP SEALANT IN ANNULAR SPACE AROUND PLASTIC PIPE.
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1/2".
3. CLOSED OR VENTED PIPING SYSTEMS. (PVC, ABS, FRPP = SCH. 40, CPVC= SDR 17).

2 FIRE STOP DETAIL
SCALE: NONE

UL/cUL SYSTEM NO. CAJ1226
METAL PIPE THROUGH A SLEEVE IN CONCRETE FLOOR/WALL OR BLOCK WALL
F RATING = 3-HR.
T RATING = 0-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400° F = 4 CFM/SQ. FT.

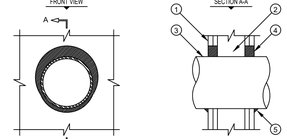


1. CONCRETE FLOOR OR WALL ASSEMBLY (3-HR FIRE-RATING):
   A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR OR WALL (MIN. 4-1/2" THICK).
   B. ANY UL/ULC CLASSIFIED CONCRETE BLOCK WALL.
2. OPTIONAL: MAXIMUM 32" NOMINAL DIAMETER STEEL PIPE SLEEVE (SCHEDULE 40 OR HEAVIER).
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 30" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 30" NOMINAL DIAMETER CAST IRON PIPE.
   C. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
   D. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
   E. MAXIMUM 4" NOMINAL DIAMETER EMT.
4. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED.
5. MINIMUM 1/4" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
6. MINIMUM 1/4" CROWN HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT APPLIED AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 32".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-7/8".
3. MINIMUM 1/4" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT IS REQUIRED ON BOTH SIDES OF A WALL ASSEMBLY.

3 FIRE STOP DETAIL
SCALE: NONE

UL/cUL SYSTEM NO. WL1054
METAL PIPE THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY
F RATING = 1-HR. OR 2-HR.
T RATING = 0-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = 4 CFM/SQ. FT.



1. GYPSUM WALL ASSEMBLY (UL/ULC CLASSIFIED U300 OR U400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. (NOT SHOWN). WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
   A. MAXIMUM 30" DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 30" DIAMETER CAST IRON PIPE.
   C. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
   D. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
   E. MAXIMUM 4" NOMINAL DIAMETER EMT.
4. HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT :
   A. MINIMUM 5/8", FOR A 1-HR. FIRE-RATING.
   B. MINIMUM 1-1/4" DEPTH, FOR A 2-HR. FIRE-RATING.
5. MINIMUM 1/2" BEAD HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING :
A. 32-1/4" FOR STEEL STUD WALLS.
B. 14-1/2" FOR WOOD STUD WALLS.
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2-1/2".

4 FIRE STOP DETAIL
SCALE: NONE

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07/18/2022

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SPECIFICATIONS, LEGEND, GENERAL NOTES

REV #	DATE	COMMENTS
REVISION: 1		
REVISION: 2		
REVISION: 3		
REVISION: 4		

REVIEWS
INITIALS

TEG
PROJECT NO.: 22018
DRAWN: CLS
DATE: 07/18/22

P001

1 OF 8

Save Date: July 14, 2022 - 6:12 PM, Chereet
Plot Date: July 14, 2022 - 6:17 PM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018P001_PLUMBING SPECIFICATIONS, LEGEND, GENERAL NOTES.dwg

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE TYPE	DESCRIPTION	SERVICE CONNECTIONS				REMARKS
			SAN	VENT	HW	CW	
W-1	BARRIER-FREE WATER CLOSET TANK-TYPE	WATER CLOSET SHALL BE EQUAL TO AMERICAN STANDARD "CADET PRO" MODEL #215AA.104.020, WHITE, VITREOUS CHINA, ELONGATED BOWL, TANK TYPE, 1.28 GPF, FLOOR MOUNTED, BOTTOM OUTLET, 12" ROUGH-IN. SEAT SHALL BE EQUAL TO CHURCH MODEL #9500SSCT, ELONGATED WHITE OPEN FRONT SEAT LESS COVER. WATER CLOSET SHALL BE PROVIDED WITH CHROME PLATED SUPPLY WITH LOOSE KEY STOP EQUAL TO McGUIRE #172.	3"	2"	–	1/2"	FIXTURE RIM TO FINISHED FLOOR MOUNTING HEIGHT SHALL BE 17". LOCATE FLUSH LEVER ON WIDE SIDE OF STALL.
L-1	BARRIER-FREE LAVATORY WALL HUNG	LAVATORY SHALL BE EQUAL TO AMERICAN STANDARD "LUCERNE" MODEL #0355.012.020, VITREOUS CHINA, WALL HUNG. PROVIDE FAUCET EQUAL TO TO DELTA MODEL #21C134 CENTERSET FAUCET WITH LEVER HANDLES. PROVIDE LAVATORY COMPLETE WITH GRID DRAIN, PREWRAPPED INSULATED, CAST BRASS, OFFSET TAILPIECE AND P-TRAP WITH CLEANOUT (EQUAL TO McGUIRE #PW2150WC) AND CHROME PLATED SUPPLIES (EQUAL TO McGUIRE #175).	2"	1 1/2"	1/2"	1/2"	PROVIDE ASSE 1070 MIXING VALVE, MV-1 AT EACH FIXTURE. SET TEMP TO 110°F.
S-1	EXAM SINK	SINK SHALL BE EQUAL TO DAYTON MODEL #DCFU1210, SINGLE BOWL, 18 GAUGE TYPE 304 STAINLESS STEEL. PROVIDE FAUCET EQUAL TO ZURN MODEL #Z812C4-XL, DUAL LEVER HANDLES, VANDAL RESISTANT AERATOR. PROVIDE SINK COMPLETE WITH ONE STAINLESS STEEL BASKET STRAINER AND TAILPIECE (EQUAL TO McGUIRE #151A), CHROME PLATED SEMI-CAST BRASS P-TRAP (EQUAL TO McGUIRE #8902), AND CHROME PLATED SUPPLIES WITH LOOSE KEY STOPS (EQUAL TO McGUIRE #175LK).	2"	1 1/2"	1/2"	1/2"	
S-2	EXAM SINK	SINK SHALL BE EQUAL TO DAYTON MODEL #DCFU2115, SINGLE BOWL, 18 GAUGE TYPE 304 STAINLESS STEEL. PROVIDE FAUCET EQUAL TO ZURN MODEL #Z812C4-XL, DUAL LEVER HANDLES, VANDAL RESISTANT AERATOR. PROVIDE SINK COMPLETE WITH ONE STAINLESS STEEL BASKET STRAINER AND TAILPIECE (EQUAL TO McGUIRE #151A), CHROME PLATED SEMI-CAST BRASS P-TRAP (EQUAL TO McGUIRE #8902), AND CHROME PLATED SUPPLIES WITH LOOSE KEY STOPS (EQUAL TO McGUIRE #175LK).	2"	1 1/2"	1/2"	1/2"	
S-3	DOUBLE BOWL SINK	SINK SHALL BE EQUAL TO DAYTON MODEL #DCFU31189, DOUBLE BOWL, 18 GAUGE TYPE 304 STAINLESS STEEL. PROVIDE FAUCET EQUAL TO T&S BRASS MODEL #B-2347-05, DUAL LEVER HANDLES, VANDAL RESISTANT AERATOR. PROVIDE SINK COMPLETE WITH ONE STAINLESS STEEL BASKET STRAINER AND TAILPIECE (EQUAL TO McGUIRE #151A), CHROME PLATED SEMI-CAST BRASS P-TRAP (EQUAL TO McGUIRE #8902), AND CHROME PLATED SUPPLIES WITH LOOSE KEY STOPS (EQUAL TO McGUIRE #175LK).	2"	1 1/2"	1/2"	1/2"	
S-4	SCRUB SINK	SINK SHALL BE TRI-STAR MODEL #300-35 WITH #5EF-ID-WGA AC ADAPTER WALL MOUNTED FAUCET. CONTRACTOR SHALL COORDINATE WITH OWNER FOR CONNECTION SIZES, ROUGH-IN REQUIREMENTS AND NECESSARY ACCESORIES. PROVIDE SINK COMPLETE WITH GRID DRAIN, ANGLE STOPS, FLEXIBLE RISER AND P-TRAP UPON COORDINATION WITH OWNER.	2"	1 1/2"	1/2"	1/2"	
S-5	UTILITY SINK	SINK SHALL BE EQUAL TO FIAT MODEL #FL-1, FLOOR MOUNTED, MOLDED STONE. PROVIDE FAUCET EQUAL TO FIAT MODEL #830-AA, INTEGRAL STOPS, VACUUM BREAKER, THREADED SPOUT, AND LEVER HANDLES. PROVIDE SINK COMPLETE WITH P-TRAP.	3"	1 1/2"	3/4"	3/4"	PROVIDE CHECK VALVE STOPS ON HW & CW SUPPLIES WITH ACCESS DOOR ABOVE FAUCET.
S-6	BREAK SINK (ADA)	SINK SHALL BE EQUAL TO ELKAY MODEL #LRAD252165, SINGLE BOWL, 18 GAUGE TYPE 304 STAINLESS STEEL. PROVIDE FAUCET EQUAL TO ZURN MODEL #Z812C4-XL, DUAL LEVER HANDLES, VANDAL RESISTANT AERATOR. PROVIDE SINK COMPLETE WITH ONE STAINLESS STEEL BASKET STRAINER, OFFSET TAILPIECE AND P-TRAP WITH CLEANOUT (EQUAL TO MCGUIRE #PW1152WC) AND CHROME PLATED SUPPLIES WITH LOOSE KEY STOPS (EQUAL TO MCGUIRE #175LK).	2"	1 1/2"	1/2"	1/2"	
T-1	GROOMING TUB	TUB AND FAUCET SHALL BE OWNER FURNISHED AND CONTRACTOR INSTALLED. PROVIDE VACUUM BREAKER AND HAIR INTERCEPTOR. PROVIDE TUB COMPLETE WITH STAINLESS STEEL FLEXIBLE RISERS, ANGLE STOPS AND P-TRAP.	2"	1 1/2"	1/2"	1/2"	
T-2	TABLE TUB UNIT	TABLE AND FAUCET SHALL BE OWNER FURNISHED AND CONTRACTOR INSTALLED. PROVIDE VACUUM BREAKER AND HAIR INTERCEPTOR. PROVIDE TUB COMPLETE WITH STAINLESS STEEL FLEXIBLE RISERS, ANGLE STOPS AND P-TRAP.	2"	1 1/2"	1/2"	1/2"	
T-3	TABLE TUB UNIT	TABLE AND FAUCET SHALL BE OWNER FURNISHED AND CONTRACTOR INSTALLED. PROVIDE VACUUM BREAKER AND HAIR INTERCEPTOR. PROVIDE TUB COMPLETE WITH STAINLESS STEEL FLEXIBLE RISERS, ANGLE STOPS AND P-TRAP.	2"	1 1/2"	1/2"	1/2"	
HI	HAIR INTERCEPTOR	HAIR INTERCEPTOR SHALL BE MARBLE PRODUCTS CATCH-ALL HAIR TRAP IN LIEU OF FIXTURE TRAP, WITH REMOVABLE PERFORATED SCREEN, 1-1/2" THREADED INLET AND OUTLET.	1 1/2"	–	–	–	
MS-1	MOP SINK	SINK SHALL BE EQUAL TO FIAT MODEL #MSB2424, 24"x24"x10", MOLDED STONE. PROVIDE FAUCET EQUAL TO FIAT MODEL #830-AA, INTEGRAL STOPS, VACUUM BREAKER, PAIL HOOK, THREADED SPOUT, AND LEVER HANDLES. PROVIDE SINK COMPLETE WITH MOP HANGER, HOSE WITH BRACKET, AND P-TRAP.	3"	1 1/2"	3/4"	3/4"	PROVIDE CHECK VALVE STOPS ON HW & CW SUPPLIES WITH ACCESS DOOR ABOVE FAUCET.
EW	EMERGENCY EYE/FASH WASH	EMERGENCY EYE/FACE WASH SHALL BE HAWS MODEL 7610 BARRIER-FREE SINK/COUNTERTOP EYE/FACE WASH. INCLUDE AN AXION MSR EYE/FACE WASH HEAD, POLISHED CHROME BRASS SINGLE ACTION PULL-DOWN VALVE BODY, WHEEL CHAIR ACCESSIBILITY, UNIVERSAL SIGN AND 1/2" O.D. SLIP JOINT INLET. PROVIDE WITH TEMPERED WATER BLENDING VALVE MODEL 9201EFE.	2"	1 1/2"	1/2"	1/2"	
SH-1	SHOWER	TILED SHOWER BY OTHERS. PROVIDE SHOWER COMPLETE WITH DRAIN, GRAB BARS, TRANSFER SEAT AND CURTAIN. BATH VALVE SHALL BE EQUAL TO DELTA MODEL #T13291 WITH #RPW324HDF.	2"	1 1/2"	1/2"	1/2"	
C-1	BARRIER-FREE BI-LEVEL ELECTRIC WATER COOLER	ELECTRIC WATER COOLER SHALL BE EQUAL TO OASIS MODEL #PGBSBFSL BI-LEVEL, STAINLESS STEEL, EZH20 BOTTLE FILLING STATION. PROVIDE WATER COOLER COMPLETE WITH ANGLE SUPPLY LOOSE KEY STOP (EQUAL TO McGUIRE #175LK), P-TRAP (EQUAL TO McGUIRE #8902), AND CARRIER. REFER TO ARCHITECTURAL FOR ADA COMPLIANT MOUNTING HEIGHTS.	2"	1 1/2"	–	1/2"	
IMB	ICE MACHINE BOX	ICE MACHINE BOX SHALL BE EQUAL TO GUY GRAY MODEL #FRIB-12 FIRE RATED.	–	–	–	1/2"	W/ VACCUM BREAKER
WMB	WASHING MACHINE BOX	WASHING MACHINE BOX SHALL BE OATEY MODEL #38470, 1/4 TURN 1/2"HW AND 1/2"CW MIP X SWEAT VALVES WITH MOUNTED WATER HAMMER ARRESTORS, AND WASHER BOX FABRICATED OF MOLDED PLASTIC.	2"	1 1/2"	1/2"	1/2"	W/ VACCUM BREAKER AND SA#1
FPH	WALL HYDRANT	FREEZE PROOF HYDRANT SHALL BE EQUAL TO WOODFORD MODEL #65.	–	–	–	1/2"	
HS	HOSE STATION	HOSE BIBB SHALL BE EQUAL TO WOODFORD MODEL #V122 WITH MOUNTING PLATE.	–	–	1/2"	1/2"	PROVIDE WITH METAL HANDLE AND DRYWALL MOUNTING PLATE.
HB	HOSE BIBB	HOSE BIBB SHALL BE EQUAL TO WOODFORD MODEL #24.	–	–	–	1/2"	PROVIDE WITH METAL HANDLE
FD	FLOOR DRAIN	FLOOR DRAIN SHALL BE SIOUX CHIEF MODEL #832-36PNRV, PVC BODY, NICKEL BRONZE STRAINER ASSEMBLY, VANDAL RESISTANT STRAINER SCREWS, DEEP SEAL P-TRAP, PLUG TRAP PRIMER CONNECTION, DIAMETER OF OUTLET AS SHOWN ON DRAWINGS. COMPLETE WITH TRAP GUARD MODEL SURE SEAL SS3009V, SIZE TO MATCH FLOOR DRAIN, SIZE PER PLANS.	SEE DWGS.	–	–	–	PROVIDE TRAP GUARD CONNECTION AS REQUIRED.
TD	TRENCH DRAIN	TRENCH DRAIN SHALL BE TRI-STAR 4"WIDE, INTEGRAL SLOPE, STAINLESS STEEL GRATE WITH 1/2"HOLES, 14 GA. STAINLESS STEEL CONSTRUCTION, DEEP SEAL P-TRAP (PVC DEEP SEAL P-TRAP), 4" NO-HUB CONNECTION, CUSTOM ORDER, DRAIN SYSTEM, COORDINATE WITH GENERAL CONTRACTOR FOR LENGTH.	SEE DWGS.	–	–	–	
HD	HUB DRAIN	HUB DRAIN SHALL BE EQUAL TO ZURN MODEL #ZN-415 WITH TYPE "L" STRAINER.	SEE DWGS.	–	–	–	
AD	AREA DRAIN	AREA DRAIN SHALL BE EQUAL TO ZURN MODEL #Z-504-DG-HP-Y, HEAVY DUTY, TRAFFIC RATED, HEEL PROOF GRATE.	SEE DWGS.	–	–	–	
FCO	FLOOR CLEANOUT	FLOOR CLEANOUT SHALL BE EQUAL TO ZURN MODEL #ZS-1400. CLEANOUT.	SEE DWGS.	–	–	–	GAS/WATER TIGHT ABS PLUG
WCO	WALL CLEANOUT	WALL CLEANOUT SHALL BE EQUAL TO ZURN MODEL #ZS-1468, ACCESS COVER AND PLUG.	SEE DWGS.	–	–	–	GAS/WATER TIGHT ABS PLUG
GCO	CLEANOUT TO GRADE	CLEANOUT TO GRADE SHALL BE EQUAL TO ZURN MODEL #ZS-1400. PROVIDE CLEANOUT IN 18"x18"x6" CONCRETE PAD.	SEE DWGS.	–	–	–	GAS/WATER TIGHT ABS PLUG

GAS WATER HEATER SCHEDULE

TAG	DESCRIPTION	GAS BURNER DATA						UNIT TOTAL	RECOVERY GPH TOTAL	FLUE SIZE TYPE	SELECTION BASED ON		REMARKS/OPTIONS
		GAS TYPE N	GAS TYPE P	INLET PRESSURE	GALLONS STORAGE	MBH INPUT	RECOVERY GPH/RISE				MANUFACTURER	MODEL NUMBER	
WH-1	BUILDING	X		7" WC	60	120	154/90°	1	154	3"PVC	A.O. SMITH	BTH-120	NOTE 1, A,C,E
WH-2	BUILDING	X		7" WC	60	120	154/90°	1	154	3"PVC	A.O. SMITH	BTH-120	NOTE 1, A,C,E

OPTIONS (ALL UNITS)
- CODE APPROVED VACUUM BREAKER, TEMPERATURE/PRESSURE RELIEF VALVE AND INTERGAL OR FIELD SUPPLIED HEAT TRAPS.
- THERMAL EXPANSION TANK ON CW MAKE-UP. SEE TANK SCHEDULE.
- SERVICE BALL VALVES ON HW/CW MAINS

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: CONCENTRIC VENT KIT FOR EACH HEATER. INSTALL PER MANUFACTURER'S REQUIREMENTS.
B: WATER HEATER ASSEMBLIES ARE MANIFOLDED TOGETHER – PROVIDE PIPING MANIFOLDS.
C: PROVIDE CONDENSATE NEUTRALIZATION KIT ON CONDENSATE DISCHARGE LINE.
D: WATER HEATERS SUPPLING KITCHENS SHALL BE N.S.F. APPROVED.
E: ELECTRONIC IGNITION CONTROLS (120/1ø/60). COORDINATE WITH E.C
F: POWERED EXHAUST/ELECTRONIC IGNITION (120V/1ø/60) COORDINATE WITH E.C.

NOTES:
1. INSTALL WATER HEATER PER MANUFACTURERS REQUIREMENTS. COORDINATE ALL CONNECTION POINTS IN THE FIELD.

EXPANSION TANK SCHEDULE

TAG	DESCRIPTION	VOLUME (GALLONS)	DIAMETER (INCHES)	HEIGHT (INCHES)	SELECTION BASED ON		REMARKS
					MANUFACTURER	MODEL NUMBER	
ET-1	BLADDER TYPE	4.4	11"	15"	AMTROL	ST-12	NOTE 1
ET-2	BLADDER TYPE	4.4	11"	15"	AMTROL	ST-12	NOTE 1

NOTES:
1. INSTALL EXPANSION TANK ON IN-COMING COLD WATER PER MANUFACTURERS REQUIREMENTS.

PUMP SCHEDULE

TAG	DESCRIPTION	TYPE	CAPACITY		ELECTRICAL DATA				SELECTION BASED ON		REMARKS/OPTIONS
			GPM	HEAD (ft.)	HP	V	PH	HZ	MANUFACTURER	MODEL NUMBER	
RCP-1	HOT WATER RECIRC. PUMP	IN-LINE	3	20	1/12	120	1	60	BELL & GOSSETT	PL-30-B	NOTE 1,2
RCP-2	HOT WATER RECIRC. PUMP	IN-LINE	2	13	1/12	120	1	60	BELL & GOSSETT	PL-30-B	NOTE 1,2

OPTIONS (ALL RCP UNITS)
- AQUA-STAT & NIGHT TIMER
- FLANGED PUMP
- BALANCING VALVE & CHECK VALVE
- MAINTENANCE BALL VALVES ON BOTH SIDES OF PUMP

OPTIONS (ALL SUMP UNITS)
- 30"x30"x30" BASIN BY G.C.
- DISCHARGE CHECK VALVE
- DISCHARGE BALL VALVE
- ---

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: OIL-MINDER ALARM/CONTROL SYSTEM
B:
C:
D:

NOTES:
1. SET AQUA-STAT WITH SET POINT 10 DEGREES BELOW SYSTEM SUPPLY TEMP.
2. INSTALL RECIRCULATION PUMP PER MANUFACTURERS REQUIREMENTS.
3. INSTALL OIL-MINDER ALARM/CONTROL PANEL ON WALL AT ELEVATOR PER MANUFACTURERS REQUIREMENTS. FIELD VERIFY EXACT LOCATION.

MIXING VALVE SCHEDULE

TAG	DESCRIPTION	MAXIMUM GPM	MINIMUM GPM	PRESSURE LOSS	SELECTION BASED ON		REMARKS/OPTIONS
					MANUFACTURER	MODEL NUMBER	
MV-1	THERMOSTATIC MIXING VALVE	3.5	.25	5	LEONARD	270-LF	NOTE 1, A

OPTIONS (ALL UNITS)
- LEAD FREE NSF APPROVED
- PROVIDE T'STAT ON TEMPERED LINE

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: ASSE 1070 APPROVED, SET @ 100° F. ¼" INLETS/ ⅜" OUTLET, MOUNT BELOW FIXTURE

NOTES:
1. INSTALL MIXING VALVE PER MANUFACTURERS REQUIREMENTS. PROVIDE ALL PIPING AND VALVES PER O&M MANUAL.

MEDICAL GASES FIXTURE SCHEDULE

TAG	FIXTURE TYPE	DESCRIPTION	REMARKS
OM	OXYGEN MANIFOLD	OXYGEN MANIFOLD SHALL BE AMICO MODEL M3EC-S-HH-U-OXY. MANIFOLD SHALL SWITCH FROM "RIGHT BANK IN USE" TO "LEFT BANK IN USE" ONCE THE RIGHT BANK DEPLETES. MANUAL OPERATION SHALL BE REQUIRED AT THE TIME OF CHANGING CYLINDERS TO ENSURE SWITCH-OVER BY MOVING LEVER. PRESSURE SWITCH CONTROLS REMOTE ALARMS WHICH INDICATE "RIGHT BANK IN USE" TO "LEFT BANK IN USE" SUPPLY SWITCH-OVER AND THAT CYLINDER REPLACEMENT IS NECESSARY. PROVIDE WITH HEADER BAR ASSEMBLY M2-HBTC-04U-OXY AND WALL BRACKET FOR HEADER BAR ASSEMBLY, MODEL M-X-HB-WLBRKT. PROVIDE ALL REQUIRED FITTINGS FOR OPERATION AS REQUIRED.	
02	OXYGEN GAS CEILING OUTLET	OXYGEN GAS CEILING OUTLET SHALL BE AMICO NO. O-DISCEI-E-OXY, LATCH VALVE AMICO NO. O-FASE-XX-U-OXY, DISS CEILING MOUNTED, UL LISTED, NFPA 99/CSA COMPLIANT, PRIMARY AND SECONDARY CHECKS, INDEXED FOR OXYGEN. PROVIDE ONE QUICK DETACH LATCH VALVE ASSEMBLY FOR EACH DISS OUTLET AND TURN OVER TO OWNER.	
02W	OXYGEN GAS WALL OUTLET	OXYGEN GAS WALL OUTLET SHALL BE AMICO DISS COMPACT WALL OUTLET, LATCH VALVE AMICO NO. O-FASE-XX-U-OXY, DISS WALL MOUNTED, UL LISTED, NFPA 99/CSA COMPLIANT, PRIMARY AND SECONDARY CHECKS, INDEXED FOR OXYGEN. PROVIDE ONE QUICK DETACH LATCH VALVE ASSEMBLY FOR EACH DISS OUTLET AND TURN OVER TO OWNER.	
AE	ANETHESIA EVAC OUTLET	ANESTHESIA EVAC OUTLET SHALL BE SUPERA EVACUATION CEILING OUTLET, FOR ANESTHESIA EVAC. CEILING MOUNTED OUTLET WITH DISTRIBUTION TYPE CONNECTION. OWNER FURNISHED CONTRACTOR INSTALLED DROP HOSE, END FITTINGS AND LENGTH OF HOSE AS SELECTED BY OWNER.	
SUAE	SCAVENGER UNIT	SCAVENGER UNIT, ANESTHESIA EVACUATION SHALL BE SUPERA ACTIVE EVACUATION SYSTEM MODEL EVC3000. PROVIDE SYSTEM COMPLETED, INCLUDING POWER UNIT, VENT PIPE, DISTRIBUTION PIPING, PIPING CONNECTIONS, HOSE AND HOSE DROPS (AT EACH LOCATION), SCAVENGING INTERFACE, GAUGE AND TUBING. 120V/1PH, FLA 0.30, 50/60 HZ. CONNECTION INLET AND OUTLET SIZE: 2".	
MGAB	MEDICAL GAS ALARM BUZZER	MEDICAL GAS ALARM BUZZER SHALL BE AMICO NO. M2-REM-AL-NEMA, MEDICAL ALARM BUZZER, OXYGEN SENSORS 110V POWER, PROVIDE TRANSFORMER.	
MGVB-1	MEDICAL GAS VALVE BOX	MEDICAL GAS VALVE BOX SHALL BE AMICO NO. VBU-M05 WITH W-ISO-G-05, MEDICAL VALVE BOX, SINGLE GAS, LABELED FOR OXYGEN SERVICE, SHUT-OFF VALVE AND GAUGE, SECTION ISOLATION VALVE WITH GAUGE PORT AND PRE-ATTACHED EXTENSIONS, 3-PIECE, FULL PORT BALL VALVE.	

SHOCK ARRESTOR TABLE

TAG	PDI WH201 DESIGNATION	FIXTURE UNITS	SELECTION BASED ON		REMARKS
			MANUFACTURER	MODEL NUMBER	
SA#1	AA	1-3	SIOUX CHIEF	660	NOTE 1
SA#2	A	4-11	SIOUX CHIEF	652-A	NOTE 1
SA#3	B	12-32	SIOUX CHIEF	653-B	NOTE 1
SA#4	C	33-60	SIOUX CHIEF	654-C	NOTE 1
SA#5	D	61-113	SIOUX CHIEF	655-D	NOTE 1

NOTES:
1. INSTALL ARRESTORS PER PDI WH201 AND MANUFACTURERS REQUIREMENTS.

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COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

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PLUMBING SCHEDULES

REV #	DATE	COMMENTS
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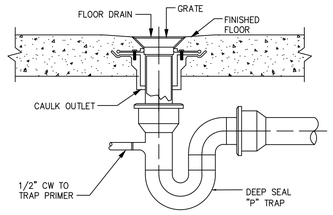
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DATE: 07/18/22

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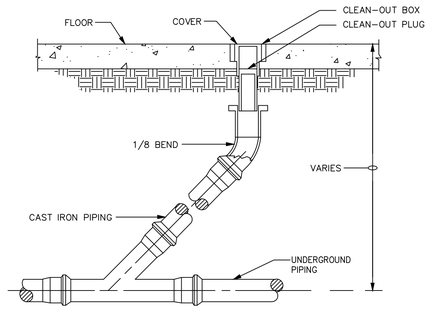
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1 TYPICAL FLOOR DRAIN DETAIL

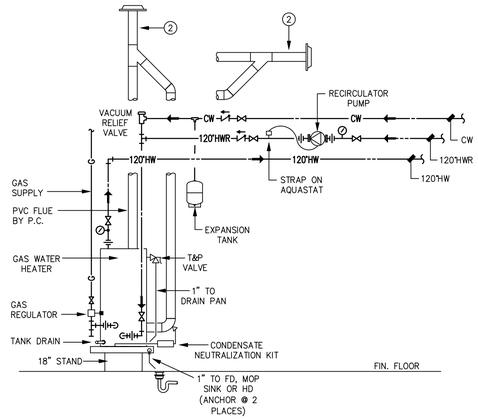
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NOTE:
P.C. SHALL PROVIDE TRAP GUARD AT DRAINS NOT WASHED BY A HOSE BIBB. TRAP GUARD = ZURN #Z1072. PROVIDE TRAP PRIMER IF REQUIRED BY AHJ. PRIMER = ZURN MODEL #Z1022 OR APPROVED EQUAL.



2 FLOOR CLEAN-OUT DETAIL

SCALE: NONE



3 GAS WATER HEATER

SCALE: NONE

NOTES:
1. DRAWINGS FOR SCHEMATIC PURPOSES ONLY. ALL VALVES & EQUIPMENT MUST BE INSTALLED PER MANUFACTURERS INSTRUCTIONS.
2. SEE PLANS FOR CONCENTRIC VENT LOCATION.

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PLUMBING SCHEDULES

REV #	DATE	COMMENTS
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REVISION:	REVISION:	REVISION:	REVISION:

REVIEWS

INITIALS	

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PROJECT NO.: 22018
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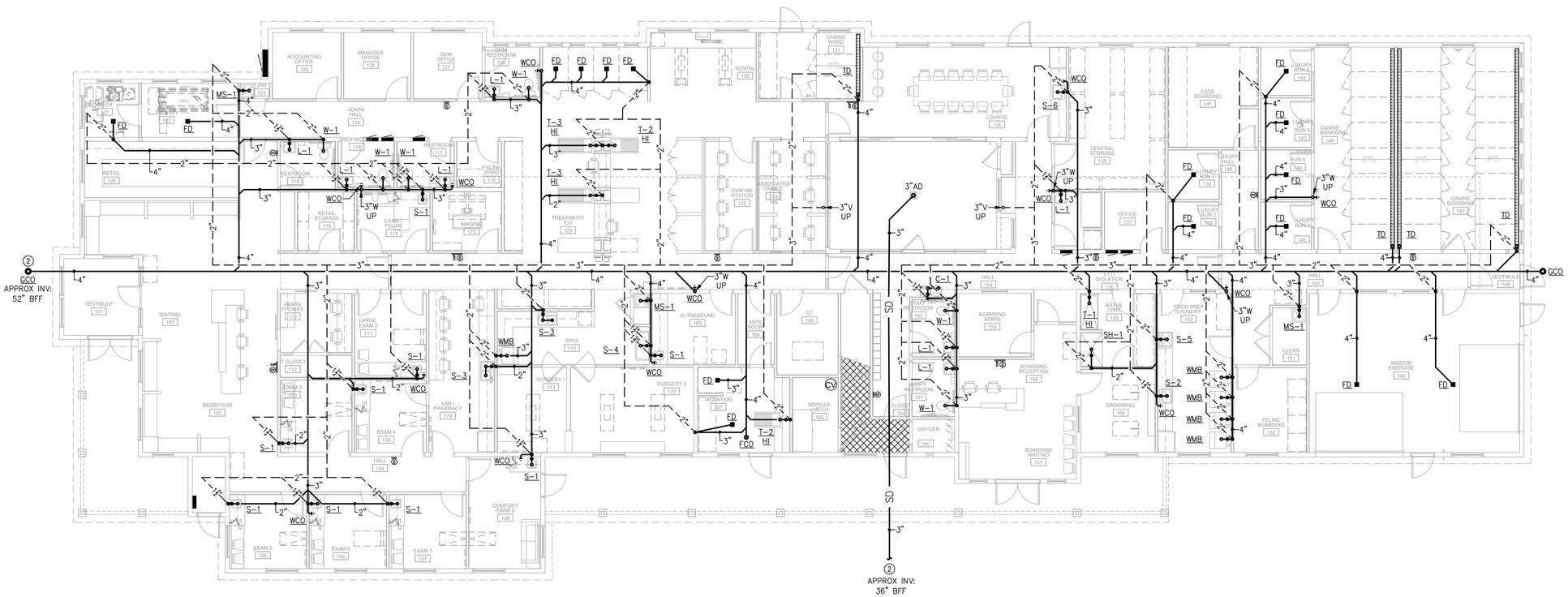
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3 OF 8

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NOTES THIS SHEET

1. SEE SHEETS P001-003 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.
2. PLUMBING CONTRACTOR SHALL TIE NEW SANITARY SEWER INTO CIVIL TAP. FIELD VERIFY EXACT LOCATION, INVERT ELEVATION AND FLOW DIRECTION.
3. PLUMBING CONTRACTOR SHALL TIE NEW STORM DRAIN INTO CIVIL TAP. FIELD VERIFY EXACT LOCATION, INVERT ELEVATION AND FLOW DIRECTION.



1 MAIN FLOOR PLAN - WASTE

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

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2497 North Landing Road
Virgina Beach, Virginia 23456
Brian Watson, DVM

MAIN FLOOR PLAN - WASTE

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PROJECT NO.: 22018
DRAWN: CLS
DATE: 07/18/22

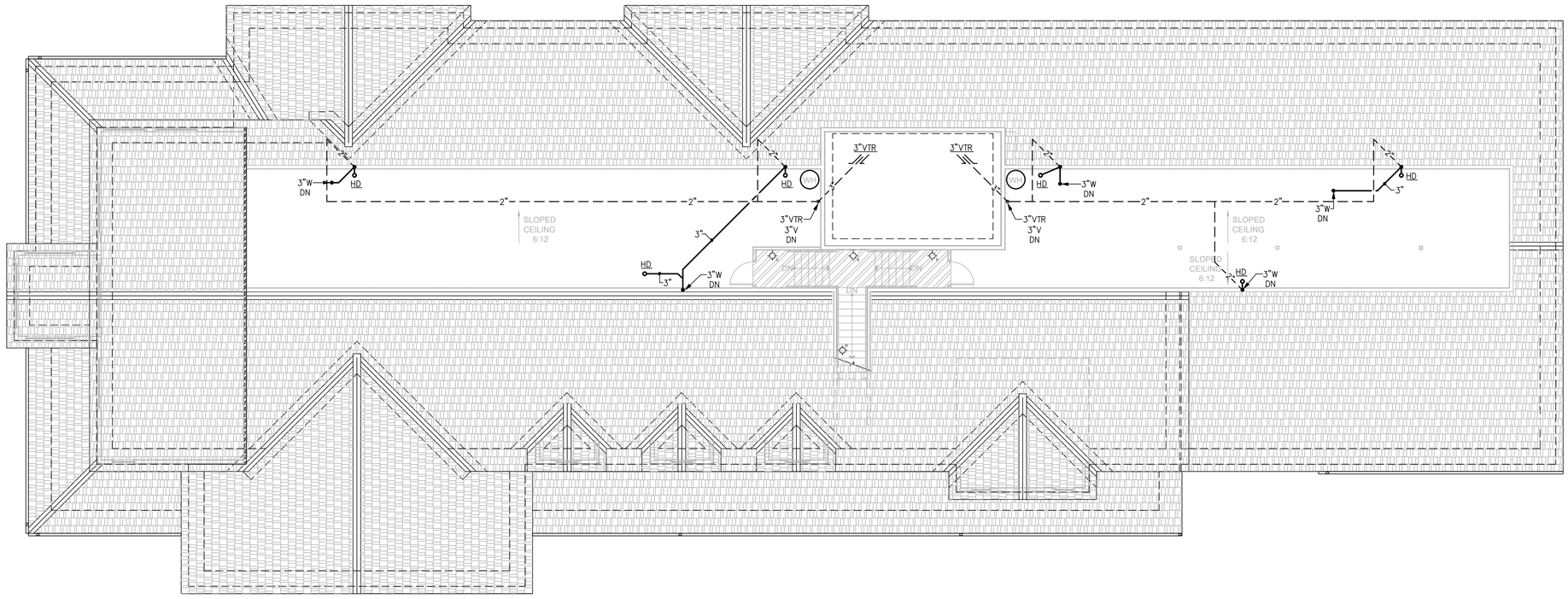
P101

4 OF 8

Save Date: July 14, 2022 - 6:14 PM - Chereet
Plot Date: July 14, 2022 - 6:18 PM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018P101_MAIN FLOOR PLAN - WASTE.dwg

NOTES THIS SHEET

1. SEE SHEETS P001-003 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.



1 UPPER FLOOR PLAN – WASTE

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

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UPPER FLOOR PLAN - WASTE

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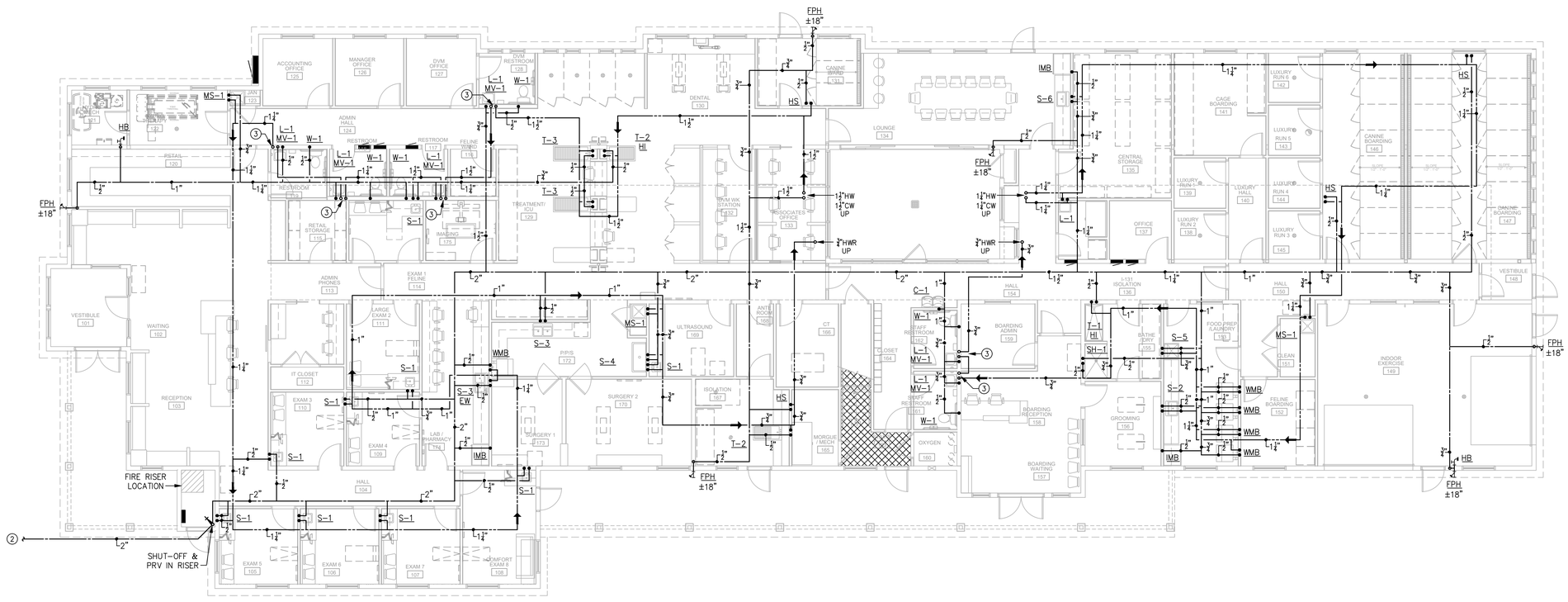
P102

5 OF 8

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Plot Date: July 14, 2022 - 6:18 PM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018P102_UPPER FLOOR PLAN - WASTE.dwg

NOTES THIS SHEET

1. SEE SHEETS P001–003 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.
2. TIE NEW 1½" CW LINE INTO CIVIL PROVIDED TAP, METER AND BACKFLOW. FIELD VERIFY EXACT LOCATIONS, INVERT ELEVATION AND FLOW DIRECTION.
3. ROUTE HW DN IN WALL TO LAVATORY HW SUPPLY. PROVIDE TAP AND TURN BACK UP TO ABOVE CEILING.



1 MAIN FLOOR PLAN – WATER
SCALE: 1/8" = 1'–0"

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MAIN FLOOR PLAN - WATER

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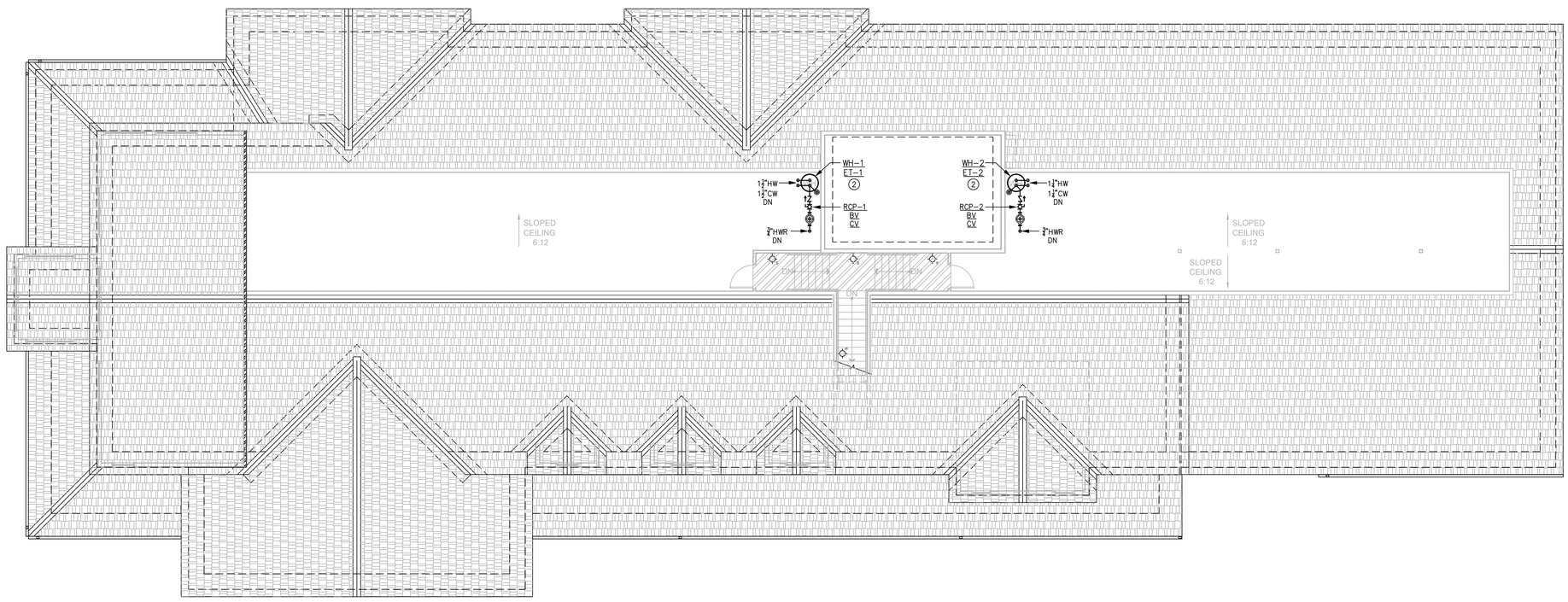
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6 OF 8

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NOTES THIS SHEET

1. SEE SHEETS P001–003 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.
2. MOUNT WATER HEATER ON 18" STAND. PROVIDE DRAIN PAN. ROUTE DRAIN PAN DRAIN TO HUB DRAIN WITH AIR GAP.



1 UPPER FLOOR PLAN – WATER

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

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UPPER FLOOR PLAN - WATER

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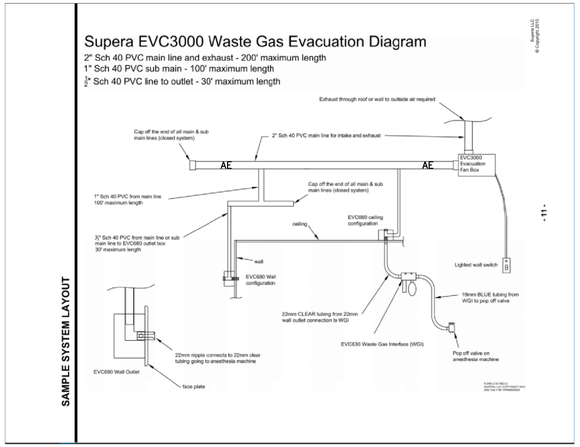
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P202

7 OF 8

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Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018P202_UPPER FLOOR PLAN - WATER.dwg

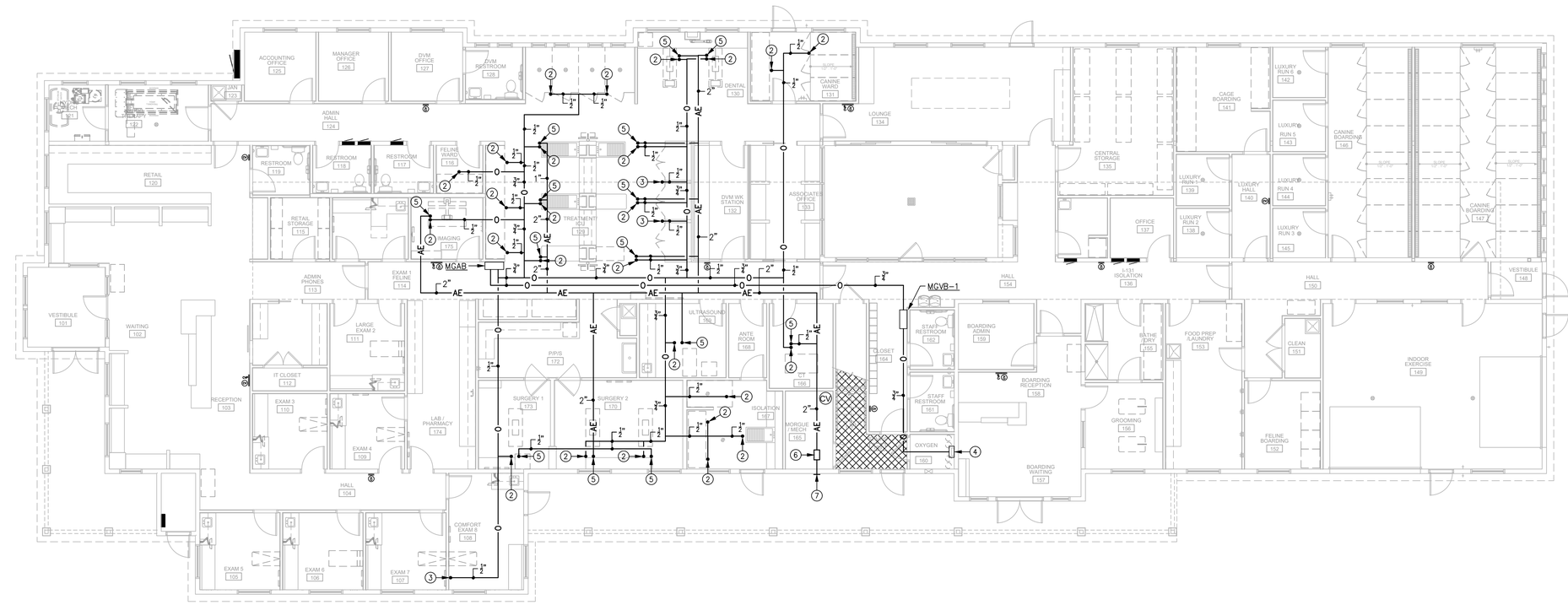


MEDICAL GAS NOTES:

1. SEE SHEETS P001–003 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.
2. ALL EQUIPMENT, PIPING, INSTALLATION, AND TESTING OF THE MEDICAL GAS SHALL COMPLY WITH NFPA 99 (2004 EDITION), EXCEPT AS NOTED, AND ALL STATE AND LOCAL CODES AND/OR ORDINANCES.
3. ALL MEDICAL GAS STORAGE SYSTEMS SHOWN ON THESE PLANS SHALL BE INSTALLED PER NATIONAL FIRE PROTECTION ASSOCIATION NFPA 55 STANDARD 2004 EDITION.
4. MEDICAL GAS MAIN LINE VALVE, PRESSURE GAUGE AND PRESSURE SWITCH SHALL BE LOCATED IMMEDIATELY DOWN STREAM OF THE MAIN SOURCE VALVES PER NFPA 99.
5. ALL MEDICAL GAS MAIN LINES SHALL BE SIZED PER NATIONAL FIRE PROTECTION ASSOCIATION 99 STANDARD 2004 EDITION.
6. PIPING LAYOUT IS DIAGRAMMATIC ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION AND COORDINATING ACTUAL LOCATION WITH ALL OTHER TRADES.
7. RECOMMENDED INSTALLATION HEIGHT OF WALL MOUNTED COMPONENTS IS 60" FROM THE CENTER LINE OF THE COMPONENT TO THE FINISHED FLOOR.
8. PIPE DROPS TO MEDICAL GAS SHALL BE ¾" NOMINAL FOR PRESSURE GASES.
9. ALL WALL PENETRATIONS SHALL BE FIRE STOPPED AS REQUIRED TO PRESERVE THE FIRE RESISTANCE RATING OF THE PENETRATED ASSEMBLY.

NOTES THIS SHEET

1. SEE SHEETS P001–003 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.
2. ¼" CEILING MOUNTED O2 OUTLET WITH SHUT–OFF PER NFPA STANDARDS. COORDINATE EXACT LOCATION WITH ARCHITECTURAL.
3. ¼" WALL MOUNTED O2W OUTLET WITH SHUT–OFF PER NFPA STANDARDS. COORDINATE EXACT LOCATION WITH ARCHITECTURAL.
4. OXYGEN GAS MANIFOLD, OM. TIE ¾" OXYGEN INTO MANIFOLD PER NFPA 99. PROVIDE ALL REQUIRED VALVES AND CONTROLS PER NFPA 99. ROUTE OXYGEN LINE ABOVE CEILING PER NFPA 99.
5. OWNER PROVIDED ¾" ANESTHESIA EVACUATION DROP WITH SUPERA EVC680 CEILING/WALL CONFIGURATION, AND EVC630 WASTE GAS INTERFACE. PROVIDE POP OFF VALVE ON ANESTHESIA MACHINE. SEE SUPERA WASTE GAS EVACUATION DIAGRAM THIS SHEET. COORDINATE DROP & EVC680 LOCATIONS WITH OWNER/ARCHITECT PRIOR TO ROUGH–IN.
6. OWNER PROVIDED SCAVENGER UNIT, SUAE, MOUNTED ABOVE CEILING. COORDINATE LOCATION WITH OWNER/ARCHITECT PRIOR TO ROUGH–IN. SCAVENGER UNIT SHALL BE CONTROLLED THROUGH A LIGHTED WALL SWITCH TO INDICATE THE DEVICE IS POWERED ON.
7. 2" SCHEDULE 40 PVC EXHAUST THROUGH WALL WITH WALL LOUVER. COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT PRIOR TO ROUGH–IN.



1 MAIN FLOOR PLAN – MED GAS

SCALE: 1/8" = 1'–0"

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MAIN FLOOR PLAN - MED GAS

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P301

8 OF 8

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MECHANICAL NOTES

1. ALL MECHANICAL SYSTEMS AND COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE 2018 VIRGINIA BUILDING CODES INCLUDING MECHANICAL, FIRE, FUEL GAS AND ENERGY CODES AS ARE APPLICABLE TO THE PROJECT IN ADDITION TO ALL NATIONAL FIRE CODES AND LOCAL AHJ AND/OR UTILITY REQUIREMENTS WHICH APPLY.
2. ALL MECHANICAL EQUIPMENT SHALL BE CLOSELY COORDINATED WITH STRUCTURAL SYSTEM, PLUMBING SYSTEM AND ELECTRICAL SYSTEM TO ENSURE PROPER COMPLIANCE WITH CODES AND ENSURE THAT ALL TRADES WILL NOT CONFLICT WITH EACH OTHER.
3. DO NOT SCALE DRAWINGS, DRAWINGS ARE DIAGRAMMATIC. SCALE WHERE INDICATED IS FOR REFERENCE ONLY.
4. PROVIDE TWO COPIES OF INSTALLATION, OPERATION, AND MAINTENANCE MANUALS TO THE OWNER WITHIN 15 CALENDAR DAYS OF ACCEPTANCE OF THE SYSTEM.
5. PROVIDE A ONE YEAR WARRANTY FOR ALL WORK PERFORMED BEGINNING ON THE DAY THE SYSTEM IS COMPLETELY OPERATIONAL AND ACCEPTABLE BY THE OWNER.
6. MECHANICAL MECHANICAL CONTRACTOR SHALL HAVE A FULL TEST AND BALANCE REPORT FOR REVIEW/APPROVAL. MECHANICAL CONTRACTOR SHALL PROVIDE A CERTIFIED TEST AND BALANCE REPORT FOR REVIEW PRIOR TO CERTIFICATE OF OCCUPANCY. SEE MECHANICAL SPECIFICATIONS FOR REQUIREMENTS.
7. THE GENERAL CONTRACTOR SHALL RETAIN THE SERVICES OF AN INDEPENDENT TEST AND BALANCE AGENCY THAT IS INDEPENDENT OF ANY CONTRACTOR, SUBCONTRACTOR, OR MANUFACTURER TO PERFORM THE TESTING AND BALANCING AND PREPARE REPORTS TO THE GENERAL CONTRACTOR. THE INDEPENDENT TEST AND BALANCE AGENCY SHALL BE A CERTIFIED MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU. RECORD DATA ON STANDARD AABC OR NEBB FORMS. MECHANICAL CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR TO ENSURE THAT ANY AND ALL REQUIRED AIR BALANCE TESTING PROCEDURE COSTS ARE INCORPORATED AND COVERED BY CONTRACTOR'S BASE BID.

INSTALLATION/MATERIALS NOTES

1. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID INTERFERENCE.
2. PENETRATIONS OF NONRATED WALLS, PARTITIONS AND FLOORS OF NON– COMBUSTIBLE CONSTRUCTION SHALL BE FIRESTOPPED WITH NONCOMBUSTIBLE MATERIALS. PENETRATIONS OF NONRATED WALLS, PARTITIONS AND FLOOR OF COMBUSTIBLE CONSTRUCTION SHALL BE FIRESTOPPED WITH MATERIALS EQUIVALENT TO TWO INCHES OF WOOD. FIRESTOPPING SHALL COMPLY WITH ASTM E–814.
3. MECHANICAL CONTRACTOR SHALL PROVIDE FIRE DAMPERS WHERE DUCTWORK PENETRATES ANY/ALL FIRE RATED WALLS/CEILINGS/PARTITIONS WHETHER FIRE DAMPERS INDICATED ON DRAWINGS OR NOT. COORDINATE WITH ARCH. DWGS FOR FIRE RATED LOCATIONS.
4. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND HVAC EQUIPMENT FOR MAINTENANCE AND FILTER REMOVAL

   MECHANICAL MECHANICAL CONTRACTOR SHALL VERIFY LOCATION OF ROOF PENETRATIONS FOR RELIEF HOODS AND OUTSIDE AIR HOODS WITH ARCHITECT & OWNER PRIOR TO INSTALLATION.
5. MECHANICAL CONTRACTOR SHALL COORDINATE ANY AND ALL PAINTING OR FINISHING REQUIREMENTS WITH ARCHITECT PRIOR TO PURCHASING ANY MATERIALS.
6. MECHANICAL MECHANICAL CONTRACTOR SHALL LOCATE EXHAUST FANS, OUTLETS, AND GAS FLUES A MINIMUM OF 10'–0" FROM ANY OUTSIDE AIR INTAKE.
7. MECHANICAL MECHANICAL CONTRACTOR SHALL LOCATE ALL ROOF MOUNTED EQUIPMENT A MINIMUM OF 10'–0" FROM EDGE OF ROOF AND/OR PARAPET AS REQUIRED BY CODE REGARDLESS OF LOCATIONS INDICATED ON PLANS. COORDINATE INSTALLATION LOCATIONS WITH ARCHITECTURAL AND STRUCTURAL PRIOR TO ROUGHING–IN.
8. ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED IN A WATERPROOF MANNER.
9. COORDINATE ROOFTOP EQUIPMENT WITH BUILDING STRUCTURE AND WORK BY OTHERS TO DETERMINE EXACT EQUIPMENT INSTALLATION LOCATION.
10. SPACE ABOVE CEILING IS LIMITED. MECHANICAL CONTRACTOR TO FIELD VERIFY EXACT DUCTWORK INSTALLATION LOCATION AND ROUTING PRIOR TO DUCTWORK FABRICATION.

SHEETMETAL/INSULATION NOTES

1. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS. ALL DUCT DIMENSIONS ON PLANS ARE SHEET METAL SIZE. DUCT DIMENSIONS HAVE BEEN INCREASED IN SIZE TO ALLOW FOR LINER WHERE REQUIRED, SIZES LISTED ARE O.D., DUCT FABRICATION DIMENSIONS. SPIRAL DUCTWORK SHALL BE DOUBLE WALL TYPE. ALL DUCT RUNOUTS TO GRD AIR TERMINAL DEVICES TO BE PROVIDED AS ROUND SPIRAL DUCT WITH EXTERNAL WRAP. ALL DUCT RUNOUTS TO BE SIZED PER GRD AIR TERMINAL NECK SIZE AS INDICATED ON GRD SCHEDULE. COORDINATE ALL DUCT SIZES PRIOR TO BIDDING, NO EXCEPTIONS. SEE MECHANICAL SPECIFICATIONS (DUCTWORK INSULATION SCHEDULE) FOR REQUIREMENTS.
2. ALL RECTANGULAR SUPPLY AND RETURN DUCTS SHALL BE LINED WITH 1" THICK DUCT LINER FOR THE FIRST 10FT FROM THE UNIT OR INDICATED ON PLANS. LINED DUCTWORK SHALL BE LABELED AS –"X–" (L). DUCT DIMENSIONS HAVE BEEN INCREASED IN SIZE TO ALLOW FOR LINER WHERE REQUIRED. ALL WRAPPED DUCTS SHALL BE WRAPPED WITH 2" THICK DUCT INSULATION. WRAPPED DUCTS SHALL BE LABELED AS –"X –" (WR).
3. OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 2" FIBERGLASS DUCT WRAP WITH VAPOR BARRIER IN LIEU OF DUCT LINER.
4. FLEXIBLE DUCT SHALL BE INSULATED FLEXMASTER TYPE 9M (OR EQUAL). MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE A MAXIMUM OF 4'–0".
5. PORTIONS OF DUCTWORK ABOVE CEILING VISIBLE THROUGH GRILLES, DIFFUSERS, AND REGISTERS SHALL HAVE INTERIOR AND EXTERIOR OF DUCTWORK PAINTED FLAT BLACK. IF EXTERIOR OF DUCTWORK IS INSULATED, WRAP VISIBLE INSULATION WITH FLAT BLACK VINYL WRAP.
6. ALL EXPOSED DUCTWORK TO BE PROVIDED WITH PAINT GRIP AND PAINTED TO MATCH WITH STRUCTURE OR COLOR SELECTED BY ARCHITECT, PAINTING BY GENERAL CONTRACTOR. ALL EXPOSED WRAPPED DUCTWORK TO BE PROVIDED WITH CONTINUOUS WHITE VINYL WRAP.
7. UNLESS OTHERWISE NOTED, BRANCH TAKE–OFF DUCTS SHALL BE EQUAL TO NECK SIZE OF THE GRILLE/DIFFUSER/REGISTER.

CONTROLS NOTES

1. ANY DEVICE REQUIRING A THERMOSTAT FOR CONTROL SHALL BE FURNISHED WITH A THERMOSTAT WHETHER INDICATED ON THE PLANS OR NOT. LOCATE ALL THERMOSTATS AND SWITCHES ±4'–0" ABOVE FINISH FLOOR. VERIFY EXACT LOCATION OF THERMOSTATS WITH THE OWNER/ARCHITECT BEFORE ROUGHING–IN. PROVIDE THERMOSTAT WITH INSULATED SUB–BASE OPTION WHERE INSTALLED ON EXTERIOR WALL. PROVIDE THERMOSTAT WITH WATER RESISTANT OPTION WHERE USED IN WET ENVIRONMENT AREA.
2. PROVIDE MAGNETIC MOTOR STARTER WITH HAND–OFF–AUTO (H.O.A) SELECTOR SWITCH FOR EACH MOTOR SPECIFIED TO OPERATE AT 200 VOLTS OR HIGHER. PROVIDE MANUAL STARTER WITH HAND–OFF–AUTO (H.O.A) SELECTOR SWITCH FOR EACH MOTOR SPECIFIED TO OPERATE AT 120 VOLTS. ALL EQUIPMENT SUPPLIED WITH INTEGRAL STARTERS SHALL BE PROVIDED WITH ADDITIONAL SEPARATE DISCONNECT BY ELECTRICAL CONTRACTOR, NO EXCEPTIONS. COORDINATE EQUIPMENT DISCONNECTS WITH ELECTRICAL CONTRACTOR.
3. DUCT MOUNTED SMOKE DETECTORS SHALL BE WIRED TO SUPERVISORY INDICATOR DEVICES TO MEET NFPA 72 REQUIREMENTS. EACH DEVICE MUST BE PERMANENTLY LABELED TO ACCURATELY IDENTIFY THE UNIT SERVED TO MEET NFPA 72 REQUIREMENTS. SEE PLANS FOR INFORMATION.
4. ALL CONTROL VOLTAGE WIRING IN EXPOSED AREAS TO BE IN RIGID CONDUIT. ALL CONTROL VOLTAGE INSTALLED WITHIN A PLENUM RATED CEILING SHALL UTILIZE PLENUM RATED CABLE OR BE INSTALLED IN PLENUM RATED RIGID CONDUIT.
5. COORDINATE THE EXACT LOCATION OF ALL THERMOSTATS WITH FINAL FURNITURE LAYOUT, EQUIPMENT LAYOUT, ARCH AND OWNERS REPRESENTATIVES.

PIPING NOTES

1. PROVIDE UNIONS, FLANGES OR COUPLINGS AT CONNECTION TO ALL VALVES AND EQUIPMENT. DO NOT USE DIRECT WELDED OR THREADED CONNECTIONS TO VALVES, EQUIPMENT OR OTHER APPARATUS.
2. PROVIDE NON–CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
3. ALL VALVES AND SPECIALTIES SHALL BE LINE SIZE UNLESS NOTED OTHERWISE, USING ECCENTRIC REDUCERS ON PUMP SUCTION AND AUTOMATIC VALVES AND CONCENTRIC REDUCERS ON PUMP DISCHARGE.
4. ALL PIPING BELOW ROOF SHALL BE SUPPORTED WITH CARBON STEEL, ADJUSTABLE, CLEVIS HANGERS AT 10'–0" ON CENTER. ADDITIONAL HANGERS SHALL BE PROVIDE AS REQUIRED TO PREVENT WEIGHT OF EQUIPMENT BEING PLACED ON EQUIPMENT. PROVIDE RIGID INSULATION AND SHEET METAL PIPE SHIELDS AT HANGER LOCATIONS.
5. EXTEND ALL DRAIN LINES TO THE NEAREST FLOOR DRAIN OR AS INDICATED ON PLANS. COORDINATE DISCHARGE REQUIREMENTS WITH LOCAL AHJ PRIOR TO ROUGHING–IN.
6. CONDENSATE DRAIN PIPING, TRAPS, AND FITTINGS SHALL BE COPPER TYPE "L", SCHEDULE 40 PVC PIPE AND FITTINGS SHALL BE ACCEPTABLE FOR PIPE INSTALLED ON ROOF ONLY. DRAINS FROM HVAC EQUIPMENT SHALL BE TRAPPED. TERMINATE ROOFTOP UNIT DRAINS ON A CONCRETE SPLASHBLOCK.
7. ALL REFRIGERANT PIPE SHALL BE NITROGENIZED ACR COPPER TUBE AND INSULATED WITH 1" ARMAFLEX.

MECHANICAL LEGEND

SYMBOLS (NOT ALL SYMBOLS SHOWN ARE USED)

- SUPPLY AIR DUCT
- RETURN AIR DUCT
- EXHAUST AIR DUCT
- SUPPLY DUCT TURNING UP
- RETURN/EXHAUST DUCT TURNING UP
- SUPPLY DUCT TURNING DOWN
- RETURN/EXHAUST DUCT TURNING DOWN
- R — RISE IN DUCT
- D — DROP IN DUCT
- TRANSITION IN DUCT, SQUARE TO SQUARE
- DUCT ROUTED UP/DOWN
- TRANSITION IN DUCT, SQUARE TO ROUND
- DUCT CAPPED AND SEALED
- DUCTWORK WITH INTERNAL LINER (X"LINED)
- DUCTWORK TRANSITION FROM HARD ROUND TO FLEXIBLE
- SQUARE THROAT DUCT ELBOW WITH TURNING VANES
- SQUARE THROAT DUCT ELBOW WITHOUT TURNING VANES
- FULL RADIUS ELBOW
- FLEXIBLE DUCT CONNECTION
- 45 DEGREE TAP
- CONICAL TAP
- SPIN–IN FITTING W/ VOLUME DAMPER & FLEXIBLE DUCT
- ROUND FLEXIBLE DUCT
- VOLUME BALANCING DAMPER
- BOTTOM REGISTER
- SQUARE–TO–ROUND BRANCH DUCT TAKE–OFF
- TRANSITION
- TEE WITH TURNING VANES AND SPLITTER DAMPER
- SQUARE ELBOW WITH TURNING VANES
- S.A. CFM / R.A. CFM / E.A. CFM — SEE AIR DISTRIBUTION SCHEDULE AIR QUANTITY REQUIRED
- PIPE UP
- PIPE DOWN
- VALVE IN VERTICAL
- G — GAS PIPING ON ROOF, SIZED PER PLANS
- G — GAS PIPING BELOW ROOF, SIZED PER PLANS
- CD — CONDENSATE DRAIN PIPING
- RS — REFRIGERANT SUCTION LINE
- RL — REFRIGERANT LIQUID LINE
- HG — REFRIGERANT HOT GAS LINE
- CONNECT NEW TO EXISTING
- XX / XXX — THROUGH PLAN SECTION
- ACCESS DOOR/PANEL
- 3" MIN — EQUIPMENT ELECTRICAL ACCESS WITH SERVICE CLEARANCE OUTLINE

SYMBOLS (NOT ALL SYMBOLS SHOWN ARE USED)

- SUPPLY AIR DIFFUSER
- RETURN AIR DIFFUSER
- EXHAUST AIR DIFFUSER
- SUPPLY AIR SPIRAL DUCT DIFFUSER
- SUPPLY AIR SPIRAL DUCT DIFFUSER
- U — 1" DOOR UNDERCUT, COORD /W G.C. & ARCH
- T — WALL MOUNTED THERMOSTAT
- KE — KITCHEN HOOD MANUAL ACTUATION DEVICE
- P — WALL MOUNTED PRESSURE CONTROLLER
- 120V M — 120V/1ø MOTOR OPERATED DAMPER
- SD — DUCT MOUNTED SMOKE DETECTOR
- SPLITTER DAMPER
- ELECTRIC WALL HEATER /W INTEGRAL THERMOSTAT
- IN–LINE EXHAUST FAN
- CEILING EXHAUST FAN
- SPLIT AIR HANDLING UNIT (HORIZONTAL)
- SPLIT SYSTEM OUTDOOR UNIT
- ERV–# — ENERGY RECOVERY VENTILATOR (ERV)
- MINI–SPLIT SYSTEM OUTDOOR UNIT
- MINI–SPLIT SYSTEM INDOOR WALL–MOUNTED UNIT
- CEILING MOUNTED FAN FILTER UNIT
- EQUIPMENT CLEARANCES, TYPICAL
- X / XXX — ENLARGED PLAN SHEET REFERENCE

ABBREVIATIONS (NOT ALL ABBREVIATIONS SHOWN ARE USED)

AHU	AIR HANDLING UNIT
AC	AIR CURTAIN
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
ATC	AUTOMATIC TEMPERATURE CONTROLS
BC	BRANCH CONROL BOX
BE	BOTTOM ELEVATION
BHP	BRAKE HORSE POWER
BTUH	BRITISH THERMAL UNITS PER HOUR
CUH	CABINET UNIT HEATER
CC	COOLING COIL
CD	CONDENSATE DRAIN LINE
CL	CENTERLINE
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
CHWS/R	CHILLED WATER SUPPLY/RETURN
CW	CITY WATER (DOMESTIC)
CP	CONDENSATE PUMP
D	DRAIN
DB	DRY BULB TEMPERATURE
DIA, ø	DIAMETER
DN	DOWN
DWS	DOUBLE WALL SPIRAL DUCTWORK
DWG	DRAWING
EA	EXHAUST AIR
EAD	EXHAUST AIR DAMPER
EDP	EMERGENCY DRIP PAN
EG	EXISTING GAS PIPING
(E)	EXISTING
(ER)	EXISTING RELOCATED
(ERR)	EXISTING REMOVED AND RELOCATED
ESP	EXTERNAL STATIC PRESSURE
EF	EXHAUST FAN
FCU	FAN COIL UNIT
F	FAN
FC	FLEXIBLE CONNECTION
G	GRILLE
GF	GAS FURNACE
GL	GLYCOL PIPING (BY OTHERS)
HC	HEATING COIL
HG	HOT GAS PIPING
HP	HORSEPOWER
HWS/R	HEATING HOT WATER SUPPLY/RETURN
KEF	KITCHEN EXHAUST FAN
(L)	LINED DUCTWORK
LPS	LOW PRESSURE STEAM
MUW	MAKE UP WATER
MAX	MAXIMUM
MA	MIXED AIR
MBH	ONE THOUSAND BTUH
MD	MOTORIZED DAMPER
MTD	MOUNTED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAD	OUTSIDE AIR DAMPER
OC	ON CENTER
OSD	OPEN SITE DRAIN
PC	PUMPED CONDENSATE
PCR	PUMPED CONDENSATE RETURN
PD	PRESSURE DROP
PH	PHASE
PMU	PAD MOUNTED UNIT
RA	RETURN AIR
RAD	RETURN AIR DAMPER
RAG	RETURN AIR GRILLE
(R)	REMOVE
R	RETURN FAN
RS/RL	REFRIGERANT SUCTION/LIQUID LINES
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SENS	SENSIBLE
TD	TRANSFER DUCT
TYP	TYPICAL
TOS	TOP OF SLAB
UH	UNIT HEATER
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VF	VENTILATION FAN
VRV	VARIABLE REFRIG. VOLUME
V	VOLTS
VD	VOLUME DAMPER
VIF	VERIFY IN FIELD
W/	WITH
WMS	WIRE MESH SCREEN
WO	WALL OPENING
(WR)	WRAPPED DUCTWORK

MECHANICAL DRAWING SCHEDULE

DRAWING NUMBER	DESCRIPTION
M001	MECHANICAL LEGENDS & GENERAL NOTES
M002	MECHANICAL SPECIFICATIONS
M003	MECHANICAL SCHEDULES
M004	MECHANICAL SCHEDULES
M005	MECHANICAL CALCULATIONS
M006	MECHANICAL DETAILS
M007	MECHANICAL SECTIONS
M101	MAIN FLOOR PLAN – MECHANICAL
M102	UPPER FLOOR PLAN – MECHANICAL
M103	UPPER FLOOR PLAN – GAS PIPING
M201	MECHANICAL COMMISSIONING

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MECHANICAL LEGENDS & GENERAL NOTES

REV #	DATE	COMMENTS
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REVISION: / REVISION: / REVISION: / REVISION:

REVIEWS

INITIALS	

TEG
PROJECT NO.: 22018
DRAWN: DRH
DATE: 07/18/22

M001

1 OF 12

Save Date: July 18, 2022, 1:27 PM RyanH
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MECHANICAL SPECIFICATIONS

HVAC GENERAL
REFER TO ALL OTHER DRAWINGS AND SPECIFICATIONS, AND BE RESPONSIBLE FOR ALL APPLICABLE PROVISIONS THEREIN. FURNISH AND INSTALL ALL NECESSARY LABOR AND MATERIALS FOR A COMPLETE SYSTEM. ANY APPLIANCES OR MATERIALS OBVIOUSLY A PART OF THE SYSTEM AND NECESSARY FOR ITS PROPER OPERATION, ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN, SHALL BE FURNISHED AND INSTALLED AS IF CALLED FOR IN DETAIL. WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL CODES, NFPA 90A, AND THE BUILDING REGULATIONS. ATTAIN AND PAY FOR ALL REQUIRED PERMITS AND FEES. EQUIPMENT AND MATERIALS SHALL BE NEW UNLESS OTHERWISE SPECIFIED. MECHANICAL CONTRACTOR SHALL BE LICENSED TO HANDLE CFC REFRIGERANTS.

DRAWINGS ARE GENERALLY DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EVERY FITTING, OFFSET, DROP AND RISE OF RUNS, AND DETAIL. INSTALL DUCTS, EQUIPMENT, AND CONTROLS IN A NEAT, WORKMANLIKE MANNER AND IN ACCORDANCE WITH GOOD PRACTICE FOR A COMPLETE, WORKABLE INSTALLATION. AVOID CONFLICT WITH OTHER WORK; MAKE ADEQUATE PROVISIONS FOR PREVENTING NOISE AND VIBRATION. DRAWINGS INDICATE LOCATIONS OF FIXTURES, APPARATUS, DUCTWORK, AND PIPING; WHILE THESE ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE, IF IT IS NECESSARY TO CHANGE THE LOCATION OF SOME TO ACCOMMODATE BUILDING CONDITIONS, MAKE CHANGES WITHOUT ADDITIONAL COST TO THE OWNER AND AS APPROVED BY THE ARCHITECT. PROVIDE ADEQUATE ACCESS TO EQUIPMENT AND APPARATUS REQUIRING OPERATION, SERVICE, OR MAINTENANCE WITHIN THE LIFE OF THE SYSTEM. DO NOT RUN PIPING OR DUCTWORK, OR LOCATE EQUIPMENT (WITH RESPECT TO SWITCHBOARDS, PANEL BOARDS, POWER PANELS, MOTOR CONTROL CENTERS OR DRY TYPE TRANSFORMERS) WITHIN 42 INCHES IN FRONT OF EQUIPMENT, OVER EQUIPMENT, OR WITHIN 36 INCHES HORIZONTALLY OF SAME SPACE.

EXISTING CONDITIONS
CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE JOB CONDITIONS BEFORE SUBMITTING HIS PROPOSAL. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS AND SIZES OF ALL EXISTING UTILITY SERVICES PRIOR TO SUBMITTING HIS PROPOSAL. NO CONSIDERATION WILL BE GIVEN TO CLAIMS FOR EXTRA COST ARISING FROM CONTRACTOR'S FAILURE TO BE FULLY COGNIZANT OF JOB OR SITE CONDITIONS EXISTING AT TIME OF ACCEPTANCE OF BID

IF, DURING THIS INSPECTION, THE CONTRACTOR FINDS ANY OBSTRUCTION OR INTERFERENCE THAT MAY PROHIBIT THE PROPER INSTALLATION OF HIS WORK, HE IS TO MAKE IT KNOWN TO THE BUILDING MANAGEMENT AND/OR OWNER AND TENANT BEFORE AND AT THE TIME OF SUBMITTING HIS PROPOSAL.

BY SUBMISSION OF THE BID, IT IS UNDERSTOOD THAT SUCH INSPECTION HAS BEEN MADE AND INCLUDES ALL THE MATERIALS AND REQUIRED RELOCATION FOR ALL WORK.

ACTIVE SERVICES: WHEN ENCOUNTERED IN WORK, PROTECT, BRACE, OR SUPPORT EXISTING ACTIVE SEWERS, GAS, AND OTHER SERVICES REQUIRED FOR PROPER EXECUTION OF WORK. IF EXISTING ACTIVE SERVICES ARE ENCOUNTERED THAT REQUIRE RELOCATION, RELOCATE AS APPROVED. DO NOT PREVENT OR DISTURB OPERATION OF ACTIVE SERVICES THAT ARE TO REMAIN.

INACTIVE SERVICES: WHEN ENCOUNTERED IN WORK, REMOVE, CAP, OR PLUG INACTIVE SERVICES, AS INDICATED. OPENINGS IN THE DUCTWORK SHALL BE PATCHED WITH SHEET METAL, SEALED AIRTIGHT WITH DUCT SEALANT, AND RE-INSULATED.

INTERRUPTION OF SERVICES: WHERE WORK MAKES TEMPORARY SHUTDOWNS OF SERVICES UNAVOIDABLE, SHUT DOWN AT NIGHT, OR AT SUCH TIMES AS APPROVED BY OWNER AND THE BUILDING MANAGEMENT WHICH WILL CAUSE LEAST INTERFERENCE WITH ESTABLISHED OPERATING ROUTINE. ARRANGE WORK TO ASSURE THAT SERVICES WILL BE SHUT DOWN ONLY DURING TIME ACTUALLY REQUIRED TO MAKE NECESSARY CONNECTION TO EXISTING WORK.

WHERE EXISTING WALLS, CEILINGS, FLOORS, ETC., ARE CUT OR OTHERWISE DAMAGED DURING CONSTRUCTION, REPAIR ALL SURFACES TO THEIR ORIGINAL CONDITION.

COORDINATION
COORDINATE ALL WORK UNDER THIS DIVISION WITH THE WORK UNDER OTHER DIVISIONS. PROVIDE ADJUSTMENTS AS NECESSARY. EQUIPMENT, APPARATUS, DUCTWORK, PIPING, ETC., INSTALLED WITHOUT REGARD FOR THE SPEC REQUIREMENTS OR OTHER TRADES WILL BE REWORKED AT THE EXPENSE OF THE INSTALLING SUBCONTRACTOR IF IT CREATES AN UNNECESSARY HINDRANCE TO THE INSTALLATION OF ANOTHER TRADE'S WORK. ALL ITEMS MOUNTED OR BELOW THE CEILING, AND ANY ITEM PENETRATING THE CEILING, SHALL BE COORDINATED WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.

PROTECTION OF WORK DURING CONSTRUCTION
PROVIDE PROTECTIVE COVERS, SKIDS, PLUGS OR CAPS TO PROTECT EQUIPMENT AND MATERIALS FROM DAMAGE AND DETERIORATION DURING CONSTRUCTION. PROTECT EXPOSED COILS WITH PLYWOOD OR OTHER SUITABLE RIGID COVERS TO AVOID DAMAGE TO FINS.

CONTRACTOR SHALL TAKE PRECAUTIONS AGAINST DAMAGING OR DISRUPTING BUILDING SYSTEMS, WIRING OR CONTROL TUBING FOR ADJACENT TENANTS. ANY DAMAGE SHALL BE REPAIRED AT THE CONTRACTOR'S COST.

PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE. ANY DAMAGE SHALL BE REPAIRED USING THE SAME MATERIALS AT THE CONTRACTOR'S COST.

TEST AND BALANCE
TEST AND BALANCE HVAC AIR SYSTEMS TO WITHIN +10%, -5% OF DESIGN FLOW.

CHECK ALL FANS, INSTRUMENTATION DEVICES, CONTROL DEVICES, DAMPERS, ETC., FOR PROPER OPERATION AND CALIBRATION. REPORT DEFICIENCIES THAT CANNOT BE CORRECTED. MARK AND LOCK DAMPER AT THEIR PROPER POSITION. ADJUST FANS FOR THE CFM SHOWN ON THE FLOOR PLAN.

ADJUST, TEST AND CONFIRM DESIGN AIR FLOW RATES, PRESSURES, TEMPERATURES, AIR QUANTITIES, EQUIPMENT SPEED, AND MOTOR AMPERAGES FOR EACH SEGMENT BRANCH AND COMPONENT OF EACH SYSTEM.

VERIFY THAT DIFFUSER DISCHARGE PATTERNS HAVE BEEN PROPERLY SET. AIR FLOWS SHALL BE BALANCED WITH THE VOLUME DAMPERS INSTALLED IN BRANCH DUCTWORK. OPPOSED BLADE DAMPERS (OBD) IN THE DIFFUSERS SHALL BE SET IN THE FULLY OPEN POSITION DURING BALANCING. AFTER THE MAIN SYSTEM IS BALANCED WITHIN LIMITS SPECIFIED ABOVE, OBD CAN BE USED FOR MINOR ADJUSTMENT.

ADJUSTMENTS AND TESTS SHALL BE MADE UNDER SIMULATED MAXIMUM LOAD CONDITIONS.

THE GENERAL CONTRACTOR SHALL RETAIN THE SERVICES OF AN INDEPENDENT TEST AND BALANCE AGENCY THAT IS INDEPENDENT OF ANY CONTRACTOR, SUBCONTRACTOR, OR MANUFACTURER TO PERFORM THE TESTING AND BALANCING AND PREPARE REPORTS TO THE GENERAL CONTRACTOR. THE INDEPENDENT TEST AND BALANCE AGENCY SHALL BE A CERTIFIED MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU. RECORD DATA ON STANDARD AABC OR NEBB FORMS. MECHANICAL CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR TO ENSURE THAT ANY AND ALL REQUIRED AIR BALANCE TESTING PROCEDURE COSTS ARE INCORPORATED AND COVERED BY CONTRACTOR'S BASE BID.

THE TEST AND BALANCE AGENCY SHALL PROVIDE EQUIPMENT, PERSONNEL, AND A COPY OF THE TEST AND BALANCE REPORT AT THE ENGINEER'S FINAL INSPECTION FOR SPOT-CHECKING. ANY SYSTEM FOUND IMPROPERLY BALANCED OR NOT IN AGREEMENT WITH THE REPORT SHALL BE RE-BALANCED AND A REVISED REPORT SHALL BE SUBMITTED.

THE TEST AND BALANCE AGENCY SHALL PERFORM A "COMFORT" BALANCE 45 DAYS AFTER TENANT MOVES IN.

RECORD DRAWINGS
UPON COMPLETION OF PROJECT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF REPRODUCIBLE DRAWINGS REFLECTING THE "AS BUILT" CONDITION OF THE MECHANICAL SYSTEMS.

OPERATING AND MAINTENANCE MANUALS
MECHANICAL CONTRACTOR SHALL SUBMIT OPERATING AND MAINTENANCE MANUALS UPON COMPLETION OF THE PROJECT. MANUALS TO BE IN ACCORDANCE WITH C408.2.5.2 OF 2018 VIRGINIA ENERGY CONSERVATION CODE

GUARANTEE
MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AGAINST DEFECTS FOR ONE YEAR. PROVIDE ADDITIONAL FOUR YEARS WARRANTY ON ALL COMPRESSORS.

SLEEVES
SLEEVES SHALL BE PROVIDED WHERE PIPES PASS THROUGH WALLS, FLOORS, AND ROOFS; IRON PIPES PASSING THROUGH MASONRY WALL MAY BE BUILT INTO THE WALL. SLEEVES SHALL BE STANDARD WEIGHT STEEL PIPE, EXCEPT SLEEVES FOR CONCEALED PIPING THROUGH FLOORS NOT IN STRUCTURAL MEMBERS; THEY MAY BE 25 GAUGE GALVANIZED SHEET METAL. FLOOR SLEEVES FOR PIPING SHALL EXTEND FROM THE BOTTOM OF THE SLAB TO 2 INCHES ABOVE THE FINISHED FLOOR. WALL SLEEVES SHALL BE FULL THICKNESS OF WALLS. SEAL BETWEEN PIPING AND SLEEVE WITH FIRE-RATED CAULK AT ALL PENETRATIONS OF FIRE-RATED WALLS, PARTITIONS OR FLOORS. MAKE SLEEVES THROUGH OUTSIDE WALLS WATERTIGHT. CAULK BETWEEN UN-INSULATED PIPE AND SLEEVE. SIZE SLEEVES FOR INSULATED PIPES TO ALLOW FULL THICKNESS INSULATION.

ELECTRICAL WORK
ALL ELECTRICAL WORK AND INSTALLATION PROVIDED UNDER THIS DIVISION SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE AND THE REQUIREMENTS OF DIVISION 16. ALL POWER WIRING AND FINAL POWER CONNECTIONS TO THE SYSTEM SHALL BE PROVIDED UNDER DIVISION 16. CONTROL WIRING (120V AND LESS) SHALL BE PROVIDED UNDER DIVISION 15 AND EXTENDED FROM THE 120V POWER CIRCUITS INDICATED ON THE ELECTRICAL DRAWINGS. ALL WIRING FOR VOLTAGES HIGHER THAN 30 VOLTS SHALL BE DONE BY A LICENSED ELECTRICIAN. ALL ELECTRICAL CHARACTERISTICS SHALL BE TAKEN FROM THE ELECTRICAL DRAWINGS AND SPECIFICATIONS AND COORDINATED BEFORE EQUIPMENT IS ORDERED OR SUBMITTED. ALL WIRING IN THE CEILING PLENUM SHALL BE PLENUM-RATED CABLE OR IN CONDUIT.

EQUIPMENT IDENTIFICATION
PROVIDE LABELS FOR EACH EQUIPMENT, STARTER, AND CONTROL SWITCH. LABELS TO BE ENGRAVED, LAMINATED, BAKELITE NAMEPLATES WITH ¼ INCH HIGH WHITE CUT LETTERS; SECURE TO STARTER OR SWITCH.

EQUIPMENT, MATERIALS AND BID BASIS
SPECIFIED MANUFACTURER'S NAMES AND MODEL NUMBERS ARE FOR THE PURPOSE OF DESCRIBING TYPE, CAPACITY, FUNCTION, AND QUALITY OF EQUIPMENT AND MATERIALS TO BE USED. UNLESS "OR EQUAL" OR SPECIFICALLY STATED, BIDS SHALL BE BASED ON EQUIPMENT NAMES. CAPACITIES INDICATED TAKE PRECEDENCE OVER MODEL NUMBERS.

EQUIPMENT SUPPORT
SUPPORT ALL CEILING-MOUNTED EQUIPMENT, DUCTWORK, AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OF SUPPORTS AND EQUIPMENT, PROVIDE ADDITIONAL STEEL FRAMING.
THIS CONTRACTOR SHALL COORDINATE SUPPORTS WITH THE BUILDING MANAGEMENT AND SUBMIT THE METHOD OF SUPPORT FOR REVIEW TO THE BUILDING MANAGEMENT.

OPENINGS THROUGH ROOF
PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOF INTEGRITY OF THIS BUILDING AS REQUIRED BY THE REMOVAL AND/OR INSTALLATION OF PIPES, DUCTS, CONDUITS, AND EQUIPMENT. SUBMIT FOR REVIEW TO THE BUILDING MANAGEMENT.

VIBRATION ISOLATORS
VIBRATION ISOLATORS FOR FANS SHALL BE THE HANGER TYPE AND SHALL CONTAIN A STEEL SPRING AND 0.3" DEFLECTION NEOPRENE ELEMENT IN SERIES. THE NEOPRENE ELEMENT SHALL BE MOLDED WITH A ROD ISOLATION BUSHING THAT PASSES THROUGH THE HANGER BOX.

SPRING DIAMETERS AND HANGER BOX LOWER HOLE SIZES SHALL BE LARGE ENOUGH TO PERMIT THE HANGER ROD TO SWING THROUGH A 15 DEGREE ARC BEFORE CONTACTING THE HOLE AND SHORT CIRCUITING THE SPRING. SPRINGS SHALL HAVE A MINIMUM ADDITIONAL TRAVEL TO SOLID HEIGHT EQUAL TO 50% OF THE RATED DEFLECTION.

SUSPENDED EQUIPMENT SHALL BE PROVIDED WITH VIBRATION ISOLATION HANGERS WHICH SHALL BE FURNISHED WITH THE UNIT, AND ISOLATOR SHALL BE MATCHED TO EQUIPMENT WEIGHT AND SUPPORT LOCATIONS. ISOLATION HANGERS SHALL BE COMBINATION STEEL SPRING AND NEOPRENE-IN-SHEAR WITH STEEL HOUSING. ISOLATORS SHALL HAVE A MINIMUM OPERATING DEFLECTION OF 1 ½". SPRINGS SHALL HAVE A MINIMUM ADDITIONAL TRAVEL FOR 50% BETWEEN THE DESIGN HEIGHT AND THE SOLID HEIGHT.

HVAC INSULATION
QUALITY ASSURANCE: SPECIFIED COMPONENTS OF THIS INSULATION SYSTEM, INCLUDING FACINGS, MASTICS AND ADHESIVES, SHALL HAVE A FIRE HAZARD RATING NOT TO EXCEED 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED RATING, AS PER TESTS CONDUCTED IN ACCORDANCE WITH ASTM E84 (NFPA 255) METHODS.

PIPE INSULATION:
TYPE P1 ASTM C547, CLASS 1 (-20 DEGREES F TO 500 DEGREES F):
FIBERGLASS, MINIMUM 4 POUNDS PER CUBIC FOOT (P.C.F.) DENSITY, K FACTOR 0.23 MAXIMUM AT 75 DEGREES F MEAN, WITH FACTORY-APPLIED ALL-SERVICE-JACKET (ASJ) COMPOSED OF REINFORCED KRAFT AND ALUMINUM FOIL LAMINATE. JACKET SHALL HAVE SELF-SEALING LAP TO FACILITATE CLOSING LONGITUDINAL AND END JOINTS.

APPROVED PRODUCTS:
CERTAINED 500 DEGREE SNAP-ON ASJ/SSL
MANVILLE MICRO-LOK AP-T
OWENS/CORNING FIBERGLASS 25 ASJ/SSL
KNAUF PIPE INSULATION ASJ/SSL

TYPE P2 ASTM C534 (-40 DEGREES F TO 220 DEGREES F:)
FLEXIBLE, CLOSED-CELL ELASTOMERIC, NOMINAL 6 PCF DENSITY, K FACTOR 0.27 MAXIMUM AT 75 DEGREES F MEAN.

APPROVED PRODUCTS:
ARMSTRONG AP ARMAFLEX
MANVILLE AEROTUBE II
NOMACO THERMA-CEL
RUBATEX R-180-F5

DUCT INSULATION:
TYPE D1 ASTM C553 TYPE 1, CLASS B3:
FIBERGLASS, NOMINAL 1 P.C.F. DENSITY BLANKET, K FACTOR 0.31 MAXIMUM AT 75 DEGREES F MEAN, WITH FACTORY APPLIED FSK (FOIL-SCRIM-KRAFT) VAPOR BARRIER JACKET, FOR TEMPERATURES TO TEMPERATURES 250 DEGREES F.

APPROVED PRODUCTS:
CERTAINED "STANDARD DUCT WRAP"
MANVILLE "MICROLITE"
OWENS/CORNING FIBERGLASS RFK-75
KNAUF "DUCTWRAP"

TYPE D3:
FIBERGLASS, NOMINAL 2.0 P.C.F. DENSITY LINER, K FACTOR 0.26 MAXIMUM AT 75 DEGREES F MEAN, BLACK COATING, FOR TEMPERATURES TO 250 DEGREES F.

APPROVED PRODUCTS:
CERTAINED ULTRALITE DUCT LINER 200
MANVILLE LINACOUSTIC
KNAUF DUCT LINER M

INSTALLATION OF PIPE INSULATION:
INSTALL INSULATION ON PIPE SYSTEMS SUBSEQUENT TO TESTING AND ACCEPTANCE OF TEST.

MAINTAIN INTEGRITY OF VAPOR-BARRIER JACKETS ON PIPE INSULATION, AND PROTECT TO PREVENT PUNCTURE OR OTHER DAMAGE. SEAL OPEN ENDS OF INSULATION WITH MASTIC. SECTIONALLY SEAL ALL BUTT ENDS OF ALL COLD WATER PIPING INSULATION AT FITTINGS WITH WHITE VAPOR BARRIER COATING.

COVER VALVES, FLANGES, FITTINGS, AND SIMILAR ITEMS IN EACH PIPING SYSTEM WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN. INSTALL FACTORY MOLDED, PRECUT OR JOB FABRICATED UNITS (AT INSTALLER'S OPTION). FINISH COLD PIPE FITTINGS WITH WHITE VAPOR BARRIER COATING AND HOT PIPING WITH WHITE VINYL ACRYLIC MASTIC, BOTH REINFORCED WITH GLASS CLOTH.

EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PIPING PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.

INSTALL PROTECTIVE METAL SHIELDS AND FOAM GLASS INSERTS WHERE PIPE HANGERS BEAR ON OUTSIDE ON INSULATION.

INSTALLATION OF DUCTWORK INSULATION:
MAINTAIN INTEGRITY OF VAPOR-BARRIER ON DUCTWORK INSULATION, AND PROTECT IT TO PREVENT PUNCTURE AND OTHER DAMAGE. TAPE ALL PUNCTURES. SECURE ALL DUCTWORK WITH GALVANIZED WIRE 12" O.C. SECURE DUCTWORK WITH OUTWARD CLINCHING STAPLES. SEAL ALL LONGITUDINAL AND CIRCUMFERENTIAL JOINTS WITH FSK TAPE.

EXTEND DUCTWORK INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS, AND SIMILAR DUCTWORK PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.

EXCEPT AS OTHERWISE INDICATED, OMIT INSULATION ON DUCTWORK WHERE INTERNAL INSULATION OR SOUND ABSORBING LININGS HAVE BEEN INSTALLED.

ALL INTERNAL INSULATION SHALL BE ADHERED TO THE DUCT WITH 100% COVERAGE OF APPROVED FIRE RETARDANT MASTIC. ALL EDGES SHALL BE SEALED. ANY ABRASIONS OR TEARS REPAIRED WITH MASTIC.
DUCT DIMENSIONS HAVE BEEN INCREASED IN SIZE TO ALLOW FOR LINER WHERE REQUIRED.

INSULATION REQUIREMENTS:

INSULATION SCHEDULE

LOCATION	WRAP	WRAP SIZE (IN.)	WRAP TYPE	WRAP R-VAL	LINER	LINER SIZE (IN.)	LINER LOCATION	LINER TYPE	LINER R-VAL
INDOOR CONCEALED SA/RA	☒	2"	D1	6.0	☒	1"	FIRST 10' FROM UNIT	D3	4.2
INDOOR EXPOSED SA/RA	☐	–	–	–	☒	1"	CONTINUOUS	D3	4.2
OUTDOOR CONCEALED SA/RA	☒	2"	D1	8.0	☒	2"	CONTINUOUS	D3	8.0
OUTDOOR EXPOSED SA/RA	☐	–	–	–	☐	–	–	–	–
INDOOR CONCEALED OA	☒	2"	D1	6.0	☐	–	–	–	–
INDOOR EXPOSED OA	☐	–	–	–	☐	–	–	–	–
INDOOR EA	☐	2"	D1	6.0	☐	–	–	–	–
INDOOR TRANSFER	☐	–	–	–	☐	1"	CONTINUOUS	D3	4.2
TYPE I KITCHEN EA	☐	–	–	–	☐	–	–	–	–
REFRIGERANT PIPING	☒	1/2"	P1	CODE MIN.	☐	–	–	–	–
CONDENSATE PIPING	☒	1/2"	P1	CODE MIN.	☐	–	–	–	–

MAINTENANCE AND SERVICE
THIS CONTRACTOR SHALL INCLUDE AND ASSUME COMPLETE RESPONSIBILITY FOR START-UP, 24 HOURS A DAY SERVICE WITH A RESPONSE TIME NOT TO EXCEED FOUR (4) HOURS.
MAINTENANCE ON A QUARTERLY BASIS (FOUR MAINTENANCE INSPECTIONS A YEAR) FOR A PERIOD OF ONE YEAR FOR ALL HVAC EQUIPMENT, INCLUDING PRE PURCHASED EQUIPMENT AS IS SAID PRE PURCHASED EQUIPMENT WERE PURCHASED BY THIS CONTRACTOR, AND INCLUDING EXISTING EQUIPMENT WITHIN TENANT SPACE.
PROVIDE COST TO PERFORM PREVENTATIVE MAINTENANCE FOR THE FIRST YEAR ONLY.

THIS ONE-YEAR MAINTENANCE CONTRACT SHALL INCLUDE, BUT IS NOT LIMITED TO THE FOLLOWING WORK:
CHECK LINES FOR LEAKAGE OF REFRIGERANT/WATER
REFILL LINES IF NECESSARY
LUBRICATE MOTORS
CHECK OPERATION OF THERMOSTATS
REPLACE RETURN AIR FILTERS
CLEAN CONDENSER COILS
CHECK AND TIGHTEN ELECTRICAL CONNECTIONS
CHECK CONTROLS
CHECK FOR NOISE AND VIBRATION
CHECK REFRIGERANT PRESSURE DURING OPERATION
CHECK CURRENT (AMPERAGE) DRAW OF ALL MOTORS
CHECK OPERATION OF CONDENSATE DRAIN SYSTEM
CHECK AND ADJUST BLOWER FAN BELT TENSION

SHEET METAL WORK
EXCEPT AS OTHERWISE NOTED, ALL DUCTWORK AND OTHER SHEET METAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH LATEST EDITION OF THE SHEET METAL AND AIR CONDITIONING CONTRACTOR NATIONAL ASSOCIATION, INC. (SMACNA), HVAC CONSTRUCTION STANDARDS MANUAL. DUCTWORK SHALL BE GALVANIZED SHEET STEEL, UNLESS OTHERWISE NOTED. FIBERGLASS DUCTWORK IS NOT ACCEPTABLE.

MINIMUM DUCTWORK STATIC PRESSURE CONSTRUCTION SHALL BE 2" W.G. DUCTWORK STATIC PRESSURE CONSTRUCTION SHALL BE 4" W.G. FOR OPERATING PRESSURES ABOVE 2" W.G. AND UP TO 4" W.G. ALL DUCTS SHALL BE SEAL CLASS "A".

LOW PRESSURE FLEXIBLE DUCT SHALL BE SIMILAR TO FLEX MASTER TYPE 5, OR APPROVED EQUAL, WITH 1" THICK INSULATION AND SHALL CONFORM TO U.L. 181 AND NFPA BULLETIN 90A.

MEDIUM PRESSURE FLEXIBLE DUCT TAKE-OFFS TO VARIABLE VOLUME TERMINAL UNITS TO BE THERMAFLEX 11 TYPE ST-L OR APPROVED EQUAL.

FIRE DAMPERS: FIRE DAMPERS SHALL BE DYNAMIC TYPE SIMILAR TO RUSKIN CURTAINTYPE DIBD2, WITH BLADES OUTSIDE AIR STREAM, GALVANIZED STEEL CONSTRUCTION, EQUIPPED WITH FUSIBLE LINK, U.L. LISTED AND INSTALLED IN CONFORMANCE WITH U.L. AND NFPA STANDARD 90A, AND APPROVED FOR USE BY AUTHORITIES HAVING JURISDICTION. PROVIDE ACCESS DOOR IN DUCTWORK FOR EACH FIRE DAMPER.

VOLUME DAMPERS: SAME MATERIAL AS DUCT, PER SMACNA, EXCEPT PROVIDE BEARING AT ONE END OF DAMPER ROD AND QUADRANT WITH LEVER AND LOCKING SCREW AT OTHER END. FOR INSULATED DUCTS, QUADRANTS MOUNTED ON COLLAR SHALL CLEAR INSULATION; INSTALL WITH LEVERS ACCESSIBLE OUTSIDE INSULATION. BALANCING DAMPERS SHALL BE THE OPPOSED BLADE TYPE.

PROVIDE AND INSTALL INSULATED HINGED ACCESS PANELS FOR ALL FIRE AND COMBINATION FIRE/SMOKE DAMPERS.

FLEXIBLE CONNECTIONS: NEOPRENE-COATED GLASS FABRIC, 30 OZ. PER SQUARE YARD WITH SEWED AND CEMENTED SEAMS, SIMILAR TO VENT FABRICS. PROVIDE FLEXIBLE CONNECTIONS BETWEEN ALL EQUIPMENT AND RIGID DUCTWORK. FABRIC CONNECTIONS SHALL BE AT LEAST FOUR (4) INCHES LONG AND HAVE METAL COLLAR AT EACH END; ALLOW AT LEAST 1" SLACK TO ELIMINATE VIBRATION TRANSMISSION.

TURNING VANES: GALVANIZED STEEL, SINGLE THICKNESS VANES WITH MINIMUM TWO (2) INCHES INSIDE RADIUS. ALL SQUARE ELBOWS SHALL HAVE TURNING VANES.

ACCESS TILE IDENTIFICATIONS: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF ALL CONCEALED VALVES, DAMPERS, AND EQUIPMENT. SUBMIT TO ARCHITECT FOR APPROVAL.

DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS. WHERE INTERNAL INSULATION IS CALLED FOR, DUCT DIMENSIONS HAVE BEEN INCREASED IN SIZE TO ALLOW FOR LINER WHERE REQUIRED.

PORTIONS OF DUCTWORK VISIBLE THROUGH SUPPLY AND RETURN AIR OPENINGS SHALL BE PAINTED FLAT BLACK.

TRANSITION RECTANGULAR DUCTWORK ON THE BOTTOM AND SIDES. MAINTAIN DUCTWORK LEVEL AND AS HIGH AS POSSIBLE UNLESS NOTED OTHERWISE.

FLEXIBLE DUCT RUNOUTS TO ALL GRILLES, DIFFUSERS SHALL BE INSTALLED FREE OF KINKS AND SAGS. ALL BRANCH DUCTWORK SHALL BE SIZED TO MATCH THE INLET OF THE GRILLES, DIFFUSERS SERVED. FLEXIBLE DUCT SHALL NOT BE ANY LONGER THAN 4 FEET.

ALL DUCT TRANSITIONS FROM SQUARE TO ROUND SHALL BE SMOOTH SQUARE TO ROUND TRANSITIONS. SPIN-IN FITTINGS AT THE END OF CAPPED DUCTS ARE NOT ACCEPTEPTABLE

ALL OPEN ENDED DUCTS SHALL BE REINFORCED WITH 1½" x ½" x ⅛" GALVANIZED STEEL ANGLES BOLTED OR RIVETED 6" ON CENTER ALL AROUND THE EXTERIOR PERIMETER OF THE DUCT.

FOR ROUND DUCT TAKE-OFFS FROM METAL DUCTS, USE GENFLEX MODEL NUMBER SM-1DEL "SPIN-IN" FITTING.

PIPING
GENERAL: PIPING SHALL BE COMPLETE WITH PIPE FITTINGS, VALVES, COUPLING, STRAINERS, HANGER RODS, HANGERS, SUPPORTS, GUIDES, SLEEVES, AND ACCESSORIES IN CONFORMANCE WITH THE LATEST CODES AND ASME, ANSI, ASTM AND MSS STANDARDS.

NO PIPING SHALL BE LESS THAN ¾", UNLESS OTHERWISE NOTED.

FOR PIPE SIZES NOT INDICATED ON PLANS, SEE MANUFACTURER'S EQUIPMENT CONNECTION DETAILS.

PROVIDE FITTINGS FOR CHANGE IN PIPE SIZE AND FOR FINAL CONNECTION AT EQUIPMENT, AS REQUIRED.

AVOID ENTRY OF FOREIGN MATTER INTO PIPING DURING CONSTRUCTION.

PROVIDE MINIMUM PITCH TO INSURE ADEQUATE VENTING AND DRAINAGE.

PIPING SUPPORTS:

HORIZONTAL PIPING AND PIPING HANGERS SHALL BE ADJUSTABLE CLEVIS TYPE "CARPENTER AND PATTERSON" FIGURE NUMBER 100 OR 100SH, OR APPROVAL EQUAL. HANGER RODS SHALL BE ON THE FOLLOWING DIAMETER:

PIPE SIZE: 1¼" & BELOW; ROD DIAMETER: ⅜"; MAX SPACING: 6'
PIPE SIZE: 1½" & 2"; ROD DIAMETER: ⅜"; MAX SPACING: 8'

PROVIDE ADDITIONAL SUPPORTS AT CHANGE OF DIRECTION, RUNOUTS, AND CONCENTRATED LOADS DUE TO VALVES, ETC.

PIPING MATERIAL:

REFRIGERANT PIPING SHALL BE COPPER ASTM #B280, FACTORY CLEANED, NITROGEN CHARGED, AND CAPPED.

CONDENSATE DISCHARGE PIPING AND FITTINGS SHALL BE COPPER TYPE "L" PIPE. SCHEDULE 40 PVC SHALL BE ACCEPTABLE FOR PIPE INSTALLED ON ROOF ONLY.

PIPING AND FITTINGS SHALL BE SUITABLE FOR OPERATING PRESSURES OF 150 PSI.

FITTINGS:

PROVIDE DIELECTRIC GASKETS FOR JOINTS OF DISSIMILAR METALS: ISOLATING GASKETS, SLEEVES AND WASHERS BETWEEN FLANGES, BOLTS AND NUTS.

FOR MANUAL AIR VENTS, PROVIDE LINE SIZE AIR CHAMBER WITH ½" VALVE. PROVIDE VALVES AT ALL HIGH POINTS AND WHERE FLOW CHANGES FROM HORIZONTAL TO DOWNWARD.

TRAP SEAL IN CONDENSATE DRAIN PIPING SHALL BE MINIMUM 1" GREATER THAN THE STATIC PRESSURE IN SYSTEM.

VALVES:

VALVES FOR WATER PIPING SHALL BE SUITABLE FOR THE SERVICE PRESSURE AND TEMPERATURE AND SHALL BE:

GLOBE VALVE: "JENKINS" FIGURE 556P, FIGURE 1200, FIGURE 613-C, OR FIGURE 923-C, OR APPROVED EQUAL.

REFRIGERANT PIPE SIZE:

LIQUID AND SUCTION REFRIGERANT LINES SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATIONS. HOWEVER, LIQUID LINE VELOCITY SHALL NOT EXCEED 360 FPM, AND THE PRESSURE DROP SHALL BE LIMITED TO A MAXIMUM EQUIVALENT OF 2 DEGREES F OF TEMPERATURE CHANGE. THE SUCTION LINE VELOCITY SHALL BE A MINIMUM OF 500 FPM IN HORIZONTAL LINES, AND A MINIMUM OF 1000 FPM IN VERTICAL RISERS (IF PART LOAD CONDITIONS EXIST, A DOUBLE RISER MAY BE REQUIRED); THE PRESSURE DROP SHALL BE LIMITED TO A MAXIMUM EQUIVALENT OF 2 DEGREES F OF TEMPERATURE CHANGE.

AIR DISTRIBUTION
DIFFUSERS, REGISTERS, AND GRILLES SHALL BE MATCHED AS SCHEDULE OR AS APPROVED EQUAL.

CEILING DIFFUSERS SHALL BE 4-WAY THROW, UNLESS SHOWN OTHERWISE ON DRAWINGS.

ALL REGISTERS SHALL BE FURNISHED WITH OPPOSED BLADE DAMPERS.

EXACT LOCATION OF ALL CEILING MOUNTED DIFFUSERS, GRILLES, AND REGISTERS TO BE COORDINATED WITH LIGHTING LAYOUT AND REFLECTED CEILING PLAN.

AUTOMATIC CONTROLS
MECHANICAL CONTRACTOR SHALL PROVIDE CONTROLS THAT MATCH THE MANUFACTURER'S RECOMMENDATION FOR ALL EQUIPMENT PROVIDED.

CONTROL WIRING SHALL BE #12 CU THHN INSTALLED IN EMT CONDUIT (MINIMUM ½" DIAMETER OR PLENUM RATED CABLE.

ALL AUTOMATIC CONTROL VALVES AND DAMPERS SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.

PROVIDE OCCUPANCY SENSORS AS REQUIRED BASED ON SEQUENCE OF OPERATIONS IF NOT PROVIDED FOR LIGHTING CONTROLS OTHERWISE BE ELECTRICAL CON

AIR HANDLING UNIT SCHEDULE

TAG	AREA SERVED	S.A. CFM	O.A. CFM	E.S.P. (IN.WC)	COOLING CAPACITY			IFM	ELECT. HEAT		ELECTRICAL DATA			CONFIGURATION	OPERATING WEIGHT	MANUFACTURER TRANE & MODEL	NOMINAL TONS	ADDITIONAL OPTIONS
					TC (MBH)	SC (MBH)	EFFICIENCY	HP	KW	STEPS	MCA	MOCP	VOLTAGE					
AHU-1	WAITING/RETAIL	2440	350	1.0	75.1	54.4	EER 12.7	1-1/2	18.7	2	71.5	80	208V-3ø	HORIZONTAL	360 LBS	TWE7243BAA	6	A,F,G
AHU-7	SURGERY	2500	325	1.0	73.7	52.3	EER 12.7	1-1/2	18.7	2	71.5	80	208V-3ø	HORIZONTAL	360 LBS	TWE7243BAA	6	A,F,G

OPTIONS (ALL UNITS)
- 7-DAY PROGRAMMABLE DIGITAL THERMOSTAT W/ HUMIDISTAT
- FILTER KIT /W 2" FILTERS
- CONDENSATE DRAIN PAN OVERFLOW SWITCH
- 2000+ CFM: DUCT SMOKE DETECTOR, SEE NOTE #3
- SINGLE POINT ELECTRICAL CONNECTION
- MANUAL O.A. DAMPER
- GALVANIZED CONDENSATE DRAIN PAN
- FACTORY INSTALLED ELECTRIC HEATER KIT

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: CONDENSATE PUMP, DIVERSITECH CP-22 120V/1ø
B: 24V MOTORIZED O.A. DAMPER
C: 120V/1ø MOTORIZED O.A. DAMPER
D: STAINLESS STEEL DRAIN PAN
E: CO2 SENSOR, WALL MOUNTED
F: TRANE 'SES' MODULE FOR HUMIDITY CONTROL
G: UV LIGHT EQUAL TO ULTRAVATION MODEL 'UVPHOTOMAX'

NOTES:
1. ALL UNITS SHALL BE U.L. LABELED.
2. ALL UNITS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE EACH UNIT WITH A SMOKE DETECTOR.
   THE SMOKE DETECTOR SHALL BE IONIZATION TYPE WIRED TO SHUT-DOWN UNIT WHEN ACTIVATED.
   THE SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.
   THE SMOKE DETECTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR TO AN AN HVAC MONITORING PANEL.
   THE PANEL SHALL PROVIDE VISUAL AND AUDIBLE SIGNAL. THE SIGNAL SHALL INDICATE AND BE LABELED AS AIR DETECTOR TROUBLE.
   THE PANEL SHALL BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.
   PROVIDE SMOKE DETECTOR WITH REMOTE ALARM OR SUPERVISORY INDICATING DEVICES.
   EACH REMOTE DEVICE SHALL BE PERMANENTLY LABELED TO ACCURATELY IDENTIFY THE UNIT SERVED.
4. ELECTRIC HEATER SHALL BE BY UNIT MANUFACTURER.

GAS FURNACE SCHEDULE

TAG	AREA SERVED	S.A. CFM	O.A. CFM	E.S.P. (IN.WC)	COOLING COOLING CAPACITY			HEATING CAPACITY (GAS)			ELECTRICAL DATA			CONFIGURATION	OPERATING WEIGHT	MANUFACTURER TRANE & MODEL	NOMINAL TONS	ADDITIONAL OPTIONS
					TC (MBH)	SC (MBH)	MANUFACTURER TRANE & MODEL	INPUT (MBH)	OUTPUT (MBH)	AFUE (%)	MCA	MOCP	VOLTAGE					
GF-2	OFFICES	1470	330	0.7	48.1	35.8	4TXCC007DS3	80	77.6	96	14.1	15	115V-1ø	HORIZONTAL	190 LBS	S9X1C080U5PSBA	4	
GF-3	ICU TREATMENT	1600	265	0.7	48.7	37.6	4TXCC007DS3	80	77.6	96	14.1	15	115V-1ø	HORIZONTAL	190 LBS	S9X1C080U5PSBA	4	
GF-4	DENTAL/CANINE	715	80	0.7	24.2	17.2	4TXCB003DS3	40	38.8	96	8.8	15	115V-1ø	HORIZONTAL	165 LBS	S9X1B040U3PSBA	2	
GF-5	DVM OFFICES	1545	140	0.7	48.4	36.9	4TXCC007DS3	80	77.6	96	14.1	15	115V-1ø	HORIZONTAL	190 LBS	S9X1C080U5PSBA	4	
GF-6	EXAM ROOMS	1800	295	0.7	48.1	35.8	4TXCC007DS3	80	77.6	96	14.1	15	115V-1ø	HORIZONTAL	190 LBS	S9X1C080U5PSBA	5	
GF-8	BOARDING WAIT	1565	170	0.7	48.5	37.1	4TXCC007DS3	80	77.6	96	14.1	15	115V-1ø	HORIZONTAL	190 LBS	S9X1C080U5PSBA	4	
GF-9	FELINE BOARDING	1250	115	0.7	35.3	27.8	4TXCB006DS3	40	38.8	96	8.8	15	115V-1ø	HORIZONTAL	165 LBS	S9X1B040U3PSBA	3	
GF-10	CANINE BOARDING	1550	165	0.7	48.4	36.9	4TXCC007DS3	80	77.6	96	14.1	15	115V-1ø	HORIZONTAL	190 LBS	S9X1C080U5PSBA	4	
GF-11	LUXURY RUNS	1475	130	0.7	41.9	32.8	4TXCB006DS3	60	58.2	96	10.3	15	115V-1ø	HORIZONTAL	173 LBS	S9X1C080U5PSBA	3.5	
GF-12	LOUNGE	1200	135	0.7	35.1	27.2	4TXCB006DS3	40	38.8	96	8.8	15	115V-1ø	HORIZONTAL	165 LBS	S91XB040U3PSBA	3	
GF-13	INDOOR EXERCISE	800	165	0.7	24.6	18.3	4TXCB003DS3	40	38.8	96	8.8	15	115V-1ø	HORIZONTAL	165 LBS	S9X1B040U3PSBA	2	

OPTIONS (ALL UNITS)
- 7-DAY PROGRAMMABLE DIGITAL THERMOSTAT W/ HUMIDISTAT
- HI-EFFICIENCY
- FILTER KIT /W 2" FILTERS
- CONDENSATE DRAIN PAN OVERFLOW SWITCH
- CONCENTRIC VENT KIT
- ROOF VENT TERMINATION KIT
- 2000+ CFM: DUCT SMOKE DETECTOR, SEE NOTE #3
- MANUAL O.A. DAMPER
- GALVANIZED CONDENSATE DRAIN PAN
- REDUCING COUPLING
- GAS REGULATOR
- GAS SHUT-OFF VALVE
- SINGLE POINT ELECTRICAL CONNECTION

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: CONDENSATE PUMP, DIVERSITECH CP-22 120V/1ø
B: 24V MOTORIZED O.A. DAMPER
C: 120V/1ø MOTORIZED O.A. DAMPER
D: STAINLESS STEEL DRAIN PAN
E: CO2 SENSOR, WALL MOUNTED
F: TRANE 'SES' MODULE FOR HUMIDITY CONTROL
G: UV LIGHT EQUAL TO ULTRAVATION MODEL 'UVPHOTOMAX'

NOTES:
1. ALL UNITS SHALL BE AGA CERTIFIED AND U.L. LABELED.
2. ALL UNITS SHALL HAVE R-410A REFRIGERANT.
3. ALL UNITS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE EACH UNIT WITH A SMOKE DETECTOR.
   THE SMOKE DETECTOR SHALL BE IONIZATION TYPE WIRED TO SHUT-DOWN UNIT WHEN ACTIVATED.
   THE SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.
   THE SMOKE DETECTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR TO AN AN HVAC MONITORING PANEL.
   THE PANEL SHALL PROVIDE VISUAL AND AUDIBLE SIGNAL. THE SIGNAL SHALL INDICATE AND BE LABELED AS AIR DETECTOR TROUBLE.
   THE PANEL SHALL BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.
   PROVIDE SMOKE DETECTOR WITH REMOTE ALARM OR SUPERVISORY INDICATING DEVICES.
   EACH REMOTE DEVICE SHALL BE PERMANENTLY LABELED TO ACCURATELY IDENTIFY THE UNIT SERVED.

MINI SPLIT SYSTEM/HEAT PUMP SCHEDULE

TAG	AREA SERVED	S.A. (CFM)	EVAPORATOR SECTION							CONDENSING SECTION				EFFICIENCY	MANUFACTURER MITSUBISHI & MODEL	ADDITIONAL OPTIONS
			RATED TC (MBH)	MIN./MAX TC (MBH)	SC (MBH)	MIN./MAX HEAT (MBH)	WEIGHT (LBS)	ELECTRICAL DATA MCA	ELECTRICAL DATA VOLTAGE	ELECTRICAL DATA MCA	ELECTRICAL DATA MOCP	ELECTRICAL DATA VOLTAGE	WEIGHT (LBS)			
DAH-1/DHP-1	173 SURGERY 1	550	17.2	5.8/18.0	14.8	5.4/20.9	28	1	208V-1ø	10	15	208V-1ø	81	16 SEER/3.1 COP	MSZ-WR18NA/MUZ-WR18NA	F
DAH-2/DHP-2	170 SURGERY 2	550	17.2	5.8/18.0	14.8	5.4/20.9	28	1	208V-1ø	10	15	208V-1ø	81	16 SEER/3.1 COP	MSZ-WR18NA/MUZ-WR18NA	F

OPTIONS (ALL UNITS)
- WALL MOUNTED 7-DAY PROGRAMMABLE DIGITAL THERMOSTAT
- CONDENSATE DRAIN PAN OVERFLOW SWITCH
- SINGLE POINT ELECTRICAL CONNECTION
- GALVANIZED CONDENSATE DRAIN PAN
- INTEGRAL CONDENSATE PUMP
- 4" THICK PREFABRICATED PAD OR CONCRETE PAD FOR OUTDOOR UNIT
- PRE-CHARGED REFRIGERANT LINE SETS
- MANUFACTURER MINIMUM CLEARANCES

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: CONDENSATE PUMP, DIVERSITECH CP-22 120V/1ø
B: 24V MOTORIZED O.A. DAMPER
C: 120V/1ø MOTORIZED O.A. DAMPER
D: STAINLESS STEEL DRAIN PAN
E: OUTDOOR UNIT WIND RESTRAINTS
F: UV LIGHT EQUAL TO ULTRAVATION MODEL 'UVPHOTOMAX' MOUNTED IN AIRSTREAM

NOTES:
1. ALL UNITS SHALL BE U.L. LABELED.
2. ALL UNITS SHALL HAVE R-410A REFRIGERANT.
3. ALL UNITS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
4. INDOOR UNIT POWERED BY OUTDOOR UNIT, SINGLE POINT ELECTRICAL CONNECT AT OUTDOOR UNIT ONLY.
   DISCONNECT SWITCH REQUIRED BY ELECTRICAL CONTRACTOR AT BOTH INDOOR AND OUTDOOR UNIT LOCATION.
5. CONTRACTOR SHALL VERIFY EQUIPMENT SUPPLIER EXACT ROUTING AND SIZE OF INSULATED REFRIGERANT PIPING. INSTALL PER MANUFACTURER RECOMMENDATIONS.

FAN FILTER UNIT SCHEDULE

TAG	AREA SERVED	FAN FILTER INFORMATION				ELECTRICAL INFORMATION			MANUFACTURER ENVIRCO & MODEL	ADDITIONAL OPTIONS
		NOMINAL UNIT SIZE	ACTIVE FILT. FACE AREA (SQ.FT.)	MAXIMUM CFM	DESIGN CFM	WATTS AT MAXIMUM CFM	FLA	VOLTAGE		
FFU-1	173 SURGERY 1	2x4 RSRE	5.3	610	275	300	1.5	208V-1PH	MAC-10-LAF	A,B,C,D
FFU-2	170 SURGERY 2	2x4 RSRE	5.3	610	525	300	1.5	208V-1PH	MAC-10-LAF	A,B,C,D

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: RSRE OPTION FOR ROOM SIDE MAINTENANCE ON FILTER AND MOTOR/BLOWER ASSEMBLY
B: AIRFLOW INDICATOR LIGHT
C: SOLID STATE SPEED CONTROL
D: FILTER REPLACEMENT INDICATOR LIGHT

CONTRACTOR NOTE:
FAN FILTER UNITS SHALL BE WIRED DIRECTLY TO PANEL FOR CONTINUOUS RUN 24/7. COORDINATE WITH ELECTRICAL CONTRACTOR TO HAVE TAG-OUT-LOCK-OUT PROVISIONS MADE AT PANEL FOR FUTURE MAINTENANCE.

HEAT PUMP SCHEDULE

TAG	COOLING CAPACITY				COMPRESSOR		FAN	ELECTRICAL DATA			MANUFACTURER TRANE & MODEL	OPERATING WEIGHT	NOMINAL TONS	MATCHING INDOOR UNIT
	TC (MBH)	SC (MBH)	EFFICIENCY	OA DB (°F)	RLA	LRA	FLA	MCA	MOCP	VOLTAGE				
HP-1	75.1	54.4	EER 12.7	95	10.4/10.4	73.0/73.0	2.2	26	35	208V-3ø	TWA07243D	360 LBS	6	AHU-1
HP-7	73.7	52.3	EER 12.7	95	10.4/10.4	73.0/73.0	2.2	26	35	208V-3ø	TWA07243D	360 LBS	6	AHU-7

OPTIONS (ALL UNITS)
- 4" THICK PREFABRICATED PAD OR CONCRETE PAD
- PRE-CHARGED REFRIGERANT LINE SETS
- MANUFACTURER MINIMUM CLEARANCES

OPTIONS IF TOTAL EQUIVALENT REFRIGERANT LENGTH ≥ 50'-0" & ≤ 175'-0"
- COMPRESSOR CRANKCASE HEATER
- COMPRESSOR START ASSIST CAPACITOR AND RELAY (NOT REQUIRED FOR SCROLL COMPRESSORS OR 3 PHASE UNITS)
- OUTDOOR UNIT CYCLE PROTECTOR (5 MINUTE)
- WIND BAFFLES (UNITS MOUNTED ON ROOF)
- FOR HORIZONTAL CONFIGURATION: PROVIDE LIQUID LINE SOLENOID WITHIN 2'-0" OF OUTDOOR UNIT WITH FLOW ARROW POINTING TOWARD OUTDOOR UNIT. VAPOR LINE SHOULD SLOPE TOWARD INDOOR UNIT.
- FOR INDOOR UNIT LOCATED ABOVE HEAT PUMP (50'-0" MAX); A LIQUID LINE (BI-FLOW) SOLENOID MUST BE INSTALLED WITHIN 2'-0" OF OUTDOOR UNIT WITH FLOW ARROW POINTING TOWARD OUTDOOR UNIT. AN INVERTED VAPOR LINE TRAP MUST BE INSTALLED AT INDOOR UNIT. THE TOP OF THE TRAP MUST BE GREATER THAN THE HEIGHT OF THE INDOOR COIL.
- FOR INDOOR UNIT LOCATED BELOW HEAT PUMP (150'-0" MAX); A LIQUID LINE (BI-FLOW) SOLENOID MUST BE INSTALLED WITHIN 2'-0" OF OUTDOOR UNIT.

NOTES:
1. ALL UNITS SHALL BE U.L. LABELED.

CONDENSING UNIT SCHEDULE

TAG	COOLING CAPACITY				COMPRESSOR		FAN	ELECTRICAL DATA			MANUFACTURER TRANE & MODEL	OPERATING WEIGHT	NOMINAL TONS	MATCHING INDOOR UNIT
	TC (MBH)	SC (MBH)	EFFICIENCY	OA DB (°F)	RLA	LRA	FLA	MCA	MOCP	VOLTAGE				
CU-2	48.1	35.8	SEER 15.0	93	18.5	124.0	0.93	24.0	40	208V-1ø	4TWR5048	250 LBS	4	GF-2
CU-3	48.7	37.6	SEER 15.0	93	18.5	124.0	0.93	24.0	40	208V-1ø	4TWR5048	250 LBS	4	GF-3
CU-4	24.2	17.2	SEER 15.0	93	10.9	62.9	0.64	14.0	25	208V-1ø	4TEWR4024	250 LBS	2	GF-4
CU-5	48.4	36.9	SEER 15.0	93	18.5	124.0	0.93	24.0	40	208V-1ø	4TWR5048	250 LBS	4	GF-5
CU-6	48.1	35.8	SEER 15.0	93	23.7	152.5	2.80	32.5	50	208V-1ø	4TWR5060	251 LBS	5	GF-6
CU-8	48.5	37.1	SEER 15.0	93	18.5	124.0	0.93	24.0	40	208V-1ø	4TWR5048	250 LBS	4	GF-8
CU-9	35.3	27.8	SEER 15.0	93	14.1	72.2	0.64	18.0	30	208V-1ø	4TWR5036	199 LBS	3	GF-9
CU-10	48.4	36.9	SEER 15.0	93	18.5	124.0	0.93	24.0	40	208V-1ø	4TWR5048	250 LBS	4	GF-10
CU-11	41.9	32.8	SEER 15.0	93	16.7	109.0	0.93	22.0	35	208V-1ø	4TWR5042	227 LBS	3.5	GF-11
CU-12	35.1	27.2	SEER 15.0	93	14.1	72.2	0.64	18.0	30	208V-1ø	4TWR5036	199 LBS	3	GF-12
CU-13	24.6	18.3	SEER 15.0	93	10.9	62.9	0.64	14.0	25	208V-1ø	4TWR4024	250 LBS	2	GF-13

OPTIONS (ALL UNITS)
- 4" THICK PREFABRICATED PAD OR CONCRETE PAD
- PRE-CHARGED REFRIGERANT LINE SETS
- MANUFACTURER MINIMUM CLEARANCES

OPTIONS IF TOTAL EQUIVALENT REFRIGERANT LENGTH ≥ 50'-0" & ≤ 175'-0"
- COMPRESSOR CRANKCASE HEATER
- COMPRESSOR START ASSIST CAPACITOR AND RELAY (NOT REQUIRED FOR SCROLL COMPRESSORS OR 3 PHASE UNITS)
- OUTDOOR UNIT CYCLE PROTECTOR (5 MINUTE)
- WIND BAFFLES (UNITS MOUNTED ON ROOF)
- FOR HORIZONTAL CONFIGURATION: PROVIDE LIQUID LINE (SINGLE FLOW) SOLENOID OR HARD SHUT-OFF THERMAL EXPANSION VALVE WITHIN 2'-0" OF INDOOR UNIT WITH FLOW ARROW POINTING TOWARD INDOOR UNIT. VAPOR LINE SHOULD SLOPE TOWARD INDOOR UNIT.
- FOR INDOOR UNIT LOCATED ABOVE CONDENSING UNIT (50'-0" MAX); A SOLENOID IS NOT REQUIRED. AN INVERTED VAPOR LINE TRAP MUST BE INSTALLED AT INDOOR UNIT. THE TOP PEAK OF THE TRAP MUST BE GREATER THAN THE HEIGHT OF THE COIL.
- FOR INDOOR UNIT LOCATED BELOW CONDENSING UNIT (150'-0" MAX); A SOLENOID IS NOT REQUIRED.

NOTES:
1. ALL UNITS SHALL U.L. LABELED.

ENERGY RECOVERY VENTILATOR SCHEDULE

TAG	CFM		SUMMER PERFORMANCE				WINTER PERFORMANCE				ELECTRICAL DATA			WEIGHT (LBS)	MANUFACTURER & MODEL	
	OUTSIDE AIR	EXHAUST AIR	OA EAT (°F) DB/WB	SA LAT (°F) DB/WB	RA LAT (°F) DB/WB	EA EAT (°F) DB/WB	OA EAT (°F) DB/WB	SA LAT (°F) DB/WB	RA LAT (°F) DB/WB	EA EAT (°F) DB/WB	MCA	MOCP	VOLTAGE			
ERV-1	715	715	93/77	79/66	75/63	89/74	20/17	58/47	70/54	31/27	20.5	25	120/1/60	240	GREENHECK	MINIVENT-750-VG
ERV-2	1250	1250	93/77	79/67	75/63	86/74	20/17	60/48	70/54	29/26	17.6	25	208/1/60	732	GREENHECK	ERV-20-15L
ERV-3	1550	1550	93/77	79/67	75/62	89/73	20/17	59/47	70/54	30/27	25.2	35	208/1/60	732	GREENHECK	ERV-20-15L
ERV-4	1475	1475	93/77	79/66	75/63	89/74	20/17	59/47	70/54	30/27	23.0	30	208/1/60	732	GREENHECK	ERV-20-15L

NOTES:
1. EXTERNAL STATIC PRESSURE - 0.7" (TOTAL ALL SIDES)
2. UNITS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
3. TWO MOTORS REQUIRED ON ALL UNITS, ONE ELECTRICAL CONNECTION.
4. ENERGY RECOVERY UNIT PROVIDED WITH: SUPPLY FAN. EXHAUST FAN, MOTOR STARTER, RELAY AND AUX. CONTACTORS, 2" MERV 8 SUPPLY FILTERS, 2" MERV 8 SUPPLY FILTERS.
5. PROVIDE UNIT WITH AN AUXILIARY DRAIN PAN AND A WATER-LEVEL DETECTION DEVICE CONFORMING TO UL 508 TO SHUT DOWN EQUIPMENT UPON WATER DETECTION IN DRAIN PAN PRIOR TO OVERFLOW OF THE PAN. PROVIDE AND INSTALL PER 2018 NORTH CAROLINA CODE CHAPTER 3 REQUIREMENTS.

ELECTRIC HEATER SCHEDULE

TAG	AREA SERVED	HEATER TYPE	ELECTRICAL DATA KW	ELECTRICAL DATA AMPS	ELECTRICAL DATA VOLTAGE	OPERATING WEIGHT	MANUFACTURER MARKEL & MODEL	ADDITIONAL OPTIONS
EWH-1	RISER RM	WALL	3	14.4	208V-1ø	- LBS	F3423T	A,E

OPTIONS (ALL UNITS)
- BUILT-IN THERMOSTAT
- TAMPER PROOF CONTROLS
- MOUNTING BRACKETS/HARDWARE

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: FLUSH MOUNTING KIT, FULLY RECESSED
B: WALL MOUNTED THERMOSTAT /W INSULATED SUB BASE
C: WET LISTED FOR USE IN WET ENVIRONMENT
D: STAINLESS STEEL FINNED HEATING ELEMENTS
E: RATED WALL BOX (WHERE APPLICABLE)
F: ADJUSTABLE DISCHARGE LOUVERS

NOTES:
1. ALL HEATERS SHALL BE U.L. LABELED.
2. ALL HEATERS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. VERIFY MOUNTING HEIGHTS AND EXACT LOCATION WITH THE OWNER/ARCHITECT PRIOR TO INSTALLING UNIT.

CHARLES A. DRIGGERS, JR, PE
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VIENNA, VIRGINIA 22182
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CHARLES A. DRIGGERS, JR HEREBY FILES AND STATES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THE INSTRUMENTS OF SERVICE PROVIDED BY HIM/HER AND HIS/HER CONSULTANTS IN CONNECTION WITH THE PROJECT, WHETHER THE PROJECT IS EXECUTED OR NOT. INSTRUMENTS OF SERVICE INCLUDE, BUT ARE NOT LIMITED TO, REPORTS, DRAWINGS AND SPECIFICATIONS, INCLUDING COMPUTER-READABLE DATA AND ANY ASSOCIATED SPECIFICATIONS, DESIGN CONCEPTS, DETAILS AND SERVICES. ALL COPYRIGHTS AND OTHER PROPERTY RIGHTS IN INSTRUMENTS OF SERVICE, INCLUDING COMPUTER-READABLE DATA AND ANY ASSOCIATED SPECIFICATIONS, DESIGN CONCEPTS, DETAILS AND SERVICES, ARE AND SHALL REMAIN THE PROPERTY OF CHARLES A. DRIGGERS, JR HEREBY FILES AND STATES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THE INSTRUMENTS OF SERVICE PROVIDED BY HIM/HER AND HIS/HER CONSULTANTS IN CONNECTION WITH THE PROJECT, WHETHER THE PROJECT IS EXECUTED OR NOT. INSTRUMENTS OF SERVICE INCLUDE, BUT ARE NOT LIMITED TO, REPORTS, DRAWINGS AND SPECIFICATIONS, INCLUDING COMPUTER-READABLE DATA AND ANY ASSOCIATED SPECIFICATIONS, DESIGN CONCEPTS, DETAILS AND SERVICES. ALL COPYRIGHTS AND OTHER PROPERTY RIGHTS IN INSTRUMENTS OF SERVICE, INCLUDING COMPUTER-READABLE DATA AND ANY ASSOCIATED SPECIFICATIONS, DESIGN CONCEPTS, DETAILS AND SERVICES, ARE AND SHALL REMAIN THE PROPERTY OF CHARLES A. DRIGGERS, JR. ALL RIGHTS RESERVED. ANY REPRODUCTION OF THESE DOCUMENTS, IN WHOLE OR IN PART, NOT BE REPRODUCED, ROUSED OR COPIED IN WHOLE OR IN PART, NON COMMERCIAL USE OF THESE DOCUMENTS, IN WHOLE OR IN PART, IS PROHIBITED WITHOUT THE EXPRESS WRITTEN PERMISSION OF CHARLES A. DRIGGERS, JR. ALL CAD PROGRAMS AND ELECTRONIC FILES OF THESE DOCUMENTS ARE THE PROPERTY OF CHARLES A. DRIGGERS, JR. AND ARE NOT TO BE USED FOR ANY PURPOSE EXCEPT THE PURPOSE FOR WHICH THEY WERE PREPARED, AND MAY NOT BE SOLD OR GIVEN TO ANY PERSON OR ENTITY FOR ANY PURPOSE WHATSOEVER WITHOUT THE PRIOR WRITTEN PERMISSION OF CHARLES A. DRIGGERS, JR.

COMMONWEALTH OF VIRGINIA
CHARLES A. DRIGGERS, JR.
Lic. No. 039957
PROFESSIONAL ENGINEER
07/18/2022

TEETER ENGINEERING GROUP, P.A.

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING
2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

MECHANICAL SCHEDULES

REV #	DATE	COMMENTS
-		
-		
-		
-		

REVISION:
REVISION:
REVISION:
REVISION:

REVIEWS
INITIALS

TEG
PROJECT NO.: 22018
DRAWN: DRH
DATE: 07/18/22

M003
3 OF 12

Save Date: July 18, 2022 - 8:48 AM - RyanH
Plot Date: July 18, 2022 - 9:21 AM
Drawing Name: \\server\Jobs2\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018M003_MECHANICAL SCHEDULES.dwg

FAN SCHEDULE

TAG	AREA SERVED	FAN TYPE	CFM (MIN/MAX)	E.S.P. (IN.WC)	DRIVE TYPE	RPM	ELECTRICAL DATA			SONES	OPERATING WEIGHT	MANUFACTURER GREENHECK & MODEL	OPTIONS
							H.P.	WATTS	VOLTAGE				
EF-1	116 FELINE WARD	CEILING EXHAUST	50	0.25	DIRECT	858	–	16.8	115V-1ø	0.4	12 LBS	SP-A70	A,B,F,L,R,S
EF-2	117 REST ROOM	CEILING EXHAUST	70	0.25	DIRECT	900	–	18	115V-1ø	0.4	12 LBS	SP-A90	A,B,F,L,R,S
EF-3	118 REST ROOM	CEILING EXHAUST	70	0.25	DIRECT	900	–	18	115V-1ø	0.4	12 LBS	SP-A90	A,B,F,L,R,S
EF-4	119 REST ROOM	CEILING EXHAUST	70	0.25	DIRECT	900	–	18	115V-1ø	0.4	12 LBS	SP-A90	A,B,F,L,R,S
EF-5	128 DVM REST ROOM	CEILING EXHAUST	70	0.25	DIRECT	900	–	18	115V-1ø	0.4	12 LBS	SP-A90	A,B,F,L,R,S
EF-6	ICU BOARDING	IN-LINE EXHAUST	95	0.25	BELT	1618	1/4	–	115V-1ø	6.9	80 LBS	BSQ-70	A,B,F,Q
EF-7	LAB/PPS/ISOLATION	IN-LINE EXHAUST	325	0.25	DIRECT	1071	1/4	–	115V-1ø	7.7	54 LBS	BSQ-80	A,B,F,Q
EF-8	161 STAFF RR	CEILING EXHAUST	70	0.25	DIRECT	900	–	18	115V-1ø	0.4	12 LBS	SP-A90	A,B,F,L,R,S
EF-9	162 STAFF RR	CEILING EXHAUST	70	0.25	DIRECT	900	–	18	115V-1ø	0.4	12 LBS	SP-A90	A,B,F,L,R,S
EF-10	122 HYDRO THERAPY	CEILING EXHAUST	100/200	0.25	VARI GREEN	858	–	16.8	115V-1ø	0.4	12 LBS	SP-A70	A,B,F,P,T,V
EF-11	136 ISOLATION	CEILING EXHAUST	80	0.25	DIRECT	858	–	16.8	115V-1ø	0.4	12 LBS	SP-A70	A,B,F,G,L,R
EF-12	167 ISOLATION	CEILING EXHAUST	135	0.25	DIRECT	1100	–	19.2	115V-1ø	0.4	18 LBS	SP-A110	A,B,F,G,L,R
EF-13	112 I.T. CLOSET	CEILING EXHAUST	100	0.25	DIRECT	1100	–	19.2	115V-1ø	0.4	18 LBS	SP-A110	A,B,F,L,R,S
EF-14	156 GROOMING	CEILING EXHAUST	125	0.25	DIRECT	1100	–	19.2	115V-1ø	0.4	18 LBS	SP-A110	A,B,F,L,V
EF-15	155 BATHE/DRY	CEILING EXHAUST	125	0.25	DIRECT	1100	–	19.2	115V-1ø	0.4	18 LBS	SP-A110	A,B,F,L,V
EF-16	ATTIC (LEFT 1/2)	INLINE EXHAUST	250	0.25	DIRECT	1325	1/20	–	115V-1ø	5.4	41 LBS	SQ-80	A,B,F,M,W
EF-17	ATTIC (RIGHT 1/2)	INLINE EXHAUST	250	0.25	DIRECT	1325	1/20	–	115V-1ø	5.4	41 LBS	SQ-80	A,B,F,M,W
RF-1	RELIEF FAN ATTIC	IN-LINE EXHAUST	800 – 1000	0.5	VARI GREEN	1725	1/4	–	115V-1ø	7.0	56 LBS	SQ-100-VG	A,B,J,W
RF-2	RELIEF FAN ATTIC	IN-LINE EXHAUST	1200 – 1470	0.5	VARI GREEN	1719	3/4	–	115V-1ø	7.1	67 LBS	SQ-140-VG	A,B,J,W
RF-3	RELIEF FAN ATTIC	IN-LINE EXHAUST	1540 – 2500	0.5	VARI GREEN	1140	3/4	–	115V-1ø	7.3	144 LBS	SQ-160-VG	A,B,J,W

OPTIONS

A: DISCONNECT SWITCH
B: BACKDRAFT DAMPER
C: PREFAB. ROOF CURB
D: BIRDSCREEN
E: SHORT BASE OPTION
F: HANGING BRACKETS WITH VIBRATION ISOLATION
G: WALL MOUNTED SWITCH (W/PILOT LIGHT)
H: 2-SPEED FAN:
- LOW SPEED CONNECTED TO HVAC FAN UNIT
- HIGH SPEED MANUAL OVERRIDE BY SPRING WOUND TIMER ON WALL (6 AC/H, 12 AC/H)

I: WALL MOUNTED THERMOSTAT
J: PROVIDE FACTORY FAN SPEED CONTROLLER TO BALANCE FAN
K: INTERLOCKED WITH LIGHTING FIXTURE SWITCH
L: WL, WALL LOUVER DISCHARGE
M: RFC, ROOF CAP (FLAT ROOF) RL, ROOF CAP (PITCHED ROOF) WITH MANUAL DAMPER
N: MOTORIZED DAMPER – 120V
O: WASHABLE ALUMINUM FILTERS
P: FAN TO BE SELECTED WITH VARI-GREEN MOTOR AND 2-SPEED CONTROL BOARD
Q: INTERLOCK WITH ASSOCIATED SPLIT SYSTEM TO ENERGIZE FAN RTU IS ENERGIZED
R: EXHAUST GRILLE
S: INTERLOCKED WITH LIGHTING OCCUPIED SENSOR (PROVIDED BY E.C. – SEE ELEC. DWGS FOR LOCATION)
T: RUN CONTINUOUSLY DURING OCCUPIED HOUR USE, CONNECTED VIA LIGHTING CONTROL. (CONTROL PROVIDED BY E.C. – SEE ELEC. DWGS FOR LOCATION)
U: FAN CONTROLLED BY HOOD CONTROL PANEL
V: SPRING–WOUND TIMER CONTROL SWITCH, 15 MIN MAX
W: WALL MOUNTED HUMIDISTAT

NOTES:
1. ALL FANS SHALL BE U.L. LABELED.
2. ALL FANS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. EF-10: FAN SHALL BE WIRED SUCH THAT CONTINUOUS RUN OPERATION AT 100 CFM RATE AND MANUAL OVERRIDE VIA SPRING–WOUND TIMER SWITCH FOR ROOM PURGING UPON DEMAND AT 200 CFM RATE.
4. PROVIDE RELIEF FANS RF–1,2,3 WITH VARIABLE SPEED (VARI–GREEN) MOTOR, CONSTANT PRESSURE CONTROL, CONTROLS TRANSFORMER, REMOTE DIAL BY FAN MANUFACTURER
5. EF–14 & 15: FAN SHALL BE CONTROLLED BY SPRING–WOUND TIMER CONTROL SWITCH (15–MIN MAX RUN TIME) FOR ROOM PURGING OF BATHE/DRY AREAS.

GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE

TAG	SERVICE	CFM RANGE	FACE SIZE (IN)	NECK SIZE (IN)	TYPE	OBD	MANUFACTURER PRICE & MODEL	ADDITIONAL OPTIONS
Ⓐ	SUPPLY	0 – 100	24x24	6"ø	SQUARE PLAQUE	NO	SPD	
Ⓑ	SUPPLY	105 – 175	24x24	8"ø	SQUARE PLAQUE	NO	SPD	
Ⓒ	SUPPLY	180 – 270	24x24	10"ø	SQUARE PLAQUE	NO	SPD	
Ⓓ	SUPPLY	275 – 425	24x24	12"ø	SQUARE PLAQUE	NO	SPD	
Ⓔ	SUPPLY	430 – 700	24x24	14"ø	SQUARE PLAQUE	NO	SPD	
Ⓕ	SUPPLY	0 – 100	12x12	6"ø	SQUARE PLAQUE	NO	SPD	
Ⓖ	SUPPLY	0 – 190	MFG	10"x4"	DOUBLE DEFLECTION LOUVERED FACE	YES	520 D	B,E
Ⓗ	SUPPLY	195 – 325	MFG	18"x4"	DOUBLE DEFLECTION LOUVERED FACE	YES	520 D	B,E
Ⓙ	SUPPLY	100 – 150	MFG	6"x6"	3–WAY LOUVERED FACE	YES	SMD	
A	RETURN	0 – 175	24x24	8"ø	PERFORATED FACE	NO	PDDR	
B	RETURN	180 – 275	24x24	10"ø	PERFORATED FACE	NO	PDDR	
C	RETURN	280 – 390	24x24	12"ø	PERFORATED FACE	NO	PDDR	
D	RETURN	395 – 620	24x24	14"ø	PERFORATED FACE	NO	PDDR	
E	RETURN	625 – 1250	24x24	15"x15"	PERFORATED FACE	NO	PDDR	
F	RETURN	130 – 350	MFG	18"x4"	45° DEFL. LVRD FACE, 3/4" SPACING	NO	530 D	B,E
G	RETURN	505 – 800	MFG	22"x12"	45° DEFL. LVRD FACE, 3/4" SPACING	NO	530 D	B,E
Ⓐ	EXHAUST	0 – 175	24x24	8"ø	PERFORATED FACE	NO	PDDR	
Ⓑ	EXHAUST	180 – 270	24x24	10"ø	PERFORATED FACE	NO	PDDR	
Ⓒ	EXHAUST	275 – 400	24x24	12"ø	PERFORATED FACE	NO	PDDR	
Ⓓ	EXHAUST	395 – 620	24x24	14"ø	PERFORATED FACE	NO	PDDR	
Ⓔ	RELIEF	1300	24x24	15"x15"	PERFORATED FACE	NO	PDDR	

ADDITIONAL OPTIONS (AS NOTED)

A: ADJUST FROM HORIZONTAL DISCHARGE TO VERTICAL DISCHARGE. PROVIDE DIFFUSER WITH SQUARE TO ROUND NECK ADAPTOR, MODEL #SR
B: PROVIDE REGISTER WITH ROUND NECK ADAPTOR WHERE REQUIRED.
C: PROVIDE LINEAR SLOT AND/OR LINEAR BAR GRILLE WITH END CAPS, BORDER SUITABLE FOR INSTALLING ON GYB CEILING/SIDEWALL.
D: PROVIDE SPIRAL DUCT GRILLE SIZED TO MATCH DUCT SIZE O.D., END FRAMES TO MATCH DUCT SIZE O.D., CLOSED CELL FOAM GASKET FACTORY COLOR TO MATCH DUCTWORK COLOR, AIR SCOOP ACCESSORY, AND OPPOSED BLADE DAMPER, NO EXCEPTIONS.
E: PROVIDE LOUVERED FACE GRILLE WITH STEEL OBD, FACTORY INSTALLED.

NOTES:
1. ALL DEVICES SHALL BE FINISHED WITH AN ENAMEL FINISH, COLOR BY ARCHITECT. COORDINATE DEVICE COLOR(S) WITH ARCHITECT PRIOR TO ORDERING. COLOR COORDINATION SHALL INCLUDE BUT NOT BE LIMITED TO DIFFUSER FACE, CENTER TEE, FRAME INTERIOR, PATTERN CONTROLLER, ETC.
2. ALL DEVICES SHALL BE FURNISHED WITH FRAMES SUITABLE FOR TYPE OF INSTALLATION REQUIRED, NO EXCEPTIONS.
3. PROVIDE EXTERNAL BACK INSULATION, FACTORY INSTALLED FOR ALL DIFFUSER/GRILLE HOUSING.
4. ALL LINEAR SLOT DIFFUSERS AND BAR GRILLES SHALL BE FURNISHED WITH END CAPS.
5. ALL DEVICES INSTALLED IN HARD CEILINGS, WALLS, OR DIRECTLY ATTACHED TO DUCTS SHALL BE PROVIDED WITH OBD'S.
6. UNLESS OTHERWISE NOTED, ALL LINEAR SLOTS, BAR GRILLES, LOUVERED AND/OR EGGCRATE FACE GRILLES/REGISTERS SHALL BE PROVIDED WITH AN INSULATED PLENUM BOX FACTORY INSTALLED BY MANUFACTURER. PLENUM BOX SHALL BE FACTORY INSULATED WITH FIBER FREE FOAM, COLOR BLACK. PROVIDE PLENUM BOX WITH DUCT COLLAR AND WITH CABLE/FACE OPERATED FULL FLOW MANUAL CONTROL DAMPER ACCESSIBLE FROM FACE OF LINEAR SLOT OR BAR GRILLE.
7. COORDINATE GRILLES/DIFFUSERS WITH ARCHITECTURAL CEILING AND STRUCTURAL FRAMING LAYOUTS PRIOR TO ORDERING. COORDINATION SHALL INCLUDE TYPE OF INSTALLATION, MOUNTING REQUIREMENTS, T–BAR SPACING/SIZE, GYPBOARD FRAMING, INSTALLATION CLEARANCES, ETC.
8. ADJUST PATTERN CONTROLLERS ON ALL LINEAR SLOTS AND LINEAR BAR GRILLES PRIOR TO AIR BALANCE (T&B).
9. SEE AIR DEVICE TAG FOR DUCT INLET SIZE. ALL DUCT RUNOUTS TO BE SIZED PER GRD AIR TERMINAL NECK SIZE ON SCHEDULE AND/OR AS INDICATED ON PLANS IN CONJUNCTION WITH REQUIREMENTS BY GRD MANUFACTURER. COORDINATE ALL DUCT SIZES PRIOR TO BIDDING, NO EXCEPTIONS. DUCT SIZE SHALL MATCH GREILLE/LOUVER SIZE IF NO DUCTWORK SIZE INDICATED ON PLANS. CONTRACTOR SHALL REFERENCE DUCTWORK INSULATION SCHEDULE FOR ALL DUCTWORK INSULATION REQUIREMENTS.
10. CONTRACTOR SHALL PAINT ALL VISIBLE SURFACES THROUGH GRD'S FLAT BLACK. PLENUM BOX INSULATION SHALL BE COLOR BLACK FROM FACTORY.
11. PROVIDE TAPERED TRANSITIONS FOR ALL SUPPLY DIFFUSERS WITH NECK SIZES DIFFERENT THAN SUPPLY DUCT RUN–OUT SIZES.
12. PROVIDE SPIN–IN TAP WITH MANUAL VOLUME DAMPER AT EACH BRANCH TAKE–OFF. SEE DETAILS SHEET AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
13. TEE–BAR CEILING GRID IS USED. GENERAL CONTRACTOR SHALL MAKE SURE THE GRILLES/DIFFUSERS/LIGHTING FIXTURES WILL FIT PROPERLY IN THE NARROW GRID.

VIRGINIA ENERGY CODE

(2018 Virginia Energy Conservation Code)

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT METHOD OF COMPLIANCE:

PRESCRIPTIVE [X] ENERGY COST BUDGET [ ]

THERMAL ZONE: 4A

EXTERIOR DESIGN CONDITIONS

winter dry bulb	20° F.
summer dry bulb	93° F.

INTERIOR DESIGN CONDITIONS

winter dry bulb	72° F.
summer dry bulb	75° F.
relative humidity	50% R.H.
BUILDING HEATING LOAD	268.3 MBH (peak)
BUILDING COOLING LOAD	435.5 MBH (peak)

MECHANICAL SPACING CONDITIONING SYSTEM

UNITARY

description of unit	SPLIT SYSTEM HEAT PUMPS/GAS FURNACES
heating efficiency	SEE SCHEDULES
cooling efficiency	SEE SCHEDULES
heat output of unit	SEE SCHEDULES
cooling output of unit	SEE SCHEDULES

BOILER

total boiler output of unit	N/A

CHILLER

total chiller capacity	N/A

LIST EQUIPMENT EFFICIENCIES

Equipment schedules with motors (mechanical systems)

motor horsepower	N/A
number of phases	N/A
minimum efficiency	N/A
motor type	N/A
# of poles	N/A

501.2 APPLICATION COMPLIANCE / 506 ADDITIONAL PRESCRIPTIVE COMPLIANCE:

[ ] 506.2.1 MORE EFFICIENT MECH. EQUIPMENT
[ ] 506.2.4 HIGHER EFF DOMESTIC HW
[X] 506.2.2 REDUCED LTG DENSITY
[ ] 506.2.5 ON–SITE RENEWABLE ENERGY
[ ] 506.2.3 ENERGY RECOVERY SYSTEM
[ ] 506.2.6 DAYLIGHT CONTROLS

DESIGNER STATEMENT: 1

To the best of my knowledge and belief, the design of this building complies with the mechanical systems, service systems and equipment requirements of the 2018 Virginia Energy Conservation.

SIGNED:

NAME: CHARLES A DRIGGERS, JR., P.E.

TITLE: MECHANICAL ENGINEER

HVAC SEQUENCE OF OPERATIONS

MECHANICAL CONTRACTOR SHALL PROVIDE CONTROLS THAT MATCH THE MANUFACTURER'S RECOMMENDATION FOR ALL EQUIPMENT PROVIDED. SEE SPECIFICATIONS FOR ADDITIONAL CONTROLS INFORMATION.

THE SEQUENCE OF OPERATIONS PROVIDED IN THE CONTRACT DOCUMENTS IS INTENDED TO COMMUNICATE THE GENERAL DESIGN INTENT TO THE CONTROLS SUBCONTRACTOR AND IS NOT INTENDED TO BE FULLY DEVELOPED OR COMPLETE. IN THE CONTROLS SUBMITTAL, THE SUBCONTRACTOR SHALL FULLY DEVELOP THE SEQUENCE OF OPERATIONS FOR ALL SYSTEMS IDENTIFIED AND SHALL PRESENT ALL SETPOINTS, CONTROL PARAMETERS, AND ALARM POINTS. THE CONTROLS SUBCONTRACTOR SHALL INCORPORATE STANDARD FEATURES SUCH AS MINIMUM RUN TIME DELAYS AND DEAD BANDS FROM SETPOINTS TO PREVENT EQUIPMENT FROM SHORT CYCLING AND WHEN HOVERING AROUND SETPOINTS. ALL MONITORED POINTS SHALL INCLUDE EARLY HIGH/LOW ALARM NOTIFICATIONS PRIOR TO HAVING TO TAKE CORRECTIVE ACTIONS OR EQUIPMENT SHUTDOWNS. TRANSMITTERS SHALL INCLUDE OUT–OF–RANGE, FAIL–SAFE POSITIONING FOR OPEN CIRCUITS OR LOSS OF COMMUNICATION. CONTROL CONTRACTOR SHALL SPECIFY TO FAIL DE–ENERGIZER, HOLD LAST STATE, OR DEFAULT TO A PREDETERMINED SETPOINT. THESE BASIC FEATURES THAT ARE NECESSARY AND ARE PART OF A ROBUST CONTROLS INSTALLATION SHALL BE ASSUMED INCLUDED IN THE SCOPE OF SERVICES FOR DELIVERABLES AT NO ADDITIONAL COSTS TO THE OWNER.

GENERAL AREAS:

THE AHU'S & GF'S WILL BE FULLY CONTROLLED BY INTERNAL CONTROLS. THE UNITS WILL BE PROVIDED WITH STAND–ALONE CONTROLLERS.

AHU'S & GF'S SHALL BE CONTROLLED BY 7–DAY PROGRAMMABLE THERMOSTAT WITH HUMIDISTAT FEATURE OR ZONE SENSORS /W UNIT SENSORS/CONTROLS (SEE PLANS FOR INFORMATION). ROOFTOP UNITS SHALL SWITCH TO OCCUPIED MODE (74° – ADJUSTABLE, ± 4°F) ONE HOUR PRIOR TO BUILDING OCCUPANCY AND SHALL SWITCH TO UNOCCUPIED MODE (85°F COOLING, 68°F HEATING) ONE HOUR AFTER BUILDING OCCUPANCY. OCCUPANCY TIME TO BE DETERMINED BY OWNER. 3–HOUR OVERRIDES SHALL BE PROVIDED AS NEEDED FOR RETAIL PERSONNEL. DUCT MOUNTED HUMIDITY SENSORS SHALL BE INSTALLED IN R.A. DUCTWORK INTERLOCKED WITH 7–DAY PROGRAMMABLE THERMOSTAT WITH BUILT IN HUMIDISTAT FEATURE TO ENERGIZE ROOFTOP UNITS AND CORRESPONDING COMPRESSOR(S) TO MAINTAIN 50% RH WITH ±3°F OCCUPIED AND UNOCCUPIED DEADBAND AND MINIMUM UNIT RUNTIME OF 15 MINUTES DURING HUMIDITY OVERRIDE.

OPTIMAL START/STOP
THE AHU & GF SYSTEM WILL BE STARTED AND STOPPED AS DEFINED BY OWNER BUILDING SCHEDULE. THE SYSTEM WILL START/STOP BY SCHEDULED OCCUPANCY TIME.

UNOCCUPIED COOLING
THE AHU'S & GF'S TO HAVE AN UNOCCUPIED COOLING SET POINT (85 DEG F, ADJUSTABLE AT EACH RTU). TO MAINTAIN DURING UNOCCUPIED PERIODS. ONCE ENERGIZED, THE RTU WILL PROVIDE COOLING AS SCHEDULED. THE SYSTEM WILL REMAIN ENERGIZED UNTIL SPACE SCHEDULED SET POINTS ARE MET.

UNOCCUPIED HEATING
THE AHU'S & GF'S TO HAVE AN UNOCCUPIED HEATING SET POINT (65 DEG F, ADJUSTABLE AT EACH AHU/GF). TO MAINTAIN DURING UNOCCUPIED PERIODS. ONCE ENERGIZED, THE OUTSIDE AIR DAMPER WILL REMAIN CLOSED AND THE SUPPLY FAN WILL MAINTAIN THE DUCT STATIC PRESSURE SET POINT. THE SYSTEM WILL REMAIN ENERGIZED UNTIL NO ZONES REQUIRE UNOCCUPIED HEATING.

OCCUPANCY OVERRIDE
EACH SYSTEM WILL BE AVAILABLE FOR OCCUPANCY OVERRIDE. DURING UNOCCUPIED MODE, THE UNIT CONTROLLER WILL OVERRIDE THE ASSOCIATED SYSTEM INTO OCCUPIED MODE FOR 3 HOURS (ADJ.).

SUPPLY FAN CONTROL
WHEN THE AHU/GF IS ENERGIZED, THE SUPPLY FAN VFD OR ECM MOTOR, WILL MODULATE TO MAINTAIN THE DUCT STATIC PRESSURE SET POINT (ADJ.). FAN SHALL MODULATE CAPACITY TO MAINTAIN 55° FLAT.

MECHANICAL COOLING
IF OUTSIDE AIR IS NOT SUFFICIENT TO PROVIDE COOLING, THE DX COMPRESSORS WILL BE TASKED WITH MAINTAINING THE DISCHARGE AIR TEMPERATURE SET POINT WHEN THE SYSTEM IS ENERGIZED AND NOT IN MORNING WARM–UP. STAGES OF DX COOLING WILL BE ENERGIZED AS NEEDED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT. COMPRESSOR STAGING CONTROL WILL BE DETERMINED BY THE AHU'S & GF'S INTERNAL CONTROLS. THE DISCHARGE AIR TEMPERATURE SET POINT SHALL MODULATE TO CONTROL SPACE TEMPERATURE AND/OR HUMIDITY AS SCHEDULED.

THE ECONOMIZER WILL BE ENABLED BY A COMPARATIVE ENTHALPY. THE AHU'S & GF'S SHOULD BE PROVIDED WITH AN OUTSIDE AIR TEMP AND HUMIDITY SENSOR AS WELL AS A RETURN AIR TEMP AND HUMIDITY SENSOR. OUTSIDE AIR ENTHALPY AND RETURN AIR ENTHALPY WILL BE CALCULATED. IF THE OUTSIDE ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY, FREE COOLING IS AVAILABLE AND THE ECONOMIZER WILL BE ENABLED. AFTER BEING ENABLED, INTERNAL TRANE AHU/GF CONTROLS WILL MODULATE THE OUTSIDE AIR AND RETURN AIR DAMPERS TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT.

HUMIDITY CONTROL
RETURN TEMPERATURE AND HUMIDITY WILL BE MONITORED AT EACH AHU/GF, AND ZONE CONTROLLER LOCATION. IF THE RETURN AND /OR SPACE HUMIDITY RISES ABOVE SET POINT. THE DISCHARGE AIR TEMPERATURE SET POINT WILL RESET AND UNIT FAN SPEED AND CAPACITY SHALL MODULATE AS REQUIRED TO MAINTAIN SPACE HUMIDITY SET POINTS.

MINIMUM OA DAMPER POSITION
THE OUTSIDE AIR DAMPER WILL GO TO MINIMUM POSITION DURING SCHEDULED OCCUPIED TIMES IF NOT IN ECONOMIZER MODE. THE MINIMUM POSITION WILL BE DEFINED BY THE TEST AND BALANCE CONTRACTOR AND BE BASED ON OUTDOOR AIR INTAKE AS LISTED IN RTU SCHEDULE.

DISCHARGE AIR TEMPERATURE RESET
IF NOT IN MORNING WARM–UP, MORNING COOL–DOWN, OR HUMIDITY CONTROL, THE DISCHARGE AIR TEMPERATURE SET POINT WILL BE RESET ACCORDING TO THE OUTSIDE AIR TEMPERATURE. (ADJ.):

DUCT SMOKE DETECTORS:

CONTRACTOR SHALL PROVIDE SMOKE DETECTORS AS OUTLINED ON PLANS FOR ALL SPLIT SYSTEMS. SEE AHU/GF UNIT SCHEDULE FOR INFORMATION.

RESTROOM EXHAUST FANS:

CEILING MOUNTED RESTROOM EXHAUST FANS ARE TO BE INTERLOCKED WITH LOCAL LIGHTING CIRCUIT TO ACTIVATE UPON RESTROOM OCCUPANCY. ROOF MOUNTED FANS SERVING MULTIPLE SPACES, INCLUDING RESTROOMS, SHALL BE INTERLOCKED WITH A TIME CLOCK AND OPERATE CONTINUOUSLY BUILDING IS IN OPERATION.

EXHAUST SYSTEMS SEQUENCES OF OPERATION

GENERAL REST ROOM EXHAUST:
- ALL EXHAUST FANS SERVING REST ROOMS, SHOWER ROOMS, LOCKER ROOMS, ETC. SHALL BE INTERLOCKED WITH ASSOCIATED ROOM LIGHTING OCCUPANCY SENSOR FOR CONTROL.

ISOLATION ROOM EXHAUST:
- ISOLATION ROOM(S) WILL REQUIRE 100 PERCENT OUTSIDE AIR WHEN IN USE; NO RETURN FROM THIS ROOM. FAN SHALL BE CONTROLLED VIA MANUAL SWITCH ON INTERIOR ROOM WALL. SWITCH SHALL BE PROVIDED WITH A PILOT LIGHT LOCATED ON ADJACENT EXTERIOR OF ROOM FOR VISUAL CONFIRMATION THE FAN IS OPERATING WHEN NEEDED.

ANIMAL AREAS ROOM EXHAUST:
- ALL ANIMAL AREAS (E.G. RUNS, WARDS, HOLDING KENNELS, ETC.) SHALL BE PROVIDED WITH AN ENERGY RECOVERY VENTILATOR THAT IS INTERCONNECTED WITH ASSOCIATED HVAC SYSTEM(S) SERVING EXHAUST SPACE. ERV EXHAUST FAN(S) SHALL ENERGIZE AND DE–ENERGIZE WITH THE ACTIVATION AND DE–ACTIVATION OF INTERLOCKED AHU/GF FOR GENERAL SPACE CONDITIONING. MECHANICAL CONTRACTOR SHALL COORDINATE ALL REQUIRED CONTROL(S) SYSTEMS, WIRING, SWITCHES BETWEEN FAN MANUFACTURER AND RTU MANUFACTURER TO ENSURE INTERCONNECTION IS POSSIBLE.

AREAS OF FOCUS THIS PROJECT:
146/147 CANINE BOARDING
LUXURY RUNS 1–6
149 INDOOR EXERCISE
131 CANINE WARD
130 DENTAL
156 GROOMING
158 BATHE/DRY

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COMMONWEALTH OF VIRGINIA
CHARLES A. DRIGGERS, JR.
Lic. No. 036957
PROFESSIONAL ENGINEER
07/18/2022

TEETER ENGINEERING GROUP, P.A.

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

MECHANICAL SCHEDULES

REV #	DATE	COMMENTS
-		

REVISION: - | REVISION: - | REVISION: - | REVISION: -

REVIEWS

INITIALS	

TEG

PROJECT NO.: 22018
DRAWN: DRH
DATE: 07/18/22

M004

4 OF 12

Save Date: July 18, 2022, 9:10 AM \ RyanH
Plot Date: July 18, 2022, 9:21 AM
Drawing Name: \\server\Jobs\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018M004_MECHANICAL SCHEDULES.dwg

Ventilation Sizing Summary for AHU-1

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:19AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**320**	CFM
System Ventilation Efficiency (Ev)	**0.919**	
Outdoor Air Intake (Vot)	**349**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
101 Vestibule	1	278	108.0	0.06	0.0	5.00	0.80	**8**	*6*	1.106
102 Waiting	1	860	408.0	0.18	9.0	7.50	0.80	**176**	*141*	0.930
120 Retail	1	792	510.0	0.18	6.0	7.50	0.80	**171**	*137*	0.919
121 Hydro Mech Rm	1	175	56.0	0.06	0.0	5.00	0.80	**4**	*3*	1.111
122 Hydro Therapy	1	273	99.0	0.18	2.0	7.50	0.80	**41**	*33*	0.984
Totals (incl. Space Multipliers)		**2377**							**320**	**0.919**

Ventilation Sizing Summary for GF-2

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:23AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**101**	CFM
System Ventilation Efficiency (Ev)	**0.760**	
Outdoor Air Intake (Vot)	**133**	CFM
Outdoor Air Intake, Corrected for Exhaust Air	**330**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
114 Feline Exam 1	1	120	82.0	0.18	2.0	7.50	0.80	**37**	*30*	0.760
115 Retail Storage	1	78	63.0	0.12	0.0	5.00	0.80	**9**	*8*	0.949
116 Feline Ward	1	62	40.0	0.18	0.0	7.50	0.80	**9**	*7*	0.925
117 RR	1	62	50.0	0.00	0.0	0.00	0.80	**0**	*0*	1.070
118 RR	1	62	50.0	0.00	0.0	0.00	0.80	**0**	*0*	1.070
119 RR	1	62	50.0	0.00	0.0	0.00	0.80	**0**	*0*	1.070
124 Admin Hall	1	211	192.0	0.06	0.0	0.00	0.80	**14**	*12*	1.002
125 Account. Office	1	181	86.0	0.06	1.0	5.00	0.80	**13**	*10*	1.000
126 Manager Office	1	174	86.0	0.06	1.0	5.00	0.80	**13**	*10*	0.997
127 DVM Office	1	174	86.0	0.06	1.0	5.00	0.80	**13**	*10*	0.997
175 Imaging	1	178	77.0	0.06	2.0	5.00	0.80	**18**	*15*	0.967
128 DVM RR	1	84	53.0	0.00	0.0	0.00	0.80	**0**	*0*	1.070
Totals (incl. Space Multipliers)		**1447**							**101**	**0.760**

Ventilation Sizing Summary for GF-3

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:24AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**209**	CFM
System Ventilation Efficiency (Ev)	**1.000**	
Outdoor Air Intake (Vot)	**262**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
129 Treatment ICU	1	1418	830.0	0.18	8.0	7.50	0.80	**262**	*209*	1.000
Totals (incl. Space Multipliers)		**1418**							**209**	**1.000**

Ventilation Sizing Summary for GF-4

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:24AM

1. Summary

Ventilation Sizing Method	**Sum of Space OA Airflows**	
Design Ventilation Airflow Rate, Corrected for Exhaust Air	**715**	CFM
Design Ventilation Airflow Rate	**0**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
130 Dental	1	132.0	2.0	350.7	0.00	0.00	0.0	0.0	0.0
131 Canine Ward	1	128.0	1.0	272.8	0.00	0.00	0.0	0.0	0.0
131 Canine Ward Corr	1	82.0	0.0	91.5	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				**715.0**					**0.0**

Ventilation Sizing Summary for GF-5

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:25AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**85**	CFM
System Ventilation Efficiency (Ev)	**0.941**	
Outdoor Air Intake (Vot)	**90**	CFM
Outdoor Air Intake, Corrected for Exhaust Air	**140**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
132 DVM Wk. Stations	1	288	106.0	0.06	4.0	5.00	0.80	**33**	*26*	0.941
133 Assoc Corr	1	376	171.0	0.06	0.0	0.00	0.80	**13**	*10*	1.022
133 Associates Office	1	592	138.0	0.06	6.0	5.00	0.80	**48**	*38*	0.975
161 Staff RR	1	58	47.0	0.00	0.0	0.00	0.80	**0**	*0*	1.056
162 Staff RR	1	58	47.0	0.00	0.0	0.00	0.80	**0**	*0*	1.056
164 Closet	1	154	171.0	0.06	0.0	0.00	0.80	**13**	*10*	0.972
Totals (incl. Space Multipliers)		**1526**							**85**	**0.941**

Ventilation Sizing Summary for GF-6

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:25AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**281**	CFM
System Ventilation Efficiency (Ev)	**0.887**	
Outdoor Air Intake (Vot)	**317**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
109 Exam 4	1	161	98.0	0.18	2.0	7.50	0.80	**41**	*33*	0.887
111 Large Exam 2	1	180	114.0	0.18	2.0	7.50	0.80	**44**	*36*	0.895
104 Hall	1	174	158.0	0.06	0.0	0.00	0.80	**12**	*9*	1.073
105 Exam 5	1	274	108.0	0.18	2.0	7.50	0.80	**43**	*34*	0.983
106 Exam 6	1	235	108.0	0.18	2.0	7.50	0.80	**43**	*34*	0.958
107 Exam 7	1	235	108.0	0.18	2.0	7.50	0.80	**43**	*34*	0.958
108 Comfort Exam	1	365	153.0	0.18	2.0	7.50	0.80	**53**	*43*	0.995
110 Exam 3	1	162	99.0	0.18	2.0	7.50	0.80	**41**	*33*	0.887
113 Admin Phones	1	210	79.0	0.06	4.0	5.00	0.80	**31**	*25*	0.994
Totals (incl. Space Multipliers)		**1995**							**281**	**0.887**

Ventilation Sizing Summary for AHU-7

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:20AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**262**	CFM
System Ventilation Efficiency (Ev)	**0.926**	
Outdoor Air Intake (Vot)	**283**	CFM
Outdoor Air Intake, Corrected for Exhaust Air	**325**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
165 Morgue/Mech	1	156	66.0	0.06	1.0	5.00	0.80	**11**	*9*	1.037
167 Isolation	1	249	147.0	0.18	0.0	7.50	0.80	**33**	*26*	0.976
168 Ante Rm	1	73	49.0	0.18	0.0	7.50	0.80	**11**	*9*	0.958
169 Ultrasound	1	240	112.0	0.18	2.0	7.50	0.80	**44**	*35*	0.926
170 Surgery 2	1	519	199.0	0.18	4.0	7.50	0.80	**82**	*66*	0.950
172 PrP/S	1	303	160.0	0.06	3.0	5.00	0.80	**31**	*25*	1.007
173 Surgery 1	1	254	115.0	0.18	2.0	7.50	0.80	**45**	*36*	0.933
166 CT	1	254	94.0	0.18	1.0	7.50	0.80	**31**	*24*	0.988
174 Lab/Pharmacy	1	360	197.0	0.06	4.0	5.00	0.80	**40**	*32*	0.998
Totals (incl. Space Multipliers)		**2409**							**262**	**0.926**

Ventilation Sizing Summary for GF-8

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:25AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**152**	CFM
System Ventilation Efficiency (Ev)	**0.901**	
Outdoor Air Intake (Vot)	**168**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
157 Boarding Waiting	1	675	298.0	0.18	7.0	7.50	0.80	**133**	*106*	0.901
159 Boarding Admin	1	136	86.0	0.06	1.0	5.00	0.80	**13**	*10*	1.005
154 Hall	1	552	284.0	0.06	0.0	0.00	0.80	**21**	*17*	1.059
136 Isolation	1	77	52.0	0.18	0.0	7.50	0.80	**12**	*9*	0.946
137 Office	1	109	67.0	0.06	1.0	5.00	0.80	**11**	*9*	0.994
Totals (incl. Space Multipliers)		**1548**							**152**	**0.901**

Ventilation Sizing Summary for GF-9

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:26AM

1. Summary

Ventilation Sizing Method	**Sum of Space OA Airflows**	
Design Ventilation Airflow Rate, Corrected for Exhaust Air	**1250**	CFM
Design Ventilation Airflow Rate	**0**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
152 Feline Boarding	1	119.0	1.0	294.9	0.00	0.00	0.0	0.0	0.0
153 Food Prep/Laundry	1	219.0	1.0	604.9	0.00	0.00	0.0	0.0	0.0
155 Bathe/Dry	1	104.0	1.0	267.0	0.00	0.00	0.0	0.0	0.0
156 Grooming	1	117.0	1.0	268.8	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				**1435.6**					**0.0**

Ventilation Sizing Summary for GF-10

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:20AM

1. Summary

Ventilation Sizing Method	**Sum of Space OA Airflows**	
Design Ventilation Airflow Rate, Corrected for Exhaust Air	**1550**	CFM
Design Ventilation Airflow Rate	**0**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
146 Canine Boarding	1	310.0	1.0	734.7	0.00	0.00	0.0	0.0	0.0
147 Canine Boarding	1	470.0	1.0	1251.5	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				**1986.2**					**0.0**

Ventilation Sizing Summary for GF-11

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:21AM

1. Summary

Ventilation Sizing Method	**Sum of Space OA Airflows**	
Design Ventilation Airflow Rate, Corrected for Exhaust Air	**1475**	CFM
Design Ventilation Airflow Rate	**0**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
135 Central Storage	1	274.0	0.0	553.0	0.00	0.00	0.0	0.0	0.0
138 Luxury Run 2	1	47.0	0.0	93.6	0.00	0.00	0.0	0.0	0.0
139 Luxury Run 1	1	47.0	0.0	93.6	0.00	0.00	0.0	0.0	0.0
140 Luxury Hall	1	70.0	0.0	112.3	0.00	0.00	0.0	0.0	0.0
141 Cage Boarding	1	171.0	0.0	424.9	0.00	0.00	0.0	0.0	0.0
143 Luxury Run 5	1	47.0	0.0	93.6	0.00	0.00	0.0	0.0	0.0
142 Luxury Run 6	1	47.0	0.0	103.1	0.00	0.00	0.0	0.0	0.0
144 Luxury Run 4	1	47.0	0.0	93.6	0.00	0.00	0.0	0.0	0.0
145 Luxury Run 3	1	47.0	0.0	93.6	0.00	0.00	0.0	0.0	0.0
150 Hall	1	229.0	0.0	327.9	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				**1989.5**					**0.0**

Ventilation Sizing Summary for GF-12

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:23AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**107**	CFM
System Ventilation Efficiency (Ev)	**1.000**	
Outdoor Air Intake (Vot)	**134**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
134 Lounge	1	1185	372.0	0.06	17.0	5.00	0.80	**134**	*107*	1.000
Totals (incl. Space Multipliers)		**1185**							**107**	**1.000**

Ventilation Sizing Summary for GF-13

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:23AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**130**	CFM
System Ventilation Efficiency (Ev)	**1.000**	
Outdoor Air Intake (Vot)	**162**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
149 Indoor Exercise	1	574	638.0	0.18	2.0	7.50	0.80	**162**	*130*	1.000
Totals (incl. Space Multipliers)		**574**							**130**	**1.000**

EXHAUST AIR CALCULATION

ASHRAE 62.1–2013 TABLE 6.5

ROOM NAME	AREA (SQ.FT) NET	NUMBER OF UNIT	CFM/UNIT	NUMBER OF SHOWERS	CFM/UNIT	NET AREA O.A. RATE (CFM/SQ FT)	REQUIRED EXHAUST (CFM)	PROVIDED EXHAUST (MIN/MAX) (CFM)	SERVED BY
116 FELINE WARD	40	–	–	–	–	0.9	36	50	EF–1
117 REST ROOM	51	1	70	–	–	–	70	70	EF–2
118 REST ROOM	51	1	70	–	–	–	70	70	EF–3
119 REST ROOM	51	1	70	–	–	–	70	70	EF–4
128 DVM REST ROOM	51	1	70	–	–	–	70	70	EF–5
TREATMENT BOARDING	102	–	–	–	–	0.9	92	95	EF–6
174 LAB/PHARMACY	197	–	–	–	–	0.9	177	460	EF–7
172 PPS	160	–	–	–	–	0.9	144		
161 STAFF REST ROOM	46	1	70	–	–	–	70	70	EF–8
162 STAFF REST ROOM	46	1	70	–	–	–	70	70	EF–9
122 HYDRO THERAPY	98	–	–	–	–	0.9	88	100	EF–10
136 ISOLATION	52	–	–	–	–	0.9	47	50	EF–11
167 ISOLATION	147	–	–	–	–	0.9	132	135	EF–12
112 IT CLOSET	30	–	–	–	–	1.0	30	100	EF–13
130 DENTAL	132	–	–	–	–	0.9	119	715	ERV–1
131 CANINE WARD	128	–	–	–	–	0.9	115		
155 BATHE/PREP	104	–	–	–	–	1.0	104	1250	ERV–2
153 FOOD PREP	219	–	–	–	–	0.9	197		
152 FELINE BOARDING	119	–	–	–	–	0.9	107		
146 CANINE BOARDING	310	–	–	–	–	0.9	279	1550	ERV–3
147 CANINE BOARDING	470	–	–	–	–	0.9	423		
139 LUXURY RUN 1	46	–	–	–	–	0.9	41	1475	ERV–4
138 LUXURY RUN 2	46	–	–	–	–	0.9	41		
146 LUXURY RUN 3	46	–	–	–	–	0.9	41		
144 LUXURY RUN 4	46	–	–	–	–	0.9	41		
143 LUXURY RUN 5	46	–	–	–	–	0.9	41		
142 LUXURY RUN 6	46	–	–	–	–	0.9	41		
141 CAGE BOARDING	171	–	–	–	–	0.9	154		

NOTE: ONE (1) UNIT = ONE (1) FLUSHING FIXTURE AND/OR SHOWERHEAD.

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MECHANICAL CALCULATIONS

REV #	DATE	COMMENTS
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REVISION: -		

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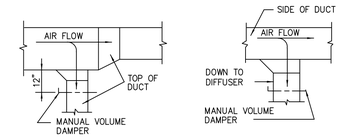
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DATE: 07/18/22

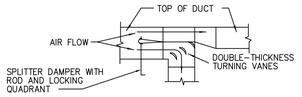
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5 OF 12

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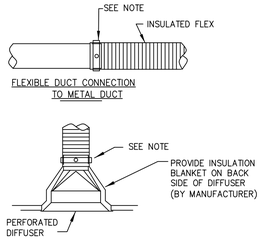
①BRANCH TAKE-OFF SINGLE DROP



②BRANCH TAKE-OFF

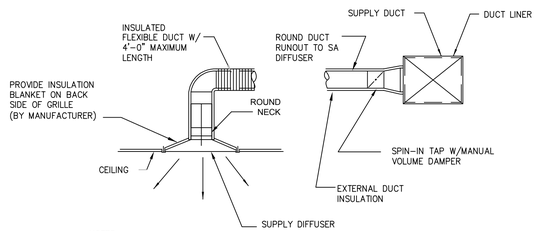
NOTE:
1. USE BRANCH TAKE-OFF ① WHEN MAIN AND BRANCH DUCTS ARE DIFFERENT DEPTHS
2. USE BRANCH TAKE-OFF ② WHEN MAIN AND BRANCH DUCTS ARE SAME DEPTHS

1 DUCTWORK DETAIL
SCALE: NONE



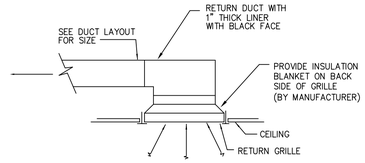
NOTE:
1. ALL FLEXIBLE DUCT CONNECTIONS TO SHEET METAL SHALL BE SECURED WITH NYLON STRAP AND 2 SHEET METAL SCREWS (MIN.).
2. PROVIDE INSULATION BLANKET ON BACK OF GRILLE FACE, TAPE EDGES DOWN TO GRILLE AND FLEX CONNECTION

2 FLEX. CONNECTION DETAIL
SCALE: NONE

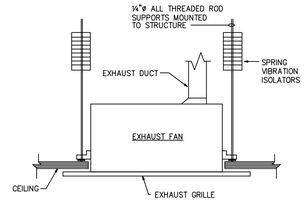


NOTES:
1. PROVIDE TRANSITION FROM ROUND DUCT TO DIFFUSER IF REQ'D.
2. PROVIDE EACH SUPPLY GRILLE A OPPOSED BLADE DAMPER (OBD)

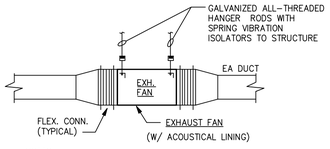
3 SPIN TAP TO ROUND NECK DIFFUSER
SCALE: NONE



4 RETURN GRILLE DETAIL
SCALE: NONE

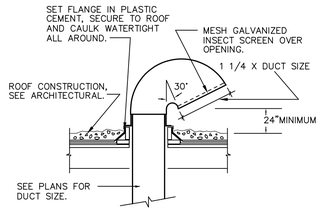


5 CEILING FAN DETAIL
SCALE: NONE

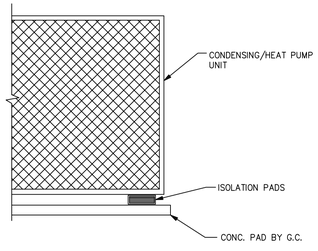


NOTES:
1. COORDINATE LOCATION OF FAN WITH OTHER TRADES TO INSURE SERVICE CLEARANCES.
2. MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS DOOR IN CEILING IF REQUIRED.

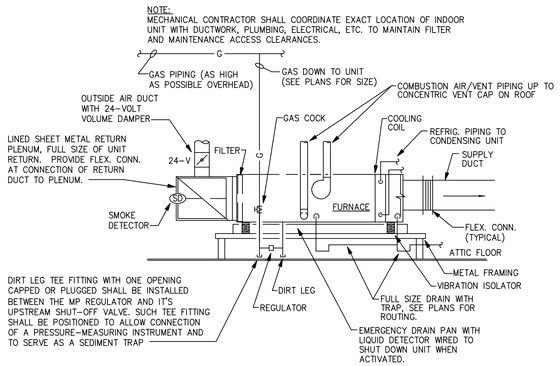
6 INLINE EXH. FAN DETAIL
SCALE: NONE



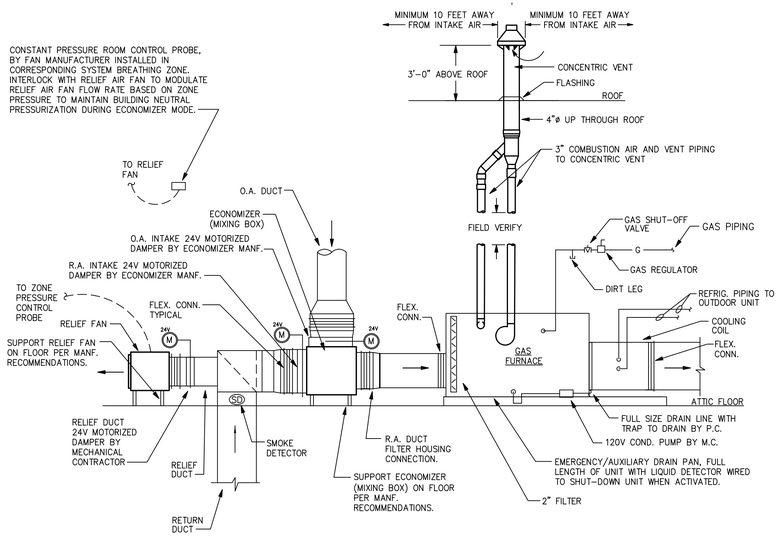
7 GOOSENECK DETAIL
SCALE: NONE



8 OUTDOOR UNIT MOUNTING DETAIL
SCALE: NONE



9 HORIZONTAL FURNACE
SCALE: NONE



HORIZONTAL GAS FURNACE W/ ECONOMIZER BOX DETAIL
SCALE: NONE

NOTES:
1. MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF INDOOR UNIT WITH DUCTWORK, PLUMBING, ELECTRICAL, ETC. TO MAINTAIN FILTER AND MAINTENANCE ACCESS CLEARANCES.
2. GENERAL CONTRACTOR SHALL PROVIDE EQUIPMENT FILTER HOUSING AND UNIT SUPPORT AS REQUIRED.

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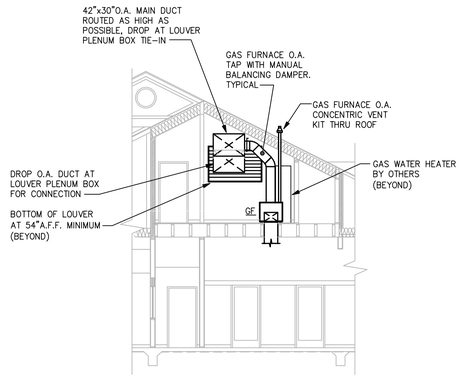
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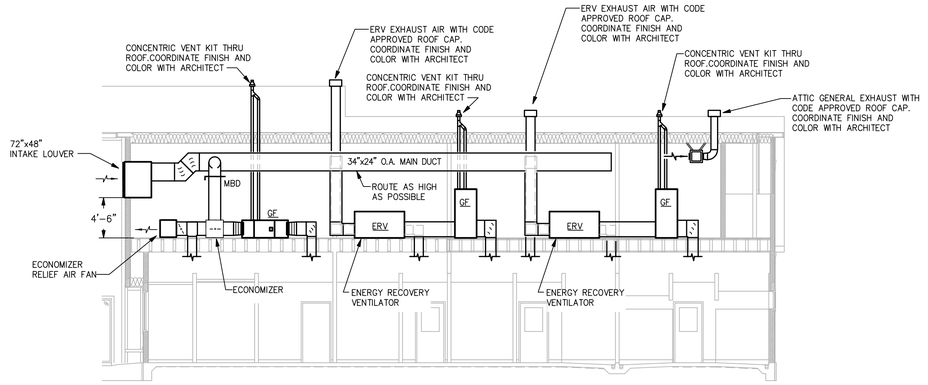
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1 MECHANICAL ATTIC BUILDING SECTION

SCALE: NONE



2 MECHANICAL ATTIC BUILDING SECTION

SCALE: NONE

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MECHANICAL SECTIONS

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REVISION: -		

REVIEWS

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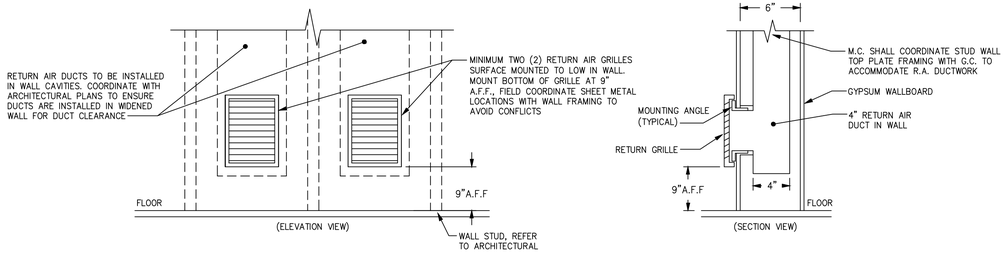
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DRAWN: DRH
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M007

7 OF 12

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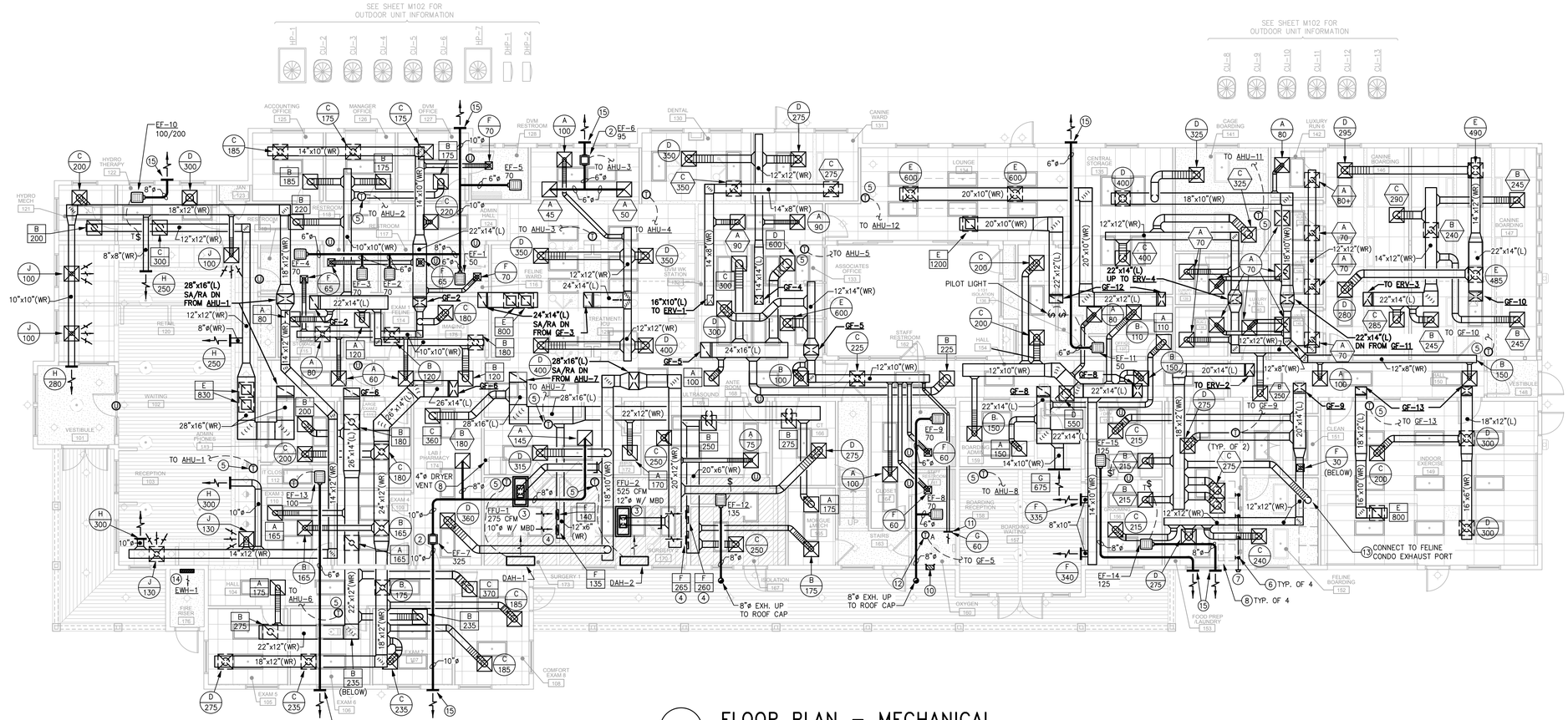


2 SURGERY ROOM RETURN AIR GRILLE DETAIL

SCALE: NO SCALE

NOTES THIS SHEET

1. SEE SHEETS M001–006 FOR SPECIFICATIONS, LEGENDS, GENERAL NOTES, SCHEDULES AND DETAILS.
2. INLINE EXHAUST FAN (EF–#) TO BE INSTALLED ABOVE CEILING. COORDINATE EXACT LOCATION OF FAN WITH ALL ABOVE CEILING CONDITIONS TO AVOID CONFLICT. PROVIDE UNIT IDENTIFICATION LABEL AT NEAREST CEILING TILE FOR MAINTENANCE. FAN SHALL BE INTERLOCKED WITH ASSOCIATED GAS FURNACE TO ENERGIZE AND DE–ENERGIZE WITH GAS FURNACE OPERATION.
3. SURGERY ROOMS: MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL FAN FILTER UNIT (FFU–#) IN CEILING, SIZED AS INDICATED. COORDINATE WITH OWNER AND SURGERY ROOM EQUIPMENT SUPPLIER FOR EXACT LOCATION OF FFU PRIOR TO ROUGHING–IN. ENSURE THAT FFU MAINTAINS ALL REQUIRED MAINTENANCE AND OPERATIONAL CLEARANCES PER MANUFACTURER'S INSTRUCTION. FFU SHALL BE WIRED DIRECTLY TO ELECTRICAL PANEL FOR CONTINUOUS OPERATION AND SHALL RUN 24/7. COORDINATE WITH ELECTRICAL CONTRACTOR TO HAVE LOCK–OUT–TAG–OUT PROVISIONS MADE AT PANEL FOR FUTURE MAINTENANCE OF UNIT.
4. SURGERY ROOMS: TWO (2) RETURN AIR GRILLES SHALL BE LOCATED LOW IN WALL (BOTTOM OF GRILLE TO BE 9" A.F.F.). GRILLE LOCATIONS SHALL BE COORDINATED WITH OWNER PRIOR TO ROUGHING–IN. PROVIDE AND INSTALL SHEET METAL R.A. DUCTS IN WALL SIZED AS INDICATED BELOW. FIELD COORDINATE DUCT LOCATIONS WITH STUD WALLS TO AVOID CONFLICT.
   173 SURGERY 1 – 4"x12" R.A. SHEET METAL DUCT IN WALL
   170 SURGERY 2 – 4"x20"(WR) R.A. SHEET METAL DUCT IN WALL
5. COORDINATE THERMOSTAT/SWITCH LOCATION WITH OWNER PRIOR TO ROUGHING–IN.
6. MECHANICAL CONTRACTOR SHALL ROUTE 4"ø DRYER VENT FROM 12" A.F.F. PROVIDE WITH CODE APPROVED CLEAN–OUT AND DRYER CONNECTION.
7. ROUTE RIGID CODE APPROVED DRYER DUCT TO EXTERIOR WALL/ROOF AS REQUIRED. PROVIDE WITH CODE APPROVED DRYER VENT CAP AND BACKDRAFT DAMPER. SEE DETAIL ON SHEET M004 FOR ADDITIONAL INFORMATION. PROVIDE WALL PENETRATION WITH FLASHING AND COUNTER FLASHING SEALED AIR AND WATER TIGHT. CONTRACTOR SHALL PAINT WALL CAP TO MATCH EXTERIOR WALL ADJACENT SURFACES, COLOR BY ARCHITECT.
8. GAS DRYER BY OTHERS. SEE SHEET M201 FOR GAS PIPING SCOPE OF WORK. REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION.
10. 160 OXYGEN: TWO(2) 6"x6" STATIONARY NON–CLOSABLE LOUVERED VENTS EQUAL TO RUSKIN ELF6375DX. INSTALL ONE(1) LOUVERED VENT WITHIN 6" OF THE FLOOR AND ONE(1) WITHIN 6" OF THE CEILING PER 2015 IFC 5306.2.1 OR APPLICABLE CODE. PROVIDE LOUVERED VENTS WITH BIRD/INSECT SCREEN AND EXTENDED SILL. COORDINATE FRAME REQUIREMENTS AND EXACT INSTALLATION WITH ARCHITECTURAL WALL CONSTRUCTION PRIOR TO ORDERING. LOUVERED VENTS SHALL BE PAINTED TO MATCH EXTERIOR WALL ADJACENT SURFACES, COLOR BY ARCHITECT. PROVIDE WALL PENETRATION WITH FLASHING AND COUNTER FLASHING SEALED WATER TIGHT.
11. 160 OXYGEN: S.A. DIFFUSER INSTALLED ON WALL AS LOW AS POSSIBLE . FIELD VERIFY EXACT INSTALLATION HEIGHT A.F.F. PRIOR TO ROUGHING–IN. NO FLEXIBLE DUCTWORK SHALL BE USED.
12. 160 OXYGEN: MECHANICAL CONTRACTOR SHALL PROVIDE AVERAGING THERMOSTATS TO BE INSTALLED ON WALL IN OXYGEN CLOSET. INSTALL ON WALL ±48" A.F.F. INTERLOCK AVERAGING THERMOSTATS WITH GF–5.
13. MECHANICAL CONTRACTOR SHALL CONNECT 10"ø EXHAUST DUCT TO FELINE CONDO EXHAUST PORT. FIELD VERIFY EXACT LOCATION OF CONNECTION PORT PRIOR TO ROUGHING–IN.
14. ELECTRIC WALL HEATER TO BE FLUSH MOUNTED. COORDINATE EXACT LOCATION OF HEATER PRIOR TO ROUGHING–IN.
15. APPROXIMATE LOCATION OF SIDEWALL EXHAUST DISCHARGE. PROVIDE WITH CODE APPROVED DISCHARGE LOUVER WITH GRAVITY BACKDRAFT DAMPER. COORDINATE LOUVER FINISH AND FINAL LOCATION WITH ARCHITECT.



1 FLOOR PLAN – MECHANICAL

SCALE: 1/8" = 1'–0"

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MAIN LEVEL FLOOR PLAN - MECHANICAL

REV #	DATE	COMMENTS
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REVIEWS

INITIALS	

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PROJECT NO.: 22018
DRAWN: DRH
DATE: 07/18/22

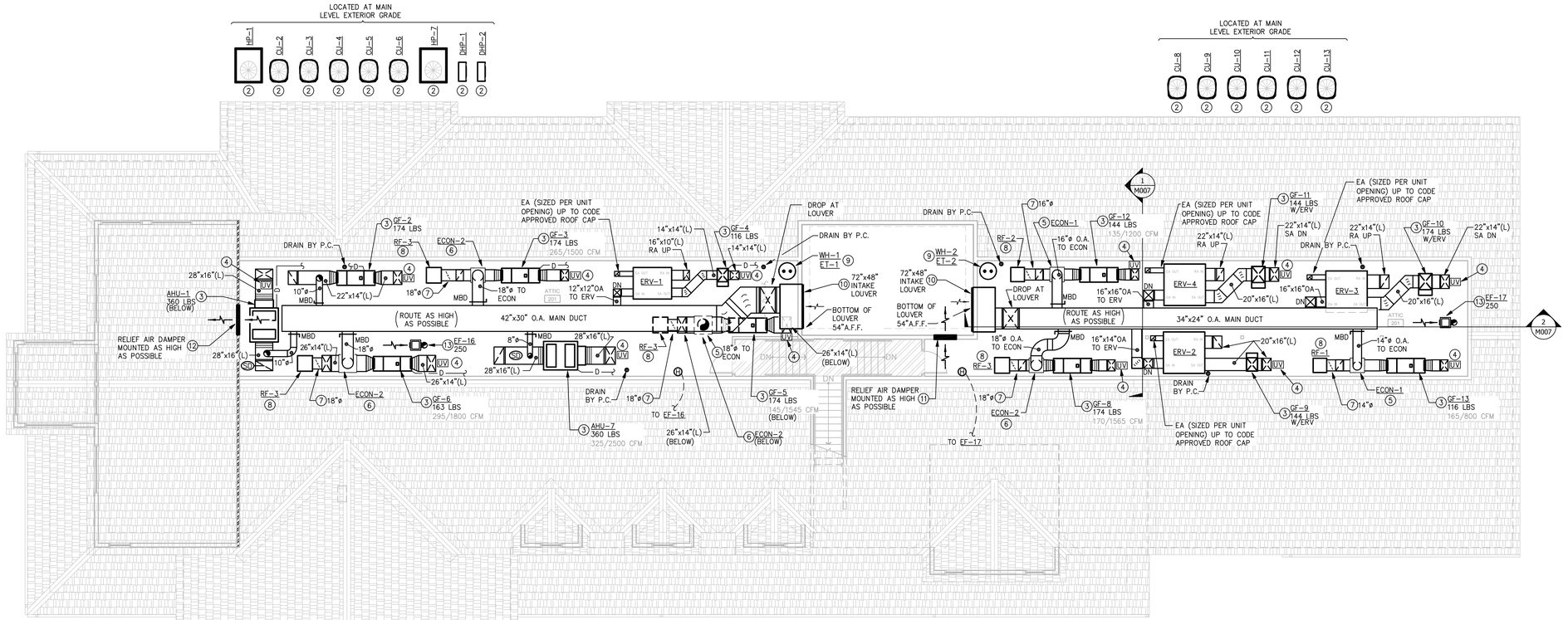
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8 OF 12

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NOTES THIS SHEET

1. SEE SHEETS M001–006 FOR SPECIFICATIONS, LEGENDS, GENERAL NOTES, SCHEDULES AND DETAILS.
2. SPLIT SYSTEM OUTDOOR UNIT (HP–# / CU–# / DHP–#) [LOCATED AT GRADE LEVEL] SHALL BE INSTALLED ON PRE–MANUFACTURED SUPPORT PAD AT EXTERIOR GRADE, MAKE DEAD LEVEL. COORDINATE ALL REFRIGERANT LINESET CONCEALMENT REQUIREMENTS PRIOR TO ROUGHING–IN. MECHANICAL CONTRACTOR SHALL FULLY COORDINATE EXACT LOCATION OF OUTDOOR UNIT WITH ARCHITECT PRIOR TO BEGINNING ANY WORK.
3. SPLIT SYSTEM GAS FURNACE (GF–#) TO BE INSTALLED ON ATTIC FLOOR PER MANUFACTURER RECOMMENDATIONS. INSTALL UNITS TO MAINTAIN MANUFACTURER AND CODE REQUIRED WORKING CLEARANCES. ROUTE CONDENSATE DRAIN LINE TO AREA DRAIN BY PLUMBING CONTRACTOR AND SPILL INDIRECTLY WITH CODE MINIMUM AIR GAP. PROVIDE UNIT WITH AN EMERGENCY DRAIN PAN BENEATH THE UNIT. THE DRAIN PAN SHALL BE FABRICATED FROM MINIMUM 20–GAUGE G–90 GALVANIZED STEEL. THE LENGTH AND WIDTH OF THE DRAIN PAN SHALL EXTEND A MINIMUM OF 3–INCHES IN EACH DIRECTION BEYOND THE OUTSIDE DIMENSIONS OF THE AIR HANDLING UNIT. THE DRAIN PAN SHALL HAVE 3–INCH HIGH EDGE TURNED UP ALL AROUND WITH ALL JOINTS SOLDERED AND PROVEN WATER TIGHT PRIOR TO INSTALLATION. PROVIDE THE PAN WITH DRAIN PAN OVERFLOW SWITCH AND LEAK DETECTOR ALARM CONTROL TO SHUT DOWN BOTH INDOOR AND OUTDOOR UNIT UPON DETECTION.
4. UV LIGHT EQUAL TO ULTRAVATION MODEL 'UVPHOTOMAX'. UV LIGHT SHALL BE PROVIDED AND INSTALLED IN THE SUPPLY DUCT BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR. COORDINATE ALL WORK INVOLVED PRIOR TO ROUGHING–IN. UV LIGHT SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS.
5. ECON–1: MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL DIFFERENTIAL ENTHALPY ECONOMIZER (MIXING BOX) AT GAS FURNACE R.A. INLET. ECONOMIZER (MIXING BOX) SHALL BE EQUAL TO MICROMETL #MB–GP10CB–D2EH (800 – 1,500 CFM CAPACITY). ECONOMIZER O.A., R.A., AND REMOTE E.A. DAMPERS SHALL BE INTERLOCKED WITH ECONOMIZER AND GAS FURNACE CONTROLS. SEE GAS FURNACE SCHEDULE ON SHEET M003 AND VERTICAL GAS FURNACE DETAIL ON SHEET M004 FOR ADDITIONAL INFORMATION.
6. ECON–2: MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL DIFFERENTIAL ENTHALPY ECONOMIZER (MIXING BOX) AT GAS FURNACE R.A. INLET. ECONOMIZER (MIXING BOX) SHALL BE EQUAL TO MICROMETL #MB–GP10CB–D2EH (1,500 – 2,000 CFM CAPACITY). ECONOMIZER O.A., R.A., AND REMOTE E.A. DAMPERS SHALL BE INTERLOCKED WITH ECONOMIZER AND GAS FURNACE CONTROLS. SEE GAS FURNACE SCHEDULE ON SHEET M003 AND VERTICAL GAS FURNACE DETAIL ON SHEET M004 FOR ADDITIONAL INFORMATION.
7. RELIEF AIR DUCT (SIZED AS INDICATED) WITH 24V MOTORIZED DAMPER INSTALLED ON R.A. DUCT ABOVE ATTIC FLOOR. INTERLOCK RELIEF DAMPER WITH IN–LINE RELIEF FAN AND GAS FURNACE ECONOMIZER CONTROLS TO OPEN WHEN UNIT IS IN ECONOMIZER MODE. DAMPER SHALL BE NORMALLY SHUT, SPRING CLOSED, 24V POWER OPENED. LOW VOLTAGE POWER TO BE PROVIDED BY MECHANICAL CONTRACTOR FROM CORRESPONDING GAS FURNACE. SEE GAS FURNACE DETAILS SHEET M007 FOR ADDITIONAL INFORMATION. RELIEF SHALL BE DISCHARGED TO ATTIC SPACE.
8. RELIEF AIR FAN (RF–#) INSTALLED ON OUTLET OF RELIEF AIR DUCT. INTERLOCK FAN WITH RELIEF DUCT DAMPER AND GAS FURNACE ECONOMIZER CONTROLS TO ENERGIZE FAN WHEN UNIT IS IN ECONOMIZER MODE. CONTRACTOR SHALL INSTALL CONSTANT PRESSURE ROOM CONTROL PROBE, BY FAN MANUFACTURER, IN CORRESPONDING SYSTEM BREATHING ZONE AND INTERLOCK WITH RELIEF AIR FAN TO MODULATE RELIEF AIR FAN FLOW RATE BASED ON ZONE PRESSURE TO MAINTAIN BUILDING NEUTRAL PRESSURIZATION DURING ECONOMIZER MODE. RELIEF AIR SHALL BE DISCHARGED TO ATTIC SPACE.
9. GAS WATER HEATER (WH–#) BY OTHERS. MECHANICAL CONTRACTOR SHALL INSTALL 4"ø VENT AND 4"ø COMBUSTION AIR ROUTED TO CONCENTRIC VENT KIT BY WATER HEATER MANUFACTURER. COORDINATE ROUTING FLUE AND COMBUSTION AIR VENT TO/FROM WATER HEATER FROM CONCENTRIC VENT KIT WITH PLUMBING CONTRACTOR PRIOR TO ROUGHING–IN. SEE SHEET M101 FOR CONTINUATION.
10. 72"X48" INTAKE LOUVER EQUAL TO RUSKIN #ELF6375DX SERIES, 6" DEPTH. INSTALL AS HIGH AS POSSIBLE ON WALL ABOVE ATTIC FLOOR, COORDINATED WITH WALL FRAMING. PROVIDE WITH INSULATED PLENUM, MINIMUM 36" DEEP, FULL SIZE OF LOUVER. THE LOUVER SHALL BE PROVIDED WITH GRAVITY DAMPER, BIRD SCREEN, AND EXTENDED SILL. LOUVER TO BE INSTALLED CENTERED ON EXTERIOR WALL PER ARCHITECTURAL ELEVATIONS AND PAINTED TO MATCH ADJACENT EXTERIOR WALL SURFACES, COLOR BY ARCHITECT. PROVIDE WALL PENETRATION WITH FLASHING AND COUNTER FLASHING SEALED AIR AND WATER TIGHT.
11. 36"x36" ECONOMIZER AIR RELIEF LOUVER EQUAL TO RUSKIN #ELBD375E SERIES, WALL DEPTH. INSTALL AS HIGH AS POSSIBLE ON WALL ABOVE ATTIC FLOOR, COORDINATED WITH WALL FRAMING. THE LOUVER SHALL BE PROVIDED WITH GRAVITY BACKDRAFT DAMPER, BIRD SCREEN, AND EXTENDED SILL. LOUVER TO BE INSTALLED CENTERED ON EXTERIOR WALL PER ARCHITECTURAL ELEVATIONS AND PAINTED TO MATCH ADJACENT EXTERIOR WALL SURFACES, COLOR BY ARCHITECT. PROVIDE WALL PENETRATION WITH FLASHING AND COUNTER FLASHING SEALED AIR AND WATER TIGHT.
12. 48"x40" ECONOMIZER AIR RELIEF LOUVER EQUAL TO RUSKIN #ELBD375E SERIES, WALL DEPTH. INSTALL AS HIGH AS POSSIBLE ON WALL ABOVE ATTIC FLOOR, COORDINATED WITH WALL FRAMING. THE LOUVER SHALL BE PROVIDED WITH GRAVITY BACKDRAFT DAMPER, BIRD SCREEN, AND EXTENDED SILL. LOUVER TO BE INSTALLED CENTERED ON EXTERIOR WALL PER ARCHITECTURAL ELEVATIONS AND PAINTED TO MATCH ADJACENT EXTERIOR WALL SURFACES, COLOR BY ARCHITECT. PROVIDE WALL PENETRATION WITH FLASHING AND COUNTER FLASHING SEALED AIR AND WATER TIGHT.
13. INLINE EXHAUST FAN SUSPENDED FROM STRUCTURE, INSTALLED AS HIGH AS POSSIBLE FOR GENERAL ATTIC VENTILATION. PROVIDE WITH 9"ø EXHAUST DUCT UP TO CODE APPROVED ROOF CAP. COORDINATE ROOF CAP STYLE, FINISH, AND COLOR WITH ARCHITECT PRIOR TO PURCHASE. FAN SHALL BE CONTROLLED VIA HUMIDISTAT CONTROLLER WITHIN ATTIC SPACE.



1 UPPER LEVEL FLOOR PLAN – MECHANICAL
SCALE: 1/8" = 1'–0"

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NOTES THIS SHEET

1. SEE SHEETS M001–007 FOR SPECIFICATIONS, LEGENDS, GENERAL NOTES, SCHEDULES, CALCULATIONS AND DETAILS.
2. SPLIT SYSTEM GAS FURNACE (GF–#) TO BE INSTALLED AS INDICATED.
3. GAS FIRED WATER HEATER (WH–#) BY PLUMBING CONTRACTOR. FIELD VERIFY EXACT LOCATION OF WATER HEATER PRIOR TO ROUGHING–IN BRANCH GAS LINE.
4. CONCENTRIC VENT ROOF TERMINATION KIT. FULLY COORDINATE EXACT LOCATION OF ROOF KIT PENETRATION TO MAINTAIN ANY LINE OF SIGHT REQUIREMENTS BY ARCHITECT PRIOR TO BEGINNING ANY WORK. COLOR AND FINISH OF CONCENTRIC KIT SHALL BE COORDINATED WITH ARCHITECT. MAINTAIN ALL MANUFACTURER REQUIRED LIMITATIONS AND CLEARANCES. FIELD VERIFY ALL EXACT ROUTING OF CONCENTRIC VENT PIPING, ELEVATION OF PIPING, AND ALL INSTALLATION WORK INVOLVED PRIOR TO ROUGHING–IN.
5. M.C. SHALL PROVIDE AND INSTALL A CARBON MONOXIDE GAS DETECTOR
   - POWER REQUIREMENT: 24VAC NOMINAL, 60 HZ, 0.35A; 24VDC NOMINAL WITH REMOTE SENSOR, 7W MAX.
   - DETECTION RANGE: CO: 0 – 250 PPM;
   - DIGITAL DISPLAY, AUDIBLE ALARM
   - UL LISTED
   - WALL MOUNTED @ ±60" A.F.F. TO THE TOP OF DETECTOR
   - TIE DETECTOR INTO MAIN CO GAS DETECTION PANEL COORDINATE WITH EQUIPMENT AND OTHER TRADES FOR EXACT DETECTOR LOCATION.
6. M.C. SHALL PROVIDE & INSTALL A MAIN CO GAS DETECTION PANEL:
   - POWER REQUIREMENT: 24VAC NOMINAL, 60 HZ, 0.35A; 24VDC NOMINAL
   - DEDICATED TRANSFORMER
   - DIGITAL DISPLAY AND AUDIBLE ALARM
   - ETL & ANSI/UL LISTED
   - WALL MOUNTED @ ± 60" A.F.F.
   - THE CONTROLLER WITH INPUTS FOR CO DETECTOR(S). ALARM SHALL SOUND WHEN CO LEVELS REACH 25 PPM.

GAS PIPE SIZING

- TABLE: 2018 VIRGINIA FUEL GAS CODE TABLE 402.4(5)
- TOTAL GAS INPUT: 940 MBH
- INLET PRESSURE: 2.0 PSI
- PRESSURE DROP: 1.0 PSI
- LENGTH: 227 LN/FT
- FITTINGS FACTOR: 20%
- TOTAL EQUIVALENT LENGTH: 272 LN/FT

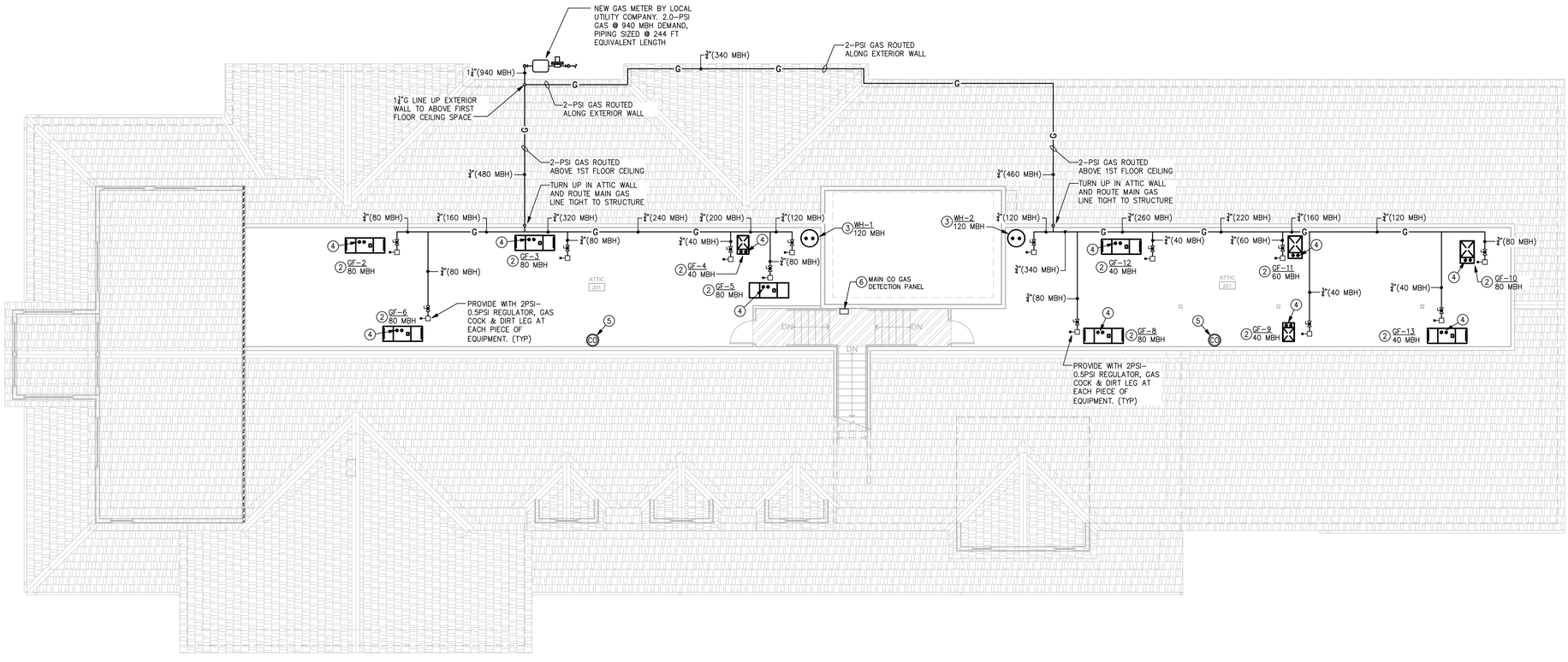
PIPE SIZE (INCHES)	CAPACITY (MBH)
3/4	528
1	945
1–1/4	1,940

GAS LOAD REQUIREMENTS

TAG	DESCRIPTION	QTY	INPUT MBH	TOTAL MBH
GF–2	GAS FURNACE	1	80	80
GF–3	GAS FURNACE	1	80	80
GF–4	GAS FURNACE	1	40	40
GF–5	GAS FURNACE	1	80	80
GF–6	GAS FURNACE	1	80	80
GF–8	GAS FURNACE	1	80	80
GF–9	GAS FURNACE	1	40	40
GF–10	GAS FURNACE	1	80	80
GF–11	GAS FURNACE	1	60	60
GF–12	GAS FURNACE	1	40	40
GF–13	GAS FURNACE	1	40	40
WH–1	GAS WATER HEATER	1	120	120
WH–2	GAS WATER HEATER	1	120	120
TOTAL BUILDING LOAD MBH				940

GAS PIPING NOTES

1. GAS PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST ISSUE OF THE INTERNATIONAL OR STATE FUEL GAS CODE AND NFPA STANDARD NO. 54 WHICH APPLY.
2. GAS PIPING SHALL BE TESTED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN NFPA NO 54. ANY OTHER TEST AS REQUIRED BY THE LOCAL GAS INSPECTION DEPARTMENT OR GAS COMPANY SHALL ALSO BE PERFORMED.
3. MINIMUM GAS PIPING SIZING SHALL BE 3/4".
4. GAS PIPING COLOR/LABELS:
   EXTERIOR:
   A. LABEL ALL GAS PIPING "GAS/PRESSURE" ON PIPE AT 5'–0' CENTERS.
   B. COLOR: ON ROOF PAINT WITH TWO COATS OF YELLOW ENAMEL, ON VERTICAL WALLS PAINT TO MATCH WALL COLOR.
   INTERIOR:
   A. LABEL ALL GAS PIPING "GAS/PRESSURE", SPACING AND COLOR PER ANSI/ASME A13.1 CODE REQUIREMENTS.
5. GAS PIPING SUPPORTS:
   EXTERIOR:
   A. PIPING ROUTED ON ROOF SHALL BE STRAPPED TO MANUFACTURED SUPPORTS "QUICK–BLOCK" OR EQUAL. GAS SUPPORTS SPACED PER NFPA 54 7.2.5.2.
   INTERIOR:
   A. PIPING TO BE SUPPORTED BY CLEVIS HANGERS W/ THREADED ROD OR UNI–STRUT SYSTEM. GAS SUPPORTS SPACED PER NFPA 54 7.2.5.2.
6. GAS VALVES SHALL BE ANSI/CSA APPROVED, 125 PSI RATED, 2 PIECE, FULL PORT, BALL VALVES W/BRASS BODY AND BALL. PROVIDE W/ LEVER HANDLE.
7. PROVIDE UNIONS, FLANGES OR COUPLINGS AT CONNECTION TO ALL VALVES AND EQUIPMENT. DO NOT USE DIRECT WELDED OR THREADED CONNECTIONS TO VALVES, EQUIPMENT OR OTHER APPARATUS.
8. PROVIDE NON–CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
9. PROVIDE DIRT LEG, GAS VALVE AND GAS REGULATOR AT EACH PIECE OF EQUIPMENT INSTALLED IN ACCESSIBLE LOCATION WITH–IN 36" OF EQUIPMENT. USE VENT–LESS REGULATORS INDOORS WHEN POSSIBLE. ROUTE VENTED REGULATOR VENTS TO EXTERIOR.



1 UPPER LEVEL FLOOR PLAN – GAS PIPING

SCALE: 1/8" = 1'–0"

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UPPER LEVEL FLOOR PLAN - GAS PIPING

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11 OF 12

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COMMISSIONING OF BUILDING MECHANICAL SYSTEMS

01 GENERAL

COMMISSIONING OF THE **BUILDING MECHANICAL** SYSTEM SHALL BE PERFORMED BY THE MECHANICAL CONTRACTOR, OBSERVED BY A REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY IN ACCORDANCE WITH THE **2018 VIRGINIA ENERGY CONSERVATION CODE, SECTION C408** AND PROVIDED AS PART OF MECHANICAL CONTRACT. NO EXCEPTIONS.

MECHANICAL CONTRACTOR SHALL PROVIDE EVIDENCE OF MECHANICAL SYSTEMS COMPLETION IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION.

02 COMMISSIONING DESCRIPTION

BUILDING MECHANICAL COMMISSIONING PROCESS INCLUDES THE FOLLOWING TASKS:

A. TESTING, STARTUP AND VERIFICATION CHECKS OF EQUIPMENT AND SYSTEMS.
B. PROVIDE QUALIFIED PERSONNEL TO ASSIST IN COMMISSIONING TESTS.
C. ASSISTANCE IN FUNCTIONAL PERFORMANCE TEST TO ASSURE EQUIPMENT AND SYSTEMS ARE FULLY OPERATIONAL.
D. PROVIDE EQUIPMENT, MATERIALS, AND LABOR NECESSARY TO CORRECT DEFICIENCIES FOUND DURING COMMISSIONING PROCESS TO FULFILL CONTRACT AND WARRANTY REQUIREMENTS.
E. PROVIDE OPERATION AND MAINTENANCE INFORMATION AND RECORD DRAWINGS TO OWNERS PROJECT MANAGER.
F. PROVIDE TRAINING FOR SYSTEMS SPECIFIED. COORDINATE WITH OWNERS PROJECT MANAGER.

EQUIPMENT AND SYSTEMS TO BE COMMISSIONED:

A. UNITARY AND PACKAGED HVAC EQUIPMENT
B. ECONOMIZERS
C. UNIT HEATERS
D. FANS
E. PUMPS
F. HVAC CONTROLS
G. HEATING/COOLING COILS
H. AIR DISTRIBUTION SYSTEMS
I. SUPPLY AIR OUTLETS
J. KITCHEN HOODS
K. MAKE–UP AIR UNITS
L. ALL PROJECT SPECIFIC EQUIPMENT AS SCHEDULED (NOT LISTED)

FUNCTIONS TO BE TESTED:

A. EACH SEQUENCE IN SEQUENCE OF OPERATION
B. ALL CONTROLS SYSTEM FUNCTIONS
C. EQUIPMENT ENTERING/LEAVING AIR TEMPERATURE & FLOW RATES
D. EQUIPMENT CAPACITY
E. HEAT RECOVERY OPERATION
F. NIGHT SET BACK AND MORNING WARM–UP
G. ECONOMIZER FUNCTIONS
   – START–UP, WARM–UP, & SHUT–DOWN MODES
   – OCCUPIED & UNOCCUPIED MODES
   – FREE COOLING MODE
   – MINIMUM/MAXIMUM OUTSIDE AIR MODE
   – FIRE/SMOKE ALARM MODE
   – FREEZE PROTECTION
H. FAN INTERLOCKS & OPERATION
I. CONDENSATE OVERFLOW SWITCH OPERATION
J. DUCT & SYSTEM STATIC PRESSURE
K. ALL ALARMS
L. HEATING AND/OR COOLING COIL CAPACITY
M. OWNER/BUILDING SCHEDULES & SETPOINTS
N. AIR DISTRIBUTION FLOW RATES
O. S.A. CFM AT EACH SUPPLY AIR OUTLET
P. OCCUPANT OVERRIDES
Q. DAMPER OPERATION, POSITION, SETPOINTS, & INTERLOCKS
R. MINIMUM OUTDOOR AIR FLOW RATES
S. SYSTEM OPERATION AT OCCUPIED AND UNOCCUPIED HOURS
T. FIRE/SMOKE SHUTDOWN AND CONTROL SEQUENCE (IF APPLICABLE)
U. TERMINAL UNIT AIR BALANCING & OPERATION
V. SYSTEM TO SYSTEM INTERFACE
W. LOSS AND RESTORATION OF POWER MODES
X. FUNCTIONS RECOMMENDED BY MANUFACTURER (NOT LISTED)

CONDITIONS TESTS SHALL BE PERFORMED:

C1 – COOLING SEASON, WITHIN 5% OF DESIGN
C2 – HEATING SEASON, WITHIN 5% OF DESIGN
C3 – FULL OUTSIDE AIR/EXHAUST DESIGN CONDITIONS
C4 – NOT REQUIRED IF DESIGN CONDITIONS CAN BE SIMULATED

A. UNITARY AND PACKAGED HVAC EQUIPMENT: C1,C2,C3
B. ECONOMIZERS: C1,C2,C3
C. UNIT HEATERS: C2
D. FANS: C4
E. PUMPS: C4
F. HVAC CONTROLS: C1,C2,C3
G. HEATING/COOLING COILS: C1,C2
H. AIR DISTRIBUTION SYSTEMS: C4
I. SUPPLY AIR OUTLETS: C4
J. KITCHEN HOODS: C3
K. MAKE–UP AIR UNITS: C3

03 COMMISSIONING SUBMITTALS

DRAFT FORMS: SUBMIT DRAFT OF SYSTEM VERIFICATION FORM AND FUNCTIONAL PERFORMANCE TEST CHECKLIST.

BALANCING REPORT: SUBMIT A SYSTEM BALANCING REPORT AS OUTLINED REQUIRED IN PROJECT SPECIFICATIONS.

TEST REPORTS: INDICATE DATA ON SYSTEM VERIFICATION FORM FOR EACH PIECE OF EQUIPMENT INSTALLED. A WRITTEN TEST AND BALANCE REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED.

FIELD REPORTS: INDICATE DEFICIENCIES PREVENTING COMPLETION OF EQUIPMENT OR SYSTEM VERIFICATION CHECKS EQUIPMENT OR SYSTEM TO ACHIEVE SPECIFIED PERFORMANCE.

04 CLOSEOUT SUBMITTALS

PROJECT RECORD DOCUMENTS: RECORD REVISIONS TO EQUIPMENT AND SYSTEM DOCUMENTATION NECESSITATED BY COMMISSIONING.

OPERATION AND MAINTENANCE DATA: SUBMIT REVISIONS TO OPERATION AND MAINTENANCE MANUALS WHEN NECESSARY REVISIONS ARE DISCOVERED DURING COMMISSIONING.

05 QUALITY ASSURANCE

PERFORM WORK IN ACCORDANCE WITH STATE CODES AND LOCAL AHJ GUIDELINES.

06 COMMISSIONING RESPONSIBILITIES

MECHANICAL CONTRACTOR:

A. ENSURE PARTICIPATION OF EQUIPMENT MANUFACTURERS IN APPROPRIATE STARTUP, TESTING, AND TRAINING ACTIVITIES WHEN REQUIRED BY INDIVIDUAL EQUIPMENT SPECIFICATIONS.
B. REVIEW FUNCTIONAL PERFORMANCE TEST PROCEDURES TO ENSURE FEASIBILITY, SAFETY AND EQUIPMENT PROTECTION.
C. PERFORM AND DOCUMENT STARTUP AND SYSTEM OPERATIONAL CHECKOUT PROCEDURES, PROVIDE COPY TO OWNERS PROJECT MANAGER.
D. COORDINATE WITH EQUIPMENT MANUFACTURERS TO DETERMINE SPECIFIC REQUIREMENTS TO MAINTAIN VALIDITY OF WARRANTIES.
E. CONFIRM SENSORS SELECTED ARE WITHIN DEVICE RANGES.
F. PROVIDE INSTRUCTIONS AND DEMONSTRATIONS FOR OWNER PERSONNEL.
G. REVIEW SEQUENCES OF OPERATION AND OBTAIN CLARIFICATION FROM ARCHITECT/ENGINEER AS NEEDED.
H. PROVIDE WRITTEN SEQUENCES OF OPERATION FOR PACKAGED CONTROLLED EQUIPMENT. EQUIPMENT MANUFACTURERS' STOCK SEQUENCES MAY BE INCLUDED, WHEN ACCOMPANIED BY ADDITIONAL NARRATIVE TO REFLECT PROJECT CONDITIONS.
I. DEMONSTRATE SYSTEM PERFORMANCE AND OPERATION TO OWNER PROJECT MANAGER AND LOCAL CODE OFFICIAL AS REQUESTED.
J. PROVIDE CONTROL SYSTEM TECHNICIAN TO ASSIST DURING COMMISSIONING AUTHORITY VERIFICATION CHECK AND FUNCTIONAL PERFORMANCE TESTING.
K. PROVIDE CONTROL SYSTEM TECHNICIAN TO ASSIST TESTING, ADJUSTING, AND BALANCING AGENCY DURING PERFORMANCE OF TESTING, ADJUSTING, AND BALANCING WORK.
L. PERFORM OPERATION AND MAINTENANCE TRAINING SESSIONS. SCHEDULE WITH OWNER PROJECT MANAGER.

REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY:

A. ENSURE TESTING, ADJUSTING, AND BALANCING IS PERFORMED AS SPECIFIED.
B. ENSURE SUBCONTRACTORS PERFORM ASSIGNED COMMISSIONING RESPONSIBILITIES.
C. PARTICIPATE IN VERIFICATION OF TESTING, ADJUSTING, AND BALANCING REPORT FOR VERIFICATION OR DIAGNOSTIC PURPOSES. REPEAT SAMPLE OF PERCENT OF MEASUREMENTS CONTAINED IN TESTING, ADJUSTING, AND BALANCING REPORT AS INDICATED IN COMMISSIONING PLAN.
D. ASSIST IN PERFORMING OPERATION AND MAINTENANCE TRAINING SESSIONS.

MECHANICAL CONTRACTOR AND REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY:

A. SCHEDULE AND ATTEND COMMISSIONING MEETINGS WITH ALL INVOLVED PARTIES.
B. DEVELOP STARTUP/ FUNCTIONAL PERFORMANCE TESTING PLAN USING MANUFACTURER'S STARTUP AND OPERATIONAL PROCEDURES FOR EQUIPMENT/SYSTEMS TO BE COMMISSIONED.
C. PROVIDE REPORTS DOCUMENTING EQUIPMENT OPERATION IN ALL MODES AND SEQUENCE OF OPERATION INCLUDING:
   1. ALL MODES DESCRIBED IN SEQUENCE OF OPERATION OR EQUIPMENT O&M MANUAL.
   2. REDUNDANT OR AUTOMATIC BACK–UP MODES, IF AVAILABLE
   3. PERFORMANCE OF ALARMS.
   4. MODE OF OPERATION UPON A LOSS OF POWER AND RESTORATION OF POWER, IF REQUIRED.

07 SCHEDULING

PREPARE SCHEDULE INDICATING ANTICIPATED START DATES FOR THE FOLLOWING:
A. EQUIPMENT AND SYSTEM STARTUPS.
B. TESTING, ADJUSTING, AND BALANCING.
C. MECHANICAL SYSTEM ORIENTATION, INSPECTIONS AND TRAINING SESSIONS.
D. OPERATION AND MAINTENANCE MANUAL SUBMITTALS.

SCHEDULE OCCUPANCY SENSITIVE TESTS OF EQUIPMENT AND SYSTEMS DURING CONDITIONS OF BOTH MINIMUM AND MAXIMUM OCCUPANCY AND OR USE.

08 DESIGN DOCUMENT AND SUBMITTAL REVIEWS

A. SUBMIT PRODUCT SUBMITTALS FOR REVIEW PRIOR TO ORDERING, NO EXCEPTIONS.
B. SUBMIT SEQUENCE OF OPERATIONS TO OWNERS PROJECT MANAGER, ARCHITECT AND MECHANICAL ENGINEER.
C. SUBMIT FULLY DETAILED PROJECT OPERATING AND MAINTENANCE REPORT TO OWNERS PROJECT MANAGER, ARCHITECT AND ENGINEER.

09 MANUALS

O&M MANUALS SHALL BE PROVIDED AND SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

A. SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.
B. MANUFACTURER'S OPERATION AND MAINTENANCE MANUAL FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT.
C. NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY.
D. CONTROLS SYSTEM MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SEQUENCE DESCRIPTIONS. DESIRED OR FIELD DETERMINED SET POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS, AT EQUIPMENT OR IN SYSTEM PROGRAMMING.
E. A NARRATIVE OF HOW EACH SYSTEM OPERATES, AND SET POINTS.

10 INSTALLATION, START–UP, TESTING AND BALANCING

A. STARTUP, TESTING AND BALANCING REPORTS SHALL BE GENERATED BY THE **MECHANICAL** CONTRACTOR FOR ALL EQUIPMENT/SYSTEMS AND SUBMITTED TO THE REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY.
B. PLACE SYSTEMS AND EQUIPMENT INTO FULL OPERATION AND CONTINUE OPERATION DURING EACH WORKING DAY OF COMMISSIONING.
C. INSTALL ADDITIONAL BALANCING, CHECK AND PRESSURE REDUCING VALVES, HEAT TRAPS, ETC. REQUIRED BY COMMISSIONING PLAN.
D. COORDINATE FINAL COMMISSIONING REPORT REQUIREMENTS, TESTING DATES AND WORK INVOLVED WITH OWNERS PROJECT MANAGER AND SCHEDULE ALL FUTURE TESTING PRIOR TO RECEIVING A CERTIFICATE OF OCCUPANCY.
E. PRIOR TO START OF FUNCTIONAL PERFORMANCE TEST, INSTALL REPLACEMENT FILTERS IN EQUIPMENT.

11 COMMISSIONING

A. TEST **BUILDING MECHANICAL SYSTEM** EQUIPMENT AT DESIGN CONDITIONS.

B. BE RESPONSIBLE TO PARTICIPATE IN INITIAL AND ALTERNATE PEAK SEASON TEST OF SYSTEMS REQUIRED TO DEMONSTRATE PERFORMANCE.

C. OCCUPANCY SENSITIVE FUNCTIONAL PERFORMANCE TESTS:

– TEST EQUIPMENT AND SYSTEMS AFFECTED BY OCCUPANCY VARIATIONS AT MINIMUM AND PEAK LOADS TO OBSERVE SYSTEM PERFORMANCE.

– PROVIDE AND PARTICIPATE IN FUTURE TESTING DELAYED BEYOND FINAL COMPLETION TO TEST PERFORMANCE WITH ACTUAL OCCUPANCY AND SEASONAL CONDITIONS. COORDINATE REQUIREMENTS WITH OWNER PROJECT MANAGER.

D. A PRELIMINARY REPORT OF COMMISSIONING TEST PROCEDURES AND RESULTS SHALL BE COMPLETED AND CERTIFIED BY THE REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY AND PROVIDED TO THE ARCHITECT AND BUILDING OWNER. THE REPORT SHALL BE IDENTIFIED AS "PRELIMINARY COMMISSIONING REPORT" AND SHALL INCLUDE:

1. ITEMIZATION OF DEFICIENCIES FOUND DURING TESTING REQUIRED BY THIS SECTION THAT HAVE NOT BEEN CORRECTED AT THE TIME OF REPORT PREPARATION.
2. DEFERRED TESTS THAT CANNOT BE PERFORMED AT THE TIME OF REPORT PREPARATION BECAUSE OF CLIMATIC CONDITIONS.
3. CLIMATIC CONDITIONS REQUIRED FOR PERFORMANCE OF THE DEFERRED TESTS.
4. DEFERRED TESTING INFORMATION (DATES, CONDITIONS, INCLUSIONS)

BUILDINGS, OR PORTIONS THEREOF, SHALL NOT PASS THE FINAL MECHANICAL INSPECTION UNTIL SUCH TIME AS THE CODE OFFICIAL HAS RECEIVED A LETTER OF TRANSMITTAL FROM THE ARCHITECT AND/OR BUILDING OWNER ACKNOWLEDGING THAT THE BUILDING OWNER HAS RECEIVED THE PRELIMINARY COMMISSIONING REPORT.

THE CODE OFFICIAL SHALL BE PERMITTED TO REQUIRE THAT A COPY OF THE PRELIMINARY COMMISSIONING REPORT BE MADE AVAILABLE FOR REVIEW BY THE CODE OFFICIAL.

E. A FINAL REPORT OF TEST PROCEDURES AND RESULTS IDENTIFIED AS "FINAL COMMISSIONING REPORT" SHALL BE DELIVERED TO THE ARCHITECT AND BUILDING OWNER AND SHALL INCLUDE:

1. RESULTS OF FUNCTIONAL PERFORMANCE TESTS.
2. DISPOSITION OF DEFICIENCIES FOUND DURING TESTING, INCLUDING DETAILS OF CORRECTIVE MEASURES USED OR PROPOSED.
3. FUNCTIONAL PERFORMANCE TEST PROCEDURES USED DURING THE COMMISSIONING PROCESS INCLUDING MEASURABLE CRITERIA FOR TEST ACCEPTANCE, PROVIDED HEREIN FOR REPEATABILITY.

COORDINATE FINAL COMMISSIONING REPORT REQUIREMENTS, TESTING DATES AND WORK INVOLVED WITH AAA PROJECT MANAGER AND SCHEDULE ALL FUTURE TESTING PRIOR TO RECEIVING A CERTIFICATE OF OCCUPANCY.

12 DOCUMENT REQUIREMENTS

THE REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY SHALL PROVIDE A STATEMENT OF SYSTEM COMMISSIONING TO THE CODE OFFICIAL AND OWNER IN ACCORDANCE WITH THE **2015 INTERNATIONAL ENERGY CONSERVATION CODE SECTION C408 REQUIREMENTS**. ANY/ALL INCOMPLETE OR DEFERRED COMMISSIONING REQUIREMENTS SHALL BE IDENTIFIED AS DEFERRED TESTS, INCLUDING TESTS THAT CANNOT BE PERFORMED BECAUSE OF CLIMATIC CONDITIONS OR OTHER NOTED DEFICIENCIES ASSOCIATED WITH COMMISSIONING, ACCORDINGLY ON THE STATEMENT OF SYSTEM COMMISSIONING PRIOR TO SUBMITTAL TO THE CODE OFFICIAL AND OWNER.

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PROFESSIONAL ENGINEER
07/18/2022

TEETER ENGINEERING GROUP, P.A.

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MECHANICAL COMMISSIONING

REV.#	DATE	COMMENTS
REVISION: -		
REVISION: -		
REVISION: -		
REVISION: -		

REVIEWS

INITIALS	

TEG
PROJECT NO.: 22018
DRAWN: DRH
DATE: 07/18/22

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12 OF 12

Save Date: Jul 15, 2022 - 8:49 AM - RyanH
Plot Date: Jul 18, 2022 - 9:29 AM
Drawing Name: \\server\Jobs\2BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018M201_MECHANICAL COMMISSIONING.dwg

DIVISION 26 ELECTRICAL SPECIFICATIONS

01 GENERAL
THE CONTRACTOR SHALL VISIT THE JOBSITE, PRIOR TO ANY SUBMISSION OF BID AND REVIEW ALL CONTRACT DOCUMENTS TO FAMILIARIZE HIMSELF WITH EXTENT OF WORK REQUIRED AND THE CONDITIONS (BOTH EXISTING AND NEW) UNDER WHICH THE WORK SHALL BE PERFORMED. THE CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCY BETWEEN THE ELECTRICAL PLANS AND EXISTING CONDITIONS PRIOR TO ISSUING A BID.

THE CONTRACTOR SHALL REVIEW ALL CONSTRUCTION DRAWINGS, SPECIFICATIONS, EQUIPMENT INSTALLATION INSTRUCTIONS AND SHOP DRAWINGS OF ALL TRADES TO FAMILIARIZE HIMSELF WITH THE EXTENT OF THE WORK REQUIRED.

THE CONTRACTOR SHALL NOT SCALE THESE DRAWINGS. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, UNLESS NOTED OTHERWISE. IT SHALL NOT BE THE INTENT OF THESE DOCUMENTS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE ELECTRICAL CONTRACTOR SHALL BE EXPECTED TO FURNISH AND INSTALL ALL ITEMS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM. ALL CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY, EXACT ROUTING SHALL BE DETERMINED IN THE FIELD. UON.

ALL CUTTING AND PATCHING, FIRE SEALING, TRENCHING AND BACKFILL, ELECTRICAL COORDINATION, ETC. REQUIRED FOR THE INSTALLATION OF THIS WORK IS THE RESPONSIBILITY OF THIS CONTRACTOR.

IT SHALL BE UNDERSTOOD THAT ALL WORK SHALL COMPLY WITH THE LATEST EDITIONS OF NATIONAL ELECTRICAL CODE, APPLICABLE NATIONAL AND LOCAL CODES, LOCAL ORDINANCES, MANUFACTURERS' INSTALLATION INSTRUCTIONS, UL STANDARDS, NFPA, AND THAT SPECIFIED IN THESE DOCUMENTS, AND OTHER AUTHORITIES HAVING JURISDICTION OVER THE ELECTRICAL CONSTRUCTION WORK ON THIS PROJECT. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR.

THE REQUIREMENTS OF THE ARCHITECT'S DIVISION 1, GENERAL AND SPECIAL CONDITIONS, AND THE CONTRACT SHALL APPLY TO THIS WORK.

ALL MATERIAL SHALL BE NEW AND LISTED FOR ITS INTENDED USE. WHERE UNDERWRITER'S LABORATORIES LABELING IS AVAILABLE FOR THE CLASS OF MATERIAL INVOLVED, MATERIALS SHALL BE FURNISHED WITH UL LABEL OR LISTING, OR THE CONTRACTOR SHALL PROVE IT IS NOT REQUIRED. ALL EQUIPMENT SHALL HAVE UL LABELS AND BE LISTED FOR ITS INTENDED USE.

ELECTRICAL CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS FOR PERMITS, LICENSES, FEES, INSPECTIONS, INSURANCE FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK UNDER THIS CONTRACT AT HIS EXPENSE.

CONTRACTOR SHALL COMPLY WITH ALL RULES AND REGULATIONS OF OSHA AS APPLIED TO CONSTRUCTION PROJECTS.

IN THE EVENT A CONFLICT OCCURS BETWEEN THE CONTRACT, SPECIFICATIONS, DRAWINGS, REFERRED TO MANUFACTURERS' LITERATURE, CODES HAVING JURISDICTION OR OTHER DOCUMENTS REFERRED TO HEREIN, THIS CONTRACTOR SHALL CONTACT THE ARCHITECT AND ENGINEER FOR A RULING AND CLARIFICATION PRIOR TO SUBMITTING ANY BID DOCUMENTS. WHERE CONFLICTS ARE QUESTIONED AFTER BID SUBMITTALS, THE DOCUMENT OR DOCUMENTS WITH THE MOST STRINGENT, EXPENSIVE AND DETAILED REQUIREMENTS WILL BE ENFORCED BY THE ARCHITECT AND ENGINEER. THE CONTRACTOR SHALL BE REQUIRED TO FURNISH AND INSTALL THE MORE STRINGENT REQUIREMENTS AND AGREES THAT NO SEPARATE OR EXTRA PAYMENTS WILL BE MADE FOR ANY ITEM OF WORK OR MATERIALS REQUIRED TO FOLLOW THE MORE STRINGENT REQUIREMENTS.

ALL EQUIPMENT AND MATERIAL SHALL BE INSTALLED IN A FIRST CLASS WORKMAN-LIKE MANNER AND ALIGNED, LEVELED AND ADJUSTED FOR SATISFACTORY OPERATION. INSTALL EQUIPMENT SO THAT ALL PARTS ARE EASILY ACCESSIBLE FOR INSPECTION, OPERATION, MAINTENANCE AND REPAIR.

THE WORD "PROVIDE" MEANS THAT THIS CONTRACTOR SHALL FABRICATE, ERECT, CONNECT AND COMPLETELY INSTALL COMPLETE SYSTEMS PLACED IN PROPER OPERATING CONDITION. THIS SHALL INCLUDE ALL LABOR, PRODUCT OPTIONS, ACCESSORIES AND INCIDENTAL MATERIALS REQUIRED TO COMPLETE THE INSTALLATION.

THE WORD "CONNECT" MEANS THAT THIS CONTRACTOR SHALL PROVIDE (SEE DEFINITION ABOVE) ALL DISCONNECTING MEANS, OVERCURRENT PROTECTION AND WIRING REQUIRED TO PLACE THE EQUIPMENT AND SYSTEMS IN PROPER OPERATING CONDITION AND TO COMPLY WITH CODE REQUIREMENTS.

ALL ELECTRICAL APPARATUS SHALL BE INSTALLED AT THE SAME MOUNTING HEIGHTS (UNLESS ALTERED BY AMERICANS WITH DISABILITIES ACT – ADA), USING THE SAME MATERIALS AND METHODS USED IN THE EXISTING CONSTRUCTION. THE QUALITY, PERFORMANCE AND APPEARANCE OF THE NEW CONSTRUCTION SHALL MATCH THAT OF ANY EXISTING CONSTRUCTION.

02 SCOPE
ELECTRICAL CONTRACTOR SHALL FURNISH ALL, BUT NOT LIMITED TO, EQUIPMENT, TOOLS, SKILLED SUPERVISION NECESSARY FOR THE CONSTRUCTION, ERECTION, INSTALLATION, CONNECTION, TESTING AND ADJUSTMENT OF ALL CIRCUITS AND ELECTRICAL EQUIPMENT SHOWN OR NOTED ON PLANS.

IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL ALL WORK IN ACCORDANCE WITH THE SPECIFICATIONS ASSOCIATED WITH THESE DRAWINGS. THE INSTALLATION OF ALL WORK PREFORMED AND ALL MATERIALS PROVIDED SHALL BE AS DIRECTED BY THE SPECIFICATIONS KEEPING IN MIND THAT THE NATIONAL ELECTRICAL CODE SHALL BE CONSIDERED AS A MINIMUM STANDARD AND THESE SPECIFICATIONS SHALL GOVERN ALL WORK. ALL EQUIPMENT SHALL BE AS SPECIFIED ON PLANS.

ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE AND FULLY OPERATIONAL ELECTRICAL SYSTEM, INSTALLED IN A GOOD WORKMANSHIP MANNER.

ELECTRICAL CONTRACTOR SHALL INCLUDE ALL LABOR, EQUIPMENT, TOOLS AND MATERIALS FOR ELECTRIC DISTRIBUTION, AS SHOWN ON DRAWINGS.

ELECTRICAL CONTRACTOR SHALL COORDINATE WITH POWER AND TELEPHONE COMPANIES AND ADHERE TO REQUIRED CRITERIA.

ELECTRICAL CONTRACTOR SHALL COORDINATE WITH ALL OTHER TRADES PRIOR TO ROUGHING.

ELECTRICAL CONTRACTOR SHALL FURNISH ALL NEW SWITCHBOARDS, PANELBOARDS, TRANSFORMERS, DISCONNECT SWITCHES, ETC. THAT ARE MANUFACTURED BY THE SAME MANUFACTURER. NEW PANELBOARDS ADDED TO AN EXISTING FACILITY SHALL BE OF THE SAME MANUFACTURER AS THE EXISTING PANELBOARDS.

UNLESS NOTED AS EXISTING, ALL EQUIPMENT, WIRING, DEVICES, LUMINAIRES, LAMPS, ETC., SHALL BE NEW AND AS SPECIFIED.

IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR FOR THE ADVANCE ORDERING OF LONG LEAD ITEMS SO AS NOT TO INTERFERE WITH THE PRODUCTION OF OTHER TRADES RESULTING IN ANY DOWN OR LAG TIME.

03 QUALITY ASSURANCE
THIS CONTRACTOR SHALL VERIFY THE LOCATIONS AND MEASUREMENTS OF EQUIPMENT AND DEVICES BEFORE INSTALLATION TO AVOID CONFLICT WITH THE WORK OF OTHER TRADES. ANY UNCERTAINTIES AND CONFLICTS SHALL BE SUBMITTED TO THE ENGINEER FOR FINAL DECISION.

THE INTEGRITY OF ALL STRUCTURAL, FIRE AND SMOKE RATED PARTITIONS AND CEILINGS, ROOFING, AND WATER PROOFING SHALL BE MAINTAINED.

CHECK NAMEPLATE DATA AND INSTALLATION DOCUMENTS OF ALL OWNER FURNISHED EQUIPMENT AND EQUIPMENT FURNISHED BY OTHER TRADES. VERIFY CIRCUIT SIZE, CONTROL REQUIREMENTS, AND MISCELLANEOUS REQUIREMENTS AGAINST THAT SHOWN IN THESE DOCUMENTS. ANY CONFLICT AND UNCERTAINTIES SHALL BE SUBMITTED TO THE ENGINEER FOR FINAL DECISION.

04 TESTS
UPON COMPLETION OF WORK, THE CONTRACTOR SHALL DEMONSTRATE THE INSTALLATION AND MAKE SUCH TESTS AS MAY BE REQUIRED TO SATISFY THE ENGINEER AND OWNER THAT THE WORK IS INSTALLED IN ACCORDANCE WITH DRAWINGS, SPECIFICATIONS AND EQUIPMENT MANUFACTURER'S INSTRUCTIONS.

TEST ALL LIGHTS, EQUIPMENT, APPLIANCES, AND OTHER SYSTEMS. ALL DEFECTS SHALL BE PROMPTLY REMEDIED AT NO ADDITIONAL COST TO THE OWNER.

THE CONTRACTOR SHALL TEST ALL WIRING AND CONNECTIONS FOR CONTINUITY AND GROUNDS AND CORRECT ALL FAULTS AT NO ADDITIONAL COST TO THE OWNER.

CHECK SERVICE GROUND. RESISTANCE TO GROUND SHALL NOT EXCEED 25 OHMS.

CHECK ALL EMPTY RACEWAYS TO ASSURE AN UNOBSTRUCTED AND USEABLE PATH FOR USE BY OTHER TRADES OR THE OWNERS VENDOR.

05 WARRANTY
THE CONTRACTOR SHALL GUARANTEE THE SYSTEM INSTALLATION FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE AGAINST ANY DEFECT IN WORKMANSHIP OR MATERIAL EXCEPTION: INCANDESCENT LAMPS SHALL BE GUARANTEED FOR 90 DAYS.

THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR TO ORIGINAL CONDITION ANY AND ALL DAMAGES TO BUILDING SURFACES,EQUIPMENT AND FURNISHINGS CAUSED DURING PERFORMANCE OF WORK.

CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED THEREBY.

ALL TEST EQUIPMENT SHALL BE FURNISHED BY THE CONTRACTOR AT HIS EXPENSE.

06 RECORD DRAWINGS
DURING THE CONSTRUCTION OF THIS PROJECT, THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF ELECTRICAL CONTRACT DRAWINGS ON WHICH SHALL BE RECORDED ALL, BUT NOT LIMITED TO, SIGNIFICANT CHANGES IN EQUIPMENT LOCATIONS, CIRCUIT ASSIGNMENT DEVIATIONS, EQUIPMENT SIZE CHANGES, ADDITIONS AND DELETIONS TO THE PROJECT, LOCATIONS OF ALL CONDUITS AND WIRING BELOW GRADE, LOCATIONS OF ALL INSTALLED PULL AND JUNCTION BOXES, FEEDER CIRCUIT LOCATIONS, ETC. THIS SET OF DRAWINGS SHALL BE USED TO PREPARE RECORD DRAWINGS TO BE SUBMITTED TO THE OWNER UPON COMPLETION OF THE PROJECT.

UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL PREPARE AN OPERATION AND MAINTENANCE MANUAL WHICH SHALL INCLUDE CATALOG DATA, EQUIPMENT INFORMATION, WIRING DIAGRAMS, WARRANTY INFORMATION, RECOMMENDED MAINTENANCE PROCEDURES, REPLACEMENT PARTS LISTS, ETC. FOR THE ELECTRICAL INSTALLATION. THE QUANTITIES OF MANUALS SHALL BE AS REQUIRED BY THE ARCHITECTURAL SECTIONS OF THESE SPECIFICATIONS. THESE MANUALS SHALL BE DELIVERED TO THE ARCHITECT FOR APPROVAL AND PRESENTATION TO THE OWNER.

07 SUBMITTALS
SHOP DRAWINGS OF MATERIALS, EQUIPMENT, LIGHTING FIXTURES AND WIRING DEVICES SHALL BE SUBMITTED FOR APPROVAL. ALL EQUIPMENT SHALL BE AS SPECIFIED HERE IN OR AS CALLED FOR ON THE DRAWINGS AND ANY ITEM NOT SUBMITTED SHALL BE PROVIDED AS SPECIFIED. THE RESPONSIBILITY TO ACCEPT OR REJECT ANY PROPOSED SUBSTITUTION REMAINS WITH THE PROJECT ENGINEER.

ALL OPERATING AND MAINTENANCE MANUALS SHALL BE DELIVERED TO THE OWNER.

SUBMIT CERTIFICATES OF INSPECTION AND ACCEPTANCE TO THE ENGINEER.

ANY ADDITIONAL COSTS INCURRED FOR SUBSTITUTE EQUIPMENT, MATERIALS AND METHODS SHALL BE PAID BY THE CONTRACTOR UNLESS APPROVED BY THE ENGINEER. CREDITS SHALL BE GIVEN TO THE OWNER WHERE SUCH SUBSTITUTE EQUIPMENT AND METHODS RESULT IN LESS EXPENSE TO THE CONTRACTOR.

ANY AND ALL DELAYS CAUSED BY THE REJECTION AND RE-SUBMITTAL OF SHOP DRAWINGS THAT ARE OR WERE IN CONFLICT WITH THE CONTRACT DRAWINGS SHALL BE THE DIRECT RESPONSIBILITY OF THIS CONTRACTOR.

CONTRACTOR AND EQUIPMENT SUPPLIERS SHALL PERFORM AND PROVIDE ALL COORDINATION STUDIES AND ARC FLASH STUDIES REQUIRED BY NATIONAL ELECTRICAL CODE FOR ALL REQUIRED SYSTEMS. REPORTS SHALL BE PROVIDED TO ENGINEER, INSPECTIONS DEPARTMENT AND OWNER.

08 CLEANING
THE ELECTRICAL CONTRACTOR SHALL KEEP ALL AREAS IN WHICH WORK IS BEING PERFORMED, FREE FROM DEBRIS AT ALL TIMES AND SAID AREAS SHALL BE LEFT BROOM CLEAN AT THE END OF EACH WORKING DAY.

ALL ELECTRICAL WORK SHALL BE CLEANED AND MADE READY FOR FINAL INSPECTION AND USE BY THE OWNER.

09 CONTRACT DOCUMENTS
THE CONTRACT DOCUMENTS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO INDICATE EVERY DETAIL OF CONSTRUCTION OR EVERY ITEM OF MATERIAL OR EQUIPMENT REQUIRED. THE CONTRACT DOCUMENTS ARE INTENDED TO ILLUSTRATE AND SPECIFY THE GENERAL EXTENT, TYPE OF SYSTEM AND PERFORMANCE WITH ANY SPECIAL CONDITION AND FUNCTIONS REQUIRED. THE ELECTRICAL CONTRACTOR SHALL BE EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE AND OPERATABLE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.

CONTRACTOR SHALL MAINTAIN ON THE JOB SITE ONE COMPLETE SET OF CONTRACT DOCUMENTS OF ALL TRADES AND SHALL COORDINATE WITH OTHER TRADES SO AS TO AVOID CONFLICTS AND PROVIDE EQUIPMENT CONNECTIONS AS REQUIRED BY EQUIPMENT SHOP DRAWINGS AND EQUIPMENT NAMEPLATES.

INDICATED LOCATIONS OF OUTLETS, EQUIPMENT CONNECTIONS, ETC. ARE APPROXIMATE AND SHALL BE VERIFIED BY REFERENCE TO RELATED DOCUMENTS (I.E. ARCHITECTURAL DRAWINGS, EQUIPMENT SHOP DRAWINGS, MANUFACTURER'S INSTRUCTIONS, MECHANICAL AND PLUMBING DRAWINGS, STRUCTURAL DRAWINGS, ETC.).

ANY SLASH MARKS SHOWN FOR CONDUCTOR QUANTITIES ARE INTENDED TO ILLUSTRATE THE WIRING INTENT ONLY. NOTE THAT IT IS NOT THE INTENT OF THE CONTRACT DRAWINGS TO INDICATE ALL CONDUCTORS REQUIRED TO PROVIDE COMPLETE AND FULLY OPERABLE WIRING SYSTEMS.

RISER DIAGRAMS ARE DIAGRAMMATIC AND NOT INTENDED TO SHOW ALL REQUIRED MATERIALS, DEVICES AND QUANTITIES OF STATIONS OR DEVICES. THE FLOOR PLANS, SPECIFICATIONS, CODES, REGULATIONS, LAWS, AND MANUFACTURER REQUIREMENTS ALSO SUPPLEMENT AND GOVERN THE REQUIREMENTS AND QUANTITIES OF DEVICES FOR THE SYSTEMS.

THE CONTRACT DOCUMENTS ARE INTENDED TO ILLUSTRATE TO COMPETENT AND EXPERIENCED CONTRACTORS AND WORKMEN THE SYSTEMS REQUIRED AND TO PERMIT SUCH PEOPLE TO TAKE-OFF THE REQUIRED MATERIALS AND EQUIPMENT, LAY OUT THE WORK SPECIFIED, AND EXECUTE ALL NECESSARY MEANS REQUIRED TO PROVIDE THE COMPLETE AND OPERABLE SYSTEMS SPECIFIED AND ILLUSTRATED.

10 GROUNDING AND BONDING
THE SERVICE CONDUITS, EQUIPMENT, AND NEUTRAL CONDUCTORS SHALL BE GROUNDED. THE GROUND CONNECTIONS FOR SYSTEM NEUTRAL AND CONDUIT SYSTEMS SHALL BE MADE AT THE SERVICE ENTRANCE. RUN A BARE COPPER GROUNDING CONDUCTOR IN CONDUIT FROM POINT OF ENTRANCE EQUIPMENT TO THE METAL COLD WATER LINE WHERE IT ENTERS THE BUILDING PLUS THE BUILDING STEEL IF AVAILABLE. PROVIDE A SUPPLEMENTAL MADE ELECTRODE UTILIZING GROUND ROD(S), OTHER METAL UNDERGROUND SYSTEMS OR STRUCTURES, OR PLATE ELECTRODE IN ACCORDANCE WITH NEC 250-66 IF BUILDING STEEL IS NOT AVAILABLE. THE GROUNDING CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE NEC 250-122. ALL GROUNDING CONDUCTORS SHALL BE INSTALLED AS TO PERMIT SHORTEST PATH FROM EQUIPMENT TO GROUND. ALL CONNECTIONS TO GROUND CONDUCTORS SHALL BE ACCESSIBLE FOR INSPECTION AND MADE WITH APPROVED SOLDERLESS CONNECTORS, EXOTHERMIC WELD, OR BOLTED TO THE EQUIPMENT OR STRUCTURE TO BE GROUNDED. ALL CONTACT SURFACES SHALL BE THOROUGHLY CLEANED BEFORE CONNECTIONS ARE MADE TO INSURE GOOD METAL TO METAL CONTACT. ALL CONNECTIONS TO GROUND RODS AND OR BUILDING FOOTER STEEL SHALL BE MADE BY EXOTHERMIC WELDS. IN NO CASE SHALL THE RESISTANCE OF THE "GROUND" EXCEEDED 25 OHMS.

ALL ELECTRICAL WORK SHALL BE GROUNDED IN ACCORDANCE WITH NEC ARTICLE 250.

ALL "CSST" GAS PIPING SHALL HAVE A BONDING GROUND IN ACCORDANCE WITH NEC ARTICLE 250 AND SIZED PER NEC TABLE 250.66.

WIRING IN PVC CONDUIT SHALL HAVE AN EQUIPMENT GROUNDING CONDUCTOR.

PROVIDE EQUIPMENT GROUNDING MEANS FOR TELEPHONE EQUIPMENT AND FIRE ALARM SYSTEM SPACES.

GROUND FAULT CIRCUITS SHALL HAVE AN EQUIPMENT GROUNDING CONDUCTOR.

PROVIDE AN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN EACH RACEWAY UNLESS OTHERWISE NOTED.

EACH GROUNDED RECEPTACLE SHALL HAVE A GROUNDING JUMPER ATTACHED TO THE BOX WITH A SCREW. REMOVAL OF ANY DEVICE SHALL NOT DISRUPT THE GROUND CONTINUITY OF DOWNSTREAM DEVICES.

11 WIRING
BRANCH CIRCUIT CONDUCTORS SHALL BE MINIMUM NO. 12 AWG, UNLESS OTHERWISE INDICATED ON THE DRAWINGS. CONDUCTORS FOR SIGNAL AND PILOT CONTROL CIRCUITS MAY BE NO. 16 AWG.

ALL CONDUCTORS SHALL BE STRANDED OR SOLID COPPER CONDUCTORS FOR #12 AND #10 AWG AND STRANDED FOR #8 AND LARGER WITH 600 VOLT THHN/THWN INSULATION UNLESS OTHERWISE SHOWN ON THE DRAWINGS. INSULATION TO LIGHT FIXTURES OR SPECIAL EQUIPMENT SHALL BE AS REQUIRED BY NAMEPLATES OR TO SUITE THE CONDITION. CONDUCTORS FOR CIRCUITS & EQUIPMENT RATED 100 AMP OR LESS SHALL BE SIZED FOR 60°C. CONDUCTORS FOR CIRCUITS & EQUIPMENT RATED ABOVE 100 AMP SHALL BE SIZED FOR 75°C.

TO COMPENSATE FOR VOLTAGE DROP ACROSS A BRANCH CIRCUIT, WIRE SHALL BE UPSIZED IN RELATION TO LENGTH. SEE CONDUCTOR SIZING TABLE AND APPLY ACCORDINGLY.

COLOR CODE CONDUCTORS FOR VOLTAGE SYSTEMS SHALL BE AS FOLLOWS:

208 VOLTS		480 VOLTS	
A PHASE:	BLACK	A PHASE:	BROWN
B PHASE:	RED	B PHASE:	ORANGE
C PHASE:	BLUE	C PHASE:	YELLOW
NEUTRAL:	WHITE	NEUTRAL:	GRAY
GROUNDING CONDUCTORS:		GREEN	

CONDUCTORS SHALL BEAR READABLE MARKINGS ALONG THE ENTIRE LENGTH.

CONDUCTORS #6 AWG OR SMALLER SHALL BEAR FACTORY COLOR INSULATION COMPLYING WITH SYSTEM PHASING ALONG THE ENTIRE LENGTH.

TYPE "MC" CABLE SHALL HAVE FACTORY COLOR INSULATION ON CONDUCTORS COMPLYING WITH SYSTEM PHASING ALONG THE ENTIRE LENGTH OF THE CONDUCTORS. FIELD PHASE TAPING WILL NOT BE ALLOWED. THE USE OF TYPE "AC" OR "NM" CABLE SHALL BE PROHIBITED.

JOINTS FOR #10 AWG OR SMALLER SHALL BE MADE WITH APPROVED TWIST-ON TYPE CONNECTORS AND INSULATED WITH SCOTCH #33 ELECTRICAL TAPE. JOINTS FOR #8 OR LARGER SHALL BE WITH MECHANICAL PRESSURE TYPE CONNECTORS OR LUGS AND PROPERLY TAPED WITH SCOTCHFILL AND SCOTCH #33 ELECTRICAL TAPE TO 150% OF THE INSULATING VALUE OF THE CONDUCTOR.

WIRING WITHIN PANELBOARDS, JUNCTION BOXES AND OUTLET BOXES SHALL BE NEATLY SQUARED AND BUNCHED TOGETHER. DO NOT USE PLASTIC TIE WRAP SYSTEMS.

PROVIDE CIRCUIT NUMBER ON EACH CONDUCTOR WITHIN PANELBOARDS, JUNCTION BOXES AND OUTLET BOXES.

PROVIDE PANEL NAME AND CIRCUIT NUMBERS ON ALL JUNCTION BOX COVERS INDICATING CIRCUIT CONTAINED WITHIN BOX WITH PERMANENT MARKER.

ALL WIRING LUGS AND TERMINALS THROUGHOUT THE PROJECT, INCLUDING BUT NOT LIMITED TO LUGS FOR SWITCHBOARDS, PANELBOARDS, CIRCUIT BREAKERS, MOTOR STARTERS, TRANSFORMERS, WIRING DEVICES, AND/OR EQUIPMENT SHALL BE 75° TEMPERATURE RATING. LUG AND TERMINAL SIZES SHALL MATCH THE CONDUCTOR SIZE.

PARALLEL CONDUCTORS SHALL BE EXACTLY THE SAME LENGTH.

TRAVELERS FOR SWITCHING SHALL BE THE SAME COLOR AS THE PHASE CONDUCTORS.

NO MORE THAN THREE CIRCUITS SHALL BE ALLOWED IN ANY ONE CONDUIT. NO CONDUIT SHALL CONTAIN ANY SHARED NEUTRAL CONDUCTORS OR MORE THAN ONE CONDUCTOR OF THE SAME PHASE.

12 CONDUIT SYSTEMS
ALL WIRING SHALL BE IN CONDUIT OR TYPE "MC" CABLE WHICH IS ALLOWABLE IN CONCEALED LOCATIONS ONLY FOR SIZES #12 & #10 CONDUCTORS WITH INSULATED GROUND AND INSULATED THROAT CONNECTORS. MINIMUM SIZE CONDUIT IS 1/2". THE CONDUIT SHALL BE INTERMEDIATE (IMC), RIGID GALVANIZED (RGS) OR ELECTRICAL METALLIC TUBING (EMT) WITH STEEL COMPRESSION TYPE FITTINGS.

ALL WIRING FOR POWER, FIRE ALARM, SECURITY AND/OR COMMUNICATIONS IN EXPOSED AREAS SHALL BE IN CONDUIT.

ALL CONDUITS IN FINISHED AREAS SHALL BE CONCEALED UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

ALL CONDUITS IN UNFINISHED AREAS MAY BE RUN EXPOSED AND SHALL BE PARALLEL WITH AND PERPENDICULAR TO THE STRUCTURE.

PVC SCHEDULE 40 WILL BE ALLOWED UNDERGROUND, BELOW FLOOR SLABS, OUTSIDE OF THE BUILDING FOUNDATION BELOW GRADE, FOR SERVICES TO BUILDING NOT SUBJECT TO PHYSICAL DAMAGE, AND WHERE INDICATED ON THE DRAWINGS. HOWEVER, ALL RISERS AND ELBOWS SHALL BE GALVANIZED RIGID STEEL. RGS CONDUITS SHALL EXTEND A MINIMUM OF 18" BELOW GRADE. APPLY BITUMASTIC COATING TO ALL METALLIC CONDUITS IN SLABS AND UNDERGROUND. THE USE PVC SCHEDULE 80 WHERE CONDUIT IS SUSCEPTIBLE TO PHYSICAL DAMAGE SHALL BE ACCEPTABLE PROVIDING IT IS NOT EXPOSED TO VIEW.

ALL MOTORS, EQUIPMENT, AND OTHER ITEMS SUBJECT TO VIBRATION SHALL BE CONNECTED WITH FLEXIBLE METAL CONDUIT (FMC) OR LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC) WITH LISTED FITTINGS.

FLEXIBLE METAL CONDUIT SHALL BE STEEL. FLEXIBLE CONDUIT OUTDOORS OR IN DAMP OR WET LOCATIONS SHALL BE LIQUID-TIGHT WITH BITE-TIGHT STEEL CONNECTORS. ALL CABLES SHALL BE SECURED WITHIN 12" OF TERMINATIONS AND EVERY SIX (6) FEET.

CONDUIT PENETRATIONS THROUGH RATED WALLS OR ASSEMBLIES SHALL BE SEALED WITH A UL LISTED FIRE SEALANT.

CONDUIT RUN THROUGH BUILDING EXPANSION JOINTS SHALL HAVE APPROPRIATE CONDUIT EXPANSION FITTINGS.

CONDUITS IN HAZARDOUS AREAS SHALL BE THREADED GALVANIZED RIGID STEEL (GRS), THREADED INTERMEDIATE METAL CONDUIT (IMC) OR LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC) WITH LISTED FITTINGS.

CONDUITS PASSING THROUGH BUILDING FOUNDATION WALLS OR OTHER MOISTURE PRONE SURFACE SHALL BE PROPERLY WATER PROOFED.

WHERE CORE DRILLING OF FLOOR/WALLS ARE REQUIRED, CONTRACTOR SHALL SEAL OPENINGS WATERTIGHT AFTER UTILITIES HAVE BEEN INSTALLED. LOCATION OF CORED HOLES SHALL BE COORDINATED WITH LOCATION OF EQUIPMENT IN A MANNER TO BE CLEAN AND FUNCTIONAL. THE CONTRACTOR SHALL INSTALL ONLY ONE CONDUIT PER HOLE AND SEAL THE OPENING AROUND THE CONDUIT AS SPECIFIED.

CONDUITS RUN IN FLOOR SLABS SHALL BE SPACED APART AND REMAIN CLEAR OF STRUCTURAL COLUMNS AS REQUIRED BY THE STRUCTURAL ENGINEER.

CONDUITS PENETRATING THE ROOF STRUCTURE FOR THE PURPOSE OF SERVING EQUIPMENT SHALL UTILIZE THE OPENINGS THROUGH ROOF CURBS WHERE POSSIBLE. PENETRATIONS THROUGH THE ROOF SHALL BE HELD TO A MINIMUM.

SERVICE ENTRANCE CONDUITS SHALL BE SPACED APART AS REQUIRED BY NEC AND LOCAL CODES.

CONDUITS PENETRATING THE ROOF SHALL BE PROVIDED WITH A SUITABLE PREFABRICATED ROOF CURB OR PITCH POCKET.

FLEXIBLE CONDUIT WHIPS TO LIGHTING FIXTURES MAY BE 3/8" WITH A MAXIMUM LENGTH OF 6'-0" AND SUPPORTED WITHIN 12" OF TERMINATIONS.

ALL WIRING SHALL BE INSTALLED IN CONDUIT IN ACCORDANCE WITH THE N.E.C. AND SO THAT THE REQUIRED CONDUCTORS MAY BE PULLED WITHOUT INJURY OR STRAIN AND PROPERLY SUPPORTED.

PROVIDE ALL PULL BOXES AND FITTINGS WHEREVER NECESSARY OR SHOWN. ALL STRAIGHT CONDUIT RUNS SHALL NOT EXCEED 100 FEET WITHOUT PULL BOX, NOT OVER 75 FEET FOR RUN WITH ONE (1) RIGHT ANGLE BEND AND NOT OVER 50 FEET FOR RUN WITH TWO (2) RIGHT ANGLES.

ALL CONDUIT SHALL BE PROPERLY SUPPORTED IN ACCORDANCE WITH THE N.E.C. AND SECURED WITHIN THREE (3) FEET OF TERMINATION AND ALL CONDUITS SHALL BE INDEPENDENTLY SUPPORTED EVERY TEN (10) FEET FROM STRUCTURE AND NOT FROM DUCTWORK, CEILING HANGERS OR CEILING SUPPORT WIRES. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH PULL WIRES AND NYLON BUSHINGS AT BOTH ENDS.

13 LIGHTING FIXTURES
FURNISH AND INSTALL LIGHTING FIXTURES AS SHOWN AND SCHEDULED ON THE DRAWINGS.

THE CATALOG NUMBERS GIVEN IDENTIFY THE SERIES OF LIGHT FIXTURE ONLY AND MAY NOT SPECIFY ALL MOUNTING HARDWARE AND ACCESSORIES REQUIRED. THE CATALOG NUMBERS ALSO MAY NOT IDENTIFY ALL ITEMS AND FINISHES REQUIRED BY THE LIGHT FIXTURE DESCRIPTION. INCLUDE ALL REQUIRED HARDWARE AND ACCESSORIES.

COORDINATE FIXTURE TYPE AND TRIM WITH CEILING CONSTRUCTION. RECESSED INCANDESCENT, FLUORESCENT, LED AND HID LIGHTING FIXTURES SHALL HAVE THERMAL PROTECTION. FIXTURES RECESSED IN INSULATED CEILINGS SHALL BE LISTED FOR DIRECT CONTACT WITH INSULATION MATERIAL OR MAINTAIN REQUIRED CLEARANCES FROM INSULATION.

RECESSED LIGHTING FIXTURES IN NON-ACCESSIBLE CEILINGS SHALL HAVE BOTTOM ACCESS.

ALL LINEAR FIXTURES IN LAY-IN CEILINGS SHALL BE SUPPORTED FROM THE STRUCTURE INDEPENDENT OF THE CEILING SYSTEM AT ALL FOUR (4) CORNERS AND ATTACHED WITH LISTED GRID CLIPS. ALL OTHER RECESSED FIXTURES (ex. RECESSED CANS) IN LAY-IN CEILINGS SHALL BE SUPPORTED FROM THE STRUCTURE INDEPENDENT OF THE CEILING SYSTEM AT TWO LOCATIONS (OPPOSITE SIDES) AND ATTACHED WITH LISTED GRID CLIPS.

RECESSED LIGHT FIXTURES IN FIRE RATED CEILINGS SHALL HAVE A FIRE RATED "TENT" BUILT OVER THE FIXTURE TO MAINTAIN THE STATED INTEGRITY OF THE CEILING. SUCH FIXTURES SHALL BE RATED FOR INSTALLATION IN AN INSULATED CEILING AND DESIGNED TO WITHSTAND THE INCREASED TEMPERATURE BUILD-UP AROUND THE FIXTURE.

LIGHTING FIXTURES INDICATED TO BE INSTALLED IN WET OR DAMP LOCATIONS SHALL HAVE THE APPROPRIATE UL "WET" OR "DAMP" LABELS.

THE MANUFACTURER OF EACH LIGHTING FIXTURE SHALL REVIEW THE APPLICATION OF HIS EQUIPMENT AND CERTIFY AT THE TIME OF SHOP DRAWING SUBMITTAL THAT HIS FIXTURE HAS BEEN PROPERLY APPLIED AND CAN BE INSTALLED, MAINTAINED AND SERVICED WHERE SHOWN ON THE DRAWINGS.

14 BALLASTS
BALLASTS SHALL BE ELECTRONIC TYPE <10% THD MINIMUM OR AS SPECIFIED IN THE LIGHTING FIXTURE SCHEDULE.

LIGHTING FIXTURES IN COLD ATMOSPHERE SHALL HAVE BALLASTS SUITABLE FOR THE TEMPERATURE TO BE ENCOUNTERED.

BALLASTS SHALL BE MANUFACTURED BY OSRAM/SYLVANIA, UNIVERSAL, OR ADVANCE.

15 LED DRIVERS
LED ELECTRONIC DRIVERS SHALL BE UL CLASS 2 AND HAVE A SOUND RATING OF CLASS "A" WITH A LIFE EXPECTANCY OF 50,000 HOURS. DR

SYMBOL SCHEDULE

GENERAL SYMBOLS

- HOMERUN TO PANELBOARD. SEE "CIRCUIT HOMERUN AND CONDUCTOR LOGIC".
- CONDUIT RUN CONCEALED OVERHEAD ABOVE CEILING AND IN WALLS OR MC CABLE WHERE PERMITTED. USE SURFACE RACEWAY SYSTEM EXPOSED ON INACCESSIBLE EXISTING CONSTRUCTION.
- CONDUIT RUN EXPOSED.
- CONDUIT RUN CONCEALED BELOW FLOOR.
- FLEXIBLE CONDUIT WITH CONNECTION TO EQUIPMENT SERVED.
- GROUND SIZED PER NEC 250.
- 120/208 VOLT PANELBOARD. SEE PANEL SCHEDULE.
- 277/480 VOLT PANELBOARD. SEE PANEL SCHEDULE.
- MONITORING PANEL, SEE PLANS FOR DESCRIPTION.

SWITCHES

- $ — SWITCH RATED 120/277 VOLTS AND 20 AMPERES. SUBSCRIPTS FOR BASIC SYMBOL.

  BLANK– SINGLE POLE
  2– DOUBLE POLE
  3– THREE WAY
  4– FOUR WAY
  D– DIMMER WITH SILICON CONTROLED RECTIFIER (DEVICE SHALL BE COMPATIBLE WITH THE LOAD IT SERVES, VERIFY)
  P– PILOT LIGHT
  3,D– THREE WAY SWITCH WITH DIMMING OPTION

- $$ — TWO SWITCHES IN COMMON OUTLET BOX AT 48" AFF.
- ^{OC} $_{OC}$ — SWITCH RATED 120/277 VOLTS AND 20 AMPERES WITH OCCUPANT SENSOR FOR MANUAL ON AND AUTO OFF AFTER PRESET TIME.
- ^{OC,D} $_{OC,D}$ — COMBO SWITCH RATED 120/277 VOLTS AND 20 AMPERES WITH DIMMER AND OCCUPANT SENSOR FOR MANUAL ON AND AUTO OFF AFTER PRESET TIME.
- TC — TIME CLOCK – ELECTRONIC 24 HOUR–7 DAY
- LC — LIGHTING CONTROL LIGHTING CONTACTOR.
- OC — LINE VOLTAGE TYPE DUAL TECHNOLOGY CEILING MOUNTED OCCUPANT SENSOR

WIRING DEVICES

- 120V, 20A DUPLEX RECEPTACLE WALL MOUNTED AT 18" AFF UNLESS OTHERWISE NOTED
  - EWC– GFCI TYPE RECEPTACLE SERVING ELECTRIC WATER COOLER. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH PLUMBING CONTRACTOR AND INSTALL RECEPTACLE SO THAT IT IS CONCEALED FROM VIEW.
  - R– RECEPTACLE SERVING REFRIGERATOR. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH EQUIPMENT CONTRACTOR AND INSTALL RECEPTACLE SO THAT IT IS CONCEALED FROM VIEW AND DOES NOT IMPEDE THE INSTALLATION OF THE REFRIGERATOR.
  - GFCI– DUPLEX RECEPTACLE WITH BUILT–IN GROUND FAULT CIRCUIT INTERRUPTING MECHANISM.
  - WP– WEATHERPROOF COVER.
- 120V, 20A DUPLEX RECEPTACLE WITH BOTTOM OF BOX 2" ABOVE COUNTER BACKSLASH OR AT COUNTER HEIGHT
- TWO 120V, 20A DUPLEX RECEPTACLES UNDER COMMON COVER
- TWO 120V, 20A DUPLEX RECEPTACLE UNDER COMMON COVER MOUNTED AT COUNTER HEIGHT
- 120V, 20A DUPLEX RECEPTACLE WITH ISOLATED GROUND TERMINAL–COLORED ORANGE
- 120V, 20A DUPLEX RECEPTACLE MOUNTED IN CEILING
- SPECIAL EQUIPMENT RECEPTACLE. (SEE NOTES)

LIGHTING (SEE LIGHTING FIXTURE SCHEDULE)

EQUIPMENT CONNECTIONS

- * M — CONNECTION TO 120 VOLT MOTOR.
- * M — CONNECTION TO 3–PHASE MOTOR.
- HEAVY DUTY SAFETY SWITCH. (NON–FUSED) SEE "EQUIPMENT DISCONNECT SCHEDULE".
- HEAVY DUTY SAFETY SWITCH. (FUSED) SEE "EQUIPMENT DISCONNECT SCHEDULE".
- * J — JUNCTION BOX WITH CONNECTION TO EQUIPMENT SERVED.
- * — CONNECTION TO HVAC, PLUMBING OR OTHER EQUIPMENT AS NOTED.
- * WH — CONNECTION TO WATER HEATER.
- CONNECTION TO OVERHEAD DOOR. PROVIDE SAFETY SWITCH AT CONNECTION POINT. RUN POWER WIRING THROUGH DOOR CONTROLLER. CONNECT ALL DOOR CONTROLS (UP/DOWN CONTROL STATION, LIMIT SWITCHES, OBSTRUCTION SAFETY SWITCHES, ETC.)
- MOTOR CONTROLLER

* NOTE: PROVIDE A DISCONNECT ON ALL FANS, UNIT HEATERS, FAN COILS, PUMPS, AIR HANDLERS, UNIT VENTILATORS, ETC.

COMMUNICATIONS SYMBOLS

- COMBINATION DATA/TELEPHONE CABLING OUTLET. COORDINATE MOUNTING HEIGHT WITH CLOSEST POWER RECEPTACLE.
- TV OUTLET BOX.
- ANN — 2–COMPARTMENT RECESSED FLOOR BOX, WITH ONE DUPLEX RECEPTACLE AND ONE SECTION FOR OWNERS COMMUNICATIONS REQUIREMENTS.
- ATA — 3–COMPARTMENT RECESSED FLOOR BOX, WITH ONE QUAD RECEPTACLE AND TWO SECTIONS FOR OWNERS COMMUNICATIONS REQUIREMENTS.
- FIRE RATED FLUSH STYLE POKE THRU DEVICE

FIRE ALARM SYMBOLS

- FACP — CONTROL PANEL.
- ANN — REMOTE ANNUNCIATOR 66" AFF TO MIDDLE OF DEVICE.
- F — MANUAL PULL STATION 48" AFF.
- F — AUDIBLE & VISUAL SIGNAL STROBE LIGHT MOUNTED @ 80" AFF. OR 6" BELOW CEILING WHICHEVER IS LOWER.
- S — VISUAL SIGNAL STROBE LIGHT MOUNTED @ 80"AFF OR 6" BELOW CEILING WHICHEVER IS LOWER.
- F — AUDIBLE & VISUAL SIGNAL STROBE LIGHT CEILING MOUNTED
- SD — PHOTO–ELECTRIC TYPE SMOKE DETECTOR.
- TD — THERMAL TYPE DETECTOR.
- SD — DUCT MOUNT SMOKE DETECTOR WITH RELAY BASE IN AIR DUCT.
- R — ADDRESSABLE CONTROL MODULE
- RT — REMOTE TEST SWITCH WITH INDICATOR LAMP FOR DUCT MOUNTED SMOKE DETECTOR
- TS — TAMPER SWITCH CONNECTED TO SPRINKLER VALVE.
- WF — WATER FLOW SWITCH CONNECTED TO SPRINKLER PIPING.

ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	AMPERE	LC	LIGHTING CONTACTOR
A/C	AIR CONDITIONING	LED	LIGHT EMITTING DIODE
ADA	AMERICANS WITH DISABILITIES ACT	LT	LIGHT
		LTG	LIGHTING
AFF	ABOVE FINISHED FLOOR	MIN	MINIMUM
AFG	ABOVE FINISHED GRADE	MAX	MAXIMUM
AHU	AIR HANDLING UNIT	MCA	MINIMUM CIRCUIT AMPERES
AL	ALUMINUM	MCB	MAIN CIRCUIT BREAKER
AMP	AMPERE	MFS	MAXIMUM FUSE SIZE
ATS	AUTOMATIC TRANSFER SWITCH	MLO	MAIN LUGS ONLY
AWG	AMERICAN WIRE GAUGE	MOCP	MAXIMUM OVER–CURRENT PROTECTION
BB	BACKBOARD		
C	CONDUIT	MMS	MANUAL MOTOR STARTER
CB	CIRCUIT BREAKER	NEC	NATIONAL ELECTRICAL CODE
CU	CONDENSING UNIT	NEMA	NATIONAL ELECTRICAL MFRS ASSOC.
DPDT	DOUBLE POLE DOUBLE THROW		
EC	EMPTY CONDUIT	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
EF	EXHAUST FAN		
EGC	EQUIPMENT GROUNDING CONDUCTOR	NIC	NOT IN CONTRACT
		P	POLE
EM	EMERGENCY	PB	PULL BOX
EMT	ELECTRICAL METALLIC TUBING	PE	PHOTO–ELECTRIC SWITCH
E OR EX	EXISTING	PVC	POLYVINYL CHLORIDE CONDUIT
ER	EXISTING TO BE REMOVED	PNL	PANEL
ETR	EXISTING TO REMAIN	RMC	RIGID METAL CONDUIT
F	FUSE	RTU	ROOF TOP UNIT
FACP	FIRE ALARM CONTROL PANEL	SF	SUPPLY FAN
FLA	FULL LOAD AMPERES	SPD	SURGE PROTECTIVE DEVICE
FPN	FUSE PER NAMEPLATE	SPDT	SINGLE POLE DOUBLE THROW
FT	FEET	SPST	SINGLE POLE SINGLE THROW
GC	GENERAL CONTRACTOR	SQ	SQUARE
GND	GROUND	SW	SWITCH
GF	GAS FURNACE	SWBD	SWITCHBOARD
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TTB	TELEPHONE TERMINAL BACKBOARD
GND	GROUND	UH	UNIT HEATER
GRC	GALVANIZED RIGID STEEL CONDUIT	UL	UNDERWRITER'S LABORATORIES
GWB	GYPSUM WALLBOARD	UNO	UNLESS NOTED OTHERWISE
HP	HORSEPOWER	UON	UNLESS OTHERWISE NOTED
HVAC	HEATING–VENTILATING–AIR CONDITIONING	UPS	UNINTERRUPTIBLE POWER SUPPLY
		V	VOLT
IG	ISOLATED GROUND	W	WATT
IMC	INTERMEDIATE METAL CONDUIT	VA	VOLT–AMPERE
KW	KILOWATT	WP	WEATHER PROOF
KVA	KILOVOLT–AMPERE	XFMR	TRANSFORMER
JB	JUNCTION BOX	XP	EXPLOSION PROOF

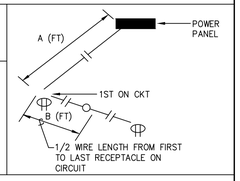
NOTES:

1. PROVIDE A BLANK COVERPLATE ON TELEPHONE OUTLETS.
2. SEE DETAILS FOR ELEVATION REPRESENTATION OF ALL DEVICE MOUNTING HEIGHTS. ALL QUESTIONS ABOUT MOUNTING HEIGHTS SHALL BE DIRECTED TO THE ARCHITECT AND ENGINEER PRIOR TO ROUGH–IN.
3. THESE ARE STANDARD SYMBOLS AND ALL MAY NOT APPEAR ON PROJECT DRAWINGS. WHEREVER THE SYMBOL ON THE PROJECT OCCURS, THE ITEM SHALL BE PROVIDED AND INSTALLED.

CONDUCTOR SIZING TABLE

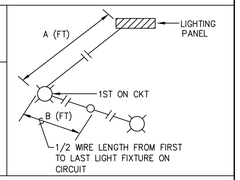
FOR 120V–20A BRANCH CIRCUITS ONLY, UNLESS OTHERWISE NOTED

IF DISTANCE A + B IN FEET IS: (SEE DIAGRAM AT RIGHT)	USE COPPER WIRE IN METALLIC CONDUIT, AWG SIZE AS FOLLOWS ON ENTIRE CIRCUIT AND SIZE CONDUIT ACCORDINGLY:
0' TO 100'	#12 (MIN.)
100' TO 175'	#10
175' TO 300'	#8
300' TO 450'	#6 (MAX.)



FOR 277V–20A BRANCH CIRCUITS ONLY, UNLESS OTHERWISE NOTED

IF DISTANCE A + B IN FEET IS: (SEE DIAGRAM AT RIGHT)	USE COPPER WIRE IN METALLIC CONDUIT, AWG SIZE AS FOLLOWS ON ENTIRE CIRCUIT AND SIZE CONDUIT ACCORDINGLY:
0' TO 250'	#12 (MIN.)
250' TO 400'	#10
400' TO 700'	#8
700' TO 1000'	#6 (MAX.)



THESE TABLES ARE BASED ON AN EVENLY DISTRIBUTED LOAD ALLOWING A 3% VOLTAGE DROP AT LAST OUTLET: APPLY ACCORDINGLY.

EQUIPMENT DISCONNECT SCHEDULE

- $M — MANUAL MOTOR STARTING SWITCH WITH OVERLOAD PROTECTION EQUAL TO SQUARE–D CLASS 2510 TYPE KG–1 SERIES.
- 3P/30A/208V — HEAVY DUTY SAFETY SWITCH: 3 POLE, 30 AMP, 208 VOLT. FIRST NUMERAL INDICATES QUANTITY OF POLES SECOND NUMERAL INDICATES AMPERE RATING. THIRD NUMERAL INDICATES VOLTAGE. IE: 3P/30A/208V INDICATES 3 POLE, 30 AMP, 208 VOLT, ETC.
- 3P/30A/208V — FUSED HEAVY DUTY SAFETY SWITCH SAME AS ABOVE EXCEPT WITH FUSES. ACTUAL SIZE AND TYPE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. FUSES SHALL BE 'RK–5' FUSETRONS.
- 3P/30A/208V/3R, 3P/30A/208V/3R — NEMA 3R CONSTRUCTION HEAVY DUTY SAFETY SWITCHES. NO–FUSE AND FUSED SWITCHES RESPECTIVELY AS SPECIFIED ABOVE. /3R INDICATES NEMA 3R CONSTRUCTION. NOTE: PROVIDE NEUTRAL BARS, GROUNDING BARS, REJECTION CLIPS, SERVICE ENTRANCE LABELS, FUSES AND ALL OTHER ACCESSORIES REQUIRED FOR THE APPLICATION.

CIRCUIT HOMERUN SYMBOL SCHEDULE

- A–1 — ONE CIRCUIT HOMERUN TO PANEL "A", CIRCUIT #1.
- A–1,3 — TWO CIRCUIT HOMERUN TO PANEL "A", CIRCUITS #1 & 3. (REQUIRES MULTI–POLE CIRCUIT BREAKER.)
- A–1,3,5 — THREE CIRCUIT HOMERUN TO PANEL "A", CIRCUITS #1, 3, & 5. (REQUIRES MULTI–POLE CIRCUIT BREAKER.)
- A–(1,3) — ONE CIRCUIT HOMERUN TO PANEL "A", 208 VOLT OR 480 VOLT–1 PHASE CIRCUIT TO POLES #1 & 3.
- A–(1,3,5) — ONE CIRCUIT HOMERUN TO PANEL "A", 208 VOLT OR 480 VOLT–3 PHASE CIRCUIT TO POLES #1, 3, & 5.
- SLASH MARKS INDICATE QUANTITY OF CONDUCTORS OTHER THAN TWO; —|— INDICATES NEUTRAL, —|— INDICATES HOT, NOTE: TWO WIRE CIRCUITS DO NOT SHOW SLASH MARKS.
- SLASH MARK INDICATES EQUIPMENT GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE 250–122.

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ELECTRICAL SYMBOLS

REV.#	DATE	COMMENTS
-	-	-
-	-	-
-	-	-
-	-	-

REVISION: REVISION: REVISION: REVISION:

REVIEWS
INITIALS

TEG
PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E002

2 OF 16

Save Date: May 11, 2022 - 12:22 PM, ZH
Plot Date: July 18, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E002_ELECTRICAL SYMBOLS.dwg

LIGHTING NOTES

1. LED DRIVERS SHALL BE ELECTRONIC TYPE.
2. LED'S SHALL BE SOLID STATE WITH 3500 DEGREE COLOR TEMP.
3. LIGHTING FIXTURE CATALOG NUMBERS IDENTIFY THE SERIES OF LIGHTING FIXTURE ONLY. PROVIDE ALL FIELD FABRICATION, MOUNTING HARDWARE, ACCESSORIES AND OPTIONS REQUIRED TO ADAPT TO THE CONDITIONS AND MEET THE INTENT OF THE FIXTURE DESCRIPTION.
4. COORDINATE FIXTURE OPERATING VOLTAGES WITH THAT PROVIDED BY THE CIRCUITRY.
5. COORDINATE FIXTURE TRIMS WITH THE CEILING TYPE.
6. DRIVERS AND LED'S SHALL BE DESIGNED TO START AND MAINTAIN PROPER OPERATION IN THE ENVIRONMENTAL AND TEMPERATURE CONDITIONS IN WHICH THE FIXTURES ARE APPLIED.
7. RECESSED LIGHTING FIXTURES SHALL HAVE THERMAL PROTECTION.
8. DOWNLIGHTS IN NONACCESSIBLE CEILINGS SHALL HAVE BOTTOM ACCESS.
9. LAY-IN TYPE FIXTURES SHALL BE SUPPORTED FROM THE STRUCTURE INDEPENDENT FROM THE CEILING SYSTEM.
10. DOWNLIGHT FIXTURES AND EXIT SIGNS IN SUSPENDED CEILINGS SHALL NOT BE SUPPORTED BY THE GRID SYSTEM AND SHALL BE SUPPORTED FROM THE STRUCTURE AND NOT RELY ON THE CEILING SYSTEM ALONE FOR SUPPORT.
11. LIGHTING FIXTURES IN WET LOCATIONS SHALL BE "WET LOCATION" LISTED. LIGHTING FIXTURES IN DAMP LOCATIONS SHALL BE "DAMP LOCATION" LISTED.
12. SUBMIT SHOP DRAWINGS FOR APPROVAL.

VIRGINIA ENERGY CODE
(2018 VIRGINIA ENERGY CONSERVATION CODE)

METHOD OF COMPLIANCE:

2018 INTERNATIONAL ENERGY CONSERVATION CODE:	☒ PRESCRIPTIVE	☐ PERFORMANCE
2016 ASHRAE 90.1:	☐ PRESCRIPTIVE	☐ PERFORMANCE

LIGHTING SCHEDULE

LAMP TYPE REQUIRED IN FIXTURE	SEE "LIGHTING FIXTURE SCHEDULE"
NUMBER OF LAMPS IN FIXTURE	SEE "LIGHTING FIXTURE SCHEDULE"
BALLAST TYPE USED IN THE FIXTURE	SEE "LIGHTING FIXTURE SCHEDULE"
NUMBER OF BALLASTS IN FIXTURE	SEE "LIGHTING FIXTURE SCHEDULE"
TOTAL WATTAGE PER FIXTURE	SEE "LIGHTING FIXTURE SCHEDULE"
TOTAL INTERIOR WATTAGE SPECIFIED VS. ALLOWED (WHOLE BUILDING OR SPACE BY SPACE)	SEE "LIGHTING FIXTURE SCHEDULE"
TOTAL EXTERIOR WATTAGE SPECIFIED VS. ALLOWED	SEE "LIGHTING FIXTURE SCHEDULE"

SECTION C406 – ADDITIONAL PRESCRIPTIVE COMPLIANCE:

- ☐ C406.2 MORE EFFICIENT HVAC EQUIPMENT PERFORMANCE
- ☐ C406.5 ON-SITE SUPPLY OF RENEWABLE ENERGY
- ☒ C406.3 REDUCED LIGHTING POWER DENSITY
- ☐ C406.6 DEDICATED OUTDOOR AIR SYSTEM
- ☐ C406.4 ENHANCED DIGITAL LIGHTING CONTROLS
- ☐ C406.7 REDUCED ENERGY USE IN SERVICE WATER HEATING

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE ELECTRICAL SYSTEM AND EQUIPMENT REQUIREMENTS OF THE NORTH CAROLINA ENERGY CONSERVATION CODE.

SIGNED: William Lee Teeter

NAME: WILLIAM LEE TEETER

TITLE: PROFESSIONAL ENGINEER

LIGHTING FIXTURE SCHEDULE

SYMBOL & TYPE	MANUFACTURER & CATALOG NUMBER	DESCRIPTION	LAMP TYPE & QUANTITY	VOLTS/ DRIVER	MOUNTING	INPUT WATTS	QTY	TOTAL WATTS
A	EQUAL TO: LITHONIA #CPX-2X4-4000LM-80CRI-40K-SWL-MIN10-ZT-MVOLT	2'x4' LED TROFFER, ALUMINUM FRAME WITH SATIN WHITE DIFFUSER.	LED 4000 LUMENS 4000K	120-277V ELECTRONIC	RECESSED CEILING	40.0	118	4720
A1	EQUAL TO: LITHONIA #CPX-2X4-6000LM-80CRI-40K-SWL-MIN10-ZT-MVOLT	2'x4' LED TROFFER, ALUMINUM FRAME WITH SATIN WHITE DIFFUSER.	LED 6000 LUMENS 4000K	120-277V ELECTRONIC	RECESSED CEILING	44.0	8	352
A1E	EQUAL TO: LITHONIA #CPX-2X4-6000LM-80CRI-40K-SWL-MIN10-ZT-MVOLT-E10WLCP	SAME AS "A1" WITH INTEGRATED EMERGENCY BATTERY PACK.	LED 6000 LUMENS 4000K	120-277V ELECTRONIC	RECESSED CEILING	44.0	6	264
C C/NL	EQUAL TO: GOTHAM EVO #EVO6-35-10-WR-WD-LSS-MVOLT	6" ROUND LED DOWNLIGHT, WHITE REFLECTOR, WHITE FLANGE. C/NL – NIGHT LIGHT FIXTURE, 24/7.	LED 1000 LUMENS 3500K	120V	RECESSED CEILING	10.0	46	460
CE	EQUAL TO: GOTHAM EVO #EVO6-35-10-WR-WD-LSS-MVOLT-ELR	6" ROUND LED DOWNLIGHT, WHITE REFLECTOR, WHITE FLANGE WITH INTEGRATED 90 MIN. EMERGENCY BATTERY.	LED 1000 LUMENS 3500K	120V	RECESSED CEILING	10.0	4	40
D	EQUAL TO: GOTHAM EVO #EVO6LW-35-10-WR-LSS-MVOLT	6" ROUND LED DOWNLIGHT WALL WASH, WHITE REFLECTOR, WHITE FLANGE.	LED 1000 LUMENS 3500K	120V	RECESSED CEILING	10.0	3	30
E	EQUAL TO: LITHONIA #FMVCSLS-48IN-MVOLT-35K-90CRI-BN-M4	1'x4' LED WALL MOUNTED CONTEMPORARY SWITCHABLE SQUARE VANITY FIXTURE.	LED 2960 LUMENS 3500K	120-277V ELECTRONIC	SURFACE WALL	36.0	6	216
F	EQUAL TO: LITHONIA #CPX-2X4-4000LM-80CRI-40K-SWL-MIN10-ZT-MVOLT MULTISURFACE KIT #2X4SMKSH	2'x4' LED TROFFER, ALUMINUM FRAME WITH SATIN WHITE DIFFUSER. SHALLOW DEPTH MULTI-SURFACE MOUNTING KIT INCLUDED.	LED 4000 LUMENS 4000K	120-277V ELECTRONIC	SURFACE CEILING	40.0	6	240
G	PROVIDED BY OWNER, INSTALLED BY ELECTRICAL CONTRACTOR	PROCEDURE (EXAM) LED LIGHT MEDICAL ILLUMINATION MI-550, PROVIDED BY OWNER, INSTALLED BY E.C.	LED	120V	SURFACE CEILING	16.0	9	144
G2	PROVIDED BY OWNER, INSTALLED BY ELECTRICAL CONTRACTOR	SURGERY LED LIGHT MEDICAL ILLUMINATION MI-1000, PROVIDED BY OWNER, INSTALLED BY E.C.	LED	120V	SURFACE CEILING	54.0	3	162
H	SELECTED BY OWNER, PURCHASED AND INSTALLED BY ELECTRICAL CONTRACTOR	INTERIOR LED WALL SCONCE LIGHT FIXTURE. CONTRACTOR TO PROVIDE $150 ALLOWANCE FOR THE FIXTURE.	LED	120V	WALL	20W MAX	8	160
Y	SELECTED BY OWNER, PURCHASED AND INSTALLED BY ELECTRICAL CONTRACTOR	ROUND PENDANT LIGHTING FIXTURE WITH LED BULB(S). CONTRACTOR TO PROVIDE $250 ALLOWANCE FOR THE FIXTURE.	LED	120V	PENDANT	60W MAX	9	540
M	EQUAL TO: LITHONIA #SBL4-LP840 (CI-254RKU)	1'x4' LED WRAPAROUND FIXTURE.	LED 2994 LUMENS 4000K	120-277V ELECTRONIC	SURFACE CEILING	32.0	22	704
N	EQUAL TO: PRESCOLITE #LBSLEDA10L-30K-9-WH	7¼" ROUND LED SURFACE MOUNTED FIXTURE, WHITE FINISH.	LED 1032 LUMENS 3000K	120V	SURFACE CEILING	16.4	1	16.4
P	EQUAL TO: PHOENIX LIGHTING #VA-W-17LED-WW-FGC	INDUSTRIAL TYPE ENCLOSED/GASKETED VAPORTIGHT SURFACE MOUNTED LIGHTING FIXTURE, FROSTED GLASS LENS.	LED 1336 LUMENS 3000K	120V-277V	SURFACE CEILING	17.0	1	17.0
R	EQUAL TO: HUBBARDTON FORGE #302713 302713-SKT-75	EXTERIOR WALL MOUNTED DARK SKY FRIENDLY GOOSENECK SCONCE WITH SEPARATELY ORDERED MEDIUM SOCKET PAR20 LED BULB. VERIFY FINISH COLOR WITH ARCHITECT PRIOR ORDERING.	LED 3500K	120V	WALL	20.0 MAX	16	–
S	EQUAL TO: TECHNOLED #TL-RWP1-60WA-50K-AT1NA1-R	EXTERIOR ARCHITECTURAL LED ROTATABLE LENS WALL PACK.	LED 5000K	120-277V ELECTRONIC	WALL	60.0	2	–
EX	EQUAL TO: LITHONIA #EXRG-EL-M6	SURFACE MOUNTED LED EXIT SIGN. 90 MINUTE MINIMUM BATTERY BACKUP. WHITE FINISH, RED/GREEN LETTERS.	LED	120V	UNIVERSAL	<5	9	–
EX1	EQUAL TO: LITHONIA #ECRG-HO-RD-M6	COMBINATION EMERGENCY LIGHTING UNIT/EXIT SIGN. WHITE THERMOPLASTIC HOUSING, RED/GREEN LETTERS. 90 MINUTE MINIMUM BATTERY BACKUP.	LED EXIT, TWO(2) LED LAMPHEADS	120V	UNIVERSAL	<5	16	–
EM	EQUAL TO: LITHONIA #ELM2L-M12	SURFACE MOUNTED EMERGENCY LIGHTING UNIT. WHITE THERMOPLASTIC HOUSING, 90 MINUTE MINIMUM BATTERY BACKUP. WHITE FINISH.	TWO(2) LED LAMPHEADS	120V	UNIVERSAL	<5	26	–

QUANTITY NOTE

THE LIGHTING FIXTURE QUANTITIES LISTED IN THIS SCHEDULE ARE FOR ENERGY CODE COMPLIANCE ONLY. THE FLOOR PLANS GOVERN THE ACTUAL QUANTITIES. THE CONTRACTOR SHALL MAKE HIS OWN QUANTITY TAKEOFF.

TOTAL WATTS FOR PROJECT (INTERIOR)	7,660
TOTAL SQUARE FEET (INTERIOR)	11,900
TOTAL WATTS / SQUARE FOOT	0.64
ALLOWED WATTS / SQUARE FOOT (-10%)	0.71

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07/18/2022

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2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

LIGHTING FIXTURE SCHEDULE

REV.#	DATE	COMMENTS
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REVIEWS

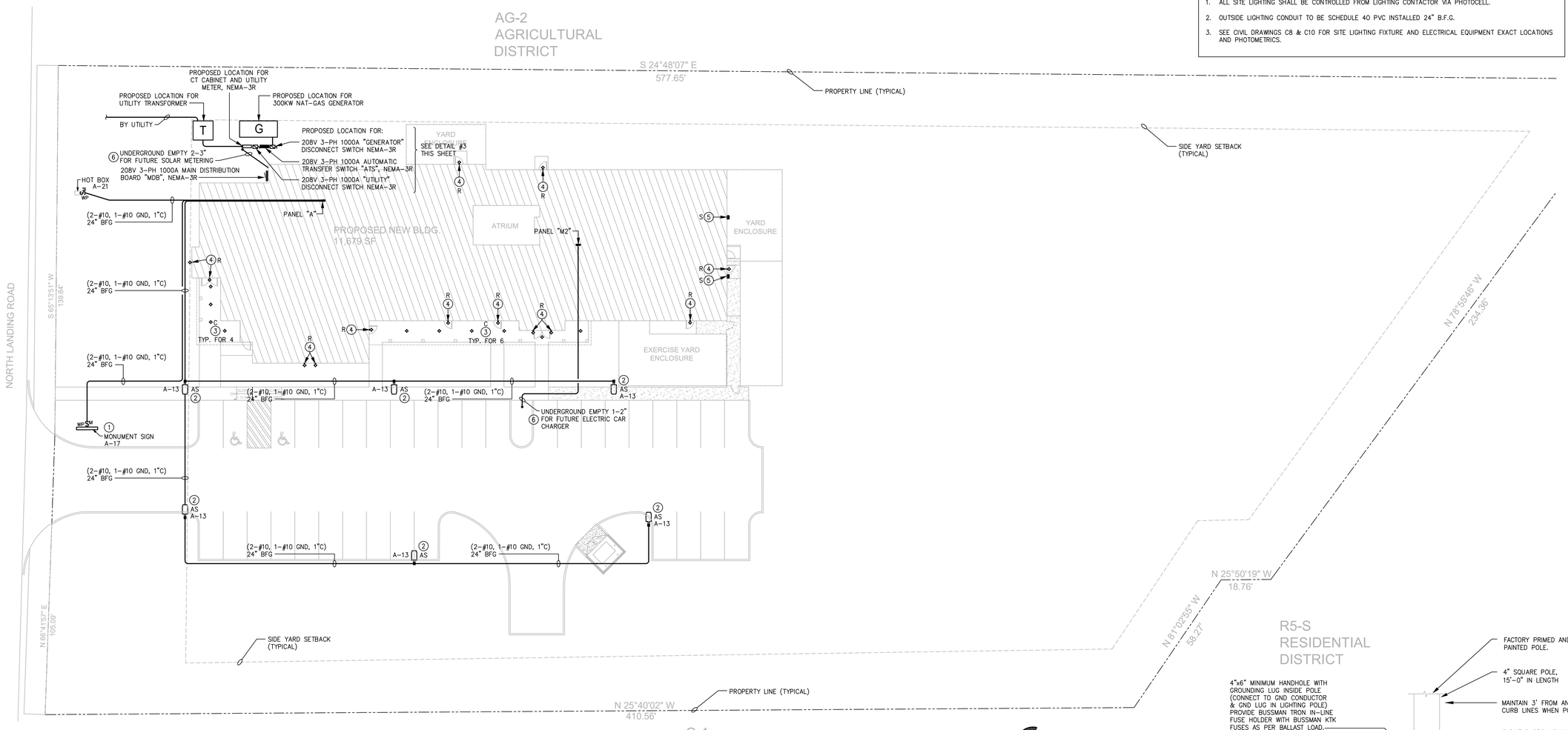
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PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E003

3 OF 16

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Plot Date: July 19, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E003_LIGHTING FIXTURE SCHEDULE.dwg



1 SITE PLAN – ELECTRICAL

SCALE: 1" = 20'-0"

GENERAL NOTES

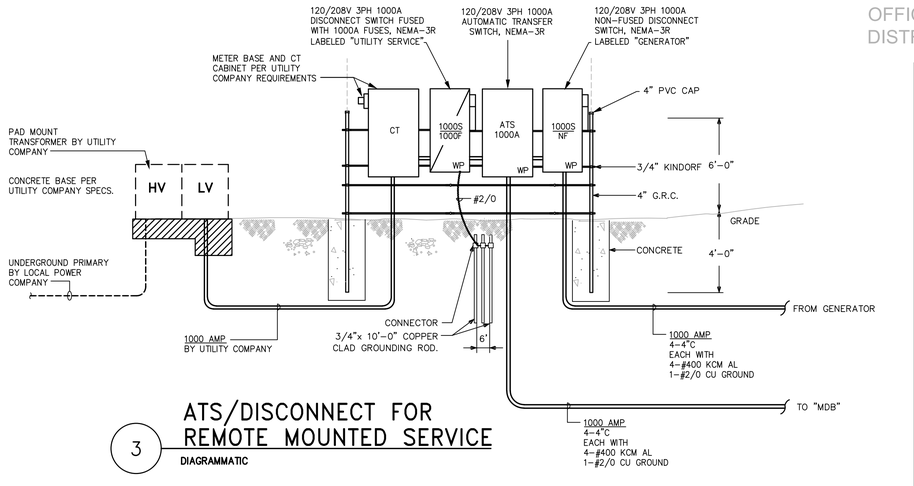
1. ALL SITE LIGHTING SHALL BE CONTROLLED FROM LIGHTING CONTACTOR VIA PHOTOCELL.
2. OUTSIDE LIGHTING CONDUIT TO BE SCHEDULE 40 PVC INSTALLED 24" B.F.G.
3. SEE CIVIL DRAWINGS C8 & C10 FOR SITE LIGHTING FIXTURE AND ELECTRICAL EQUIPMENT EXACT LOCATIONS AND PHOTOMETRICS.

SHEET NOTES

1. MONUMENT SIGN. WIRE VIA POLE LIGHTING PHOTOCELL AND TIMECLOCK.
2. AS – SITE LIGHTING FIXTURE (COACH LANTERN, DARK SKY-FULL CUTOFF) AND POLE PROVIDED BY ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL POLE BASE, POLE, FIXTURE, CONDUITS AND WIRING FOR CONNECTION TO THE FIXTURE. COORDINATE FINAL POLE LOCATION, HEIGHT AND OTHER POLE AND FIXTURE REQUIREMENTS WITH CIVIL DRAWINGS "C8" AND "C10" AND THE OWNER PRIOR TO ROUGH-IN.
   AT THE TIME OF THE DESIGN THE FIXTURE WAS 120V 71 WATTS LED, EQUAL TO: AV POLES AND LIGHTING FIXTURE AVPL-CL-S-II-71W-4000K-120-277V-CSA-BLACK, 8848 LM, 4000K, TYPE II DISTRIBUTION. AT THE TIME OF THE DESIGN THE POLE BASE WAS EQUAL TO: AV POLES AND LIGHTING HG-SB-4-BLACK WITH 18' HEIGHT ROUND POLE WPO-D-S (18 AFG) ASDN3.
   CONTRACTOR TO VERIFY FIXTURE AND POLE REQUIREMENTS WITH CIVIL ENGINEER AND ARCHITECT PRIOR ORDERING. SEE CIVIL DRAWINGS "C8" AND "C10" FOR MORE INFORMATION AND PHOTOMETRICS.
3. C – 6-IN ROUND DOWNLIGHT FIXTURE, MOUNTED UNDER THE CANOPY RECESSED. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL FIXTURE, CONDUITS AND WIRING FOR CONNECTION TO THE FIXTURES. COORDINATE FINAL LOCATION, HEIGHT AND OTHER REQUIREMENTS WITH ARCHITECTURAL DRAWINGS AND THE OWNER PRIOR TO ROUGH-IN.
   AT THE TIME OF THE DESIGN THE FIXTURE WAS 120V 10 WATTS LED, EQUAL TO: GOTHAM EVO #EVO6-35-10-WR-WD-LSS-MVOLT FIXTURE. 1000 LM, 3500K. SEE ELECTRICAL CONNECTIONS ON SHEET E101.
4. R – DARK SKY FRIENDLY GOOSENECK SCONCE WITH SEPARATELY ORDERED LED BULB, MOUNTED AT 12' AFG (TBD). THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL FIXTURE, CONDUITS AND WIRING FOR CONNECTION TO THE FIXTURE. COORDINATE FINAL LOCATION, HEIGHT AND OTHER REQUIREMENTS WITH ARCHITECTURAL DRAWINGS AND THE OWNER PRIOR TO ROUGH-IN.
   AT THE TIME OF THE DESIGN THE FIXTURE WAS 120V MAX 20 WATTS LED, EQUAL TO: HUBBARDTON FORGE #302713 (302713-SKT-75) FIXTURE. 3500K. SEE ELECTRICAL CONNECTIONS ON SHEET E101.
5. S – DARK SKY FRIENDLY ROTATABLE LENS WALL PACK, MOUNTED AT 12' AFG (TBD). THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL FIXTURE, CONDUITS AND WIRING FOR CONNECTION TO THE FIXTURE. COORDINATE FINAL LOCATION, HEIGHT AND OTHER REQUIREMENTS WITH ARCHITECTURAL DRAWINGS AND THE OWNER PRIOR TO ROUGH-IN.
   AT THE TIME OF THE DESIGN THE FIXTURE WAS 120V 60 WATTS LED, EQUAL TO: TECHNOLED #TL-RWP1-60WA-50K-AT1NA1-R FIXTURE. 5000K. SEE ELECTRICAL CONNECTIONS ON SHEET E101.
6. PROVIDE 2-3" EMPTY CONDUITS WITH PULL STRINGS FROM THE METER TO FUTURE SOLAR INVERTER LOCATION IN THE ATTIC. CAP ENDS AND SECURE CONDUITS FOR FUTURE USE.

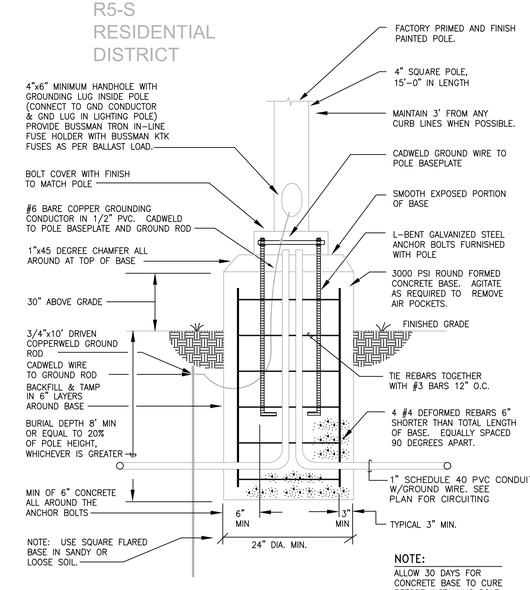
O-1 OFFICE DISTRICT

R5-S RESIDENTIAL DISTRICT



3 ATS/DISCONNECT FOR REMOTE MOUNTED SERVICE

DIAGRAMMATIC



NOTE:
ALLOW 30 DAYS FOR CONCRETE BASE TO CURE BEFORE INSTALLING POLE

2 POLE BASE DETAIL

NOT TO SCALE

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COMMONWEALTH OF VIRGINIA
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07/18/2022

TEETER ENGINEERING GROUP, P.A.

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

SITE PLAN - ELECTRICAL

REV #	DATE	COMMENTS
-		
-		
-		
-		

REVISION:
REVISION:
REVISION:
REVISION:

REVIEWS

INITIALS	

TEG
PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E100

4 OF 16

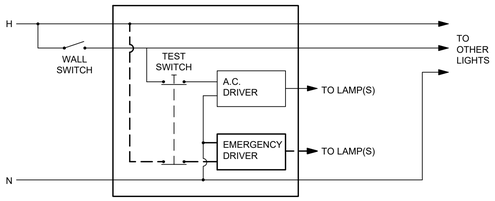
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Plot Date: July 18, 2022 - 10:01 AM
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DRAWING KEYNOTES

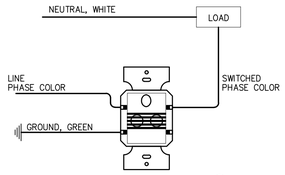
1. SEE SWITCHED EMERGENCY LIGHTING DETAIL #2 THIS SHEET.
2. CONNECT FIXTURES SUCH THAT ACTIVATION OF ANY OCCUPANCY SENSOR SHALL ENERGIZE ALL FIXTURES IN THIS SPACE.
3. EXIT SIGNS AND EMERGENCY LIGHTING FIXTURES (DRIVERS) SHALL BE CONNECTED TO LOCAL AREA LIGHTING CIRCUIT UNSWITCHED, AHEAD OF AREA LIGHTING CONTROLS.
4. PROVIDE A FLANGE KIT FOR FIXTURES MOUNTED IN HARD CEILING (TYPICAL).
5. SEE LIGHTING CONTROL DETAIL #4 THIS SHEET FOR ADDITIONAL INFORMATION.
6. OWNER SUPPLIED EXAM/SURGERY LIGHT. SEE SHEET E201 FOR POWER CONNECTION.
7. WIRE EXTERIOR LIGHTING FIXTURE VIA PHOTOCELL/LIGHTING CONTACTOR. VERIFY LOCATIONS AND MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS PRIOR TO ROUGH-IN.

DAYLITE RESPONSIVE CONTROLS AREA ANALYSIS

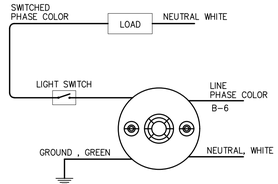
ALL SIDELIT ZONES IN THIS BUILDING CONSIST OF LESS THAN 150W OF GENERAL LIGHTING THEREFORE DAYLIGHT-RESPONSIVE CONTROLS ARE NOT REQUIRED PER 2018 IECC C405.2.3.



2 SWITCHED EMERGENCY LIGHTING DETAIL
NO SCALE

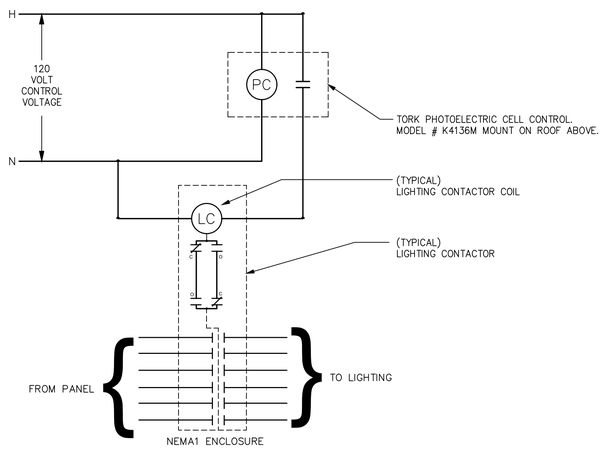


WALL BOX MOUNTED PIR SENSOR (S)
PASSIVE INFRARED OCCUPANCY SENSOR, LINE VOLTAGE, 800 WATTS AT 120 VOLTS, MANUAL "ON", WALL BOX MOUNTED 48"AFF, EQUAL TO SENSOR SWITCH "WSD-SA"

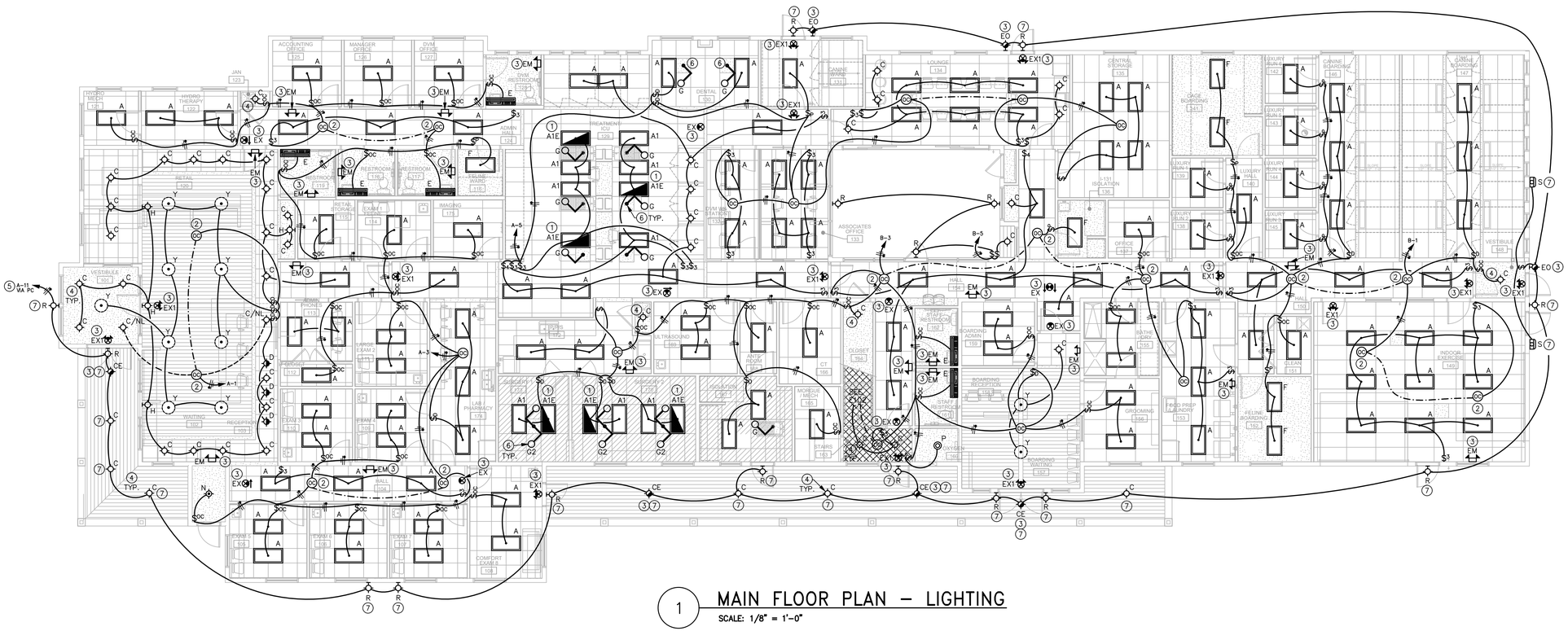


PLAYGROUND 121 CEILING MOUNTED SENSOR (S)pdt
DUAL TECHNOLOGY, (PDT), CEILING MOUNTED, LINE VOLTAGE OCCUPANCY SENSOR, 800 WATTS AT 120 VOLTS, EQUAL TO SENSOR SWITCH "CM-PDT-10"

3 OCCUPANCY SENSOR LIGHTING CONTROLS
DIAGRAMMATIC



4 EXTERIOR PHOTOCELL LIGHTING CONTROLS
DIAGRAMMATIC



1 MAIN FLOOR PLAN - LIGHTING
SCALE: 1/8" = 1'-0"

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07/18/2022

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MAIN FLOOR PLAN - LIGHTING

REV #	DATE	COMMENTS
REVISION: -		
REVISION: -		
REVISION: -		
REVISION: -		

REVIEWS	
INITIALS	

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PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

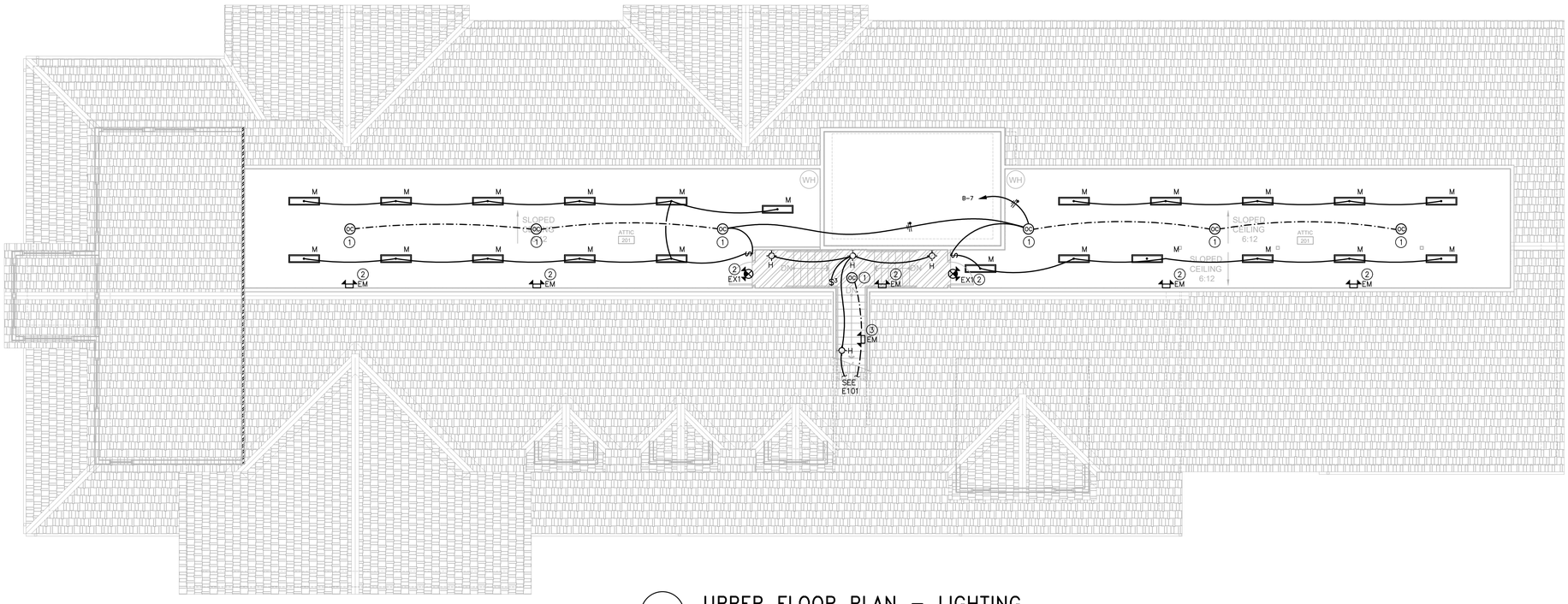
E101

5 OF 16

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Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E101_MAIN FLOOR PLAN - LIGHTING.dwg

DRAWING KEYNOTES

1. CONNECT FIXTURES SUCH THAT ACTIVATION OF ANY OCCUPANCY SENSOR SHALL ILLUMINATE ALL FIXTURES IN THIS SPACE.
2. EXIT SIGNS AND EMERGENCY LIGHTING FIXTURES SHALL BE CONNECTED TO LOCAL AREA LIGHTING CIRCUIT UNSWITCHED, AHEAD OF AREA LIGHTING CONTROLS.



1 UPPER FLOOR PLAN – LIGHTING

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

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UPPER FLOOR PLAN - LIGHTING

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PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

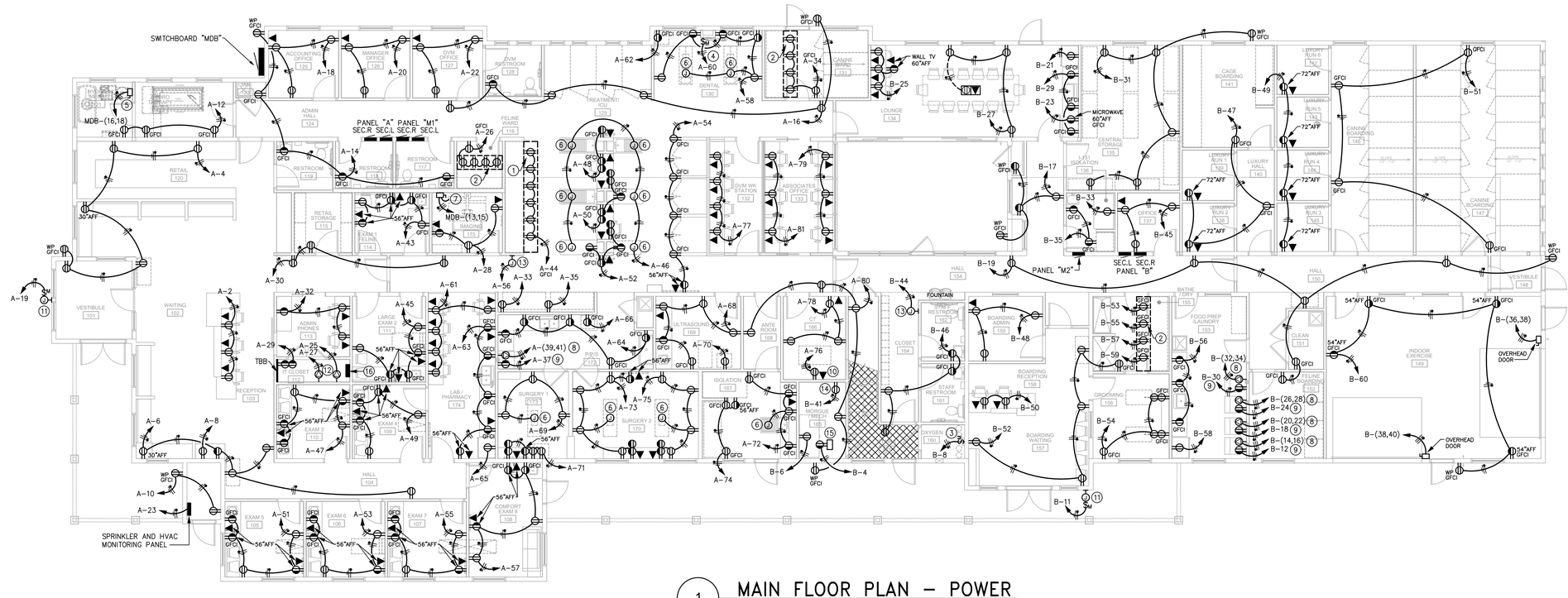
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6 OF 16

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Plot Date: July 18, 2022 - 10:02 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\2201BE102_UPPER FLOOR PLAN - LIGHTING.dwg

DRAWING KEYNOTES

1. PROVIDE PLUG MOLD WITH 6 DUPLEX OUTLETS ON FACE OF CENTER SHELF IN BETWEEN CAGES. CONNECT TO A "GFCI" PROTECTION. COORDINATE EXACT LOCATION WITH OWNER BEFORE ROUGH-IN.
2. PROVIDE PLUG MOLD WITH 4 DUPLEX OUTLETS ON FACE OF CENTER SHELF IN BETWEEN CAGES. CONNECT TO A "GFCI" PROTECTION. COORDINATE EXACT LOCATION WITH OWNER BEFORE ROUGH-IN.
3. PROVIDE CONNECTION FOR OXYGEN MANIFOLD. COORDINATE REQUIRED CONNECTION TYPE WITH EQUIPMENT VENDOR PRIOR TO ROUGH-IN.
4. 20A SPST SWITCH FOR DENTAL X-RAY MACHINE ANTECH SOUND HD. 120V 1-PH 10A. EXTEND 2-#12 CU AND 1-#12 CU GND IN ¾"C TO CIRCUIT INDICATED. VERIFY DENTAL X-RAY REQUIREMENTS WITH ACTUAL DENTAL X-RAY UNIT SUPPLIED PRIOR TO ROUGH-IN.
5. NON-FUSIBLE 208V 2P 60A NEMA-3R DISCONNECT SWITCH FOR HYDROTHERAPY EQUIPMENT, 50A, 208V, 1-PH. EXTEND 3-#6 CU AND 1-#10 CU GND IN 1"C TO CIRCUIT INDICATED, CONNECT TO 50A GFCI BREAKER IN THE PANEL. VERIFY END REQUIRED CONNECTION TYPE WITH EQUIPMENT DELIVERED, WIRE VIA CONTROL PANEL, PROVIDED BY OTHERS. ELECTRICAL CONTRACTOR TO PROVIDE 208V/220V 1-PH BOOST TRANSFORMER IF REQUIRED.
6. POWER J-BOX IN CEILING FOR EXAM/SURGERY LIGHT, 115V, 1PH, 16W/54W. ELECTRICAL CONTRACTOR TO INSTALL OWNER SUPPLIED LIGHT.
7. NON-FUSIBLE 208V 2P 200A NEMA-1 DISCONNECT SWITCH FOR 30 KW SUMMIT SOUND X-RAY MACHINE. EXTEND 2-#1 CU AND 1-#6 CU GND IN 2"C TO CIRCUIT INDICATED. MOMENTARY CURRENT 125 AMPS, NOMINAL CURRENT <5 AMPS. NOTE: SOME X-RAY UNITS REQUIRE OPTIONAL STEP-UP TRANSFORMER (TO BE SUPPLIED BY ELECTRICAL CONTRACTOR) FOR 220V SERVICE. VERIFY X-RAY REQUIREMENTS WITH ACTUAL X-RAY UNIT SUPPLIED PRIOR TO ROUGH-IN.
8. CONNECTION FOR STACKABLE ELECTRIC DRYER 208V, 1-P, 0.42 KW MOTOR WITH 5.4 KW HEATING ELEMENT, 26 AMPS. VERIFY ELECTRICAL CONNECTION TYPE WITH DELIVERED EQUIPMENT PRIOR TO ROUGH-IN. PROVIDE RESPECTIVE POWER CORD WITH PLUG AND CONNECT DRYER.
9. CONNECTION FOR STACKABLE WASHER 120V, 1-P, 12 AMPS. VERIFY ELECTRICAL CONNECTION TYPE WITH DELIVERED EQUIPMENT PRIOR TO ROUGH-IN. PROVIDE RESPECTIVE POWER CORD WITH PLUG AND CONNECT WASHER.
10. PROVIDE RECEPTACLE FOR SAMSUNG CERETOM PORTABLE CT MACHINE. 115V, 1-PH, 1300VA MAX. INSTALL DATA CONNECTION NEXT TO RECEPTACLE. VERIFY LOCATION AND POWER REQUIREMENTS WITH CT SCAN MACHINE VENDOR PRIOR TO ROUGH-IN.
11. E.C TO PROVIDE JUNCTION BOX AND LOCAL DISCONNECTING MEANS FOR EXTERIOR SIGNAGE. CIRCUIT TO BE CONTROLLED VIA PC.
12. PROVIDE 120V, 30A RECEPTACLE FOR IT RACK @ 80"AFF. COORDINATE WITH THE OWNER FOR EXACT RECEPTACLE TYPE REQUIRED.
13. PROVIDE CONNECTION FOR MEDICAL GAS (O2) ALARM PANEL/VALVE BOX, 110V. SEE MEDICAL GAS PLAN FOR MORE INFORMATION.
14. RECEPTACLE FOR CENTRAL VAC SYSTEM VACUMAID S2600 UNIT, 120V, 15.8A. COORDINATE EXACT LOCATION WITH OWNER PRIOR BEGINNING ANY WORK. COORDINATE REQUIRED CONNECTION TYPE WITH CENTRAL VAC SYSTEM CONTRACTOR BEFORE ROUGH-IN.
15. SWITCHED RECEPTACLES AND PILOT SWITCHES FOR SUPERA GAS EVACUATION SYSTEM (SCAVENGER) UNITS, 120V, 0.3A PER UNIT. PROVIDE SWITCHED RECEPTACLES MOUNTED ABOVE CEILING IN MORGUE/MECH ROOM 165 AND PILOT SWITCHES (LOCATION TO BE VERIFIED). COORDINATE EXACT LOCATION WITH SCAVENGER SYSTEM CONTRACTOR BEFORE ROUGH-IN.
16. PROPOSED GENERATOR ANNUNCIATOR LOCATION. VERIFY WITH OWNER AND GENERATOR VENDOR PRIOR TO ROUGH-IN.



1 MAIN FLOOR PLAN – POWER

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

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MAIN FLOOR PLAN - POWER

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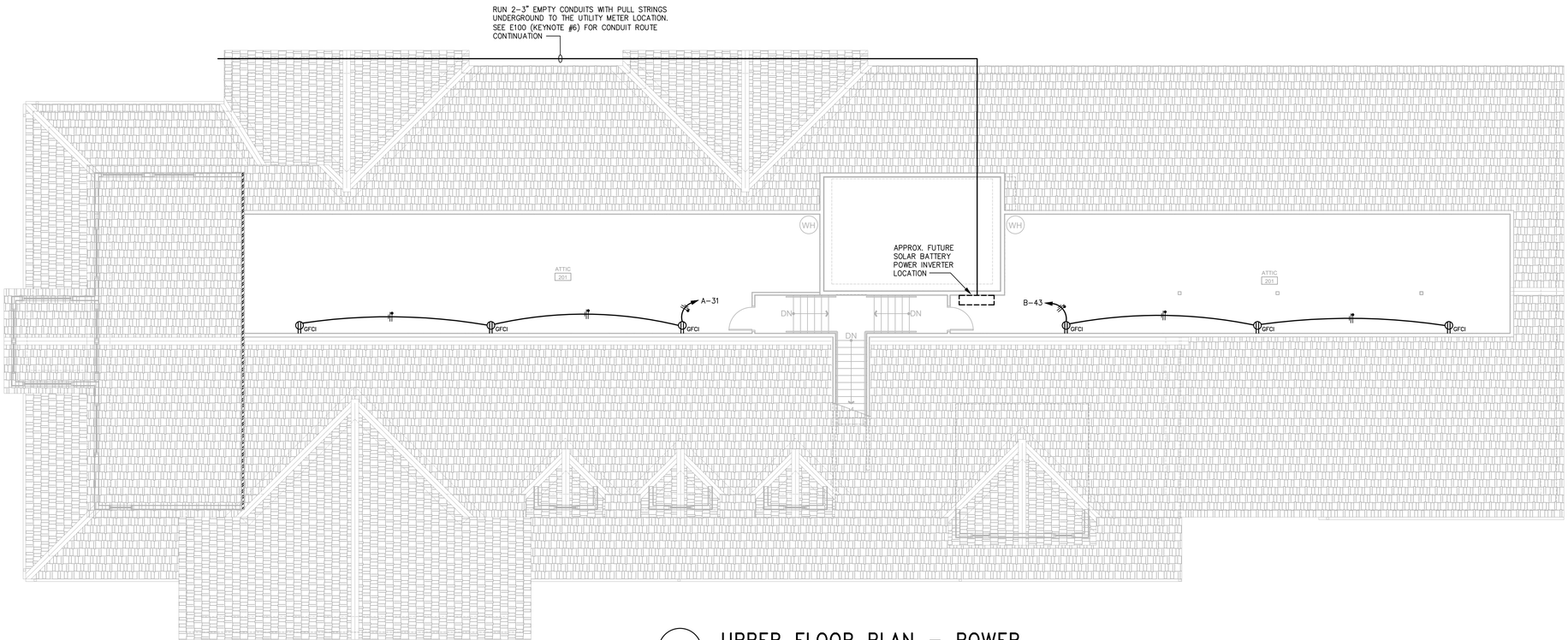
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7 OF 16

Save Date: July 18, 2022 - 8:57 AM - ZR
Plot Date: July 18, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E201_MAIN FLOOR PLAN - POWER.dwg



1 UPPER FLOOR PLAN – POWER

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UPPER FLOOR PLAN - POWER

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8 OF 16

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Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E202_UPPER FLOOR PLAN - POWER.dwg

HEAT PUMP SCHEDULE

TAG	NOMINAL TONS	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		MCA	MOCP	VOLTAGE		
HP-1	6	26	35	208V-3ø	3P/60A/208V/3R-FPN	¾"C., 3#8 & 1#10 GND.
HP-7	6	26	35	208V-3ø	2P/60A/208V/3R-FPN	¾"C., 3#8 & 1#10 GND.

CONDENSING UNTI SCHEDULE

TAG	NOMINAL TONS	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		MCA	MOCP	VOLTAGE		
CU-2	4	24	40	208V-1ø	2P/60A/208V/3R-FPN	¾"C., 2#8 & 1#10 GND.
CU-3	4	24	40	208V-1ø	2P/60A/208V/3R-FPN	¾"C., 2#8 & 1#10 GND.
CU-4	2	14	25	208V-1ø	2P/30A/208V/3R-FPN	¾"C., 2#10 & 1#10 GND.
CU-5	4	24	40	208V-1ø	2P/60A/208V/3R-FPN	¾"C., 2#8 & 1#10 GND.
CU-6	5	32.5	50	208V-1ø	2P/60A/208V/3R-FPN	1"C., 2#6 & 1#10 GND.
CU-8	4	24	40	208V-1ø	2P/60A/208V/3R-FPN	¾"C., 2#8 & 1#10 GND.
CU-9	3	18	30	208V-1ø	2P/30A/208V/3R-FPN	¾"C., 2#10 & 1#10 GND.
CU-10	4	24	40	208V-1ø	2P/60A/208V/3R-FPN	¾"C., 2#8 & 1#10 GND.
CU-11	3.5	22	35	208V-1ø	2P/60A/208V/3R-FPN	¾"C., 2#8 & 1#10 GND.
CU-12	3	18	30	208V-1ø	2P/30A/208V/3R-FPN	¾"C., 2#10 & 1#10 GND.
CU-13	2	14	25	208V-1ø	2P/30A/208V/3R-FPN	¾"C., 2#10 & 1#10 GND.

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, REDUCERS, CONTROL CIRCUITS, DUCT TYPE SMOKE DETECTORS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.

GENERAL NOTES

1. ALL CONNECTIONS AND ELECTRICAL EQUIPMENT LISTED IN SCHEDULE SHALL BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. FIELD VERIFY CONNECTION REQUIREMENTS AND EQUIPMENT PROVIDED BY OTHERS PRIOR TO ROUGH-IN.
2. REFER TO MECHANICAL AND PLUMBING DRAWINGS AND SPECIFICATIONS FOR THE REQUIREMENTS ASSOCIATED WITH WIRING AND CONNECTIONS OF INTERLOCKING, THERMOSTAT LOCATIONS, EXHAUST FAN CONTROL SWITCHES, AND OTHER CONTROLS OF MECHANICAL AND PLUMBING EQUIPMENT.
3. PROVIDE DUCT MOUNTED SMOKE DETECTORS IN THE RETURN DUCT. VERIFY THE REQUIRED QUANTITY OF DUCT SMOKE DETECTORS FOR EACH UNIT WITH DUCTWORK LAYOUT TO MEET NFPA REQUIREMENTS.
4. ALL ELECTRICAL CHARACTERISTICS SCHEDULED ABOVE ARE BASED ON INFORMATION AVAILABLE AT THE TIME OF DESIGN. ELECTRICAL CONTRACTOR SHALL VERIFY ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT WITH EQUIPMENT SUPPLIER(S) PRIOR TO ROUGHING, AND SHALL VERIFY EXACT LOCATION AND EXACT TYPE OF CONNECTION. ALL EQUIPMENT SHALL BE PROPERLY AND SECURELY GROUNDED. ANY SIGNIFICANT CHANGES IN LOCATION, ELECTRICAL REQUIREMENTS, OR TYPE OF CONNECTION REQUIRED FOR ANY EQUIPMENT SCHEDULED ABOVE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IN WRITING PRIOR TO PROCEEDING.

ELECTRIC HEATER SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		KW	AMPS	VOLTAGE		
EWH-1	FIRE RISER RM	3.0	14.4	208V-1ø	2P/30A/208V/NF	¾"C., 2#12 & 1#12 GND.

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, REDUCERS, CONTROL CIRCUITS, DUCT TYPE SMOKE DETECTORS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.

DRAWING KEYNOTES

1. INTERLOCK FAN WITH LIGHTING CIRCUIT IN THIS ROOM. FAN TO BE CONTROLLED VIA LIGHTING CONTROLS.

FAN FILTER UNIT SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA				DISCONNECT	HOMERUN BRANCH CIRCUIT
		FLA	V	PH	HZ		
FFU-1	173	1.5	208	1	60	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
FFU-2	170	1.5	208	1	60	20A SPST SWITCH	¾"C, 2#12, 1#12 GND

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE PLUMBING CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, REDUCERS, CONTROL CIRCUITS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE PLUMBING EQUIPMENT.

MINI SPLIT SYSTEM / HEAT PUMP SCHEDULE

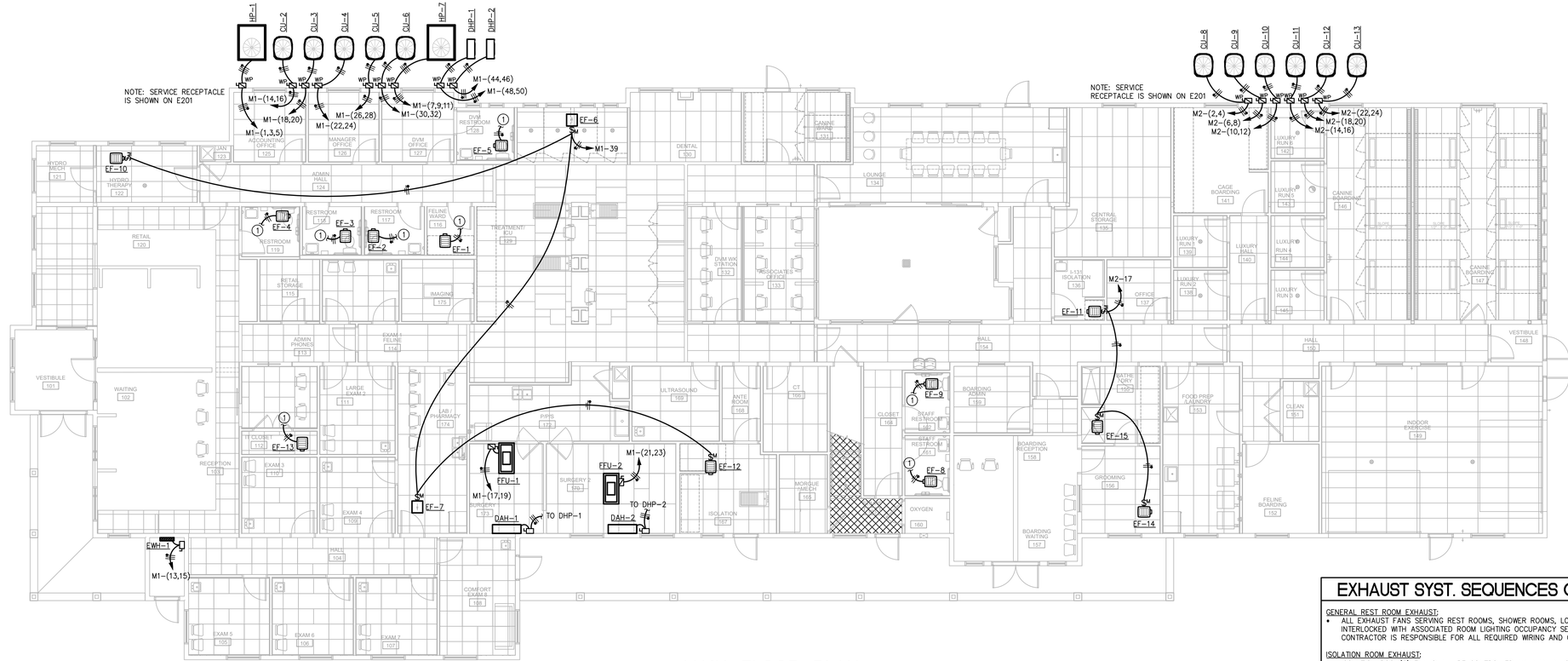
TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		MCA	MOCP	VOLTAGE		
DAH-1	173 SURGERY 1	1.0	15	208V-1ø	2P/30A/208V/NF	¾"C., 2#12 & 1#12 GND.
DHP-1	173 SURGERY 1	10.0	15	208V-1ø	2P/30A/208V/FPN	¾"C., 2#12 & 1#12 GND.
DAH-2	170 SURGERY 2	1.0	15	208V-1ø	2P/30A/208V/NF	¾"C., 2#12 & 1#12 GND.
DHP-2	170 SURGERY 2	10.0	15	208V-1ø	2P/30A/208V/FPN	¾"C., 2#12 & 1#12 GND.

NOTE:
1. INDOOR UNITS DAH FED FROM OUTDOOR UNITS DHP.
2. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, REDUCERS, CONTROL CIRCUITS, DUCT TYPE SMOKE DETECTORS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.

FAN SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		HP	WATTS	VOLTAGE		
EF-1	116 FELINE WARD	–	16.8	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-2	117 REST ROOM	–	18	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-3	118 REST ROOM	–	18	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-4	119 REST ROOM	–	18	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-5	128 DVM REST ROOM	–	18	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-6	ICU BOARDING	1/4	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-7	LAB/PPS/ISOLATION	1/4	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-8	161 STAFF RR	–	18	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-9	162 STAFF RR	–	18	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-10	122 HYDRO THERAPY	–	16.8	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-11	136 ISOLATION	–	16.8	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-12	167 ISOLATION	–	19.2	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-13	112 I.T. CLOSET	–	19.2	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-14	156 GROOMING	–	19.2	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-15	155 BATHE/DRY	–	19.2	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, STARTERS, CONTROL CIRCUITS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.



1 MAIN FLOOR PLAN – MECHANICAL CONNECTIONS
SCALE: 1/8" = 1'-0"

EXHAUST SYST. SEQUENCES OF OPERATION

GENERAL REST ROOM EXHAUST:
- ALL EXHAUST FANS SERVING REST ROOMS, SHOWER ROOMS, LOCKER ROOMS, ETC. SHALL BE INTERLOCKED WITH ASSOCIATED ROOM LIGHTING OCCUPANCY SENSOR FOR CONTROL. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL REQUIRED WIRING AND CONNECTIONS.

ISOLATION ROOM EXHAUST:
- ISOLATION ROOM(S) FAN SHALL BE CONTROLLED VIA MANUAL SWITCH ON INTERIOR ROOM WALL. SWITCH SHALL BE PROVIDED WITH A PILOT LIGHT LOCATED ON ADJACENT EXTERIOR OF ROOM FOR VISUAL CONFIRMATION THE FAN IS OPERATING WHEN NEEDED. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL WIRING, SWITCHES AND CONNECTIONS.

ANIMAL AREAS ROOM EXHAUST:
- ALL ANIMAL AREAS (E.G. RUNS, WARDS, HOLDING KENNELS, ETC.) SHALL BE PROVIDED WITH EXHAUST FAN(S) THAT ARE INTERCONNECTED WITH ASSOCIATED HVAC SYSTEM(S) SERVING EXHAUST SPACE. EXHAUST FAN(S) SHALL ENERGIZE AND DE-ENERGIZE WITH THE ACTIVATION AND DE-ACTIVATION OF INTERLOCKED RTU FOR GENERAL SPACE CONDITIONING. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL REQUIRED CONTROL(S) SYSTEMS, WIRING, SWITCHES BETWEEN FAN MANUFACTURER AND RTU MANUFACTURER TO ENSURE INTERCONNECTION IS POSSIBLE AND PROVIDING REQUIRED INTERCONNECTIONS. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL POWER WIRING AND REQUIRED POWER CONNECTIONS.

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MAIN FLOOR PLAN - MECHANICAL CONNECTIONS

REV #	DATE	COMMENTS
-		REVISION:
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REVIEWS

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PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E301

9 OF 16

Save Date: July 18, 2022 - 2:57 AM - ZM
Plot Date: July 18, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E301_MAIN FLOOR PLAN - MECHANICAL CONNECTIONS.dwg

GAS FURNACE SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		MCA	MOCP	VOLTAGE		
GF-2	OFFICES	14.1	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-3	ICU TREATMENT	14.1	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-4	DENTAL/CANINE	8.8	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-5	DVM OFFICES	14.1	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-6	EXAM ROOMS	14.1	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-8	BOARDING WAIT	14.1	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-9	FELINE BOARDING	8.8	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-10	CANINE BOARDING	14.1	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-11	LUXURY RUNS	10.3	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-12	LOUNGE	8.8	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-13	INDOOR EXERCISE	8.8	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, REDUCERS, CONTROL CIRCUITS, DUCT TYPE SMOKE DETECTORS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.

DRAWING KEYNOTES

1. ALL AHU/OF UNITS SHALL BE PROVIDED WITH UV LIGHT EQUAL TO ULTRAVATION MODEL 'UVPHOTOMAX', 120V, 20W. UV LIGHT SHALL BE PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR, AND SHALL BE WIRED BE ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE 20A SPSC SWITCH FOR LOCAL DISCONNECTING MEANS AT EACH UNIT AND WIRE UV LIGHTS AS REQUIRED. FIELD COORDINATE EXACT LOCATIONS AND ALL WORK INVOLVED.

AIR HANDLING UNIT SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		MCA	MOCP	VOLTAGE		
AHU-1	WAITING/RETAIL	71.5	80	208V-3ø	3P/100A/208V/3R-FPN	1¼"C., 3#3 & 1#8 GND.
AHU-7	SURGERY	71.5	80	208V-3ø	3P/100A/208V/3R-FPN	1¼"C., 3#3 & 1#8 GND.

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, REDUCERS, CONTROL CIRCUITS, DUCT TYPE SMOKE DETECTORS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.

RELIEF FAN SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		HP	WATTS	VOLTAGE		
RF-1	RELIEF FAN ATTIC	1/4	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
RF-2	RELIEF FAN ATTIC	3/4	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
RF-3	RELIEF FAN ATTIC	3/4	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, STARTERS, CONTROL CIRCUITS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.

FAN SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		HP	WATTS	VOLTAGE		
EF-16	ATTIC (LEFT 1/2)	1/20	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-17	ATTIC (RIGHT 1/2)	1/20	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, STARTERS, CONTROL CIRCUITS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.

RECIRCULATION PUMP SCHEDULE

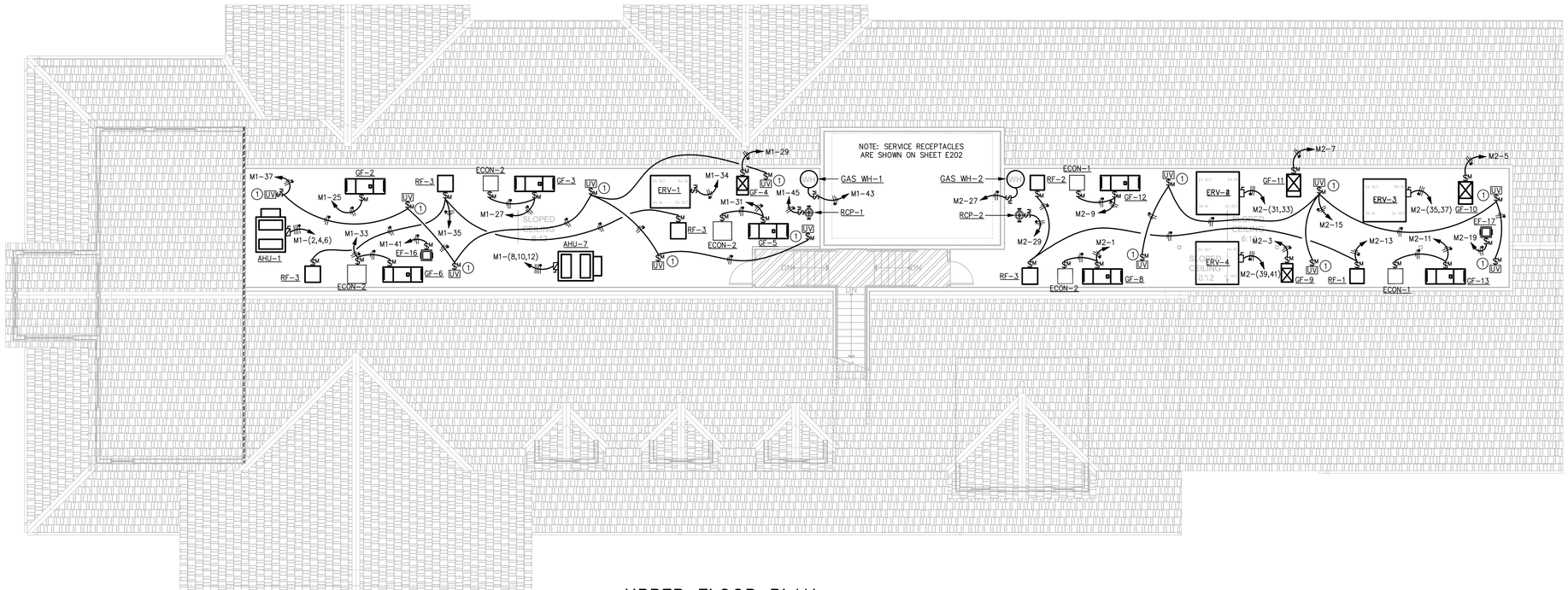
TAG	TYPE	ELECTRICAL DATA				DISCONNECT	HOMERUN BRANCH CIRCUIT
		HP	V	PH	HZ		
RCP-1	IN-LINE	1/12	120	1	60	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
RCP-2	IN-LINE	1/12	120	1	60	20A SPST SWITCH	¾"C, 2#12, 1#12 GND

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE PLUMBING CONTRACTORS FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, REDUCERS, CONTROL CIRCUITS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE PLUMBING EQUIPMENT.

ENERGY RECOVERY VENTILATOR SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		MCA	MOCP	VOLTAGE		
ERV-1	–	20.5	25	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
ERV-2	–	17.6	25	208V-1ø	2P/30A/208V/NF	¾"C, 2#10, 1#10 GND
ERV-3	–	25.2	35	208V-1ø	2P/60A/208V/NF	¾"C, 2#8, 1#10 GND
ERV-4	–	23.0	30	208V-1ø	2P/30A/208V/NF	¾"C, 2#10, 1#10 GND

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, STARTERS, CONTROL CIRCUITS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.



1 UPPER FLOOR PLAN – MECHANICAL AND PLUMBING CONNECTIONS

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

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COMMONWEALTH OF VIRGINIA
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07/18/2022

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COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

UPPER FLOOR PLAN - MECH. AND PLUMBING CONNECT.

REV #	DATE	COMMENTS
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REVIEWS

INITIALS	

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PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E302

10 OF 16

Scan Date: July 18, 2022 - 6:57 AM - ZM
Plot Date: July 18, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E302_UPPER FLOOR PLAN - MECHANICAL AND PLUMBING CONNECTIONS.dwg

NEW PANEL "MDB"

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 1000A MLO
INTERRUPT RATING: 65K AIC
MOUNTING: SURFACE EXTERIOR

TYPE: SWITCHBOARD
BUS MATERIAL: COPPER
MANUFACTURER: SQUARE-D, GE, SIEMENS

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A	PHASE LOAD SUMMARY B	PHASE LOAD SUMMARY C	CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
.	PANEL "A"	225	3	300	1	22.8	36.5		2	2X	3	400	PANEL "M1"	.
.	.	.	.	AL	3		25.6	34.6	4	300	.	.	.	.
.	.	.	.	.	5			20.4 29.0	6	AL	.	.	.	.
.	PANEL "B"	225	3	300	7	22.1	18.5		8	300	3	225	PANEL "M2"	.
.	.	.	.	AL	9		22.5	17.5	10	AL	.	.	.	.
.	.	.	.	.	11			17.0 14.6	12	.	.	.	.	.
.	X-RAY	125	2	1	13	13.0	0.0		14	.	1	.	SPACE WITH BUSSING	.
.	.	.	.	.	15		13.0	5.0	16	6	2	50	HYDROTHERAPY EQUIPM.	A
.	SPACE WITH BUSSING	.	1	.	17			0.0 5.0	18	.	.	.	.	.
.	SPACE WITH BUSSING	.	3	.	19	0.0	0.0		20	.	3	.	SPACE WITH BUSSING	.
.	.	.	.	.	21		0.0	0.0	22	.	.	.	.	.
.	.	.	.	.	23			0.0 0.0	24	.	.	.	.	.
.	SPACE WITH BUSSING	.	3	.	25	0.0	0.1		26	4	3	60	SURGE PROTECTOR	.
.	.	.	.	.	27		0.0	0.1	28	.	.	.	.	.
.	.	.	.	.	29			0.0 0.1	30	.	.	.	.	.
TOTAL KVA PER PHASE						113.0	118.3	86.2						
DIVERSIFIED KVA PER PHASE						106.6	113.1	81.9						
DIVERSIFIED TOTAL KVA						301.6 KVA								
MAXIMUM AMPS HEAVIEST PHASE (DIVERSIFIED)						941.8 AMPS								

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.
3. NEMA-3R ENCLOSURE.

PANEL KEY NOTES:

NEC 220 LOAD JUSTIFICATION:

LIGHTING	125%	16.9
HEATING	100%	23.2
AIR HANDLERS	100%	80.7
AIR CONDITIONING	100%	42.4
RECEPTACLES	1st 10kVA = 100% +50% OF REMAINING	29.3
WATER HEATER	100%	0.0
KITCHEN EQUIPMENT	MINUS NEC DEMAND 100%	0.0
PROCESS	100%	34.2
MISCELLANEOUS	100%	74.9

NEW PANEL "M2"

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 225A MLO
INTERRUPT RATING: 10K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUFACTURER: SQUARE-D, GE, SIEMENS

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A	PHASE LOAD SUMMARY B	PHASE LOAD SUMMARY C	CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
.	GF-8	15	1	12	1	1.7	2.1		2	8	2	40	CU-8	.
.	GF-9	15	1	12	3		1.1	2.1	4	.	.	.	.	.
.	GF-10	15	1	12	5			1.7 1.6	6	10	2	30	CU-9	.
.	GF-11	15	1	12	7	1.2	1.6		8	.	.	.	.	.
.	GF-12	15	1	12	9		1.1	2.1	10	8	2	40	CU-10	.
.	GF-13	15	1	12	11			1.1 2.1	12	.	.	.	.	.
.	RELIEF FANS RF	20	1	12	13	0.3	2.0		14	8	2	35	CU-11	.
.	UV LIGHTS	20	1	12	15		0.1	2.0	16	.	.	.	.	.
.	FANS EF-11,14,15	20	1	12	17			0.1 1.6	18	10	2	30	CU-12	.
.	FAN EF-17	20	1	12	19	0.1	1.6		20	.	.	.	.	.
.	SPARE	20	1	.	21		0.0	1.2	22	10	1	25	CU-13	.
.	SPARE	20	1	.	23			0.0 1.2	24	.	.	.	.	.
.	SPARE	20	1	.	25	0.0	3.3		26	.	2	40	SPARE FOR ELECTRIC	.
.	GAS WH-2 IGNITER	20	1	12	27		0.1	3.3	28	.	.	.	CAR CHARGER	.
.	RCP-2	20	1	12	29			0.1 0.0	30	.	1	20	SPARE	.
.	ERV-2	25	1	10	31	1.9	0.0		32	.	1	20	SPARE	.
.	.	.	.	.	33		1.9	0.0	34	.	1	20	SPARE	.
.	ERV-3	35	1	8	35			2.6 0.0	36	.	1	20	SPARE	.
.	.	.	.	.	37	2.6	0.0		38	.	1	20	SPARE	.
.	ERV-4	30	1	10	39		2.4	0.0	40	.	1	20	SPARE	.
.	.	.	.	.	41			2.4 0.0	42	.	1	20	SPARE	.
TOTAL KVA PER PHASE						18.5	17.5	14.6						
DIVERSIFIED KVA PER PHASE						18.5	17.5	14.6						
DIVERSIFIED TOTAL KVA						50.6 KVA								
MAXIMUM AMPS HEAVIEST PHASE (DIVERSIFIED)						154.0 AMPS								

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.

NEC 220 LOAD JUSTIFICATION:

LIGHTING	125%	0.2
HEATING	100%	0.0
AIR HANDLERS	100%	22.0
AIR CONDITIONING	100%	21.4
RECEPTACLES	1st 10kVA = 100% +50% OF REMAINING	0.0
WATER HEATER	100%	0.0
KITCHEN EQUIPMENT	MINUS NEC DEMAND 100%	0.0
PROCESS	100%	0.0
MISCELLANEOUS	100%	7.1

NEW PANEL "M1" (LEFT SECTION)

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 400A MLO
INTERRUPT RATING: 22K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUFACTURER: SQUARE-D, GE, SIEMENS

TWO-SECTION PANELBOARD WITH 42 POLES PER SECTION. PRIVIDE SUB-FEED LUGS AND CABLE BETWEEN SECTION TO SECOND SECTION.

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A	PHASE LOAD SUMMARY B	PHASE LOAD SUMMARY C	CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
.	HP-1	35	3	8	1	2.7	7.3		2	3	3	80	AHU-1	.
.	.	.	.	.	3		2.7	7.3	4	.	.	.	.	.
.	.	.	.	.	5			2.7 7.3	6	.	.	.	.	.
.	HP-7	35	3	8	7	2.7	7.3		8	3	3	80	AHU-7	.
.	.	.	.	.	9		2.7	7.3	10	.	.	.	.	.
.	.	.	.	.	11			2.7 7.3	12	.	.	.	.	.
.	EWH-1	20	2	12	13	1.5	2.1		14	8	2	40	CU-2	.
.	.	.	.	.	15		1.5	2.1	16	.	.	.	.	.
.	FFU-1	15	2	12	17			0.2 2.1	18	8	2	40	CU-3	.
.	.	.	.	.	19	0.2	2.1		20	.	.	.	.	.
.	FFU-2	15	2	12	21		0.2	1.2	22	10	2	25	CU-4	.
.	.	.	.	.	23			0.2 1.2	24	.	.	.	.	.
.	GF-2	15	1	12	25	1.7	2.1		26	8	2	40	CU-5	.
.	GF-3	15	1	12	27		1.7	2.1	28	.	.	.	.	.
.	GF-4	15	1	12	29			1.1 2.9	30	6	2	50	CU-6	.
.	GF-5	15	1	12	31	1.7	2.9		32	.	.	.	.	.
.	GF-6	15	1	12	33		1.7	2.5	34	30	1	25	ERV-1	.
.	RELIEF FANS RF	20	1	12	35			0.3 0.0	36	.	1	20	SPARE	.
.	UV LIGHTS	20	1	12	37	0.1	0.0		38	.	1	20	SPARE	.
.	FANS EF-6,7,10,12	20	1	12	39		0.5	0.0	40	.	1	20	SPARE	.
.	FAN EF-16	20	1	12	41			0.1 0.0	42	.	1	20	SPARE	.
TOTAL KVA PER PHASE						34.4	33.5	28.0						

NEC 220 LOAD JUSTIFICATION:
SEE RIGHT SECTION FOR LOAD JUSTIFICATION.

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.

NEW PANEL "M1" (RIGHT SECTION)

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 400A MLO
INTERRUPT RATING: 22K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUFACTURER: SQUARE-D, GE, SIEMENS

TWO-SECTION PANELBOARD WITH 42 POLES PER SECTION. PRIVIDE SUB-FEED LUGS AND CABLE BETWEEN SECTION TO SECOND SECTION.

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A	PHASE LOAD SUMMARY B	PHASE LOAD SUMMARY C	CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
.	GAS WH-1 IGNITER	20	1	12	43	0.1	1.0		44	12	2	15	DHP-1	.
.	RCP-1	20	1	12	45		0.1	1.0	46	.	.	.	.	.
.	SPARE	20	1	.	47			0.0 1.0	48	12	2	15	DHP-2	.
.	SPARE	20	1	.	49	0.0	1.0		50	.	.	.	.	.
.	SPARE	20	1	.	51		0.0	0.0	52	.	1	20	SPARE	.
.	SPARE	20	1	.	53			0.0 0.0	54	.	1	20	SPARE	.
.	SPARE	20	1	.	55	0.0	0.0		56	.	1	20	SPARE	.
.	SPARE	20	1	.	57		0.0	0.0	58	.	1	20	SPARE	.
.	SPARE	20	1	.	59			0.0 0.0	60	.	1	20	SPARE	.
.	USEABLE SPACE ONLY	.	1	.	61	0.0	0.0		62	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	63		0.0	0.0	64	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	65			0.0 0.0	66	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	67	0.0	0.0		68	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	69		0.0	0.0	70	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	71			0.0 0.0	72	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	73	0.0	0.0		74	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	75		0.0	0.0	76	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	77			0.0 0.0	78	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	79	0.0	0.0		80	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	81		0.0	0.0	82	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	83			0.0 0.0	84	.	1	.	USEABLE SPACE ONLY	.
TOTAL KVA PER PHASE						36.5	34.6	29.0						
DIVERSIFIED KVA PER PHASE						36.6	34.6	29.0						
DIVERSIFIED TOTAL KVA						100.2 KVA								
MAXIMUM AMPS HEAVIEST PHASE (DIVERSIFIED)						304.4 AMPS								

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.

NEC 220 LOAD JUSTIFICATION:

LIGHTING	125%	0.2
HEATING	100%	19.2
AIR HANDLERS	100%	58.7
AIR CONDITIONING	100%	21.0
RECEPTACLES	1st 10kVA = 100% +50% OF REMAINING	0.0
WATER HEATER	100%	0.0
KITCHEN EQUIPMENT	MINUS NEC DEMAND 100%	0.0
PROCESS	100%	0.0
MISCELLANEOUS	100%	1.1

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PANEL SCHEDULES

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REVISION: -		
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REVIEWS

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PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E401

11 OF 16

Save Date: July 19, 2022 - 9:56 AM - ZR
Plot Date: July 19, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E401_PANEL SCHEDULES.dwg

NEW PANEL 'A' (LEFT SECTION)

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 225A MLO
INTERRUPT RATING: 22K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUF: SQ-D,GE,SIEMENS

TWO-SECTION PANELBOARD WITH 42 POLES PER SECTION. PRIVIDE SUB-FEED LUGS AND CABLE CONNECTION TO SECOND SECTION.

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A		PHASE B		PHASE C	
.	LTG WAITING	20	1	12	1	0.7	0.5				
.	LTG EXAMS	20	1	12	3			1.7	1.3		
.	LTG TREATMENT	20	1	12	5					1.5	0.9
.	SPARE	20	1	.	7	0.0	0.8				
.	CONTACTOR & PC	20	1	12	9			0.1	0.4		
.	LTG EXTER WALL VIA PC	20	1	12	11					0.5	0.5
.	LTG SITE VIA PC	20	1	10	13	0.5	0.9				
.	SPARE	20	1	.	15			0.0	1.1		
A	MONUMENT SIGN	20	1	10	17					1.2	0.5
.	SIGN EXTER VIA PC	20	1	12	19	0.8	0.5				
A	HOT BOX	20	1	10	21			1.0	0.5		
B	MONITORING PANEL	20	1	12	23					0.2	0.0
.	IT RACK	30	1	10	25	2.0	0.9				
.	IT RACK	30	1	10	27			2.0	0.5		
.	TELEPHONE BOARD	20	1	12	29					0.4	0.5
.	REC ATTIC	20	1	12	31	0.5	0.5				
.	OXYGEN CAGE (TREATMENT)	20	1	12	33			1.0	0.9		
.	OXYGEN CAGE (TREATMENT)	20	1	12	35					1.0	0.0
.	WASHER P/P/S	20	1	12	37	1.4	2.0				
.	DRYER P/P/S	30	2	10	39			2.9	2.0		
.	.	.	.	.	41					2.9	0.2
TOTAL KVA PER PHASE						12.2		15.4		10.4	

CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
2	12	1	20	REC RECEPTION	.
4	12	1	20	REC RETAIL	.
6	12	1	20	REC WAITING, HALL	.
8	12	1	20	REFRIGERATOR WAITING	.
10	12	1	20	REC SPRINKLER ROOM	.
12	12	1	20	REC HYDROTHERAPY	.
14	12	1	20	REC RESTROOMS, JANITORY	.
16	12	1	20	REC RESTROOMS, HALL	.
18	12	1	20	REC ACC OFFICE	.
20	12	1	20	REC MANAGER OFFICE	.
22	12	1	20	REC DVM OFFICE	.
24	.	1	20	SPARE	.
26	12	1	20	REC FELINE WARD	A
28	12	1	20	REC IMAGING	.
30	12	1	20	REC HALL	.
32	12	1	20	REC ADMIN PHONES	.
34	12	1	20	REC CANINE WARD	A
36	.	1	20	SPARE	.
38	10	2	30	GENERATOR HEATER	.
40	.	.	.	.	.
42	10	1	20	GEN BATTERY CHARGER	.

NEC 220 LOAD JUSTIFICATION:
SEE RIGHT SECTION FOR LOAD JUSTIFICATION.

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.
C. PROVIDE LOCK-ON BREAKER. MARK RED COLOR.

NEW PANEL 'A' (RIGHT SECTION)

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 225A MLO
INTERRUPT RATING: 22K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUF: SQ-D,GE,SIEMENS

TWO-SECTION PANELBOARD WITH 42 POLES PER SECTION. PRIVIDE SUB-FEED LUGS AND CABLE CONNECTION TO SECOND SECTION.

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A		PHASE B		PHASE C	
.	REC EXAM 1	20	1	12	43	0.9	1.1				
.	REC EXAM 2	20	1	12	45			0.9	0.4		
.	REC EXAM 3	20	1	12	47					0.9	0.5
.	REC EXAM 4	20	1	12	49	0.9	0.9				
.	REC EXAM 5	20	1	12	51			0.9	0.9		
.	REC EXAM 6	20	1	12	53					0.9	0.9
.	REC EXAM 7	20	1	12	55	0.9	0.1				
.	REC EXAM 8	20	1	12	57			0.0	1.0		
.	SPARE	20	1	.	59					0.0	1.2
.	REC LAB/PHARMACY	20	1	12	61	0.9	0.4				
.	REC LAB/PHARMACY	20	1	12	63			0.9	0.9		
.	REFRIGERATOR LAB	20	1	12	65					1.2	1.4
.	SPARE	20	1	.	67	0.0	0.9				
.	REC LTS SURGERY 1	20	1	12	69			0.6	0.6		
.	REC SURGERY 1	20	1	12	71					0.9	0.8
.	REC LTS SURGERY 2	20	1	12	73	1.4	0.5				
.	REC LTS SURGERY 2	20	1	12	75			1.2	1.4		
.	REC DVM WK STATION	20	1	12	77					0.7	0.5
.	REC ASSOC OFFICE	20	1	12	79	0.5	0.9				
.	REC ASSOC OFFICE	20	1	12	81			0.5	0.0		
.	SPARE	20	1	.	83					0.0	0.0
TOTAL KVA PER PHASE						22.5		25.6		20.4	
DIVERSIFIED KVA PER PHASE						18.2		21.9		18.2	
DIVERSIFIED TOTAL KVA						58.3 KVA					
MAXIMUM AMPS HEAVIEST PHASE (DIVERSIFIED)						182.3 AMPS					

CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
44	12	1	20	PLUGMOLD TREATMENT	A
46	12	1	20	LTS TREATMENT	.
48	12	1	20	REC TREATMENT	.
50	12	1	20	REC TREATMENT	.
52	12	1	20	REC TREATMENT	.
54	12	1	20	REC TREATMENT	.
56	12	1	20	MED GAS ALARM PANEL	.
58	12	1	20	REC LTS DENTAL	.
60	12	1	20	DENTAL X-RAY	.
62	12	1	20	ETO STERILIZER (DENTAL)	.
64	12	1	20	REC P/P/S	.
66	12	1	20	AUTOCLAVE P/P/S	.
68	12	1	20	REC ULTRASOUND	.
70	12	1	20	ULTRASOUND CART	.
72	12	1	20	REC LTS ISOLATION	.
74	12	1	20	REC ISOLATION	.
76	12	1	20	CT MACHINE (PORTABLE)	.
78	12	1	20	REC CT ROOM	.
80	12	1	20	REC ANTE, MORGUE	.
82	.	1	20	SPARE	.
84	.	1	20	SPARE	.

NEC 220 LOAD JUSTIFICATION:

LIGHTING	125%	9.8
HEATING	100%	4.0
AIR HANDLERS	100%	0.0
AIR CONDITIONING	100%	0.0
RECEPTACLES	1st 10kVA = 100% +50% OF REMAINING	22.3
WATER HEATER	100%	0.0
KITCHEN EQUIPMENT	MINUS NEC DEMAND 100%	0.0
PROCESS	100%	7.0
MISCELLANEOUS	100%	15.2

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.
C. PROVIDE LOCK-ON BREAKER. MARK RED COLOR.

NEW PANEL 'B' (LEFT SECTION)

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 225A MLO
INTERRUPT RATING: 10K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUF: SQ-D, GE, SIEMENS

TWO-SECTION PANELBOARD WITH 42 POLES PER SECTION. PRIVIDE SUB-FEED LUGS AND CABLE CONNECTION TO SECOND SECTION.

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A		PHASE B		PHASE C	
.	LTG EXERCISE, RUNS	20	1	12	1	1.3	0.0				
.	LTG BOARDING	20	1	12	3			1.7	0.1		
.	LTG ATRIUM	20	1	12	5					0.2	1.5
.	LTG ATTIC	20	1	12	7	0.8	1.2				
.	SPARE	20	1	.	9			0.0	0.0		
.	SIGN	20	1	12	11					1.2	1.4
.	CONTACTOR/PC	20	1	12	13	0.1	2.9				
.	SPARE	20	1	.	15			0.0	2.9		
.	REC HALL, ATRIUM	20	1	12	17					0.7	1.4
.	REC HALL	20	1	12	19	1.3	2.9				
.	REFRIGERATOR LOUNGE	20	1	12	21			1.2	2.9		
.	MICROWAVE LOUNGE	20	1	12	23					1.4	1.4
.	REC LOUNGE	20	1	12	25	0.7	2.9				
.	REC LOUNGE	20	1	12	27			0.7	2.9		
.	REC LOUNGE	20	1	12	29					0.5	1.4
.	REC CENTRAL STORAGE	20	1	12	31	1.1	2.9				
.	CHEST FREEZER I-131	20	1	12	33			1.5	2.9		
.	REC I-131	20	1	12	35					0.4	0.0
.	OVERHEAD DOOR	20	2	12	37	0.8	0.8				
.	.	.	.	.	39			0.8	0.8		
.	CENTRAL VAC	20	1	12	41					1.9	0.0
TOTAL KVA PER PHASE						19.7		18.4		13.6	

CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
2	.	1	20	SPARE	.
4	12	1	20	SCAVENGER	.
6	12	1	20	CHEST FREEZER MORGUE	.
8	12	1	20	OXY MANIFOLD	.
10	.	1	20	SPARE	.
12	12	1	20	WASHER LAUNDRY	.
14	10	2	30	DRYER LAUNDRY	.
16	.	.	.	.	.
18	12	1	20	WASHER LAUNDRY	.
20	10	2	30	DRYER LAUNDRY	.
22	.	.	.	.	.
24	12	1	20	WASHER LAUNDRY	.
26	10	2	30	DRYER LAUNDRY	.
28	.	.	.	.	.
30	12	1	20	WASHER LAUNDRY	.
32	10	2	30	DRYER LAUNDRY	.
34	.	.	.	.	.
36	.	1	20	SPARE	.
38	12	2	20	OVERHEAD DOOR	.
40	.	.	.	.	.
42	.	1	20	SPARE	.

NEC 220 LOAD JUSTIFICATION:
SEE RIGHT SECTION FOR LOAD JUSTIFICATION.

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.

NEW PANEL 'B' (RIGHT SECTION)

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 225A MLO
INTERRUPT RATING: 10K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUF: SQ-D, GE, SIEMENS

TWO-SECTION PANELBOARD WITH 42 POLES PER SECTION. PRIVIDE SUB-FEED LUGS AND CABLE CONNECTION TO SECOND SECTION.

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A		PHASE B		PHASE C	
.	REC ATTIC	20	1	12	43	0.5	0.1				
.	REC OFFICE	20	1	12	45			0.5	0.7		
.	REC LUXURY RUNS	20	1	12	47					0.7	0.5
.	REC LUXURY RUNS	20	1	12	49	0.7	0.4				
.	REC CANINE BOARDING	20	1	12	51			0.7	0.7		
.	REC BATHE/DRY	20	1	12	53					0.2	0.9
.	REC BATHE/DRY	20	1	12	55	0.2	0.5				
.	REC BATHE/DRY	20	1	12	57			0.2	1.2		
.	REC BATHE/DRY	20	1	12	59					0.2	0.9
.	SPARE	20	1	.	61	0.0	0.0				
.	SPARE	20	1	.	63			0.0	0.0		
.	SPARE	20	1	.	65					0.0	0.0
.	SPACE WITH BUSSING	.	1	.	67	0.0	0.0				
.	SPACE WITH BUSSING	.	1	.	69			0.0	0.0		
.	SPACE WITH BUSSING	.	1	.	71					0.0	0.0
.	SPACE WITH BUSSING	.	1	.	73	0.0	0.0				
.	SPACE WITH BUSSING	.	1	.	75			0.0	0.0		
.	SPACE WITH BUSSING	.	1	.	77					0.0	0.0
.	SPACE WITH BUSSING	.	1	.	79	0.0	0.0				
.	SPACE WITH BUSSING	.	1	.	81			0.0	0.0		
.	SPACE WITH BUSSING	.	1	.	83					0.0	0.0
TOTAL KVA PER PHASE						22.1		22.5		17.0	
DIVERSIFIED KVA PER PHASE						21.8		22.4		16.6	
DIVERSIFIED TOTAL KVA						60.9 KVA					
MAXIMUM AMPS HEAVIEST PHASE (DIVERSIFIED)						186.6 AMPS					

CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
44	12	1	20	MED GAS ALARM PANEL	.
46	12	1	20	REC RESTROOMS	.
48	12	1	20	REC BOARDING ADMIN	.
50	12	1	20	REC BOARDING RECEPTION	.
52	12	1	20	REC BOARDING WAITING	.
54	12	1	20	REC GROOMING	.
56	12	1	20	REC FOOD PREP	.
58	12	1	20	REFRIG FOOD PREP	.
60	12	1	20	REC INDOOR EXERCISE	.
62	.	1	20	SPARE	.
64	.	1	20	SPARE	.
66	.	1	20	SPARE	.
68	.	1	.	SPACE WITH BUSSING	.
70	.	1	.	SPACE WITH BUSSING	.
72	.	1	.	SPACE WITH BUSSING	.
74	.	1	.	SPACE WITH BUSSING	.
76	.	1	.	SPACE WITH BUSSING	.
78	.	1	.	SPACE WITH BUSSING	.
80	.	1	.	SPACE WITH BUSSING	.
82	.	1	.	SPACE WITH BUSSING	.
84	.	1	.	SPACE WITH BUSSING	.

NEC 220 LOAD JUSTIFICATION:

LIGHTING	125%	6.5
HEATING	100%	0.0
AIR HANDLERS	100%	0.0
AIR CONDITIONING	100%	0.0
RECEPTACLES	1st 10kVA = 100% +50% OF REMAINING	12.0
WATER HEATER	100%	0.0
KITCHEN EQUIPMENT	MINUS NEC DEMAND 100%	0.0
PROCESS	100%	1.2
MISCELLANEOUS	100%	41.2

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.

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COMMONWEALTH OF VIRGINIA
WILLIAM LEE TEETER
Lic. No. 025440
PROFESSIONAL ENGINEER
07/18/2022

TEETER ENGINEERING GROUP, P.A.

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

PANEL SCHEDULES

REV.#	DATE	COMMENTS
REVISION:	,	,
REVISION:	,	,
REVISION:	,	,
REVISION:	,	,

REVIEWS

INITIALS	

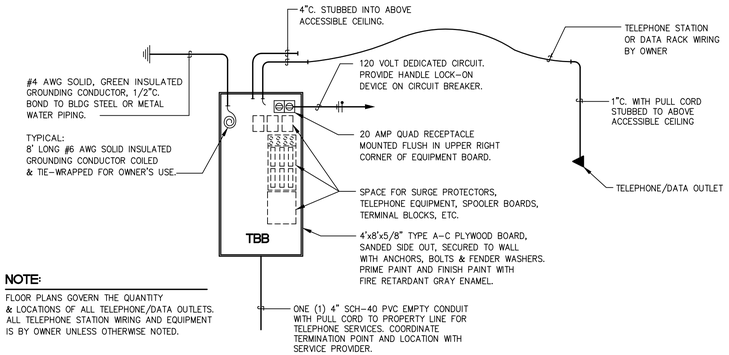
TEG

PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E402

12 OF 16

Save Date: July 18, 2022 - 10:02 AM, Zlh
Plot Date: July 18, 2022 - 10:02 AM
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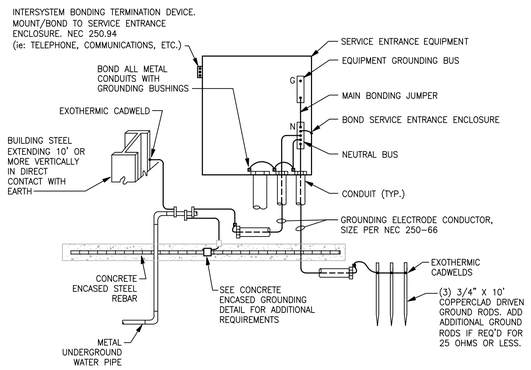


NOTE:

FLOOR PLANS GOVERN THE QUANTITY & LOCATIONS OF ALL TELEPHONE/DATA OUTLETS. ALL TELEPHONE STATION WIRING AND EQUIPMENT IS BY OWNER UNLESS OTHERWISE NOTED.

5 TELEPHONE TERMINAL BOARD DIAGRAM

DIAGRAMMATIC

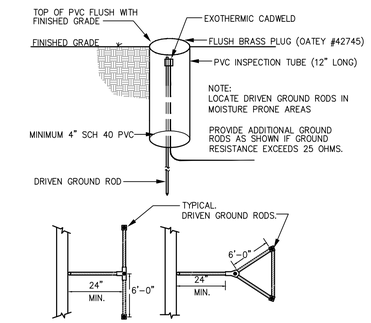


NOTES:

1. GROUNDING ELECTRODE CONDUCTOR SHALL BE ENCLOSED FULL LENGTH BY CONDUIT (RMC OR EMT).
2. GROUNDING ELECTRODE CONDUCTOR SHALL BE CONTINUOUS (UNBROKEN) FROM THE NEUTRAL BUS TO THE GROUNDING ELECTRODE. SPLICES AND/OR JOINTS ARE PROHIBITED. EXCEPTIONS AS ALLOWED PER NEC 250.64(C) IRREVERSIBLE COMPRESSION TYPE CONNECTORS OR BY EXOTHERMIC WELDING WILL BE ACCEPTABLE FOR REMODEL WORK ONLY.
3. GROUNDING ELECTRODE CONDUCTORS SHALL BE COPPER.
4. CONNECTION TO THE METAL COLD WATER PIPE SHALL BE MADE WITHIN 5' OF THE POINT OF ENTRANCE INTO THE BUILDING.
5. GROUNDING ELECTRODE CONDUCTORS AND BONDING JUMPER CONNECTIONS TO BUILDING STEEL, CONCRETE ENCASED STEEL REBAR, AND DRIVEN GROUND RODS SHALL BE CONNECTED BY EXOTHERMIC CADWELDS.
6. ALL GROUNDING BUSHINGS, CLAMPS, JUMPERS, FASTENERS, ETC. SHALL BE APPROVED AND LISTED FOR THE PURPOSE.

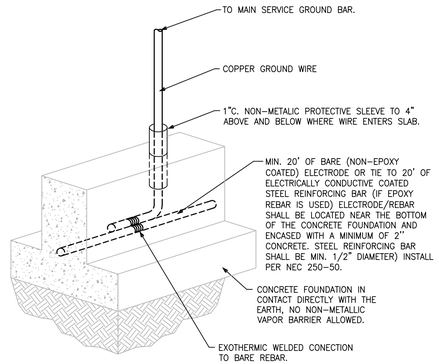
2 SERVICE GROUND DETAIL

NOT TO SCALE



4 DRIVEN GROUND DETAIL

NOT TO SCALE

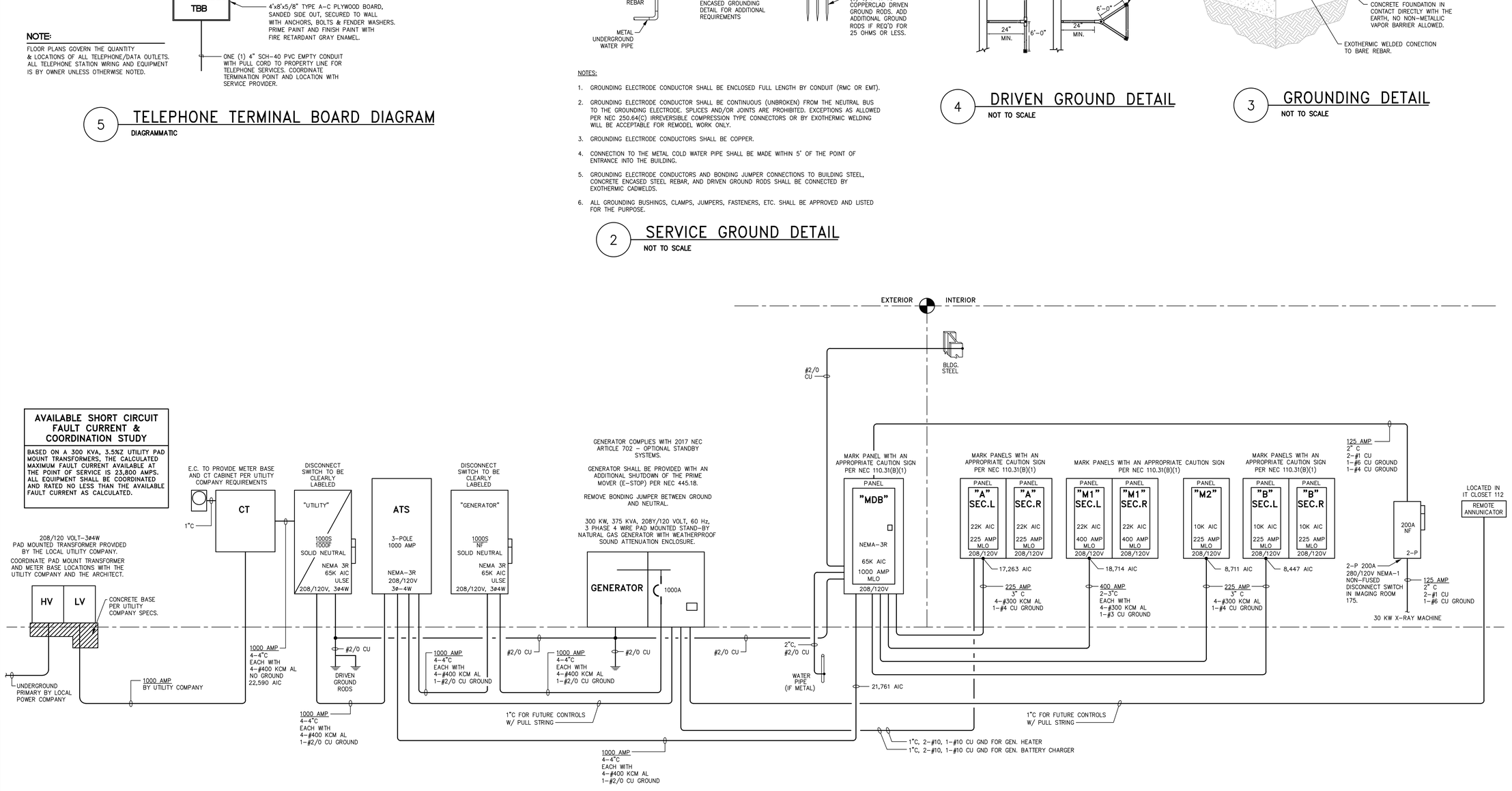


3 GROUNDING DETAIL

NOT TO SCALE

AVAILABLE SHORT CIRCUIT FAULT CURRENT & COORDINATION STUDY

BASED ON A 300 KVA, 3.5%Z UTILITY PAD MOUNT TRANSFORMERS, THE CALCULATED MAXIMUM FAULT CURRENT AVAILABLE AT THE POINT OF SERVICE IS 23,800 AMPS. ALL EQUIPMENT SHALL BE COORDINATED AND RATED NO LESS THAN THE AVAILABLE FAULT CURRENT AS CALCULATED.



1 POWER RISER DIAGRAM

DIAGRAMMATIC

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07/18/2022

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COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

POWER RISER DIAGRAM

REV #	DATE	COMMENTS
-		
-		
-		
-		

REVISION:
REVISION:
REVISION:
REVISION:

REVIEWS

INITIALS	

TEG
PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E501

13 OF 16

Save Date: July 18, 2022 - 10:16 AM - ZH
Plot Date: July 18, 2022 - 10:17 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E501_POWER RISER DIAGRAM.dwg

DIVISION 26 ELECTRICAL SPECIFICATIONS

01 GENERAL
THE CONTRACTOR SHALL VISIT THE JOBSITE, PRIOR TO ANY SUBMISSION OF BID AND REVIEW ALL CONTRACT DOCUMENTS TO FAMILIARIZE HIMSELF WITH EXTENT OF WORK REQUIRED AND THE CONDITIONS (BOTH EXISTING AND NEW) UNDER WHICH THE WORK SHALL BE PERFORMED. THE CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCY BETWEEN THE ELECTRICAL PLANS AND EXISTING CONDITIONS PRIOR TO ISSUING A BID.

THE CONTRACTOR SHALL REVIEW ALL CONSTRUCTION DRAWINGS, SPECIFICATIONS, EQUIPMENT INSTALLATION INSTRUCTIONS AND SHOP DRAWINGS OF ALL TRADES TO FAMILIARIZE HIMSELF WITH THE EXTENT OF THE WORK REQUIRED.

THE CONTRACTOR SHALL NOT SCALE THESE DRAWINGS. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, UNLESS NOTED OTHERWISE. IT SHALL NOT BE THE INTENT OF THESE DOCUMENTS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE ELECTRICAL CONTRACTOR SHALL BE EXPECTED TO FURNISH AND INSTALL ALL ITEMS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM. ALL CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY, EXACT ROUTING SHALL BE DETERMINED IN THE FIELD. UON.

ALL CUTTING AND PATCHING, FIRE SEALING, TRENCHING AND BACKFILL, ELECTRICAL COORDINATION, ETC. REQUIRED FOR THE INSTALLATION OF THIS WORK IS THE RESPONSIBILITY OF THIS CONTRACTOR.

IT SHALL BE UNDERSTOOD THAT ALL WORK SHALL COMPLY WITH THE LATEST EDITIONS OF NATIONAL ELECTRICAL CODE, APPLICABLE NATIONAL AND LOCAL CODES, LOCAL ORDINANCES, MANUFACTURERS' INSTALLATION INSTRUCTIONS, UL STANDARDS, NFPA, AND THAT SPECIFIED IN THESE DOCUMENTS, AND OTHER AUTHORITIES HAVING JURISDICTION OVER THE ELECTRICAL CONSTRUCTION WORK ON THIS PROJECT. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR.

THE REQUIREMENTS OF THE ARCHITECT'S DIVISION 1, GENERAL AND SPECIAL CONDITIONS, AND THE CONTRACT SHALL APPLY TO THIS WORK.

ALL MATERIAL SHALL BE NEW AND LISTED FOR ITS INTENDED USE. WHERE UNDERWRITER'S LABORATORIES LABELING IS AVAILABLE FOR THE CLASS OF MATERIAL INVOLVED, MATERIALS SHALL BE FURNISHED WITH UL LABEL OR LISTING, OR THE CONTRACTOR SHALL PROVE IT IS NOT REQUIRED. ALL EQUIPMENT SHALL HAVE UL LABELS AND BE LISTED FOR ITS INTENDED USE.

ELECTRICAL CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS FOR PERMITS, LICENSES, FEES, INSPECTIONS, INSURANCE FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK UNDER THIS CONTRACT AT HIS EXPENSE.

CONTRACTOR SHALL COMPLY WITH ALL RULES AND REGULATIONS OF OSHA AS APPLIED TO CONSTRUCTION PROJECTS.

IN THE EVENT A CONFLICT OCCURS BETWEEN THE CONTRACT, SPECIFICATIONS, DRAWINGS, REFERRED TO MANUFACTURERS' LITERATURE, CODES HAVING JURISDICTION OR OTHER DOCUMENTS REFERRED TO HEREIN, THIS CONTRACTOR SHALL CONTACT THE ARCHITECT AND ENGINEER FOR A RULING AND CLARIFICATION PRIOR TO SUBMITTING ANY BID DOCUMENTS. WHERE CONFLICTS ARE QUESTIONED AFTER BID SUBMITTALS, THE DOCUMENT OR DOCUMENTS WITH THE MOST STRINGENT, EXPENSIVE AND DETAILED REQUIREMENTS WILL BE ENFORCED BY THE ARCHITECT AND ENGINEER. THE CONTRACTOR SHALL BE REQUIRED TO FURNISH AND INSTALL THE MORE STRINGENT REQUIREMENTS AND AGREES THAT NO SEPARATE OR EXTRA PAYMENTS WILL BE MADE FOR ANY ITEM OF WORK OR MATERIALS REQUIRED TO FOLLOW THE MORE STRINGENT REQUIREMENTS.

ALL EQUIPMENT AND MATERIAL SHALL BE INSTALLED IN A FIRST CLASS WORKMAN-LIKE MANNER AND ALIGNED, LEVELED AND ADJUSTED FOR SATISFACTORY OPERATION. INSTALL EQUIPMENT SO THAT ALL PARTS ARE EASILY ACCESSIBLE FOR INSPECTION, OPERATION, MAINTENANCE AND REPAIR.

THE WORD "PROVIDE" MEANS THAT THIS CONTRACTOR SHALL FABRICATE, ERECT, CONNECT AND COMPLETELY INSTALL COMPLETE SYSTEMS PLACED IN PROPER OPERATING CONDITION. THIS SHALL INCLUDE ALL LABOR, PRODUCT OPTIONS, ACCESSORIES AND INCIDENTAL MATERIALS REQUIRED TO COMPLETE THE INSTALLATION.

THE WORD "CONNECT" MEANS THAT THIS CONTRACTOR SHALL PROVIDE (SEE DEFINITION ABOVE) ALL DISCONNECTING MEANS, OVERCURRENT PROTECTION AND WIRING REQUIRED TO PLACE THE EQUIPMENT AND SYSTEMS IN PROPER OPERATING CONDITION AND TO COMPLY WITH CODE REQUIREMENTS.

ALL ELECTRICAL APPARATUS SHALL BE INSTALLED AT THE SAME MOUNTING HEIGHTS (UNLESS ALTERED BY AMERICANS WITH DISABILITIES ACT – ADA), USING THE SAME MATERIALS AND METHODS USED IN THE EXISTING CONSTRUCTION. THE QUALITY, PERFORMANCE AND APPEARANCE OF THE NEW CONSTRUCTION SHALL MATCH THAT OF ANY EXISTING CONSTRUCTION.

02 SCOPE
ELECTRICAL CONTRACTOR SHALL FURNISH ALL, BUT NOT LIMITED TO, EQUIPMENT, TOOLS, SKILLED SUPERVISION NECESSARY FOR THE CONSTRUCTION, ERECTION, INSTALLATION, CONNECTION, TESTING AND ADJUSTMENT OF ALL CIRCUITS AND ELECTRICAL EQUIPMENT SHOWN OR NOTED ON PLANS.

IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL ALL WORK IN ACCORDANCE WITH THE SPECIFICATIONS ASSOCIATED WITH THESE DRAWINGS. THE INSTALLATION OF ALL WORK PREFORMED AND ALL MATERIALS PROVIDED SHALL BE AS DIRECTED BY THE SPECIFICATIONS KEEPING IN MIND THAT THE NATIONAL ELECTRICAL CODE SHALL BE CONSIDERED AS A MINIMUM STANDARD AND THESE SPECIFICATIONS SHALL GOVERN ALL WORK. ALL EQUIPMENT SHALL BE AS SPECIFIED ON PLANS.

ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE AND FULLY OPERATIONAL ELECTRICAL SYSTEM, INSTALLED IN A GOOD WORKMANSHIP MANNER.

ELECTRICAL CONTRACTOR SHALL INCLUDE ALL LABOR, EQUIPMENT, TOOLS AND MATERIALS FOR ELECTRIC DISTRIBUTION, AS SHOWN ON DRAWINGS.

ELECTRICAL CONTRACTOR SHALL COORDINATE WITH POWER AND TELEPHONE COMPANIES AND ADHERE TO REQUIRED CRITERIA.

ELECTRICAL CONTRACTOR SHALL COORDINATE WITH ALL OTHER TRADES PRIOR TO ROUGHING.

ELECTRICAL CONTRACTOR SHALL FURNISH ALL NEW SWITCHBOARDS, PANELBOARDS, TRANSFORMERS, DISCONNECT SWITCHES, ETC. THAT ARE MANUFACTURED BY THE SAME MANUFACTURER. NEW PANELBOARDS ADDED TO AN EXISTING FACILITY SHALL BE OF THE SAME MANUFACTURER AS THE EXISTING PANELBOARDS.

UNLESS NOTED AS EXISTING, ALL EQUIPMENT, WIRING, DEVICES, LUMINAIRES, LAMPS, ETC., SHALL BE NEW AND AS SPECIFIED.

IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR FOR THE ADVANCE ORDERING OF LONG LEAD ITEMS SO AS NOT TO INTERFERE WITH THE PRODUCTION OF OTHER TRADES RESULTING IN ANY DOWN OR LAG TIME.

03 QUALITY ASSURANCE
THIS CONTRACTOR SHALL VERIFY THE LOCATIONS AND MEASUREMENTS OF EQUIPMENT AND DEVICES BEFORE INSTALLATION TO AVOID CONFLICT WITH THE WORK OF OTHER TRADES. ANY UNCERTAINTIES AND CONFLICTS SHALL BE SUBMITTED TO THE ENGINEER FOR FINAL DECISION.

THE INTEGRITY OF ALL STRUCTURAL, FIRE AND SMOKE RATED PARTITIONS AND CEILINGS, ROOFING, AND WATER PROOFING SHALL BE MAINTAINED.

CHECK NAMEPLATE DATA AND INSTALLATION DOCUMENTS OF ALL OWNER FURNISHED EQUIPMENT AND EQUIPMENT FURNISHED BY OTHER TRADES. VERIFY CIRCUIT SIZE, CONTROL REQUIREMENTS, AND MISCELLANEOUS REQUIREMENTS AGAINST THAT SHOWN IN THESE DOCUMENTS. ANY CONFLICT AND UNCERTAINTIES SHALL BE SUBMITTED TO THE ENGINEER FOR FINAL DECISION.

04 TESTS
UPON COMPLETION OF WORK, THE CONTRACTOR SHALL DEMONSTRATE THE INSTALLATION AND MAKE SUCH TESTS AS MAY BE REQUIRED TO SATISFY THE ENGINEER AND OWNER THAT THE WORK IS INSTALLED IN ACCORDANCE WITH DRAWINGS, SPECIFICATIONS AND EQUIPMENT MANUFACTURER'S INSTRUCTIONS.

TEST ALL LIGHTS, EQUIPMENT, APPLIANCES, AND OTHER SYSTEMS. ALL DEFECTS SHALL BE PROMPTLY REMEDIED AT NO ADDITIONAL COST TO THE OWNER.

THE CONTRACTOR SHALL TEST ALL WIRING AND CONNECTIONS FOR CONTINUITY AND GROUNDS AND CORRECT ALL FAULTS AT NO ADDITIONAL COST TO THE OWNER.

CHECK SERVICE GROUND. RESISTANCE TO GROUND SHALL NOT EXCEED 25 OHMS.

CHECK ALL EMPTY RACEWAYS TO ASSURE AN UNOBSTRUCTED AND USEABLE PATH FOR USE BY OTHER TRADES OR THE OWNERS VENDOR.

05 WARRANTY
THE CONTRACTOR SHALL GUARANTEE THE SYSTEM INSTALLATION FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE AGAINST ANY DEFECT IN WORKMANSHIP OR MATERIAL EXCEPTION: INCANDESCENT LAMPS SHALL BE GUARANTEED FOR 90 DAYS.

THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR TO ORIGINAL CONDITION ANY AND ALL DAMAGES TO BUILDING SURFACES,EQUIPMENT AND FURNISHINGS CAUSED DURING PERFORMANCE OF WORK.

CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED THEREBY.

ALL TEST EQUIPMENT SHALL BE FURNISHED BY THE CONTRACTOR AT HIS EXPENSE.

06 RECORD DRAWINGS
DURING THE CONSTRUCTION OF THIS PROJECT, THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF ELECTRICAL CONTRACT DRAWINGS ON WHICH SHALL BE RECORDED ALL, BUT NOT LIMITED TO, SIGNIFICANT CHANGES IN EQUIPMENT LOCATIONS, CIRCUIT ASSIGNMENT DEVIATIONS, EQUIPMENT SIZE CHANGES, ADDITIONS AND DELETIONS TO THE PROJECT, LOCATIONS OF ALL CONDUITS AND WIRING BELOW GRADE, LOCATIONS OF ALL INSTALLED PULL AND JUNCTION BOXES, FEEDER CIRCUIT LOCATIONS, ETC. THIS SET OF DRAWINGS SHALL BE USED TO PREPARE RECORD DRAWINGS TO BE SUBMITTED TO THE OWNER UPON COMPLETION OF THE PROJECT.

UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL PREPARE AN OPERATION AND MAINTENANCE MANUAL WHICH SHALL INCLUDE CATALOG DATA, EQUIPMENT INFORMATION, WIRING DIAGRAMS, WARRANTY INFORMATION, RECOMMENDED MAINTENANCE PROCEDURES, REPLACEMENT PARTS LISTS, ETC. FOR THE ELECTRICAL INSTALLATION. THE QUANTITIES OF MANUALS SHALL BE AS REQUIRED BY THE ARCHITECTURAL SECTIONS OF THESE SPECIFICATIONS. THESE MANUALS SHALL BE DELIVERED TO THE ARCHITECT FOR APPROVAL AND PRESENTATION TO THE OWNER.

07 SUBMITTALS
SHOP DRAWINGS OF MATERIALS, EQUIPMENT, LIGHTING FIXTURES AND WIRING DEVICES SHALL BE SUBMITTED FOR APPROVAL. ALL EQUIPMENT SHALL BE AS SPECIFIED HERE IN OR AS CALLED FOR ON THE DRAWINGS AND ANY ITEM NOT SUBMITTED SHALL BE PROVIDED AS SPECIFIED. THE RESPONSIBILITY TO ACCEPT OR REJECT ANY PROPOSED SUBSTITUTION REMAINS WITH THE PROJECT ENGINEER.

ALL OPERATING AND MAINTENANCE MANUALS SHALL BE DELIVERED TO THE OWNER.

SUBMIT CERTIFICATES OF INSPECTION AND ACCEPTANCE TO THE ENGINEER.

ANY ADDITIONAL COSTS INCURRED FOR SUBSTITUTE EQUIPMENT, MATERIALS AND METHODS SHALL BE PAID BY THE CONTRACTOR UNLESS APPROVED BY THE ENGINEER. CREDITS SHALL BE GIVEN TO THE OWNER WHERE SUCH SUBSTITUTE EQUIPMENT AND METHODS RESULT IN LESS EXPENSE TO THE CONTRACTOR.

ANY AND ALL DELAYS CAUSED BY THE REJECTION AND RE-SUBMITTAL OF SHOP DRAWINGS THAT ARE OR WERE IN CONFLICT WITH THE CONTRACT DRAWINGS SHALL BE THE DIRECT RESPONSIBILITY OF THIS CONTRACTOR.

CONTRACTOR AND EQUIPMENT SUPPLIERS SHALL PERFORM AND PROVIDE ALL COORDINATION STUDIES AND ARC FLASH STUDIES REQUIRED BY NATIONAL ELECTRICAL CODE FOR ALL REQUIRED SYSTEMS. REPORTS SHALL BE PROVIDED TO ENGINEER, INSPECTIONS DEPARTMENT AND OWNER.

08 CLEANING
THE ELECTRICAL CONTRACTOR SHALL KEEP ALL AREAS IN WHICH WORK IS BEING PERFORMED, FREE FROM DEBRIS AT ALL TIMES AND SAID AREAS SHALL BE LEFT BROOM CLEAN AT THE END OF EACH WORKING DAY.

ALL ELECTRICAL WORK SHALL BE CLEANED AND MADE READY FOR FINAL INSPECTION AND USE BY THE OWNER.

09 CONTRACT DOCUMENTS
THE CONTRACT DOCUMENTS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO INDICATE EVERY DETAIL OF CONSTRUCTION OR EVERY ITEM OF MATERIAL OR EQUIPMENT REQUIRED. THE CONTRACT DOCUMENTS ARE INTENDED TO ILLUSTRATE AND SPECIFY THE GENERAL EXTENT, TYPE OF SYSTEM AND PERFORMANCE WITH ANY SPECIAL CONDITION AND FUNCTIONS REQUIRED. THE ELECTRICAL CONTRACTOR SHALL BE EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE AND OPERATABLE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.

CONTRACTOR SHALL MAINTAIN ON THE JOB SITE ONE COMPLETE SET OF CONTRACT DOCUMENTS OF ALL TRADES AND SHALL COORDINATE WITH OTHER TRADES SO AS TO AVOID CONFLICTS AND PROVIDE EQUIPMENT CONNECTIONS AS REQUIRED BY EQUIPMENT SHOP DRAWINGS AND EQUIPMENT NAMEPLATES.

INDICATED LOCATIONS OF OUTLETS, EQUIPMENT CONNECTIONS, ETC. ARE APPROXIMATE AND SHALL BE VERIFIED BY REFERENCE TO RELATED DOCUMENTS (I.E. ARCHITECTURAL DRAWINGS, EQUIPMENT SHOP DRAWINGS, MANUFACTURER'S INSTRUCTIONS, MECHANICAL AND PLUMBING DRAWINGS, STRUCTURAL DRAWINGS, ETC.).

ANY SLASH MARKS SHOWN FOR CONDUCTOR QUANTITIES ARE INTENDED TO ILLUSTRATE THE WIRING INTENT ONLY. NOTE THAT IT IS NOT THE INTENT OF THE CONTRACT DRAWINGS TO INDICATE ALL CONDUCTORS REQUIRED TO PROVIDE COMPLETE AND FULLY OPERABLE WIRING SYSTEMS.

RISER DIAGRAMS ARE DIAGRAMMATIC AND NOT INTENDED TO SHOW ALL REQUIRED MATERIALS, DEVICES AND QUANTITIES OF STATIONS OR DEVICES. THE FLOOR PLANS, SPECIFICATIONS, CODES, REGULATIONS, LAWS, AND MANUFACTURER REQUIREMENTS ALSO SUPPLEMENT AND GOVERN THE REQUIREMENTS AND QUANTITIES OF DEVICES FOR THE SYSTEMS.

THE CONTRACT DOCUMENTS ARE INTENDED TO ILLUSTRATE TO COMPETENT AND EXPERIENCED CONTRACTORS AND WORKMEN THE SYSTEMS REQUIRED AND TO PERMIT SUCH PEOPLE TO TAKE-OFF THE REQUIRED MATERIALS AND EQUIPMENT, LAY OUT THE WORK SPECIFIED, AND EXECUTE ALL NECESSARY MEANS REQUIRED TO PROVIDE THE COMPLETE AND OPERABLE SYSTEMS SPECIFIED AND ILLUSTRATED.

10 GROUNDING AND BONDING
THE SERVICE CONDUITS, EQUIPMENT, AND NEUTRAL CONDUCTORS SHALL BE GROUNDED. THE GROUND CONNECTIONS FOR SYSTEM NEUTRAL AND CONDUIT SYSTEMS SHALL BE MADE AT THE SERVICE ENTRANCE. RUN A BARE COPPER GROUNDING CONDUCTOR IN CONDUIT FROM POINT OF ENTRANCE EQUIPMENT TO THE METAL COLD WATER LINE WHERE IT ENTERS THE BUILDING PLUS THE BUILDING STEEL IF AVAILABLE. PROVIDE A SUPPLEMENTAL MADE ELECTRODE UTILIZING GROUND ROD(S), OTHER METAL UNDERGROUND SYSTEMS OR STRUCTURES, OR PLATE ELECTRODE IN ACCORDANCE WITH NEC 250-66 IF BUILDING STEEL IS NOT AVAILABLE. THE GROUNDING CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE NEC 250-122. ALL GROUNDING CONDUCTORS SHALL BE INSTALLED AS TO PERMIT SHORTEST PATH FROM EQUIPMENT TO GROUND. ALL CONNECTIONS TO GROUND CONDUCTORS SHALL BE ACCESSIBLE FOR INSPECTION AND MADE WITH APPROVED SOLDERLESS CONNECTORS, EXOTHERMIC WELD, OR BOLTED TO THE EQUIPMENT OR STRUCTURE TO BE GROUNDED. ALL CONTACT SURFACES SHALL BE THOROUGHLY CLEANED BEFORE CONNECTIONS ARE MADE TO INSURE GOOD METAL TO METAL CONTACT. ALL CONNECTIONS TO GROUND RODS AND OR BUILDING FOOTER STEEL SHALL BE MADE BY EXOTHERMIC WELDS. IN NO CASE SHALL THE RESISTANCE OF THE "GROUND" EXCEEDED 25 OHMS.

ALL ELECTRICAL WORK SHALL BE GROUNDED IN ACCORDANCE WITH NEC ARTICLE 250.

ALL "CSST" GAS PIPING SHALL HAVE A BONDING GROUND IN ACCORDANCE WITH NEC ARTICLE 250 AND SIZED PER NEC TABLE 250.66.

WIRING IN PVC CONDUIT SHALL HAVE AN EQUIPMENT GROUNDING CONDUCTOR.

PROVIDE EQUIPMENT GROUNDING MEANS FOR TELEPHONE EQUIPMENT AND FIRE ALARM SYSTEM SPACES.

GROUND FAULT CIRCUITS SHALL HAVE AN EQUIPMENT GROUNDING CONDUCTOR.

PROVIDE AN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN EACH RACEWAY UNLESS OTHERWISE NOTED.

EACH GROUNDED RECEPTACLE SHALL HAVE A GROUNDING JUMPER ATTACHED TO THE BOX WITH A SCREW. REMOVAL OF ANY DEVICE SHALL NOT DISRUPT THE GROUND CONTINUITY OF DOWNSTREAM DEVICES.

11 WIRING
BRANCH CIRCUIT CONDUCTORS SHALL BE MINIMUM NO. 12 AWG, UNLESS OTHERWISE INDICATED ON THE DRAWINGS. CONDUCTORS FOR SIGNAL AND PILOT CONTROL CIRCUITS MAY BE NO. 16 AWG.

ALL CONDUCTORS SHALL BE STRANDED OR SOLID COPPER CONDUCTORS FOR #12 AND #10 AWG AND STRANDED FOR #8 AND LARGER WITH 600 VOLT THHN/THWN INSULATION UNLESS OTHERWISE SHOWN ON THE DRAWINGS. INSULATION TO LIGHT FIXTURES OR SPECIAL EQUIPMENT SHALL BE AS REQUIRED BY NAMEPLATES OR TO SUITE THE CONDITION. CONDUCTORS FOR CIRCUITS & EQUIPMENT RATED 100 AMP OR LESS SHALL BE SIZED FOR 60°C. CONDUCTORS FOR CIRCUITS & EQUIPMENT RATED ABOVE 100 AMP SHALL BE SIZED FOR 75°C.

TO COMPENSATE FOR VOLTAGE DROP ACROSS A BRANCH CIRCUIT, WIRE SHALL BE UPSIZED IN RELATION TO LENGTH. SEE CONDUCTOR SIZING TABLE AND APPLY ACCORDINGLY.

COLOR CODE CONDUCTORS FOR VOLTAGE SYSTEMS SHALL BE AS FOLLOWS:

208 VOLTS		480 VOLTS	
A PHASE:	BLACK	A PHASE:	BROWN
B PHASE:	RED	B PHASE:	ORANGE
C PHASE:	BLUE	C PHASE:	YELLOW
NEUTRAL:	WHITE	NEUTRAL:	GRAY
GROUNDING CONDUCTORS:		GREEN	

CONDUCTORS SHALL BEAR READABLE MARKINGS ALONG THE ENTIRE LENGTH.

CONDUCTORS #6 AWG OR SMALLER SHALL BEAR FACTORY COLOR INSULATION COMPLYING WITH SYSTEM PHASING ALONG THE ENTIRE LENGTH.

TYPE "MC" CABLE SHALL HAVE FACTORY COLOR INSULATION ON CONDUCTORS COMPLYING WITH SYSTEM PHASING ALONG THE ENTIRE LENGTH OF THE CONDUCTORS. FIELD PHASE TAPING WILL NOT BE ALLOWED. THE USE OF TYPE "AC" OR "NM" CABLE SHALL BE PROHIBITED.

JOINTS FOR #10 AWG OR SMALLER SHALL BE MADE WITH APPROVED TWIST-ON TYPE CONNECTORS AND INSULATED WITH SCOTCH #33 ELECTRICAL TAPE. JOINTS FOR #8 OR LARGER SHALL BE WITH MECHANICAL PRESSURE TYPE CONNECTORS OR LUGS AND PROPERLY TAPED WITH SCOTCHFILL AND SCOTCH #33 ELECTRICAL TAPE TO 150% OF THE INSULATING VALUE OF THE CONDUCTOR.

WIRING WITHIN PANELBOARDS, JUNCTION BOXES AND OUTLET BOXES SHALL BE NEATLY SQUARED AND BUNCHED TOGETHER. DO NOT USE PLASTIC TIE WRAP SYSTEMS.

PROVIDE CIRCUIT NUMBER ON EACH CONDUCTOR WITHIN PANELBOARDS, JUNCTION BOXES AND OUTLET BOXES.

PROVIDE PANEL NAME AND CIRCUIT NUMBERS ON ALL JUNCTION BOX COVERS INDICATING CIRCUIT CONTAINED WITHIN BOX WITH PERMANENT MARKER.

ALL WIRING LUGS AND TERMINALS THROUGHOUT THE PROJECT, INCLUDING BUT NOT LIMITED TO LUGS FOR SWITCHBOARDS, PANELBOARDS, CIRCUIT BREAKERS, MOTOR STARTERS, TRANSFORMERS, WIRING DEVICES, AND/OR EQUIPMENT SHALL BE 75° TEMPERATURE RATING. LUG AND TERMINAL SIZES SHALL MATCH THE CONDUCTOR SIZE.

PARALLEL CONDUCTORS SHALL BE EXACTLY THE SAME LENGTH.

TRAVELERS FOR SWITCHING SHALL BE THE SAME COLOR AS THE PHASE CONDUCTORS.

NO MORE THAN THREE CIRCUITS SHALL BE ALLOWED IN ANY ONE CONDUIT. NO CONDUIT SHALL CONTAIN ANY SHARED NEUTRAL CONDUCTORS OR MORE THAN ONE CONDUCTOR OF THE SAME PHASE.

12 CONDUIT SYSTEMS
ALL WIRING SHALL BE IN CONDUIT OR TYPE "MC" CABLE WHICH IS ALLOWABLE IN CONCEALED LOCATIONS ONLY FOR SIZES #12 & #10 CONDUCTORS WITH INSULATED GROUND AND INSULATED THROAT CONNECTORS. MINIMUM SIZE CONDUIT IS 1/2". THE CONDUIT SHALL BE INTERMEDIATE (IMC), RIGID GALVANIZED (RGS) OR ELECTRICAL METALLIC TUBING (EMT) WITH STEEL COMPRESSION TYPE FITTINGS.

ALL WIRING FOR POWER, FIRE ALARM, SECURITY AND/OR COMMUNICATIONS IN EXPOSED AREAS SHALL BE IN CONDUIT.

ALL CONDUITS IN FINISHED AREAS SHALL BE CONCEALED UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

ALL CONDUITS IN UNFINISHED AREAS MAY BE RUN EXPOSED AND SHALL BE PARALLEL WITH AND PERPENDICULAR TO THE STRUCTURE.

PVC SCHEDULE 40 WILL BE ALLOWED UNDERGROUND, BELOW FLOOR SLABS, OUTSIDE OF THE BUILDING FOUNDATION BELOW GRADE, FOR SERVICES TO BUILDING NOT SUBJECT TO PHYSICAL DAMAGE, AND WHERE INDICATED ON THE DRAWINGS. HOWEVER, ALL RISERS AND ELBOWS SHALL BE GALVANIZED RIGID STEEL. RGS CONDUITS SHALL EXTEND A MINIMUM OF 18" BELOW GRADE. APPLY BITUMASTIC COATING TO ALL METALLIC CONDUITS IN SLABS AND UNDERGROUND. THE USE PVC SCHEDULE 80 WHERE CONDUIT IS SUSCEPTIBLE TO PHYSICAL DAMAGE SHALL BE ACCEPTABLE PROVIDING IT IS NOT EXPOSED TO VIEW.

ALL MOTORS, EQUIPMENT, AND OTHER ITEMS SUBJECT TO VIBRATION SHALL BE CONNECTED WITH FLEXIBLE METAL CONDUIT (FMC) OR LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC) WITH LISTED FITTINGS.

FLEXIBLE METAL CONDUIT SHALL BE STEEL. FLEXIBLE CONDUIT OUTDOORS OR IN DAMP OR WET LOCATIONS SHALL BE LIQUID-TIGHT WITH BITE-TIGHT STEEL CONNECTORS. ALL CABLES SHALL BE SECURED WITHIN 12" OF TERMINATIONS AND EVERY SIX (6) FEET.

CONDUIT PENETRATIONS THROUGH RATED WALLS OR ASSEMBLIES SHALL BE SEALED WITH A UL LISTED FIRE SEALANT.

CONDUIT RUN THROUGH BUILDING EXPANSION JOINTS SHALL HAVE APPROPRIATE CONDUIT EXPANSION FITTINGS.

CONDUITS IN HAZARDOUS AREAS SHALL BE THREADED GALVANIZED RIGID STEEL (GRS), THREADED INTERMEDIATE METAL CONDUIT (IMC) OR LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC) WITH LISTED FITTINGS.

CONDUITS PASSING THROUGH BUILDING FOUNDATION WALLS OR OTHER MOISTURE PRONE SURFACE SHALL BE PROPERLY WATER PROOFED.

WHERE CORE DRILLING OF FLOOR/WALLS ARE REQUIRED, CONTRACTOR SHALL SEAL OPENINGS WATERTIGHT AFTER UTILITIES HAVE BEEN INSTALLED. LOCATION OF CORED HOLES SHALL BE COORDINATED WITH LOCATION OF EQUIPMENT IN A MANNER TO BE CLEAN AND FUNCTIONAL. THE CONTRACTOR SHALL INSTALL ONLY ONE CONDUIT PER HOLE AND SEAL THE OPENING AROUND THE CONDUIT AS SPECIFIED.

CONDUITS RUN IN FLOOR SLABS SHALL BE SPACED APART AND REMAIN CLEAR OF STRUCTURAL COLUMNS AS REQUIRED BY THE STRUCTURAL ENGINEER.

CONDUITS PENETRATING THE ROOF STRUCTURE FOR THE PURPOSE OF SERVING EQUIPMENT SHALL UTILIZE THE OPENINGS THROUGH ROOF CURBS WHERE POSSIBLE. PENETRATIONS THROUGH THE ROOF SHALL BE HELD TO A MINIMUM.

SERVICE ENTRANCE CONDUITS SHALL BE SPACED APART AS REQUIRED BY NEC AND LOCAL CODES.

CONDUITS PENETRATING THE ROOF SHALL BE PROVIDED WITH A SUITABLE PREFABRICATED ROOF CURB OR PITCH POCKET.

FLEXIBLE CONDUIT WHIPS TO LIGHTING FIXTURES MAY BE 3/8" WITH A MAXIMUM LENGTH OF 6'-0" AND SUPPORTED WITHIN 12" OF TERMINATIONS.

ALL WIRING SHALL BE INSTALLED IN CONDUIT IN ACCORDANCE WITH THE N.E.C. AND SO THAT THE REQUIRED CONDUCTORS MAY BE PULLED WITHOUT INJURY OR STRAIN AND PROPERLY SUPPORTED.

PROVIDE ALL PULL BOXES AND FITTINGS WHEREVER NECESSARY OR SHOWN. ALL STRAIGHT CONDUIT RUNS SHALL NOT EXCEED 100 FEET WITHOUT PULL BOX, NOT OVER 75 FEET FOR RUN WITH ONE (1) RIGHT ANGLE BEND AND NOT OVER 50 FEET FOR RUN WITH TWO (2) RIGHT ANGLES.

ALL CONDUIT SHALL BE PROPERLY SUPPORTED IN ACCORDANCE WITH THE N.E.C. AND SECURED WITHIN THREE (3) FEET OF TERMINATION AND ALL CONDUITS SHALL BE INDEPENDENTLY SUPPORTED EVERY TEN (10) FEET FROM STRUCTURE AND NOT FROM DUCTWORK, CEILING HANGERS OR CEILING SUPPORT WIRES. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH PULL WIRES AND NYLON BUSHINGS AT BOTH ENDS.

13 LIGHTING FIXTURES
FURNISH AND INSTALL LIGHTING FIXTURES AS SHOWN AND SCHEDULED ON THE DRAWINGS.

THE CATALOG NUMBERS GIVEN IDENTIFY THE SERIES OF LIGHT FIXTURE ONLY AND MAY NOT SPECIFY ALL MOUNTING HARDWARE AND ACCESSORIES REQUIRED. THE CATALOG NUMBERS ALSO MAY NOT IDENTIFY ALL ITEMS AND FINISHES REQUIRED BY THE LIGHT FIXTURE DESCRIPTION. INCLUDE ALL REQUIRED HARDWARE AND ACCESSORIES.

COORDINATE FIXTURE TYPE AND TRIM WITH CEILING CONSTRUCTION. RECESSED INCANDESCENT, FLUORESCENT, LED AND HID LIGHTING FIXTURES SHALL HAVE THERMAL PROTECTION. FIXTURES RECESSED IN INSULATED CEILINGS SHALL BE LISTED FOR DIRECT CONTACT WITH INSULATION MATERIAL OR MAINTAIN REQUIRED CLEARANCES FROM INSULATION.

RECESSED LIGHTING FIXTURES IN NON-ACCESSIBLE CEILINGS SHALL HAVE BOTTOM ACCESS.

ALL LINEAR FIXTURES IN LAY-IN CEILINGS SHALL BE SUPPORTED FROM THE STRUCTURE INDEPENDENT OF THE CEILING SYSTEM AT ALL FOUR (4) CORNERS AND ATTACHED WITH LISTED GRID CLIPS. ALL OTHER RECESSED FIXTURES (ex. RECESSED CANS) IN LAY-IN CEILINGS SHALL BE SUPPORTED FROM THE STRUCTURE INDEPENDENT OF THE CEILING SYSTEM AT TWO LOCATIONS (OPPOSITE SIDES) AND ATTACHED WITH LISTED GRID CLIPS.

RECESSED LIGHT FIXTURES IN FIRE RATED CEILINGS SHALL HAVE A FIRE RATED "TENT" BUILT OVER THE FIXTURE TO MAINTAIN THE STATED INTEGRITY OF THE CEILING. SUCH FIXTURES SHALL BE RATED FOR INSTALLATION IN AN INSULATED CEILING AND DESIGNED TO WITHSTAND THE INCREASED TEMPERATURE BUILD-UP AROUND THE FIXTURE.

LIGHTING FIXTURES INDICATED TO BE INSTALLED IN WET OR DAMP LOCATIONS SHALL HAVE THE APPROPRIATE UL "WET" OR "DAMP" LABELS.

THE MANUFACTURER OF EACH LIGHTING FIXTURE SHALL REVIEW THE APPLICATION OF HIS EQUIPMENT AND CERTIFY AT THE TIME OF SHOP DRAWING SUBMITTAL THAT HIS FIXTURE HAS BEEN PROPERLY APPLIED AND CAN BE INSTALLED, MAINTAINED AND SERVICED WHERE SHOWN ON THE DRAWINGS.

14 BALLASTS
BALLASTS SHALL BE ELECTRONIC TYPE <10% THD MINIMUM OR AS SPECIFIED IN THE LIGHTING FIXTURE SCHEDULE.

LIGHTING FIXTURES IN COLD ATMOSPHERE SHALL HAVE BALLASTS SUITABLE FOR THE TEMPERATURE TO BE ENCOUNTERED.

BALLASTS SHALL BE MANUFACTURED BY OSRAM/SYLVANIA, UNIVERSAL, OR ADVANCE.

15 LED DRIVERS
LED ELECTRONIC DRIVERS SHALL BE UL CLASS 2 AND HAVE A SOUND RATING OF CLASS "A" WITH A LIFE EXPECTANCY OF 50,000 HOURS. DR

SYMBOL SCHEDULE

GENERAL SYMBOLS

- HOMERUN TO PANELBOARD. SEE "CIRCUIT HOMERUN AND CONDUCTOR LOGIC".
- CONDUIT RUN CONCEALED OVERHEAD ABOVE CEILING AND IN WALLS OR MC CABLE WHERE PERMITTED. USE SURFACE RACEWAY SYSTEM EXPOSED ON INACCESSIBLE EXISTING CONSTRUCTION.
- CONDUIT RUN EXPOSED.
- CONDUIT RUN CONCEALED BELOW FLOOR.
- FLEXIBLE CONDUIT WITH CONNECTION TO EQUIPMENT SERVED.
- GROUND SIZED PER NEC 250.
- 120/208 VOLT PANELBOARD. SEE PANEL SCHEDULE.
- 277/480 VOLT PANELBOARD. SEE PANEL SCHEDULE.
- MONITORING PANEL, SEE PLANS FOR DESCRIPTION.

SWITCHES

- $ — SWITCH RATED 120/277 VOLTS AND 20 AMPERES. SUBSCRIPTS FOR BASIC SYMBOL.

  BLANK– SINGLE POLE
  2– DOUBLE POLE
  3– THREE WAY
  4– FOUR WAY
  D– DIMMER WITH SILICON CONTROLED RECTIFIER (DEVICE SHALL BE COMPATIBLE WITH THE LOAD IT SERVES, VERIFY)
  P– PILOT LIGHT
  3,D– THREE WAY SWITCH WITH DIMMING OPTION

- $$ — TWO SWITCHES IN COMMON OUTLET BOX AT 48" AFF.
- ^{OC} $_{OC}$ — SWITCH RATED 120/277 VOLTS AND 20 AMPERES WITH OCCUPANT SENSOR FOR MANUAL ON AND AUTO OFF AFTER PRESET TIME.
- ^{OC,D} $_{OC,D}$ — COMBO SWITCH RATED 120/277 VOLTS AND 20 AMPERES WITH DIMMER AND OCCUPANT SENSOR FOR MANUAL ON AND AUTO OFF AFTER PRESET TIME.
- TC — TIME CLOCK – ELECTRONIC 24 HOUR–7 DAY
- LC — LIGHTING CONTROL LIGHTING CONTACTOR.
- OC — LINE VOLTAGE TYPE DUAL TECHNOLOGY CEILING MOUNTED OCCUPANT SENSOR

WIRING DEVICES

- 120V, 20A DUPLEX RECEPTACLE WALL MOUNTED AT 18" AFF UNLESS OTHERWISE NOTED
  - EWC– GFCI TYPE RECEPTACLE SERVING ELECTRIC WATER COOLER. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH PLUMBING CONTRACTOR AND INSTALL RECEPTACLE SO THAT IT IS CONCEALED FROM VIEW.
  - R– RECEPTACLE SERVING REFRIGERATOR. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH EQUIPMENT CONTRACTOR AND INSTALL RECEPTACLE SO THAT IT IS CONCEALED FROM VIEW AND DOES NOT IMPEDE THE INSTALLATION OF THE REFRIGERATOR.
  - GFCI– DUPLEX RECEPTACLE WITH BUILT–IN GROUND FAULT CIRCUIT INTERRUPTING MECHANISM.
  - WP– WEATHERPROOF COVER.
- 120V, 20A DUPLEX RECEPTACLE WITH BOTTOM OF BOX 2" ABOVE COUNTER BACKSLASH OR AT COUNTER HEIGHT
- TWO 120V, 20A DUPLEX RECEPTACLES UNDER COMMON COVER
- TWO 120V, 20A DUPLEX RECEPTACLE UNDER COMMON COVER MOUNTED AT COUNTER HEIGHT
- 120V, 20A DUPLEX RECEPTACLE WITH ISOLATED GROUND TERMINAL–COLORED ORANGE
- 120V, 20A DUPLEX RECEPTACLE MOUNTED IN CEILING
- SPECIAL EQUIPMENT RECEPTACLE. (SEE NOTES)

LIGHTING (SEE LIGHTING FIXTURE SCHEDULE)

EQUIPMENT CONNECTIONS

- * M — CONNECTION TO 120 VOLT MOTOR.
- * M — CONNECTION TO 3–PHASE MOTOR.
- HEAVY DUTY SAFETY SWITCH. (NON–FUSED) SEE "EQUIPMENT DISCONNECT SCHEDULE".
- HEAVY DUTY SAFETY SWITCH. (FUSED) SEE "EQUIPMENT DISCONNECT SCHEDULE".
- * J — JUNCTION BOX WITH CONNECTION TO EQUIPMENT SERVED.
- * — CONNECTION TO HVAC, PLUMBING OR OTHER EQUIPMENT AS NOTED.
- * WH — CONNECTION TO WATER HEATER.
- CONNECTION TO OVERHEAD DOOR. PROVIDE SAFETY SWITCH AT CONNECTION POINT. RUN POWER WIRING THROUGH DOOR CONTROLLER. CONNECT ALL DOOR CONTROLS (UP/DOWN CONTROL STATION, LIMIT SWITCHES, OBSTRUCTION SAFETY SWITCHES, ETC.)
- MOTOR CONTROLLER

* NOTE: PROVIDE A DISCONNECT ON ALL FANS, UNIT HEATERS, FAN COILS, PUMPS, AIR HANDLERS, UNIT VENTILATORS, ETC.

COMMUNICATIONS SYMBOLS

- COMBINATION DATA/TELEPHONE CABLING OUTLET. COORDINATE MOUNTING HEIGHT WITH CLOSEST POWER RECEPTACLE.
- TV OUTLET BOX.
- ANN — 2–COMPARTMENT RECESSED FLOOR BOX, WITH ONE DUPLEX RECEPTACLE AND ONE SECTION FOR OWNERS COMMUNICATIONS REQUIREMENTS.
- ATA — 3–COMPARTMENT RECESSED FLOOR BOX, WITH ONE QUAD RECEPTACLE AND TWO SECTIONS FOR OWNERS COMMUNICATIONS REQUIREMENTS.
- FIRE RATED FLUSH STYLE POKE THRU DEVICE

FIRE ALARM SYMBOLS

- FACP — CONTROL PANEL.
- ANN — REMOTE ANNUNCIATOR 66" AFF TO MIDDLE OF DEVICE.
- F — MANUAL PULL STATION 48" AFF.
- F — AUDIBLE & VISUAL SIGNAL STROBE LIGHT MOUNTED @ 80" AFF. OR 6" BELOW CEILING WHICHEVER IS LOWER.
- S — VISUAL SIGNAL STROBE LIGHT MOUNTED @ 80"AFF OR 6" BELOW CEILING WHICHEVER IS LOWER.
- F — AUDIBLE & VISUAL SIGNAL STROBE LIGHT CEILING MOUNTED
- SD — PHOTO–ELECTRIC TYPE SMOKE DETECTOR.
- TD — THERMAL TYPE DETECTOR.
- SD — DUCT MOUNT SMOKE DETECTOR WITH RELAY BASE IN AIR DUCT.
- R — ADDRESSABLE CONTROL MODULE
- RT — REMOTE TEST SWITCH WITH INDICATOR LAMP FOR DUCT MOUNTED SMOKE DETECTOR
- TS — TAMPER SWITCH CONNECTED TO SPRINKLER VALVE.
- WF — WATER FLOW SWITCH CONNECTED TO SPRINKLER PIPING.

ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	AMPERE	LC	LIGHTING CONTACTOR
A/C	AIR CONDITIONING	LED	LIGHT EMITTING DIODE
ADA	AMERICANS WITH DISABILITIES ACT	LT	LIGHT
		LTG	LIGHTING
AFF	ABOVE FINISHED FLOOR	MIN	MINIMUM
AFG	ABOVE FINISHED GRADE	MAX	MAXIMUM
AHU	AIR HANDLING UNIT	MCA	MINIMUM CIRCUIT AMPERES
AL	ALUMINUM	MCB	MAIN CIRCUIT BREAKER
AMP	AMPERE	MFS	MAXIMUM FUSE SIZE
ATS	AUTOMATIC TRANSFER SWITCH	MLO	MAIN LUGS ONLY
AWG	AMERICAN WIRE GAUGE	MOCP	MAXIMUM OVER–CURRENT PROTECTION
BB	BACKBOARD		
C	CONDUIT	MMS	MANUAL MOTOR STARTER
CB	CIRCUIT BREAKER	NEC	NATIONAL ELECTRICAL CODE
CU	CONDENSING UNIT	NEMA	NATIONAL ELECTRICAL MFRS ASSOC.
DPDT	DOUBLE POLE DOUBLE THROW		
EC	EMPTY CONDUIT	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
EF	EXHAUST FAN		
EGC	EQUIPMENT GROUNDING CONDUCTOR	NIC	NOT IN CONTRACT
		P	POLE
EM	EMERGENCY	PB	PULL BOX
EMT	ELECTRICAL METALLIC TUBING	PE	PHOTO–ELECTRIC SWITCH
E OR EX	EXISTING	PVC	POLYVINYL CHLORIDE CONDUIT
ER	EXISTING TO BE REMOVED	PNL	PANEL
ETR	EXISTING TO REMAIN	RMC	RIGID METAL CONDUIT
F	FUSE	RTU	ROOF TOP UNIT
FACP	FIRE ALARM CONTROL PANEL	SF	SUPPLY FAN
FLA	FULL LOAD AMPERES	SPD	SURGE PROTECTIVE DEVICE
FPN	FUSE PER NAMEPLATE	SPDT	SINGLE POLE DOUBLE THROW
FT	FEET	SPST	SINGLE POLE SINGLE THROW
GC	GENERAL CONTRACTOR	SQ	SQUARE
GND	GROUND	SW	SWITCH
GF	GAS FURNACE	SWBD	SWITCHBOARD
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TTB	TELEPHONE TERMINAL BACKBOARD
GND	GROUND	UH	UNIT HEATER
GRC	GALVANIZED RIGID STEEL CONDUIT	UL	UNDERWRITER'S LABORATORIES
GWB	GYPSUM WALLBOARD	UNO	UNLESS NOTED OTHERWISE
HP	HORSEPOWER	UON	UNLESS OTHERWISE NOTED
HVAC	HEATING–VENTILATING–AIR CONDITIONING	UPS	UNINTERRUPTIBLE POWER SUPPLY
		V	VOLT
IG	ISOLATED GROUND	W	WATT
IMC	INTERMEDIATE METAL CONDUIT	VA	VOLT–AMPERE
KW	KILOWATT	WP	WEATHER PROOF
KVA	KILOVOLT–AMPERE	XFMR	TRANSFORMER
JB	JUNCTION BOX	XP	EXPLOSION PROOF

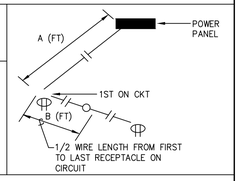
NOTES:

1. PROVIDE A BLANK COVERPLATE ON TELEPHONE OUTLETS.
2. SEE DETAILS FOR ELEVATION REPRESENTATION OF ALL DEVICE MOUNTING HEIGHTS. ALL QUESTIONS ABOUT MOUNTING HEIGHTS SHALL BE DIRECTED TO THE ARCHITECT AND ENGINEER PRIOR TO ROUGH–IN.
3. THESE ARE STANDARD SYMBOLS AND ALL MAY NOT APPEAR ON PROJECT DRAWINGS. WHEREVER THE SYMBOL ON THE PROJECT OCCURS, THE ITEM SHALL BE PROVIDED AND INSTALLED.

CONDUCTOR SIZING TABLE

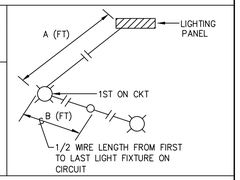
FOR 120V–20A BRANCH CIRCUITS ONLY, UNLESS OTHERWISE NOTED

IF DISTANCE A + B IN FEET IS: (SEE DIAGRAM AT RIGHT)	USE COPPER WIRE IN METALLIC CONDUIT, AWG SIZE AS FOLLOWS ON ENTIRE CIRCUIT AND SIZE CONDUIT ACCORDINGLY:
0' TO 100'	#12 (MIN.)
100' TO 175'	#10
175' TO 300'	#8
300' TO 450'	#6 (MAX.)



FOR 277V–20A BRANCH CIRCUITS ONLY, UNLESS OTHERWISE NOTED

IF DISTANCE A + B IN FEET IS: (SEE DIAGRAM AT RIGHT)	USE COPPER WIRE IN METALLIC CONDUIT, AWG SIZE AS FOLLOWS ON ENTIRE CIRCUIT AND SIZE CONDUIT ACCORDINGLY:
0' TO 250'	#12 (MIN.)
250' TO 400'	#10
400' TO 700'	#8
700' TO 1000'	#6 (MAX.)



THESE TABLES ARE BASED ON AN EVENLY DISTRIBUTED LOAD ALLOWING A 3% VOLTAGE DROP AT LAST OUTLET: APPLY ACCORDINGLY.

EQUIPMENT DISCONNECT SCHEDULE

- $M — MANUAL MOTOR STARTING SWITCH WITH OVERLOAD PROTECTION EQUAL TO SQUARE–D CLASS 2510 TYPE KG–1 SERIES.
- 3P/30A/208V — HEAVY DUTY SAFETY SWITCH: 3 POLE, 30 AMP, 208 VOLT. FIRST NUMERAL INDICATES QUANTITY OF POLES SECOND NUMERAL INDICATES AMPERE RATING. THIRD NUMERAL INDICATES VOLTAGE. IE: 3P/30A/208V INDICATES 3 POLE, 30 AMP, 208 VOLT, ETC.
- 3P/30A/208V — FUSED HEAVY DUTY SAFETY SWITCH SAME AS ABOVE EXCEPT WITH FUSES. ACTUAL SIZE AND TYPE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. FUSES SHALL BE 'RK–5' FUSETRONS.
- 3P/30A/208V/3R, 3P/30A/208V/3R — NEMA 3R CONSTRUCTION HEAVY DUTY SAFETY SWITCHES. NO–FUSE AND FUSED SWITCHES RESPECTIVELY AS SPECIFIED ABOVE. /3R INDICATES NEMA 3R CONSTRUCTION. NOTE: PROVIDE NEUTRAL BARS, GROUNDING BARS, REJECTION CLIPS, SERVICE ENTRANCE LABELS, FUSES AND ALL OTHER ACCESSORIES REQUIRED FOR THE APPLICATION.

CIRCUIT HOMERUN SYMBOL SCHEDULE

- A–1 — ONE CIRCUIT HOMERUN TO PANEL "A", CIRCUIT #1.
- A–1,3 — TWO CIRCUIT HOMERUN TO PANEL "A", CIRCUITS #1 & 3. (REQUIRES MULTI–POLE CIRCUIT BREAKER.)
- A–1,3,5 — THREE CIRCUIT HOMERUN TO PANEL "A", CIRCUITS #1, 3, & 5. (REQUIRES MULTI–POLE CIRCUIT BREAKER.)
- A–(1,3) — ONE CIRCUIT HOMERUN TO PANEL "A", 208 VOLT OR 480 VOLT–1 PHASE CIRCUIT TO POLES #1 & 3.
- A–(1,3,5) — ONE CIRCUIT HOMERUN TO PANEL "A", 208 VOLT OR 480 VOLT–3 PHASE CIRCUIT TO POLES #1, 3, & 5.
- SLASH MARKS INDICATE QUANTITY OF CONDUCTORS OTHER THAN TWO; —|— INDICATES NEUTRAL, —|— INDICATES HOT, NOTE: TWO WIRE CIRCUITS DO NOT SHOW SLASH MARKS.
- SLASH MARK INDICATES EQUIPMENT GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE 250–122.

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Virginia Beach, Virginia 23456
Brian Watson, DVM

ELECTRICAL SYMBOLS

REV.#	DATE	COMMENTS
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-	-	-
-	-	-

REVISION: REVISION: REVISION: REVISION:

REVIEWS
INITIALS

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PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E002

2 OF 16

Save Date: May 11, 2022 - 12:22 PM, ZH
Plot Date: July 18, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E002_ELECTRICAL SYMBOLS.dwg

LIGHTING NOTES

1. LED DRIVERS SHALL BE ELECTRONIC TYPE.
2. LED'S SHALL BE SOLID STATE WITH 3500 DEGREE COLOR TEMP.
3. LIGHTING FIXTURE CATALOG NUMBERS IDENTIFY THE SERIES OF LIGHTING FIXTURE ONLY. PROVIDE ALL FIELD FABRICATION, MOUNTING HARDWARE, ACCESSORIES AND OPTIONS REQUIRED TO ADAPT TO THE CONDITIONS AND MEET THE INTENT OF THE FIXTURE DESCRIPTION.
4. COORDINATE FIXTURE OPERATING VOLTAGES WITH THAT PROVIDED BY THE CIRCUITRY.
5. COORDINATE FIXTURE TRIMS WITH THE CEILING TYPE.
6. DRIVERS AND LED'S SHALL BE DESIGNED TO START AND MAINTAIN PROPER OPERATION IN THE ENVIRONMENTAL AND TEMPERATURE CONDITIONS IN WHICH THE FIXTURES ARE APPLIED.
7. RECESSED LIGHTING FIXTURES SHALL HAVE THERMAL PROTECTION.
8. DOWNLIGHTS IN NONACCESSIBLE CEILINGS SHALL HAVE BOTTOM ACCESS.
9. LAY-IN TYPE FIXTURES SHALL BE SUPPORTED FROM THE STRUCTURE INDEPENDENT FROM THE CEILING SYSTEM.
10. DOWNLIGHT FIXTURES AND EXIT SIGNS IN SUSPENDED CEILINGS SHALL NOT BE SUPPORTED BY THE GRID SYSTEM AND SHALL BE SUPPORTED FROM THE STRUCTURE AND NOT RELY ON THE CEILING SYSTEM ALONE FOR SUPPORT.
11. LIGHTING FIXTURES IN WET LOCATIONS SHALL BE "WET LOCATION" LISTED. LIGHTING FIXTURES IN DAMP LOCATIONS SHALL BE "DAMP LOCATION" LISTED.
12. SUBMIT SHOP DRAWINGS FOR APPROVAL.

VIRGINIA ENERGY CODE
(2018 VIRGINIA ENERGY CONSERVATION CODE)

METHOD OF COMPLIANCE:

2018 INTERNATIONAL ENERGY CONSERVATION CODE:	☒ PRESCRIPTIVE	☐ PERFORMANCE
2016 ASHRAE 90.1:	☐ PRESCRIPTIVE	☐ PERFORMANCE

LIGHTING SCHEDULE

LAMP TYPE REQUIRED IN FIXTURE	SEE "LIGHTING FIXTURE SCHEDULE"
NUMBER OF LAMPS IN FIXTURE	SEE "LIGHTING FIXTURE SCHEDULE"
BALLAST TYPE USED IN THE FIXTURE	SEE "LIGHTING FIXTURE SCHEDULE"
NUMBER OF BALLASTS IN FIXTURE	SEE "LIGHTING FIXTURE SCHEDULE"
TOTAL WATTAGE PER FIXTURE	SEE "LIGHTING FIXTURE SCHEDULE"
TOTAL INTERIOR WATTAGE SPECIFIED VS. ALLOWED (WHOLE BUILDING OR SPACE BY SPACE)	SEE "LIGHTING FIXTURE SCHEDULE"
TOTAL EXTERIOR WATTAGE SPECIFIED VS. ALLOWED	SEE "LIGHTING FIXTURE SCHEDULE"

SECTION C406 – ADDITIONAL PRESCRIPTIVE COMPLIANCE:

- ☐ C406.2 MORE EFFICIENT HVAC EQUIPMENT PERFORMANCE
- ☐ C406.5 ON-SITE SUPPLY OF RENEWABLE ENERGY
- ☒ C406.3 REDUCED LIGHTING POWER DENSITY
- ☐ C406.6 DEDICATED OUTDOOR AIR SYSTEM
- ☐ C406.4 ENHANCED DIGITAL LIGHTING CONTROLS
- ☐ C406.7 REDUCED ENERGY USE IN SERVICE WATER HEATING

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE ELECTRICAL SYSTEM AND EQUIPMENT REQUIREMENTS OF THE NORTH CAROLINA ENERGY CONSERVATION CODE.

SIGNED: William Lee Teeter

NAME: WILLIAM LEE TEETER

TITLE: PROFESSIONAL ENGINEER

LIGHTING FIXTURE SCHEDULE

SYMBOL & TYPE	MANUFACTURER & CATALOG NUMBER	DESCRIPTION	LAMP TYPE & QUANTITY	VOLTS/ DRIVER	MOUNTING	INPUT WATTS	QTY	TOTAL WATTS
A	EQUAL TO: LITHONIA #CPX-2X4-4000LM-80CRI-40K-SWL-MIN10-ZT-MVOLT	2'x4' LED TROFFER, ALUMINUM FRAME WITH SATIN WHITE DIFFUSER.	LED 4000 LUMENS 4000K	120-277V ELECTRONIC	RECESSED CEILING	40.0	118	4720
A1	EQUAL TO: LITHONIA #CPX-2X4-6000LM-80CRI-40K-SWL-MIN10-ZT-MVOLT	2'x4' LED TROFFER, ALUMINUM FRAME WITH SATIN WHITE DIFFUSER.	LED 6000 LUMENS 4000K	120-277V ELECTRONIC	RECESSED CEILING	44.0	8	352
A1E	EQUAL TO: LITHONIA #CPX-2X4-6000LM-80CRI-40K-SWL-MIN10-ZT-MVOLT-E10WLCP	SAME AS "A1" WITH INTEGRATED EMERGENCY BATTERY PACK.	LED 6000 LUMENS 4000K	120-277V ELECTRONIC	RECESSED CEILING	44.0	6	264
C C/NL	EQUAL TO: GOTHAM EVO #EVO6-35-10-WR-WD-LSS-MVOLT	6" ROUND LED DOWNLIGHT, WHITE REFLECTOR, WHITE FLANGE. C/NL – NIGHT LIGHT FIXTURE, 24/7.	LED 1000 LUMENS 3500K	120V	RECESSED CEILING	10.0	46	460
CE	EQUAL TO: GOTHAM EVO #EVO6-35-10-WR-WD-LSS-MVOLT-ELR	6" ROUND LED DOWNLIGHT, WHITE REFLECTOR, WHITE FLANGE WITH INTEGRATED 90 MIN. EMERGENCY BATTERY.	LED 1000 LUMENS 3500K	120V	RECESSED CEILING	10.0	4	40
D	EQUAL TO: GOTHAM EVO #EVO6LW-35-10-WR-LSS-MVOLT	6" ROUND LED DOWNLIGHT WALL WASH, WHITE REFLECTOR, WHITE FLANGE.	LED 1000 LUMENS 3500K	120V	RECESSED CEILING	10.0	3	30
E	EQUAL TO: LITHONIA #FMVCSLS-48IN-MVOLT-35K-90CRI-BN-M4	1'x4' LED WALL MOUNTED CONTEMPORARY SWITCHABLE SQUARE VANITY FIXTURE.	LED 2960 LUMENS 3500K	120-277V ELECTRONIC	SURFACE WALL	36.0	6	216
F	EQUAL TO: LITHONIA #CPX-2X4-4000LM-80CRI-40K-SWL-MIN10-ZT-MVOLT MULTISURFACE KIT #2X4SMKSH	2'x4' LED TROFFER, ALUMINUM FRAME WITH SATIN WHITE DIFFUSER. SHALLOW DEPTH MULTI-SURFACE MOUNTING KIT INCLUDED.	LED 4000 LUMENS 4000K	120-277V ELECTRONIC	SURFACE CEILING	40.0	6	240
G	PROVIDED BY OWNER, INSTALLED BY ELECTRICAL CONTRACTOR	PROCEDURE (EXAM) LED LIGHT MEDICAL ILLUMINATION MI-550, PROVIDED BY OWNER, INSTALLED BY E.C.	LED	120V	SURFACE CEILING	16.0	9	144
G2	PROVIDED BY OWNER, INSTALLED BY ELECTRICAL CONTRACTOR	SURGERY LED LIGHT MEDICAL ILLUMINATION MI-1000, PROVIDED BY OWNER, INSTALLED BY E.C.	LED	120V	SURFACE CEILING	54.0	3	162
H	SELECTED BY OWNER, PURCHASED AND INSTALLED BY ELECTRICAL CONTRACTOR	INTERIOR LED WALL SCONCE LIGHT FIXTURE. CONTRACTOR TO PROVIDE $150 ALLOWANCE FOR THE FIXTURE.	LED	120V	WALL	20W MAX	8	160
Y	SELECTED BY OWNER, PURCHASED AND INSTALLED BY ELECTRICAL CONTRACTOR	ROUND PENDANT LIGHTING FIXTURE WITH LED BULB(S). CONTRACTOR TO PROVIDE $250 ALLOWANCE FOR THE FIXTURE.	LED	120V	PENDANT	60W MAX	9	540
M	EQUAL TO: LITHONIA #SBL4-LP840 (CI-254RKU)	1'x4' LED WRAPAROUND FIXTURE.	LED 2994 LUMENS 4000K	120-277V ELECTRONIC	SURFACE CEILING	32.0	22	704
N	EQUAL TO: PRESCOLITE #LBSLEDA10L-30K-9-WH	7¼" ROUND LED SURFACE MOUNTED FIXTURE, WHITE FINISH.	LED 1032 LUMENS 3000K	120V	SURFACE CEILING	16.4	1	16.4
P	EQUAL TO: PHOENIX LIGHTING #VA-W-17LED-WW-FGC	INDUSTRIAL TYPE ENCLOSED/GASKETED VAPORTIGHT SURFACE MOUNTED LIGHTING FIXTURE, FROSTED GLASS LENS.	LED 1336 LUMENS 3000K	120V-277V	SURFACE CEILING	17.0	1	17.0
R	EQUAL TO: HUBBARDTON FORGE #302713 302713-SKT-75	EXTERIOR WALL MOUNTED DARK SKY FRIENDLY GOOSENECK SCONCE WITH SEPARATELY ORDERED MEDIUM SOCKET PAR20 LED BULB. VERIFY FINISH COLOR WITH ARCHITECT PRIOR ORDERING.	LED 3500K	120V	WALL	20.0 MAX	16	–
S	EQUAL TO: TECHNOLED #TL-RWP1-60WA-50K-AT1NA1-R	EXTERIOR ARCHITECTURAL LED ROTATABLE LENS WALL PACK.	LED 5000K	120-277V ELECTRONIC	WALL	60.0	2	–
EX	EQUAL TO: LITHONIA #EXRG-EL-M6	SURFACE MOUNTED LED EXIT SIGN. 90 MINUTE MINIMUM BATTERY BACKUP. WHITE FINISH, RED/GREEN LETTERS.	LED	120V	UNIVERSAL	<5	9	–
EX1	EQUAL TO: LITHONIA #ECRG-HO-RD-M6	COMBINATION EMERGENCY LIGHTING UNIT/EXIT SIGN. WHITE THERMOPLASTIC HOUSING, RED/GREEN LETTERS. 90 MINUTE MINIMUM BATTERY BACKUP.	LED EXIT, TWO(2) LED LAMPHEADS	120V	UNIVERSAL	<5	16	–
EM	EQUAL TO: LITHONIA #ELM2L-M12	SURFACE MOUNTED EMERGENCY LIGHTING UNIT. WHITE THERMOPLASTIC HOUSING, 90 MINUTE MINIMUM BATTERY BACKUP. WHITE FINISH.	TWO(2) LED LAMPHEADS	120V	UNIVERSAL	<5	26	–

QUANTITY NOTE

THE LIGHTING FIXTURE QUANTITIES LISTED IN THIS SCHEDULE ARE FOR ENERGY CODE COMPLIANCE ONLY. THE FLOOR PLANS GOVERN THE ACTUAL QUANTITIES. THE CONTRACTOR SHALL MAKE HIS OWN QUANTITY TAKEOFF.

TOTAL WATTS FOR PROJECT (INTERIOR)	7,660
TOTAL SQUARE FEET (INTERIOR)	11,900
TOTAL WATTS / SQUARE FOOT	0.64
ALLOWED WATTS / SQUARE FOOT (-10%)	0.71

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07/18/2022

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Brian Watson, DVM

LIGHTING FIXTURE SCHEDULE

REV.#	DATE	COMMENTS
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REVIEWS

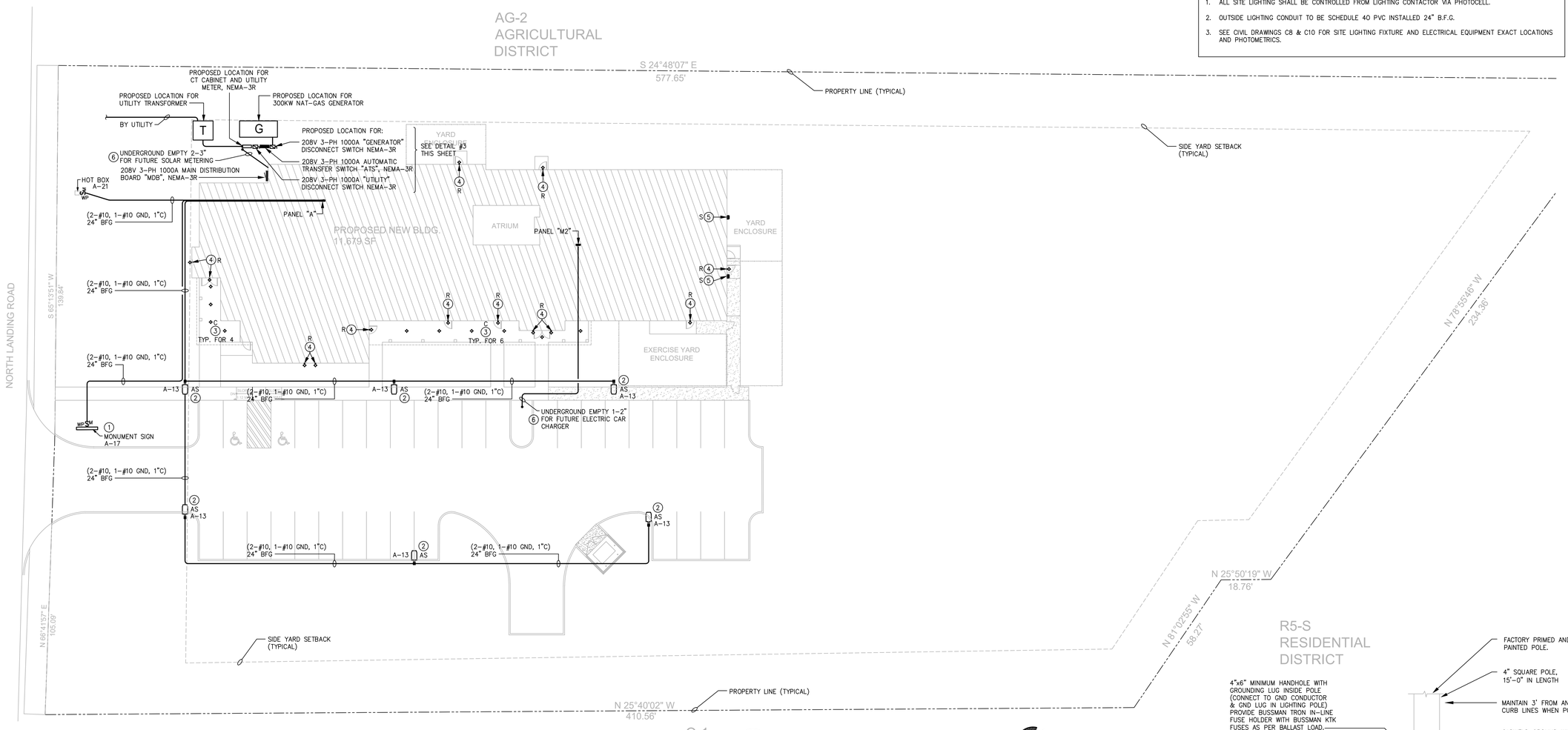
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PROJECT NO.: 22018
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DATE: 07/18/22

E003

3 OF 16

Save Date: July 19, 2022 - 8:57 AM - ZR
Plot Date: July 19, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E003_LIGHTING FIXTURE SCHEDULE.dwg



1 SITE PLAN – ELECTRICAL

SCALE: 1" = 20'-0"

GENERAL NOTES

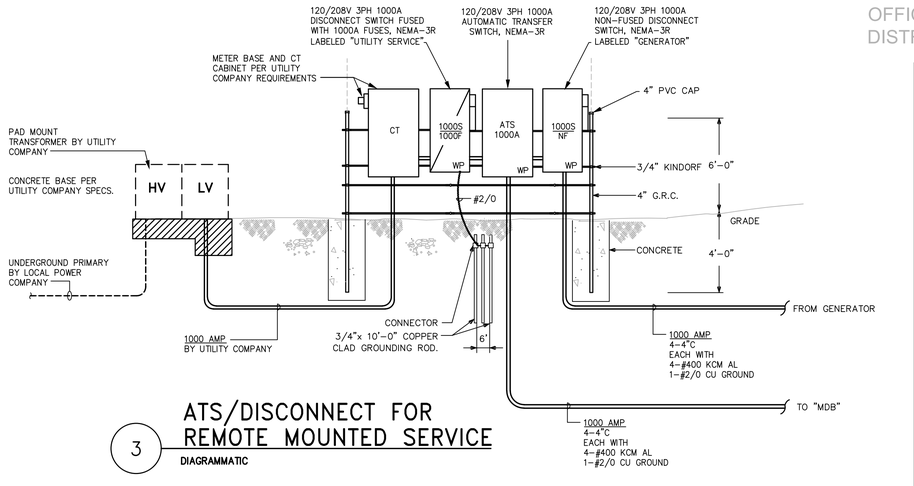
1. ALL SITE LIGHTING SHALL BE CONTROLLED FROM LIGHTING CONTACTOR VIA PHOTOCELL.
2. OUTSIDE LIGHTING CONDUIT TO BE SCHEDULE 40 PVC INSTALLED 24" B.F.G.
3. SEE CIVIL DRAWINGS C8 & C10 FOR SITE LIGHTING FIXTURE AND ELECTRICAL EQUIPMENT EXACT LOCATIONS AND PHOTOMETRICS.

SHEET NOTES

1. MONUMENT SIGN. WIRE VIA POLE LIGHTING PHOTOCELL AND TIMECLOCK.
2. AS – SITE LIGHTING FIXTURE (COACH LANTERN, DARK SKY-FULL CUTOFF) AND POLE PROVIDED BY ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL POLE BASE, POLE, FIXTURE, CONDUITS AND WIRING FOR CONNECTION TO THE FIXTURE. COORDINATE FINAL POLE LOCATION, HEIGHT AND OTHER POLE AND FIXTURE REQUIREMENTS WITH CIVIL DRAWINGS "C8" AND "C10" AND THE OWNER PRIOR TO ROUGH-IN.
   AT THE TIME OF THE DESIGN THE FIXTURE WAS 120V 71 WATTS LED, EQUAL TO: AV POLES AND LIGHTING FIXTURE AVPL-CL-S-II-71W-4000K-120-277V-CSA-BLACK, 8848 LM, 4000K, TYPE II DISTRIBUTION. AT THE TIME OF THE DESIGN THE POLE BASE WAS EQUAL TO: AV POLES AND LIGHTING HG-SB-4-BLACK WITH 18' HEIGHT ROUND POLE WPO-D-S (18 AFG) ASDN3.
   CONTRACTOR TO VERIFY FIXTURE AND POLE REQUIREMENTS WITH CIVIL ENGINEER AND ARCHITECT PRIOR ORDERING. SEE CIVIL DRAWINGS "C8" AND "C10" FOR MORE INFORMATION AND PHOTOMETRICS.
3. C – 6-IN ROUND DOWNLIGHT FIXTURE, MOUNTED UNDER THE CANOPY RECESSED. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL FIXTURE, CONDUITS AND WIRING FOR CONNECTION TO THE FIXTURES. COORDINATE FINAL LOCATION, HEIGHT AND OTHER REQUIREMENTS WITH ARCHITECTURAL DRAWINGS AND THE OWNER PRIOR TO ROUGH-IN.
   AT THE TIME OF THE DESIGN THE FIXTURE WAS 120V 10 WATTS LED, EQUAL TO: GOTHAM EVO #EVO6-35-10-WR-WD-LSS-MVOLT FIXTURE. 1000 LM, 3500K. SEE ELECTRICAL CONNECTIONS ON SHEET E101.
4. R – DARK SKY FRIENDLY GOOSENECK SCONCE WITH SEPARATELY ORDERED LED BULB, MOUNTED AT 12' AFG (TBD). THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL FIXTURE, CONDUITS AND WIRING FOR CONNECTION TO THE FIXTURE. COORDINATE FINAL LOCATION, HEIGHT AND OTHER REQUIREMENTS WITH ARCHITECTURAL DRAWINGS AND THE OWNER PRIOR TO ROUGH-IN.
   AT THE TIME OF THE DESIGN THE FIXTURE WAS 120V MAX 20 WATTS LED, EQUAL TO: HUBBARDTON FORGE #302713 (302713-SKT-75) FIXTURE. 3500K. SEE ELECTRICAL CONNECTIONS ON SHEET E101.
5. S – DARK SKY FRIENDLY ROTATABLE LENS WALL PACK, MOUNTED AT 12' AFG (TBD). THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL FIXTURE, CONDUITS AND WIRING FOR CONNECTION TO THE FIXTURE. COORDINATE FINAL LOCATION, HEIGHT AND OTHER REQUIREMENTS WITH ARCHITECTURAL DRAWINGS AND THE OWNER PRIOR TO ROUGH-IN.
   AT THE TIME OF THE DESIGN THE FIXTURE WAS 120V 60 WATTS LED, EQUAL TO: TECHNOLED #TL-RWP1-60WA-50K-AT1NA1-R FIXTURE. 5000K. SEE ELECTRICAL CONNECTIONS ON SHEET E101.
6. PROVIDE 2-3" EMPTY CONDUITS WITH PULL STRINGS FROM THE METER TO FUTURE SOLAR INVERTER LOCATION IN THE ATTIC. CAP ENDS AND SECURE CONDUITS FOR FUTURE USE.

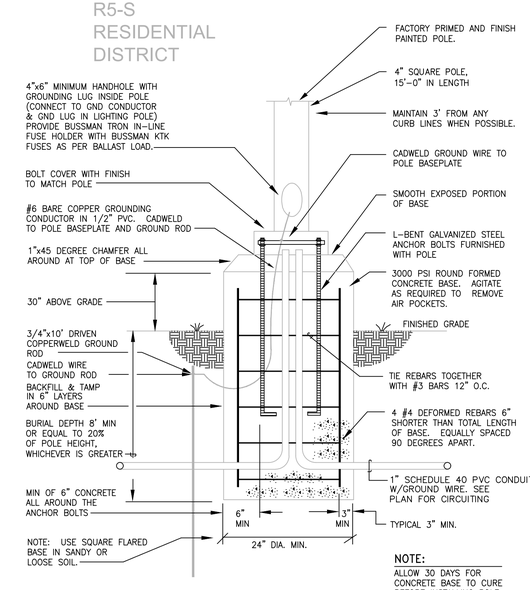
O-1 OFFICE DISTRICT

R5-S RESIDENTIAL DISTRICT



3 ATS/DISCONNECT FOR REMOTE MOUNTED SERVICE

DIAGRAMMATIC



NOTE:
ALLOW 30 DAYS FOR CONCRETE BASE TO CURE BEFORE INSTALLING POLE

2 POLE BASE DETAIL

NOT TO SCALE

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COMMONWEALTH OF VIRGINIA
WILLIAM LEE TEETER
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07/18/2022

TEETER ENGINEERING GROUP, P.A.

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

SITE PLAN - ELECTRICAL

REV #	DATE	COMMENTS
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REVISION:
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REVIEWS

INITIALS	

TEG
PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E100

4 OF 16

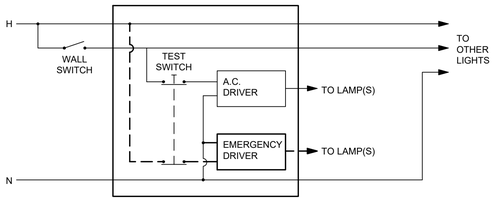
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DRAWING KEYNOTES

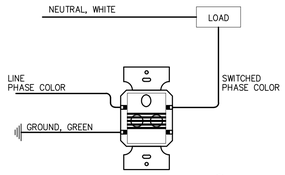
1. SEE SWITCHED EMERGENCY LIGHTING DETAIL #2 THIS SHEET.
2. CONNECT FIXTURES SUCH THAT ACTIVATION OF ANY OCCUPANCY SENSOR SHALL ENERGIZE ALL FIXTURES IN THIS SPACE.
3. EXIT SIGNS AND EMERGENCY LIGHTING FIXTURES (DRIVERS) SHALL BE CONNECTED TO LOCAL AREA LIGHTING CIRCUIT UNSWITCHED, AHEAD OF AREA LIGHTING CONTROLS.
4. PROVIDE A FLANGE KIT FOR FIXTURES MOUNTED IN HARD CEILING (TYPICAL).
5. SEE LIGHTING CONTROL DETAIL #4 THIS SHEET FOR ADDITIONAL INFORMATION.
6. OWNER SUPPLIED EXAM/SURGERY LIGHT. SEE SHEET E201 FOR POWER CONNECTION.
7. WIRE EXTERIOR LIGHTING FIXTURE VIA PHOTOCELL/LIGHTING CONTACTOR. VERIFY LOCATIONS AND MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS PRIOR TO ROUGH-IN.

DAYLITE RESPONSIVE CONTROLS AREA ANALYSIS

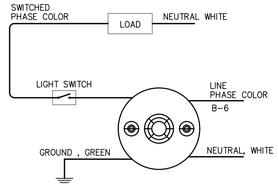
ALL SIDELIT ZONES IN THIS BUILDING CONSIST OF LESS THAN 150W OF GENERAL LIGHTING THEREFORE DAYLIGHT-RESPONSIVE CONTROLS ARE NOT REQUIRED PER 2018 IECC C405.2.3.



2 SWITCHED EMERGENCY LIGHTING DETAIL
NO SCALE

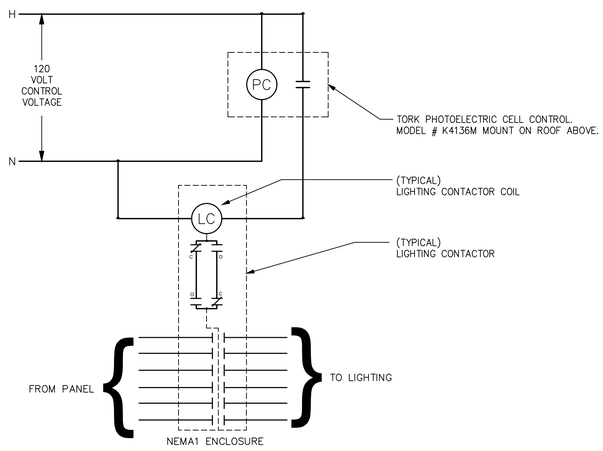


WALL BOX MOUNTED PIR SENSOR (S)
PASSIVE INFRARED OCCUPANCY SENSOR, LINE VOLTAGE, 800 WATTS AT 120 VOLTS, MANUAL "ON", WALL BOX MOUNTED 48"AFF, EQUAL TO SENSOR SWITCH "WSD-SA"

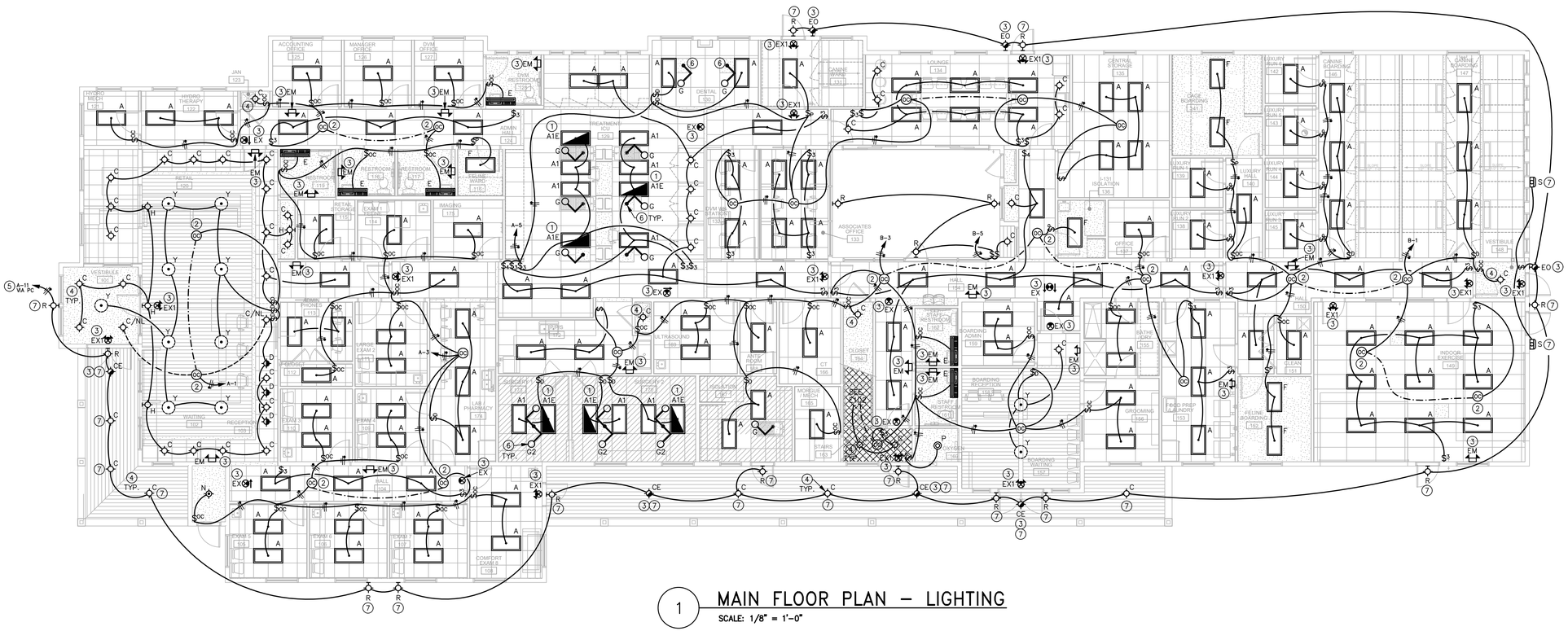


PLAYGROUND 121 CEILING MOUNTED SENSOR (S)pdt
DUAL TECHNOLOGY, (PDT), CEILING MOUNTED, LINE VOLTAGE OCCUPANCY SENSOR, 800 WATTS AT 120 VOLTS, EQUAL TO SENSOR SWITCH "CM-PDT-10"

3 OCCUPANCY SENSOR LIGHTING CONTROLS
DIAGRAMMATIC



4 EXTERIOR PHOTOCELL LIGHTING CONTROLS
DIAGRAMMATIC



1 MAIN FLOOR PLAN - LIGHTING
SCALE: 1/8" = 1'-0"

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MAIN FLOOR PLAN - LIGHTING

REV #	DATE	COMMENTS
REVISION: -		
REVISION: -		
REVISION: -		
REVISION: -		

REVIEWS	
INITIALS	

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PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

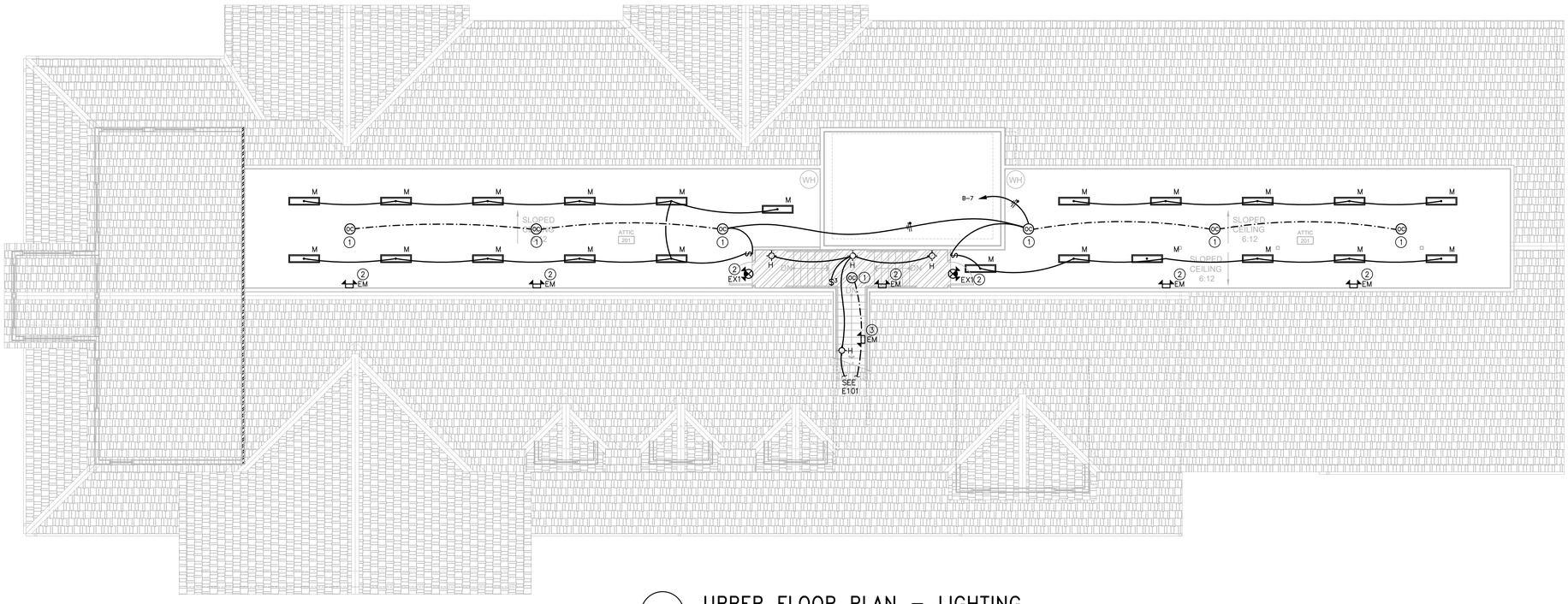
E101

5 OF 16

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Plot Date: July 19, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E101_MAIN FLOOR PLAN - LIGHTING.dwg

DRAWING KEYNOTES

1. CONNECT FIXTURES SUCH THAT ACTIVATION OF ANY OCCUPANCY SENSOR SHALL ILLUMINATE ALL FIXTURES IN THIS SPACE.
2. EXIT SIGNS AND EMERGENCY LIGHTING FIXTURES SHALL BE CONNECTED TO LOCAL AREA LIGHTING CIRCUIT UNSWITCHED, AHEAD OF AREA LIGHTING CONTROLS.



1 UPPER FLOOR PLAN – LIGHTING

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

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UPPER FLOOR PLAN - LIGHTING

REV #	DATE	COMMENTS
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REVIEWS

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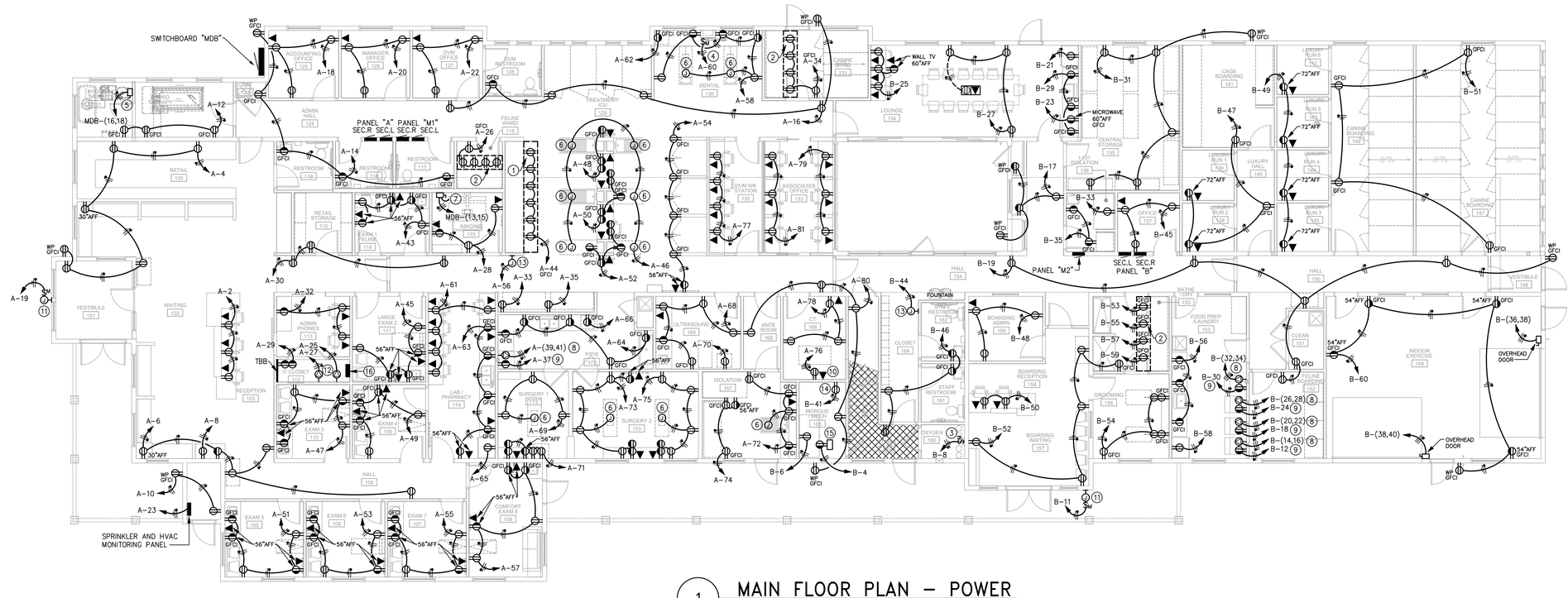
E102

6 OF 16

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Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\2201BE102_UPPER FLOOR PLAN - LIGHTING.dwg

DRAWING KEYNOTES

1. PROVIDE PLUG MOLD WITH 6 DUPLEX OUTLETS ON FACE OF CENTER SHELF IN BETWEEN CAGES. CONNECT TO A "GFCI" PROTECTION. COORDINATE EXACT LOCATION WITH OWNER BEFORE ROUGH-IN.
2. PROVIDE PLUG MOLD WITH 4 DUPLEX OUTLETS ON FACE OF CENTER SHELF IN BETWEEN CAGES. CONNECT TO A "GFCI" PROTECTION. COORDINATE EXACT LOCATION WITH OWNER BEFORE ROUGH-IN.
3. PROVIDE CONNECTION FOR OXYGEN MANIFOLD. COORDINATE REQUIRED CONNECTION TYPE WITH EQUIPMENT VENDOR PRIOR TO ROUGH-IN.
4. 20A SPST SWITCH FOR DENTAL X-RAY MACHINE ANTECH SOUND HD. 120V 1-PH 10A. EXTEND 2-#12 CU AND 1-#12 CU GND IN ¾"C TO CIRCUIT INDICATED. VERIFY DENTAL X-RAY REQUIREMENTS WITH ACTUAL DENTAL X-RAY UNIT SUPPLIED PRIOR TO ROUGH-IN.
5. NON-FUSIBLE 208V 2P 60A NEMA-3R DISCONNECT SWITCH FOR HYDROTHERAPY EQUIPMENT, 50A, 208V, 1-PH. EXTEND 3-#6 CU AND 1-#10 CU GND IN 1"C TO CIRCUIT INDICATED, CONNECT TO 50A GFCI BREAKER IN THE PANEL. VERIFY END REQUIRED CONNECTION TYPE WITH EQUIPMENT DELIVERED, WIRE VIA CONTROL PANEL, PROVIDED BY OTHERS. ELECTRICAL CONTRACTOR TO PROVIDE 208V/220V 1-PH BOOST TRANSFORMER IF REQUIRED.
6. POWER J-BOX IN CEILING FOR EXAM/SURGERY LIGHT, 115V, 1PH, 16W/54W. ELECTRICAL CONTRACTOR TO INSTALL OWNER SUPPLIED LIGHT.
7. NON-FUSIBLE 208V 2P 200A NEMA-1 DISCONNECT SWITCH FOR 30 KW SUMMIT SOUND X-RAY MACHINE. EXTEND 2-#1 CU AND 1-#6 CU GND IN 2"C TO CIRCUIT INDICATED. MOMENTARY CURRENT 125 AMPS, NOMINAL CURRENT <5 AMPS. NOTE: SOME X-RAY UNITS REQUIRE OPTIONAL STEP-UP TRANSFORMER (TO BE SUPPLIED BY ELECTRICAL CONTRACTOR) FOR 220V SERVICE. VERIFY X-RAY REQUIREMENTS WITH ACTUAL X-RAY UNIT SUPPLIED PRIOR TO ROUGH-IN.
8. CONNECTION FOR STACKABLE ELECTRIC DRYER 208V, 1-P, 0.42 KW MOTOR WITH 5.4 KW HEATING ELEMENT, 26 AMPS. VERIFY ELECTRICAL CONNECTION TYPE WITH DELIVERED EQUIPMENT PRIOR TO ROUGH-IN. PROVIDE RESPECTIVE POWER CORD WITH PLUG AND CONNECT DRYER.
9. CONNECTION FOR STACKABLE WASHER 120V, 1-P, 12 AMPS. VERIFY ELECTRICAL CONNECTION TYPE WITH DELIVERED EQUIPMENT PRIOR TO ROUGH-IN. PROVIDE RESPECTIVE POWER CORD WITH PLUG AND CONNECT WASHER.
10. PROVIDE RECEPTACLE FOR SAMSUNG CERETOM PORTABLE CT MACHINE. 115V, 1-PH, 1300VA MAX. INSTALL DATA CONNECTION NEXT TO RECEPTACLE. VERIFY LOCATION AND POWER REQUIREMENTS WITH CT SCAN MACHINE VENDOR PRIOR TO ROUGH-IN.
11. E.C TO PROVIDE JUNCTION BOX AND LOCAL DISCONNECTING MEANS FOR EXTERIOR SIGNAGE. CIRCUIT TO BE CONTROLLED VIA PC.
12. PROVIDE 120V, 30A RECEPTACLE FOR IT RACK @ 80"AFF. COORDINATE WITH THE OWNER FOR EXACT RECEPTACLE TYPE REQUIRED.
13. PROVIDE CONNECTION FOR MEDICAL GAS (O2) ALARM PANEL/VALVE BOX, 110V. SEE MEDICAL GAS PLAN FOR MORE INFORMATION.
14. RECEPTACLE FOR CENTRAL VAC SYSTEM VACUMAID S2600 UNIT, 120V, 15.8A. COORDINATE EXACT LOCATION WITH OWNER PRIOR BEGINNING ANY WORK. COORDINATE REQUIRED CONNECTION TYPE WITH CENTRAL VAC SYSTEM CONTRACTOR BEFORE ROUGH-IN.
15. SWITCHED RECEPTACLES AND PILOT SWITCHES FOR SUPERA GAS EVACUATION SYSTEM (SCAVENGER) UNITS, 120V, 0.3A PER UNIT. PROVIDE SWITCHED RECEPTACLES MOUNTED ABOVE CEILING IN MORGUE/MECH ROOM 165 AND PILOT SWITCHES (LOCATION TO BE VERIFIED). COORDINATE EXACT LOCATION WITH SCAVENGER SYSTEM CONTRACTOR BEFORE ROUGH-IN.
16. PROPOSED GENERATOR ANNUNCIATOR LOCATION. VERIFY WITH OWNER AND GENERATOR VENDOR PRIOR TO ROUGH-IN.



1 MAIN FLOOR PLAN – POWER

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

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Brian Watson, DVM

MAIN FLOOR PLAN - POWER

REV. #	DATE	COMMENTS
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REVIEWS

INITIALS	

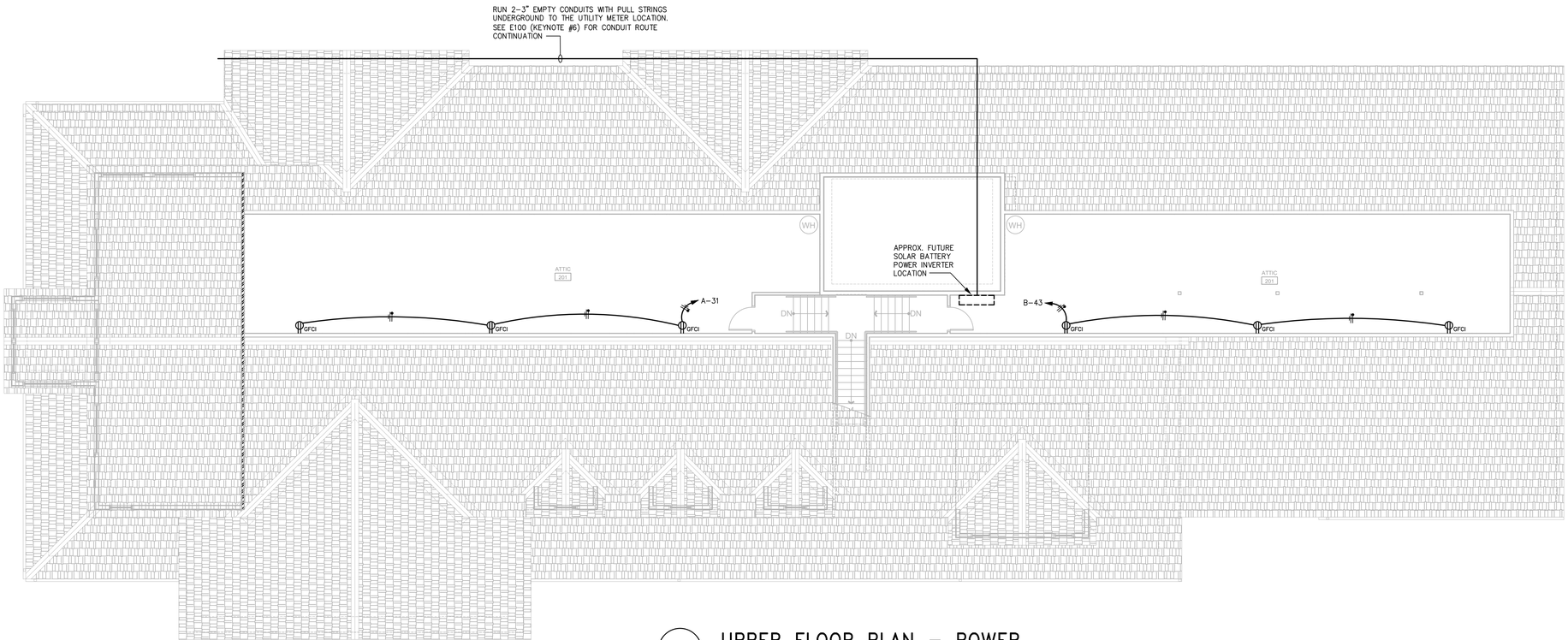
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PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E201

7 OF 16

Save Date: July 18, 2022 - 8:57 AM - ZR
Plot Date: July 18, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E201_MAIN FLOOR PLAN - POWER.dwg



1 UPPER FLOOR PLAN – POWER

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

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PROFESSIONAL ENGINEER

07/18/2022

TEETER ENGINEERING GROUP, P.A.

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

UPPER FLOOR PLAN - POWER

REV.#	DATE	COMMENTS
REVISION: -		
REVISION: -		
REVISION: -		
REVISION: -		

REVIEWS

INITIALS	

TEG

PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E202

8 OF 16

Save Date: July 15, 2022 - 2:26 PM - Chancelo
Plot Date: July 18, 2022 - 10:02 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E202_UPPER FLOOR PLAN - POWER.dwg

HEAT PUMP SCHEDULE

TAG	NOMINAL TONS	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		MCA	MOCP	VOLTAGE		
HP-1	6	26	35	208V-3ø	3P/60A/208V/3R-FPN	¾"C., 3#8 & 1#10 GND.
HP-7	6	26	35	208V-3ø	2P/60A/208V/3R-FPN	¾"C., 3#8 & 1#10 GND.

CONDENSING UNTI SCHEDULE

TAG	NOMINAL TONS	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		MCA	MOCP	VOLTAGE		
CU-2	4	24	40	208V-1ø	2P/60A/208V/3R-FPN	¾"C., 2#8 & 1#10 GND.
CU-3	4	24	40	208V-1ø	2P/60A/208V/3R-FPN	¾"C., 2#8 & 1#10 GND.
CU-4	2	14	25	208V-1ø	2P/30A/208V/3R-FPN	¾"C., 2#10 & 1#10 GND.
CU-5	4	24	40	208V-1ø	2P/60A/208V/3R-FPN	¾"C., 2#8 & 1#10 GND.
CU-6	5	32.5	50	208V-1ø	2P/60A/208V/3R-FPN	1"C., 2#6 & 1#10 GND.
CU-8	4	24	40	208V-1ø	2P/60A/208V/3R-FPN	¾"C., 2#8 & 1#10 GND.
CU-9	3	18	30	208V-1ø	2P/30A/208V/3R-FPN	¾"C., 2#10 & 1#10 GND.
CU-10	4	24	40	208V-1ø	2P/60A/208V/3R-FPN	¾"C., 2#8 & 1#10 GND.
CU-11	3.5	22	35	208V-1ø	2P/60A/208V/3R-FPN	¾"C., 2#8 & 1#10 GND.
CU-12	3	18	30	208V-1ø	2P/30A/208V/3R-FPN	¾"C., 2#10 & 1#10 GND.
CU-13	2	14	25	208V-1ø	2P/30A/208V/3R-FPN	¾"C., 2#10 & 1#10 GND.

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, REDUCERS, CONTROL CIRCUITS, DUCT TYPE SMOKE DETECTORS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.

GENERAL NOTES

1. ALL CONNECTIONS AND ELECTRICAL EQUIPMENT LISTED IN SCHEDULE SHALL BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. FIELD VERIFY CONNECTION REQUIREMENTS AND EQUIPMENT PROVIDED BY OTHERS PRIOR TO ROUGH-IN.
2. REFER TO MECHANICAL AND PLUMBING DRAWINGS AND SPECIFICATIONS FOR THE REQUIREMENTS ASSOCIATED WITH WIRING AND CONNECTIONS OF INTERLOCKING, THERMOSTAT LOCATIONS, EXHAUST FAN CONTROL SWITCHES, AND OTHER CONTROLS OF MECHANICAL AND PLUMBING EQUIPMENT.
3. PROVIDE DUCT MOUNTED SMOKE DETECTORS IN THE RETURN DUCT. VERIFY THE REQUIRED QUANTITY OF DUCT SMOKE DETECTORS FOR EACH UNIT WITH DUCTWORK LAYOUT TO MEET NFPA REQUIREMENTS.
4. ALL ELECTRICAL CHARACTERISTICS SCHEDULED ABOVE ARE BASED ON INFORMATION AVAILABLE AT THE TIME OF DESIGN. ELECTRICAL CONTRACTOR SHALL VERIFY ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT WITH EQUIPMENT SUPPLIER(S) PRIOR TO ROUGHING, AND SHALL VERIFY EXACT LOCATION AND EXACT TYPE OF CONNECTION. ALL EQUIPMENT SHALL BE PROPERLY AND SECURELY GROUNDED. ANY SIGNIFICANT CHANGES IN LOCATION, ELECTRICAL REQUIREMENTS, OR TYPE OF CONNECTION REQUIRED FOR ANY EQUIPMENT SCHEDULED ABOVE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IN WRITING PRIOR TO PROCEEDING.

ELECTRIC HEATER SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		KW	AMPS	VOLTAGE		
EWH-1	FIRE RISER RM	3.0	14.4	208V-1ø	2P/30A/208V/NF	¾"C., 2#12 & 1#12 GND.

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, REDUCERS, CONTROL CIRCUITS, DUCT TYPE SMOKE DETECTORS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.

DRAWING KEYNOTES

1. INTERLOCK FAN WITH LIGHTING CIRCUIT IN THIS ROOM. FAN TO BE CONTROLLED VIA LIGHTING CONTROLS.

FAN FILTER UNIT SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA				DISCONNECT	HOMERUN BRANCH CIRCUIT
		FLA	V	PH	HZ		
FFU-1	173	1.5	208	1	60	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
FFU-2	170	1.5	208	1	60	20A SPST SWITCH	¾"C, 2#12, 1#12 GND

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE PLUMBING CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, REDUCERS, CONTROL CIRCUITS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE PLUMBING EQUIPMENT.

MINI SPLIT SYSTEM / HEAT PUMP SCHEDULE

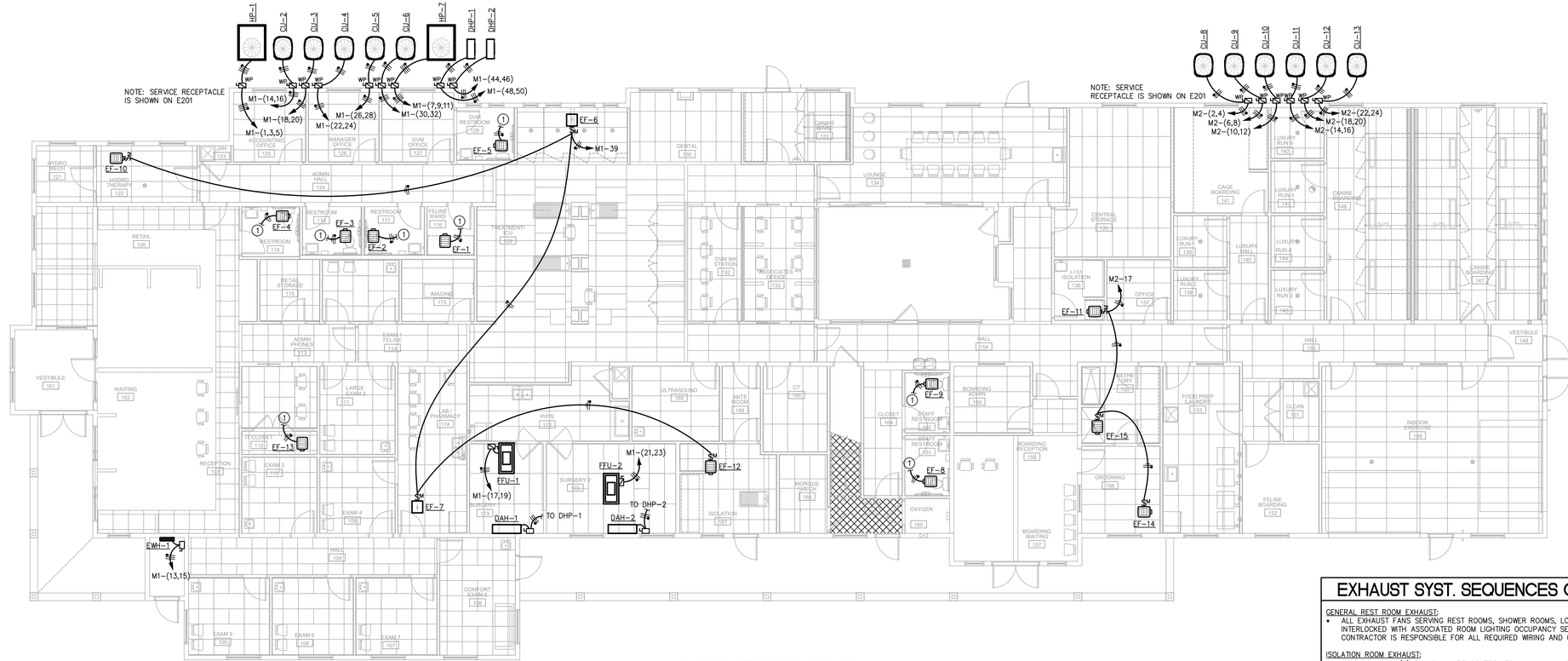
TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		MCA	MOCP	VOLTAGE		
DAH-1	173 SURGERY 1	1.0	15	208V-1ø	2P/30A/208V/NF	¾"C., 2#12 & 1#12 GND.
DHP-1	173 SURGERY 1	10.0	15	208V-1ø	2P/30A/208V/FPN	¾"C., 2#12 & 1#12 GND.
DAH-2	170 SURGERY 2	1.0	15	208V-1ø	2P/30A/208V/NF	¾"C., 2#12 & 1#12 GND.
DHP-2	170 SURGERY 2	10.0	15	208V-1ø	2P/30A/208V/FPN	¾"C., 2#12 & 1#12 GND.

NOTE:
1. INDOOR UNITS DAH FED FROM OUTDOOR UNITS DHP.
2. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, REDUCERS, CONTROL CIRCUITS, DUCT TYPE SMOKE DETECTORS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.

FAN SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		HP	WATTS	VOLTAGE		
EF-1	116 FELINE WARD	–	16.8	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-2	117 REST ROOM	–	18	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-3	118 REST ROOM	–	18	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-4	119 REST ROOM	–	18	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-5	128 DVM REST ROOM	–	18	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-6	ICU BOARDING	1/4	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-7	LAB/PPS/ISOLATION	1/4	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-8	161 STAFF RR	–	18	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-9	162 STAFF RR	–	18	115V-1ø	INTEGRAL	¾"C, 2#12, 1#12 GND
EF-10	122 HYDRO THERAPY	–	16.8	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-11	136 ISOLATION	–	16.8	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-12	167 ISOLATION	–	19.2	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-13	112 I.T. CLOSET	–	19.2	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-14	156 GROOMING	–	19.2	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-15	155 BATHE/DRY	–	19.2	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND

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1 MAIN FLOOR PLAN – MECHANICAL CONNECTIONS
SCALE: 1/8" = 1'-0"

EXHAUST SYST. SEQUENCES OF OPERATION

GENERAL REST ROOM EXHAUST:
- ALL EXHAUST FANS SERVING REST ROOMS, SHOWER ROOMS, LOCKER ROOMS, ETC. SHALL BE INTERLOCKED WITH ASSOCIATED ROOM LIGHTING OCCUPANCY SENSOR FOR CONTROL. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL REQUIRED WIRING AND CONNECTIONS.

ISOLATION ROOM EXHAUST:
- ISOLATION ROOM(S) FAN SHALL BE CONTROLLED VIA MANUAL SWITCH ON INTERIOR ROOM WALL. SWITCH SHALL BE PROVIDED WITH A PILOT LIGHT LOCATED ON ADJACENT EXTERIOR OF ROOM FOR VISUAL CONFIRMATION THE FAN IS OPERATING WHEN NEEDED. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL WIRING, SWITCHES AND CONNECTIONS.

ANIMAL AREAS ROOM EXHAUST:
- ALL ANIMAL AREAS (E.G. RUNS, WARDS, HOLDING KENNELS, ETC.) SHALL BE PROVIDED WITH EXHAUST FAN(S) THAT ARE INTERCONNECTED WITH ASSOCIATED HVAC SYSTEM(S) SERVING EXHAUST SPACE. EXHAUST FAN(S) SHALL ENERGIZE AND DE-ENERGIZE WITH THE ACTIVATION AND DE-ACTIVATION OF INTERLOCKED RTU FOR GENERAL SPACE CONDITIONING. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL REQUIRED CONTROL(S) SYSTEMS, WIRING, SWITCHES BETWEEN FAN MANUFACTURER AND RTU MANUFACTURER TO ENSURE INTERCONNECTION IS POSSIBLE AND PROVIDING REQUIRED INTERCONNECTIONS. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL POWER WIRING AND REQUIRED POWER CONNECTIONS.

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COMMONWEALTH OF VIRGINIA
WILLIAM LEE TEETER
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PROFESSIONAL ENGINEER
07/18/2022

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COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

MAIN FLOOR PLAN - MECHANICAL CONNECTIONS

REV #	DATE	COMMENTS
-		REVISION:
-		REVISION:
-		REVISION:
-		REVISION:

REVIEWS

INITIALS	

TEG
PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E301

9 OF 16

Save Date: July 18, 2022 - 2:57 AM - ZM
Plot Date: July 18, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E301_MAIN FLOOR PLAN - MECHANICAL CONNECTIONS.dwg

GAS FURNACE SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		MCA	MOCP	VOLTAGE		
GF-2	OFFICES	14.1	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-3	ICU TREATMENT	14.1	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-4	DENTAL/CANINE	8.8	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-5	DVM OFFICES	14.1	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-6	EXAM ROOMS	14.1	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-8	BOARDING WAIT	14.1	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-9	FELINE BOARDING	8.8	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-10	CANINE BOARDING	14.1	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-11	LUXURY RUNS	10.3	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-12	LOUNGE	8.8	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.
GF-13	INDOOR EXERCISE	8.8	15	115V-1ø	20A SPST SWITCH	¾"C., 2#12 & 1#12 GND.

NOTE:
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DRAWING KEYNOTES

1. ALL AHU/OF UNITS SHALL BE PROVIDED WITH UV LIGHT EQUAL TO ULTRAVATION MODEL 'UVPHOTOMAX', 120V, 20W. UV LIGHT SHALL BE PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR, AND SHALL BE WIRED BE ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE 20A SPSC SWITCH FOR LOCAL DISCONNECTING MEANS AT EACH UNIT AND WIRE UV LIGHTS AS REQUIRED. FIELD COORDINATE EXACT LOCATIONS AND ALL WORK INVOLVED.

AIR HANDLING UNIT SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		MCA	MOCP	VOLTAGE		
AHU-1	WAITING/RETAIL	71.5	80	208V-3ø	3P/100A/208V/3R-FPN	1¼"C., 3#3 & 1#8 GND.
AHU-7	SURGERY	71.5	80	208V-3ø	3P/100A/208V/3R-FPN	1¼"C., 3#3 & 1#8 GND.

NOTE:
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RELIEF FAN SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		HP	WATTS	VOLTAGE		
RF-1	RELIEF FAN ATTIC	1/4	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
RF-2	RELIEF FAN ATTIC	3/4	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
RF-3	RELIEF FAN ATTIC	3/4	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, STARTERS, CONTROL CIRCUITS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.

FAN SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		HP	WATTS	VOLTAGE		
EF-16	ATTIC (LEFT 1/2)	1/20	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
EF-17	ATTIC (RIGHT 1/2)	1/20	–	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, STARTERS, CONTROL CIRCUITS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.

RECIRCULATION PUMP SCHEDULE

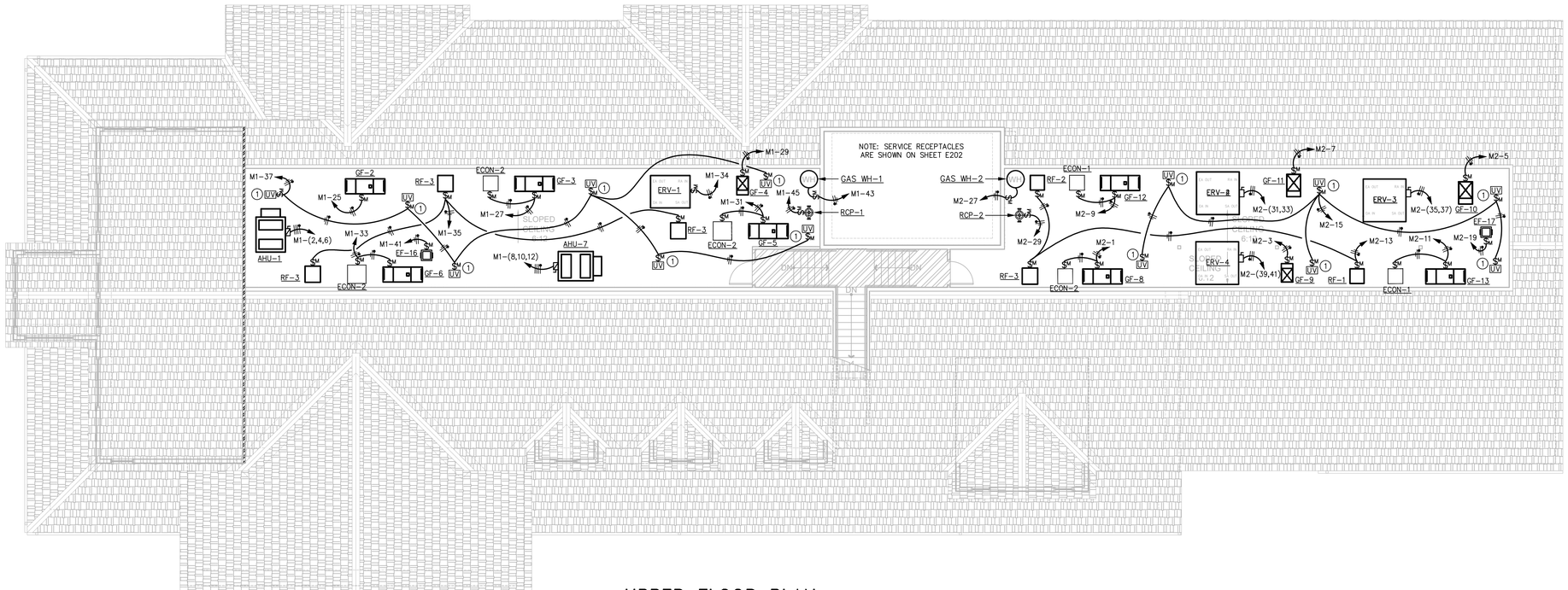
TAG	TYPE	ELECTRICAL DATA				DISCONNECT	HOMERUN BRANCH CIRCUIT
		HP	V	PH	HZ		
RCP-1	IN-LINE	1/12	120	1	60	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
RCP-2	IN-LINE	1/12	120	1	60	20A SPST SWITCH	¾"C, 2#12, 1#12 GND

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE PLUMBING CONTRACTORS FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, REDUCERS, CONTROL CIRCUITS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE PLUMBING EQUIPMENT.

ENERGY RECOVERY VENTILATOR SCHEDULE

TAG	AREA SERVED	ELECTRICAL DATA			DISCONNECT	HOMERUN BRANCH CIRCUIT
		MCA	MOCP	VOLTAGE		
ERV-1	–	20.5	25	115V-1ø	20A SPST SWITCH	¾"C, 2#12, 1#12 GND
ERV-2	–	17.6	25	208V-1ø	2P/30A/208V/NF	¾"C, 2#10, 1#10 GND
ERV-3	–	25.2	35	208V-1ø	2P/60A/208V/NF	¾"C, 2#8, 1#10 GND
ERV-4	–	23.0	30	208V-1ø	2P/30A/208V/NF	¾"C, 2#10, 1#10 GND

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL CONTRACTOR FOR EXACT EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL DISCONNECTS, FUSES, STARTERS, CONTROL CIRCUITS AND CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE MECHANICAL EQUIPMENT.



1 UPPER FLOOR PLAN – MECHANICAL AND PLUMBING CONNECTIONS

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

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Brian Watson, DVM

UPPER FLOOR PLAN - MECH. AND PLUMBING CONNECT.

REV #	DATE	COMMENTS
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REVISION:
REVISION:
REVISION:
REVISION:

REVIEWS

INITIALS	

TEG

PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E302

10 OF 16

Scan Date: July 18, 2022 - 6:57 AM - ZM
Plot Date: July 18, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E302_UPPER FLOOR PLAN - MECHANICAL AND PLUMBING CONNECTIONS.dwg

NEW PANEL "MDB"

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 1000A MLO
INTERRUPT RATING: 65K AIC
MOUNTING: SURFACE EXTERIOR

TYPE: SWITCHBOARD
BUS MATERIAL: COPPER
MANUFACTURER: SQUARE-D, GE, SIEMENS

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A	PHASE LOAD SUMMARY B	PHASE LOAD SUMMARY C	CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
.	PANEL "A"	225	3	300	1	22.8	36.5		2	2X	3	400	PANEL "M1"	.
.	.	.	.	AL	3		25.6	34.6	4	300	.	.	.	.
.	.	.	.	.	5			20.4 29.0	6	AL	.	.	.	.
.	PANEL "B"	225	3	300	7	22.1	18.5		8	300	3	225	PANEL "M2"	.
.	.	.	.	AL	9		22.5	17.5	10	AL	.	.	.	.
.	.	.	.	.	11			17.0 14.6	12	.	.	.	.	.
.	X-RAY	125	2	1	13	13.0	0.0		14	.	1	.	SPACE WITH BUSSING	.
.	.	.	.	.	15		13.0	5.0	16	6	2	50	HYDROTHERAPY EQUIPM.	A
.	SPACE WITH BUSSING	.	1	.	17			0.0 5.0	18	.	.	.	.	.
.	SPACE WITH BUSSING	.	3	.	19	0.0	0.0		20	.	3	.	SPACE WITH BUSSING	.
.	.	.	.	.	21		0.0	0.0	22	.	.	.	.	.
.	.	.	.	.	23			0.0 0.0	24	.	.	.	.	.
.	SPACE WITH BUSSING	.	3	.	25	0.0	0.1		26	4	3	60	SURGE PROTECTOR	.
.	.	.	.	.	27		0.0	0.1	28	.	.	.	.	.
.	.	.	.	.	29			0.0 0.1	30	.	.	.	.	.
TOTAL KVA PER PHASE						113.0	118.3	86.2						
DIVERSIFIED KVA PER PHASE						106.6	113.1	81.9						
DIVERSIFIED TOTAL KVA						301.6 KVA								
MAXIMUM AMPS HEAVIEST PHASE (DIVERSIFIED)						941.8 AMPS								

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.
3. NEMA-3R ENCLOSURE.

PANEL KEY NOTES:

NEC 220 LOAD JUSTIFICATION:

LIGHTING	125%	16.9
HEATING	100%	23.2
AIR HANDLERS	100%	80.7
AIR CONDITIONING	100%	42.4
RECEPTACLES	1st 10kVA = 100% +50% OF REMAINING	29.3
WATER HEATER	100%	0.0
KITCHEN EQUIPMENT	MINUS NEC DEMAND 100%	0.0
PROCESS	100%	34.2
MISCELLANEOUS	100%	74.9

NEW PANEL "M2"

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 225A MLO
INTERRUPT RATING: 10K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUFACTURER: SQUARE-D, GE, SIEMENS

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A	PHASE LOAD SUMMARY B	PHASE LOAD SUMMARY C	CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
.	GF-8	15	1	12	1	1.7	2.1		2	8	2	40	CU-8	.
.	GF-9	15	1	12	3		1.1	2.1	4	.	.	.	.	.
.	GF-10	15	1	12	5			1.7 1.6	6	10	2	30	CU-9	.
.	GF-11	15	1	12	7	1.2	1.6		8	.	.	.	.	.
.	GF-12	15	1	12	9		1.1	2.1	10	8	2	40	CU-10	.
.	GF-13	15	1	12	11			1.1 2.1	12	.	.	.	.	.
.	RELIEF FANS RF	20	1	12	13	0.3	2.0		14	8	2	35	CU-11	.
.	UV LIGHTS	20	1	12	15		0.1	2.0	16	.	.	.	.	.
.	FANS EF-11,14,15	20	1	12	17			0.1 1.6	18	10	2	30	CU-12	.
.	FAN EF-17	20	1	12	19	0.1	1.6		20	.	.	.	.	.
.	SPARE	20	1	.	21		0.0	1.2	22	10	1	25	CU-13	.
.	SPARE	20	1	.	23			0.0 1.2	24	.	.	.	.	.
.	SPARE	20	1	.	25	0.0	3.3		26	.	2	40	SPARE FOR ELECTRIC	.
.	GAS WH-2 IGNITER	20	1	12	27		0.1	3.3	28	.	.	.	CAR CHARGER	.
.	RCP-2	20	1	12	29			0.1 0.0	30	.	1	20	SPARE	.
.	ERV-2	25	1	10	31	1.9	0.0		32	.	1	20	SPARE	.
.	.	.	.	.	33		1.9	0.0	34	.	1	20	SPARE	.
.	ERV-3	35	1	8	35			2.6 0.0	36	.	1	20	SPARE	.
.	.	.	.	.	37	2.6	0.0		38	.	1	20	SPARE	.
.	ERV-4	30	1	10	39		2.4	0.0	40	.	1	20	SPARE	.
.	.	.	.	.	41			2.4 0.0	42	.	1	20	SPARE	.
TOTAL KVA PER PHASE						18.5	17.5	14.6						
DIVERSIFIED KVA PER PHASE						18.5	17.5	14.6						
DIVERSIFIED TOTAL KVA						50.6 KVA								
MAXIMUM AMPS HEAVIEST PHASE (DIVERSIFIED)						154.0 AMPS								

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.

NEC 220 LOAD JUSTIFICATION:

LIGHTING	125%	0.2
HEATING	100%	0.0
AIR HANDLERS	100%	22.0
AIR CONDITIONING	100%	21.4
RECEPTACLES	1st 10kVA = 100% +50% OF REMAINING	0.0
WATER HEATER	100%	0.0
KITCHEN EQUIPMENT	MINUS NEC DEMAND 100%	0.0
PROCESS	100%	0.0
MISCELLANEOUS	100%	7.1

NEW PANEL "M1" (LEFT SECTION)

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 400A MLO
INTERRUPT RATING: 22K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUFACTURER: SQUARE-D, GE, SIEMENS

TWO-SECTION PANELBOARD WITH 42 POLES PER SECTION. PRIVIDE SUB-FEED LUGS AND CABLE BETWEEN SECTION TO SECOND SECTION.

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A	PHASE LOAD SUMMARY B	PHASE LOAD SUMMARY C	CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
.	HP-1	35	3	8	1	2.7	7.3		2	3	3	80	AHU-1	.
.	.	.	.	.	3		2.7	7.3	4	.	.	.	.	.
.	.	.	.	.	5			2.7 7.3	6	.	.	.	.	.
.	HP-7	35	3	8	7	2.7	7.3		8	3	3	80	AHU-7	.
.	.	.	.	.	9		2.7	7.3	10	.	.	.	.	.
.	.	.	.	.	11			2.7 7.3	12	.	.	.	.	.
.	EWH-1	20	2	12	13	1.5	2.1		14	8	2	40	CU-2	.
.	.	.	.	.	15		1.5	2.1	16	.	.	.	.	.
.	FFU-1	15	2	12	17			0.2 2.1	18	8	2	40	CU-3	.
.	.	.	.	.	19	0.2	2.1		20	.	.	.	.	.
.	FFU-2	15	2	12	21		0.2	1.2	22	10	2	25	CU-4	.
.	.	.	.	.	23			0.2 1.2	24	.	.	.	.	.
.	GF-2	15	1	12	25	1.7	2.1		26	8	2	40	CU-5	.
.	GF-3	15	1	12	27		1.7	2.1	28	.	.	.	.	.
.	GF-4	15	1	12	29			1.1 2.9	30	6	2	50	CU-6	.
.	GF-5	15	1	12	31	1.7	2.9		32	.	.	.	.	.
.	GF-6	15	1	12	33		1.7	2.5	34	30	1	25	ERV-1	.
.	RELIEF FANS RF	20	1	12	35			0.3 0.0	36	.	1	20	SPARE	.
.	UV LIGHTS	20	1	12	37	0.1	0.0		38	.	1	20	SPARE	.
.	FANS EF-6,7,10,12	20	1	12	39		0.5	0.0	40	.	1	20	SPARE	.
.	FAN EF-16	20	1	12	41			0.1 0.0	42	.	1	20	SPARE	.
TOTAL KVA PER PHASE						34.4	33.5	28.0						

NEC 220 LOAD JUSTIFICATION:
SEE RIGHT SECTION FOR LOAD JUSTIFICATION.

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.

NEW PANEL "M1" (RIGHT SECTION)

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 400A MLO
INTERRUPT RATING: 22K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUFACTURER: SQUARE-D, GE, SIEMENS

TWO-SECTION PANELBOARD WITH 42 POLES PER SECTION. PRIVIDE SUB-FEED LUGS AND CABLE BETWEEN SECTION TO SECOND SECTION.

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A	PHASE LOAD SUMMARY B	PHASE LOAD SUMMARY C	CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
.	GAS WH-1 IGNITER	20	1	12	43	0.1	1.0		44	12	2	15	DHP-1	.
.	RCP-1	20	1	12	45		0.1	1.0	46	.	.	.	.	.
.	SPARE	20	1	.	47			0.0 1.0	48	12	2	15	DHP-2	.
.	SPARE	20	1	.	49	0.0	1.0		50	.	.	.	.	.
.	SPARE	20	1	.	51		0.0	0.0	52	.	1	20	SPARE	.
.	SPARE	20	1	.	53			0.0 0.0	54	.	1	20	SPARE	.
.	SPARE	20	1	.	55	0.0	0.0		56	.	1	20	SPARE	.
.	SPARE	20	1	.	57		0.0	0.0	58	.	1	20	SPARE	.
.	SPARE	20	1	.	59			0.0 0.0	60	.	1	20	SPARE	.
.	USEABLE SPACE ONLY	.	1	.	61	0.0	0.0		62	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	63		0.0	0.0	64	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	65			0.0 0.0	66	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	67	0.0	0.0		68	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	69		0.0	0.0	70	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	71			0.0 0.0	72	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	73	0.0	0.0		74	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	75		0.0	0.0	76	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	77			0.0 0.0	78	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	79	0.0	0.0		80	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	81		0.0	0.0	82	.	1	.	USEABLE SPACE ONLY	.
.	USEABLE SPACE ONLY	.	1	.	83			0.0 0.0	84	.	1	.	USEABLE SPACE ONLY	.
TOTAL KVA PER PHASE						36.5	34.6	29.0						
DIVERSIFIED KVA PER PHASE						36.6	34.6	29.0						
DIVERSIFIED TOTAL KVA						100.2 KVA								
MAXIMUM AMPS HEAVIEST PHASE (DIVERSIFIED)						304.4 AMPS								

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.

NEC 220 LOAD JUSTIFICATION:

LIGHTING	125%	0.2
HEATING	100%	19.2
AIR HANDLERS	100%	58.7
AIR CONDITIONING	100%	21.0
RECEPTACLES	1st 10kVA = 100% +50% OF REMAINING	0.0
WATER HEATER	100%	0.0
KITCHEN EQUIPMENT	MINUS NEC DEMAND 100%	0.0
PROCESS	100%	0.0
MISCELLANEOUS	100%	1.1

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COMMONWEALTH OF VIRGINIA
WILLIAM LEE TEETER
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PROFESSIONAL ENGINEER
07/18/2022

TEETER ENGINEERING GROUP, P.A.

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

PANEL SCHEDULES

REV.#	DATE	COMMENTS
REVISION: -		
REVISION: -		
REVISION: -		
REVISION: -		

REVIEWS

INITIALS	

TEG
PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

E401

11 OF 16

Save Date: July 19, 2022 - 9:56 AM - ZR
Plot Date: July 19, 2022 - 10:01 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018E401_PANEL SCHEDULES.dwg

NEW PANEL 'A' (LEFT SECTION)

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 225A MLO
INTERRUPT RATING: 22K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUF: SQ-D,GE,SIEMENS

TWO-SECTION PANELBOARD WITH 42 POLES PER SECTION. PRIVIDE SUB-FEED LUGS AND CABLE CONNECTION TO SECOND SECTION.

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A		PHASE B		PHASE C	
.	LTG WAITING	20	1	12	1	0.7	0.5				
.	LTG EXAMS	20	1	12	3			1.7	1.3		
.	LTG TREATMENT	20	1	12	5					1.5	0.9
.	SPARE	20	1	.	7	0.0	0.8				
.	CONTACTOR & PC	20	1	12	9			0.1	0.4		
.	LTG EXTER WALL VIA PC	20	1	12	11					0.5	0.5
.	LTG SITE VIA PC	20	1	10	13	0.5	0.9				
.	SPARE	20	1	.	15			0.0	1.1		
A	MONUMENT SIGN	20	1	10	17					1.2	0.5
.	SIGN EXTER VIA PC	20	1	12	19	0.8	0.5				
A	HOT BOX	20	1	10	21			1.0	0.5		
B	MONITORING PANEL	20	1	12	23					0.2	0.0
.	IT RACK	30	1	10	25	2.0	0.9				
.	IT RACK	30	1	10	27			2.0	0.5		
.	TELEPHONE BOARD	20	1	12	29					0.4	0.5
.	REC ATTIC	20	1	12	31	0.5	0.5				
.	OXYGEN CAGE (TREATMENT)	20	1	12	33			1.0	0.9		
.	OXYGEN CAGE (TREATMENT)	20	1	12	35					1.0	0.0
.	WASHER P/P/S	20	1	12	37	1.4	2.0				
.	DRYER P/P/S	30	2	10	39			2.9	2.0		
.	.	.	.	.	41					2.9	0.2
TOTAL KVA PER PHASE						12.2		15.4		10.4	

CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
2	12	1	20	REC RECEPTION	.
4	12	1	20	REC RETAIL	.
6	12	1	20	REC WAITING, HALL	.
8	12	1	20	REFRIGERATOR WAITING	.
10	12	1	20	REC SPRINKLER ROOM	.
12	12	1	20	REC HYDROTHERAPY	.
14	12	1	20	REC RESTROOMS, JANITORY	.
16	12	1	20	REC RESTROOMS, HALL	.
18	12	1	20	REC ACC OFFICE	.
20	12	1	20	REC MANAGER OFFICE	.
22	12	1	20	REC DVM OFFICE	.
24	.	1	20	SPARE	.
26	12	1	20	REC FELINE WARD	A
28	12	1	20	REC IMAGING	.
30	12	1	20	REC HALL	.
32	12	1	20	REC ADMIN PHONES	.
34	12	1	20	REC CANINE WARD	A
36	.	1	20	SPARE	.
38	10	2	30	GENERATOR HEATER	.
40	.	.	.	.	.
42	10	1	20	GEN BATTERY CHARGER	.

NEC 220 LOAD JUSTIFICATION:
SEE RIGHT SECTION FOR LOAD JUSTIFICATION.

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.
C. PROVIDE LOCK-ON BREAKER. MARK RED COLOR.

NEW PANEL 'A' (RIGHT SECTION)

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 225A MLO
INTERRUPT RATING: 22K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUF: SQ-D,GE,SIEMENS

TWO-SECTION PANELBOARD WITH 42 POLES PER SECTION. PRIVIDE SUB-FEED LUGS AND CABLE CONNECTION TO SECOND SECTION.

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A		PHASE B		PHASE C	
.	REC EXAM 1	20	1	12	43	0.9	1.1				
.	REC EXAM 2	20	1	12	45			0.9	0.4		
.	REC EXAM 3	20	1	12	47					0.9	0.5
.	REC EXAM 4	20	1	12	49	0.9	0.9				
.	REC EXAM 5	20	1	12	51			0.9	0.9		
.	REC EXAM 6	20	1	12	53					0.9	0.9
.	REC EXAM 7	20	1	12	55	0.9	0.1				
.	REC EXAM 8	20	1	12	57			0.0	1.0		
.	SPARE	20	1	.	59					0.0	1.2
.	REC LAB/PHARMACY	20	1	12	61	0.9	0.4				
.	REC LAB/PHARMACY	20	1	12	63			0.9	0.9		
.	REFRIGERATOR LAB	20	1	12	65					1.2	1.4
.	SPARE	20	1	.	67	0.0	0.9				
.	REC LTS SURGERY 1	20	1	12	69			0.6	0.6		
.	REC SURGERY 1	20	1	12	71					0.9	0.8
.	REC LTS SURGERY 2	20	1	12	73	1.4	0.5				
.	REC LTS SURGERY 2	20	1	12	75			1.2	1.4		
.	REC DVM WK STATION	20	1	12	77					0.7	0.5
.	REC ASSOC OFFICE	20	1	12	79	0.5	0.9				
.	REC ASSOC OFFICE	20	1	12	81			0.5	0.0		
.	SPARE	20	1	.	83					0.0	0.0
TOTAL KVA PER PHASE						22.5		25.6		20.4	
DIVERSIFIED KVA PER PHASE						18.2		21.9		18.2	
DIVERSIFIED TOTAL KVA						58.3 KVA					
MAXIMUM AMPS HEAVIEST PHASE (DIVERSIFIED)						182.3 AMPS					

CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
44	12	1	20	PLUGMOLD TREATMENT	A
46	12	1	20	LTS TREATMENT	.
48	12	1	20	REC TREATMENT	.
50	12	1	20	REC TREATMENT	.
52	12	1	20	REC TREATMENT	.
54	12	1	20	REC TREATMENT	.
56	12	1	20	MED GAS ALARM PANEL	.
58	12	1	20	REC LTS DENTAL	.
60	12	1	20	DENTAL X-RAY	.
62	12	1	20	ETO STERILIZER (DENTAL)	.
64	12	1	20	REC P/P/S	.
66	12	1	20	AUTOCLAVE P/P/S	.
68	12	1	20	REC ULTRASOUND	.
70	12	1	20	ULTRASOUND CART	.
72	12	1	20	REC LTS ISOLATION	.
74	12	1	20	REC ISOLATION	.
76	12	1	20	CT MACHINE (PORTABLE)	.
78	12	1	20	REC CT ROOM	.
80	12	1	20	REC ANTE, MORGUE	.
82	.	1	20	SPARE	.
84	.	1	20	SPARE	.

NEC 220 LOAD JUSTIFICATION:

LIGHTING	125%	9.8
HEATING	100%	4.0
AIR HANDLERS	100%	0.0
AIR CONDITIONING	100%	0.0
RECEPTACLES	1st 10kVA = 100% +50% OF REMAINING	22.3
WATER HEATER	100%	0.0
KITCHEN EQUIPMENT	MINUS NEC DEMAND 100%	0.0
PROCESS	100%	7.0
MISCELLANEOUS	100%	15.2

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.
C. PROVIDE LOCK-ON BREAKER. MARK RED COLOR.

NEW PANEL 'B' (LEFT SECTION)

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 225A MLO
INTERRUPT RATING: 10K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUF: SQ-D, GE, SIEMENS

TWO-SECTION PANELBOARD WITH 42 POLES PER SECTION. PRIVIDE SUB-FEED LUGS AND CABLE CONNECTION TO SECOND SECTION.

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A		PHASE B		PHASE C	
.	LTG EXERCISE, RUNS	20	1	12	1	1.3	0.0				
.	LTG BOARDING	20	1	12	3			1.7	0.1		
.	LTG ATRIUM	20	1	12	5					0.2	1.5
.	LTG ATTIC	20	1	12	7	0.8	1.2				
.	SPARE	20	1	.	9			0.0	0.0		
.	SIGN	20	1	12	11					1.2	1.4
.	CONTACTOR/PC	20	1	12	13	0.1	2.9				
.	SPARE	20	1	.	15			0.0	2.9		
.	REC HALL, ATRIUM	20	1	12	17					0.7	1.4
.	REC HALL	20	1	12	19	1.3	2.9				
.	REFRIGERATOR LOUNGE	20	1	12	21			1.2	2.9		
.	MICROWAVE LOUNGE	20	1	12	23					1.4	1.4
.	REC LOUNGE	20	1	12	25	0.7	2.9				
.	REC LOUNGE	20	1	12	27			0.7	2.9		
.	REC LOUNGE	20	1	12	29					0.5	1.4
.	REC CENTRAL STORAGE	20	1	12	31	1.1	2.9				
.	CHEST FREEZER I-131	20	1	12	33			1.5	2.9		
.	REC I-131	20	1	12	35					0.4	0.0
.	OVERHEAD DOOR	20	2	12	37	0.8	0.8				
.	.	.	.	.	39			0.8	0.8		
.	CENTRAL VAC	20	1	12	41					1.9	0.0
TOTAL KVA PER PHASE						19.7		18.4		13.6	

CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
2	.	1	20	SPARE	.
4	12	1	20	SCAVENGER	.
6	12	1	20	CHEST FREEZER MORGUE	.
8	12	1	20	OXY MANIFOLD	.
10	.	1	20	SPARE	.
12	12	1	20	WASHER LAUNDRY	.
14	10	2	30	DRYER LAUNDRY	.
16	.	.	.	.	.
18	12	1	20	WASHER LAUNDRY	.
20	10	2	30	DRYER LAUNDRY	.
22	.	.	.	.	.
24	12	1	20	WASHER LAUNDRY	.
26	10	2	30	DRYER LAUNDRY	.
28	.	.	.	.	.
30	12	1	20	WASHER LAUNDRY	.
32	10	2	30	DRYER LAUNDRY	.
34	.	.	.	.	.
36	.	1	20	SPARE	.
38	12	2	20	OVERHEAD DOOR	.
40	.	.	.	.	.
42	.	1	20	SPARE	.

NEC 220 LOAD JUSTIFICATION:
SEE RIGHT SECTION FOR LOAD JUSTIFICATION.

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.

NEW PANEL 'B' (RIGHT SECTION)

SUPPLY: 208/120V, 3-PHASE, 4 WIRE
MAINS: 225A MLO
INTERRUPT RATING: 10K AIC
MOUNTING: RECESSED

TYPE: BRANCH CIRCUIT
BUS MATERIAL: COPPER
MANUF: SQ-D, GE, SIEMENS

TWO-SECTION PANELBOARD WITH 42 POLES PER SECTION. PRIVIDE SUB-FEED LUGS AND CABLE CONNECTION TO SECOND SECTION.

NOTE	DESCRIPTION	TRIP	POLE	WIRE	CCT	PHASE LOAD SUMMARY A		PHASE B		PHASE C	
.	REC ATTIC	20	1	12	43	0.5	0.1				
.	REC OFFICE	20	1	12	45			0.5	0.7		
.	REC LUXURY RUNS	20	1	12	47					0.7	0.5
.	REC LUXURY RUNS	20	1	12	49	0.7	0.4				
.	REC CANINE BOARDING	20	1	12	51			0.7	0.7		
.	REC BATHE/DRY	20	1	12	53					0.2	0.9
.	REC BATHE/DRY	20	1	12	55	0.2	0.5				
.	REC BATHE/DRY	20	1	12	57			0.2	1.2		
.	REC BATHE/DRY	20	1	12	59					0.2	0.9
.	SPARE	20	1	.	61	0.0	0.0				
.	SPARE	20	1	.	63			0.0	0.0		
.	SPARE	20	1	.	65					0.0	0.0
.	SPACE WITH BUSSING	.	1	.	67	0.0	0.0				
.	SPACE WITH BUSSING	.	1	.	69			0.0	0.0		
.	SPACE WITH BUSSING	.	1	.	71					0.0	0.0
.	SPACE WITH BUSSING	.	1	.	73	0.0	0.0				
.	SPACE WITH BUSSING	.	1	.	75			0.0	0.0		
.	SPACE WITH BUSSING	.	1	.	77					0.0	0.0
.	SPACE WITH BUSSING	.	1	.	79	0.0	0.0				
.	SPACE WITH BUSSING	.	1	.	81			0.0	0.0		
.	SPACE WITH BUSSING	.	1	.	83					0.0	0.0
TOTAL KVA PER PHASE						22.1		22.5		17.0	
DIVERSIFIED KVA PER PHASE						21.8		22.4		16.6	
DIVERSIFIED TOTAL KVA						60.9 KVA					
MAXIMUM AMPS HEAVIEST PHASE (DIVERSIFIED)						186.6 AMPS					

CCT	WIRE	POLE	TRIP	DESCRIPTION	NOTE
44	12	1	20	MED GAS ALARM PANEL	.
46	12	1	20	REC RESTROOMS	.
48	12	1	20	REC BOARDING ADMIN	.
50	12	1	20	REC BOARDING RECEPTION	.
52	12	1	20	REC BOARDING WAITING	.
54	12	1	20	REC GROOMING	.
56	12	1	20	REC FOOD PREP	.
58	12	1	20	REFRIG FOOD PREP	.
60	12	1	20	REC INDOOR EXERCISE	.
62	.	1	20	SPARE	.
64	.	1	20	SPARE	.
66	.	1	20	SPARE	.
68	.	1	.	SPACE WITH BUSSING	.
70	.	1	.	SPACE WITH BUSSING	.
72	.	1	.	SPACE WITH BUSSING	.
74	.	1	.	SPACE WITH BUSSING	.
76	.	1	.	SPACE WITH BUSSING	.
78	.	1	.	SPACE WITH BUSSING	.
80	.	1	.	SPACE WITH BUSSING	.
82	.	1	.	SPACE WITH BUSSING	.
84	.	1	.	SPACE WITH BUSSING	.

NEC 220 LOAD JUSTIFICATION:

LIGHTING	125%	6.5
HEATING	100%	0.0
AIR HANDLERS	100%	0.0
AIR CONDITIONING	100%	0.0
RECEPTACLES	1st 10kVA = 100% +50% OF REMAINING	12.0
WATER HEATER	100%	0.0
KITCHEN EQUIPMENT	MINUS NEC DEMAND 100%	0.0
PROCESS	100%	1.2
MISCELLANEOUS	100%	41.2

REQUIREMENTS:
1. WITH EQUIPMENT GROUND BUS
2. PROVIDE A TYPEWRITTEN DIRECTORY.

PANEL KEY NOTES:
A. PROVIDE A GFCI BREAKER.

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Brian Watson, DVM

PANEL SCHEDULES

REV.#	DATE	COMMENTS
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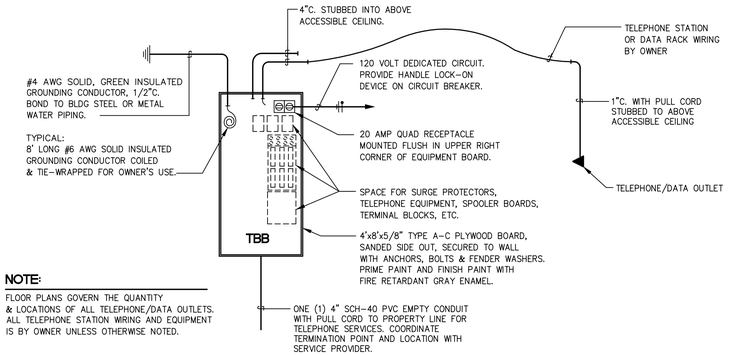
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12 OF 16

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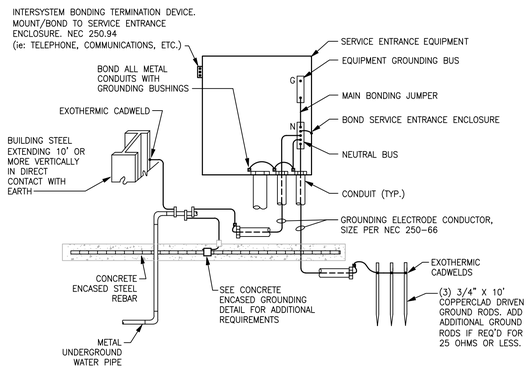


NOTE:

FLOOR PLANS GOVERN THE QUANTITY & LOCATIONS OF ALL TELEPHONE/DATA OUTLETS. ALL TELEPHONE STATION WIRING AND EQUIPMENT IS BY OWNER UNLESS OTHERWISE NOTED.

5 TELEPHONE TERMINAL BOARD DIAGRAM

DIAGRAMMATIC

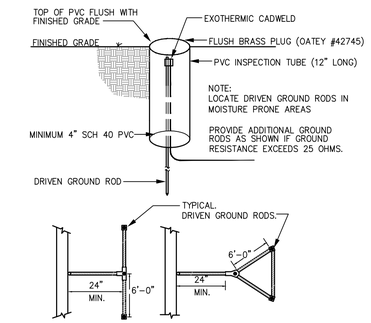


NOTES:

1. GROUNDING ELECTRODE CONDUCTOR SHALL BE ENCLOSED FULL LENGTH BY CONDUIT (RMC OR EMT).
2. GROUNDING ELECTRODE CONDUCTOR SHALL BE CONTINUOUS (UNBROKEN) FROM THE NEUTRAL BUS TO THE GROUNDING ELECTRODE. SPLICES AND/OR JOINTS ARE PROHIBITED. EXCEPTIONS AS ALLOWED PER NEC 250.64(C) IRREVERSIBLE COMPRESSION TYPE CONNECTORS OR BY EXOTHERMIC WELDING WILL BE ACCEPTABLE FOR REMODEL WORK ONLY.
3. GROUNDING ELECTRODE CONDUCTORS SHALL BE COPPER.
4. CONNECTION TO THE METAL COLD WATER PIPE SHALL BE MADE WITHIN 5' OF THE POINT OF ENTRANCE INTO THE BUILDING.
5. GROUNDING ELECTRODE CONDUCTORS AND BONDING JUMPER CONNECTIONS TO BUILDING STEEL, CONCRETE ENCASED STEEL REBAR, AND DRIVEN GROUND RODS SHALL BE CONNECTED BY EXOTHERMIC CADWELDS.
6. ALL GROUNDING BUSHINGS, CLAMPS, JUMPERS, FASTENERS, ETC. SHALL BE APPROVED AND LISTED FOR THE PURPOSE.

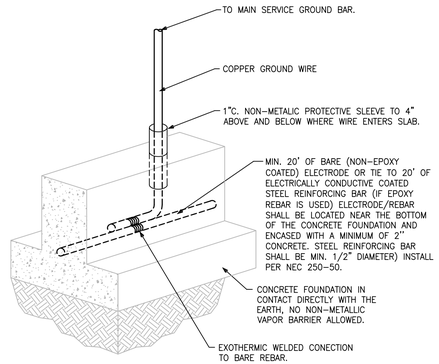
2 SERVICE GROUND DETAIL

NOT TO SCALE



4 DRIVEN GROUND DETAIL

NOT TO SCALE

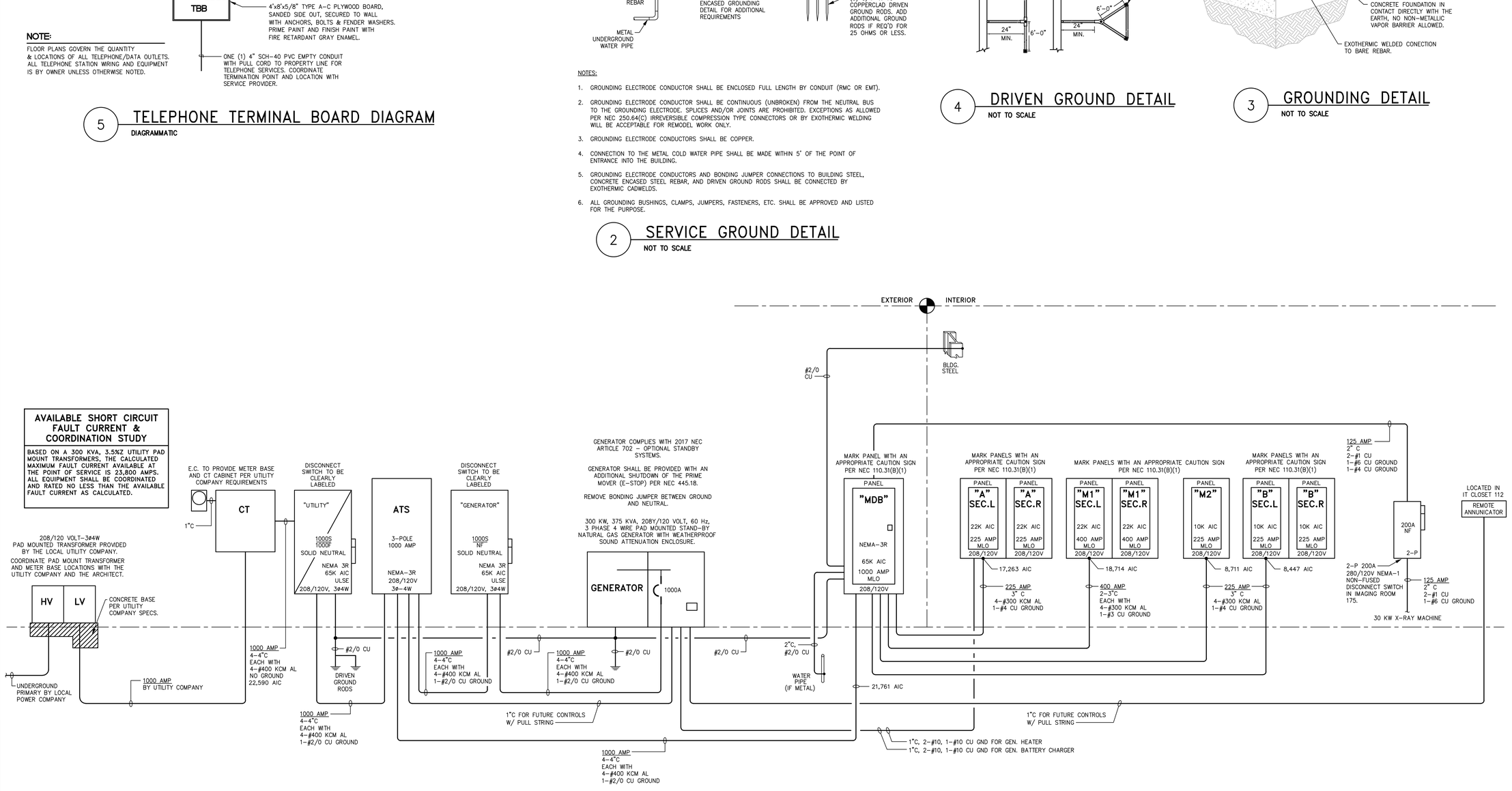


3 GROUNDING DETAIL

NOT TO SCALE

AVAILABLE SHORT CIRCUIT FAULT CURRENT & COORDINATION STUDY

BASED ON A 300 KVA, 3.5%Z UTILITY PAD MOUNT TRANSFORMERS, THE CALCULATED MAXIMUM FAULT CURRENT AVAILABLE AT THE POINT OF SERVICE IS 23,800 AMPS. ALL EQUIPMENT SHALL BE COORDINATED AND RATED NO LESS THAN THE AVAILABLE FAULT CURRENT AS CALCULATED.



1 POWER RISER DIAGRAM

DIAGRAMMATIC

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POWER RISER DIAGRAM

REV #	DATE	COMMENTS
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REVIEWS

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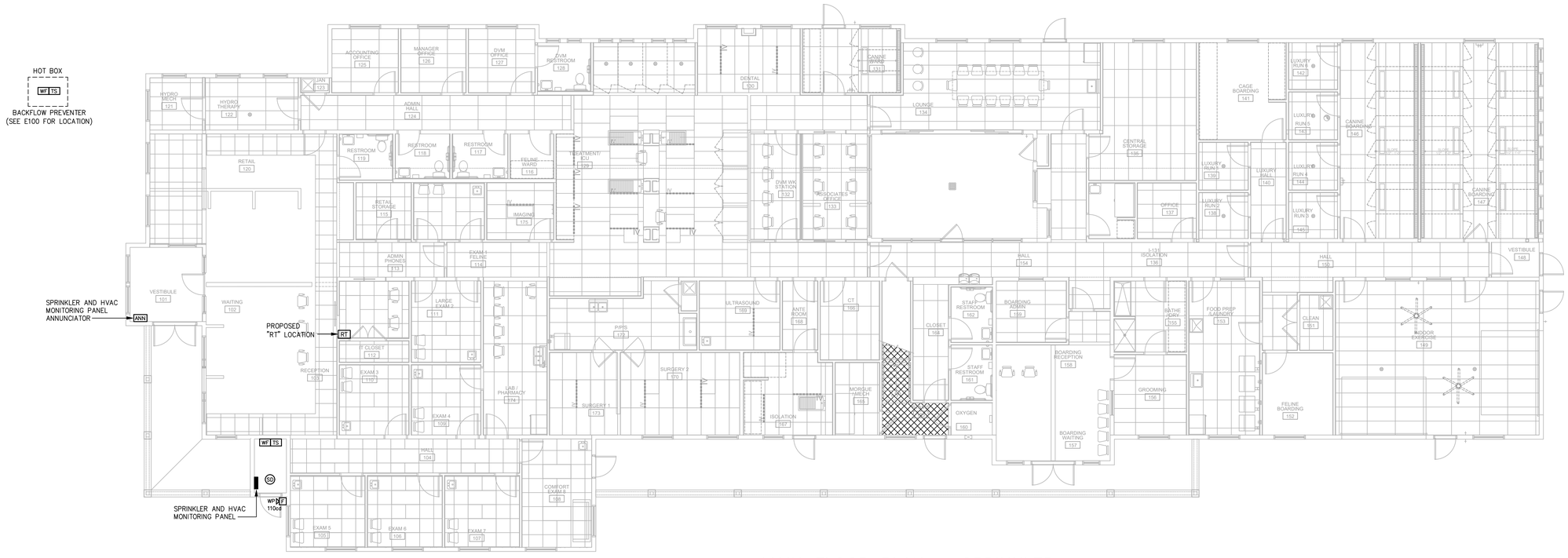
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13 OF 16

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SYMBOL SCHEDULE

▬	SPRINKLER AND HVAC MONITORING PANEL.
ANN	REMOTE ANNUNCIATOR 66" AFF TO MIDDLE OF DEVICE.
SD	PHOTO-ELECTRIC TYPE SMOKE DETECTOR.
F	AUDIBLE & VISUAL SIGNAL STROBE LIGHT MOUNTED @ 80" AFF. OR 6" BELOW CEILING WHICHEVER IS LOWER.
RT	REMOTE INDICATOR STATION.
WF	WATER FLOW SWITCH CONNECTED TO SPRINKLER PIPING.
TS	TAMPER SWITCH CONNECTED TO SPRINKLER VALVE.



1 MAIN FLOOR PLAN – SPRINKLER AND HVAC MONITORING SYSTEM

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

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MAIN FLOOR PLAN - SPRINKLER AND HVAC MONITORING SYSTEM

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REVIEWS

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14 OF 16

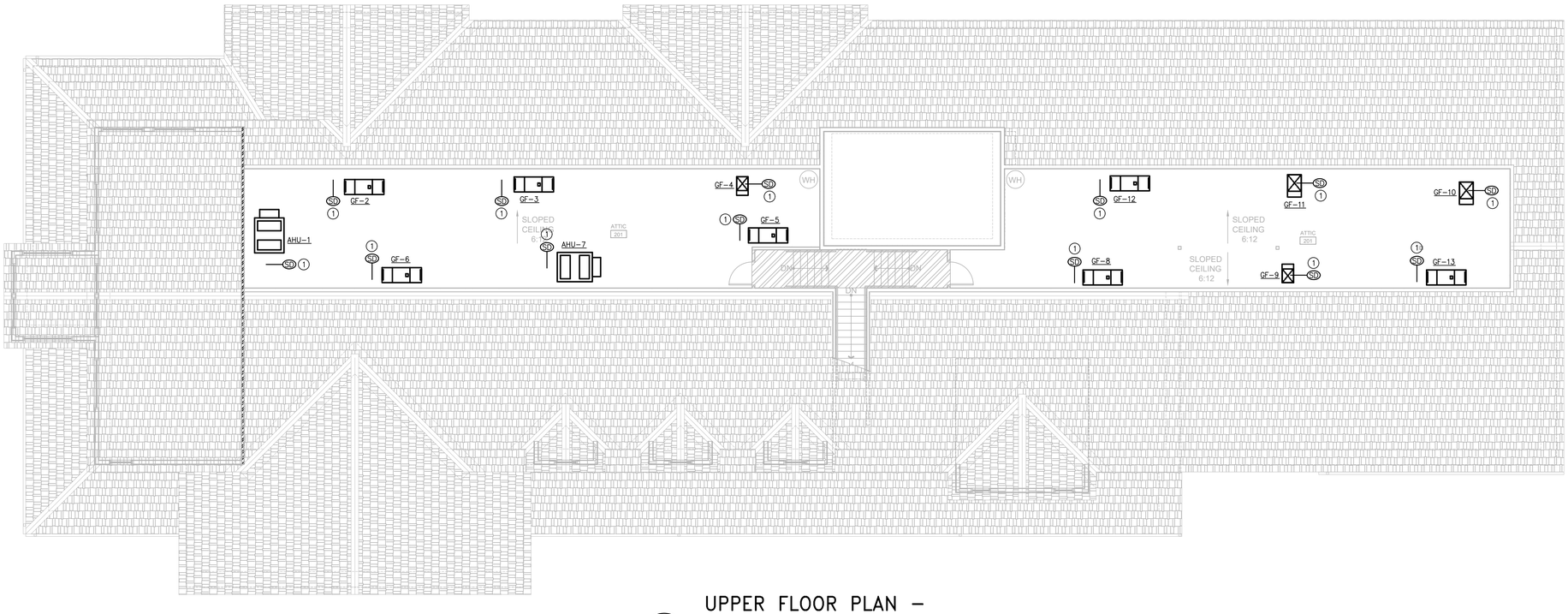
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SYMBOL SCHEDULE

SD	DUCT MOUNT SMOKE DETECTOR WITH RELAY BASE IN AIR DUCT.

DRAWING KEYNOTES

1. DUCT MOUNTED SMOKE DETECTOR(S) PROVIDED AND INSTALLED IN THE DUCT BY MECHANICAL CONTRACTOR. THE SMOKE DETECTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR TO HVAC MONITORING PANEL (PANEL PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR).



1 UPPER FLOOR PLAN – HVAC MONITORING SYSTEM

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

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UPPER FLOOR PLAN - HVAC MONITORING SYSTEM

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REVIEWS

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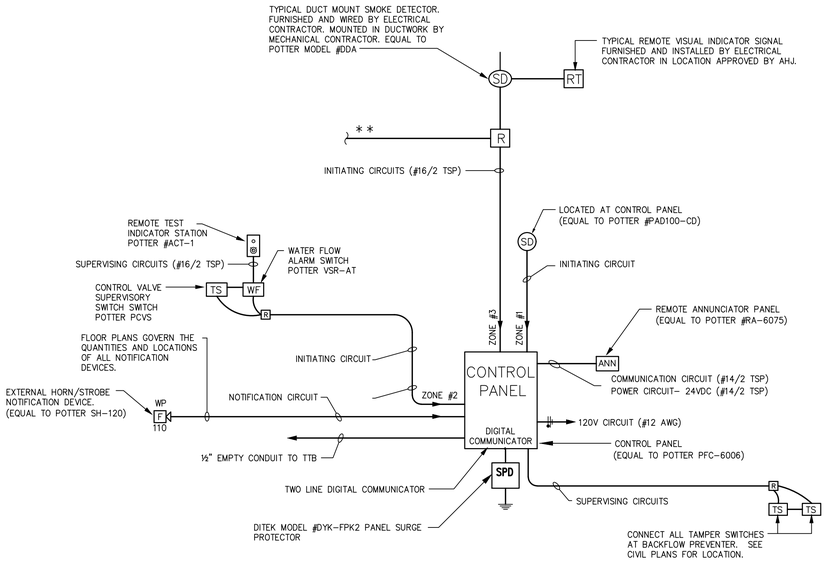
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15 OF 16

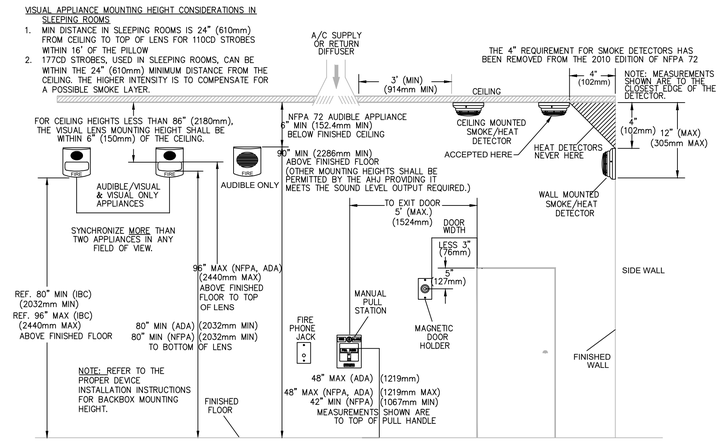
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1 FIRE SPRINKLER & HVAC MONITORING SYSTEM RISER

DIAGRAMMATIC

** FLOOR PLAN GOVERNS THE QUANTITY AND LOCATIONS OF ALL INITIATION AND NOTIFICATION DEVICES.



2 DEVICE MOUNTING HEIGHT DETAIL (NFPA 72)

DIAGRAMMATIC

SYMBOL SCHEDULE

▬	SPRINKLER AND HVAC MONITORING PANEL.
ANN	REMOTE ANNUNCIATOR 66" AFF TO MIDDLE OF DEVICE.
SD	PHOTO-ELECTRIC TYPE SMOKE DETECTOR.
SD	DUCT MOUNT SMOKE DETECTOR WITH RELAY BASE IN AIR DUCT.
F	AUDIBLE & VISUAL SIGNAL STROBE LIGHT MOUNTED @ 80" AFF. OR 6" BELOW CEILING WHICHEVER IS LOWER.
R	ADDRESSABLE CONTROL MODULE.
RT	REMOTE INDICATOR MODULE
WF	WATER FLOW SWITCH CONNECTED TO SPRINKLER PIPING.
TS	TAMPER SWITCH CONNECTED TO SPRINKLER VALVE.

FIRE ALARM SYSTEM MATRIX

BUILDING SYSTEM OUTPUTS | CENTRAL COMM

EVACUATION TONE SHALL BE THREE PULSE TEMPORAL PATTERN.

	ACTUATE COMMON ALARM SIGNAL INDICATOR	ACTUATE AUDIBLE ALARM SIGNAL	ACTUATE COMMON SUPERVISORY SIGNAL INDICATOR	ACTUATE AUDIBLE SUPERVISORY SIGNAL	ACTUATE COMMON TROUBLE SIGNAL INDICATOR	ACTUATE AUDIBLE TROUBLE SIGNAL	ACTUATE GENERAL EVACUATION SIGNAL	DISPLAY CHANGE OF STATUS	ACTIVATE EXTERNAL HORN STROBE	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL COMM	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL COMM	TRANSMIT TROUBLE SIGNAL TO CENTRAL COMM	RELEASE MAGNETIC DOOR HOLD OPEN DEVICES	UNLOCK EXIT DOORS	SHUT DOWN RESPECTIVE HVAC	SHOW CHANGE OF STATUS ON ANNUNCIATOR	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	TRANSMIT TROUBLE SIGNAL TO CENTRAL STATION
MANUAL FIRE ALARM PULL BOXES	X	X					X	X	X			X			X		X	X	X		
BUILDING SMOKE DETECTOR	X	X					X	X	X	X			X			X		X	X	X		
SPRINKLER WATER FLOW	X	X					X	X	X	X			X			X		X	X	X		
SPRINKLER TAMPER SWITCH			X	X				X			X							X	X		X	
FIRE ALARM AC POWER FAILURE					X	X		X				X						X	X			X
FIRE ALARM SYSTEM LOW BATTERY					X	X		X				X						X	X			X
OPEN CIRCUIT					X	X		X				X						X	X			X
GROUND FAULT					X	X		X				X						X	X			X
NOTIFICATION APPLIANCE CIRCUIT SHORT					X	X		X				X						X	X			X
DUCT DETECTORS			X	X				X			X					X	X	X		X		

SPRINKLER & HVAC MONITORING SYSTEM SPECIFICATIONS

1. FURNISH AND INSTALL A SUPERVISED, LOW VOLTAGE, HVAC MONITORING SYSTEM. THE SYSTEM SHALL INCLUDE, BUT NOT BE LIMITED TO, CONTROL PANEL WITH ALL REQUIRED COMPONENTS, POWER SUPPLIES, STANDBY BATTERY SYSTEM, INTEGRAL ALARM, CONDUIT, OUTLETS AND WIRE, END-OF-LINE DEVICES, POWER CIRCUIT, 120 VOLT POWER CIRCUIT, ACCESS TO TELEPHONE EQUIPMENT, AUTOMATIC DIALER, ETC.
2. ALL COMPONENTS SHALL BE U.L. LISTED AND COMPLY WITH NFPA 72. WIRING SHALL COMPLY WITH NEC ARTICLE 760.
3. CATALOG NUMBERS GIVEN ARE THOSE OF POTTER AND DENOTE THE MINIMUM QUALITY AND PERFORMANCE REQUIRED. EQUAL EQUIPMENT BY FCI, SIMPLEX, ADT, AUTOCALL, GAMEWELL, PYROTRONICS OR OTHER APPROVED MANUFACTURER WILL BE ACCEPTABLE.
4. WIRING SHALL BE CLASS-B, COPPER SINGLE STRANDED CONDUCTORS, #16AWG, COLOR CODED AS REQUIRED BY EQUIPMENT SUPPLIER. SYSTEM SHALL HAVE NO MORE THAN 50 ADDRESSABLE DEVICES ON EACH INITIATING CIRCUIT. CONDUCTORS SHALL BE RUN IN EMT CONDUIT, ½" MINIMUM SIZE. RUN INITIATING AND NOTIFICATION DEVICES WITH #16-2TSP AND POWER WITH #12 AWG. AT THE CONTRACTORS OPTION, FIRE RETARDANT (2-HR CI RATED) AND LOW SMOKE PRODUCING FIRE ALARM CABLE UL LISTED FOR THE PURPOSE MAY BE USED WITHOUT CONDUIT, PROVIDING ALL CABLES ARE RUN CONCEALED FROM VIEW IN WALLS OR ABOVE CEILINGS. EACH AND ALL ITEMS OF THE MONITORING SYSTEM SHALL BE LISTED AS A PRODUCT OF A SINGLE MANUFACTURER UNDER THE APPROPRIATE CATEGORY BY "UL". ALL DEVICES BY ANOTHER MANUFACTURER SHALL NOT BE ACCEPTABLE. THE ENTIRE SYSTEM SHALL BE INSTALLED BY A CURRENTLY LICENSED CONTRACTOR TRAINED & CERTIFIED BY THE MANUFACTURER. INSTALLER SHALL BE A NICET-CERTIFIED TECHNICIAN LEVEL IV MINIMUM.
5. THE CONTROL PANEL SHALL BE SEMI-FLUSH MOUNTED. THE PANEL SHALL BE COMPLETE WITH POWER SUPPLY MODULES, MASTER PANEL CONTROLS, SIGNAL CIRCUIT MODULES FOR AUDIBLE/VISUAL DEVICES, ALARM RECEIVING MODULES, SMOKE DETECTOR ALARM RECEIVING/POWER MODULES, REMOTE STATION MONITOR MODULE CAPABLE, 24 HOUR STANDBY BATTERY WITH INTERFACE MODULE AND CHARGER MODULE, AUXILIARY MODULES, TROUBLE MODULES, ALL REQUIRED TERMINAL STRIPS AND BLOCKS AND ACCESSORY RELAYS, AND ALL OTHER NECESSARY FEATURES FOR A COMPLETE SYSTEM. PROVIDE TRANSIENT SUPPRESSION WIRED IN SERIES TO THE POWER SUPPLY AND MUNICIPAL CONNECTION CIRCUITS. THE SPD SHALL HAVE A MINIMUM PEAK SURGE CURRENT OF 54,000 AMPS AND A RESPONSE TIME OF 5 NANOSECONDS.
6. THE REMOTE ANNUNCIATOR SHALL DUPLICATE FUNCTIONS OF THE CONTROL PANEL FOR ALARM, SUPERVISORY, AND TROUBLE INDICATIONS. ALSO DUPLICATE MANUAL SWITCHING FUNCTIONS OF THE CONTROL PANEL, INCLUDING ACKNOWLEDGING, SILENCING, RESETTING AND TESTING. ALPHANUMERIC DISPLAY SHALL BE THE SAME AS THE CONTROL PANEL. CABINET SHALL BE FLUSH MOUNTED IN WALL AND LOCATED AT A CONSTANTLY ATTENDED LOCATION APPROVED BY THE FIRE MARSHAL.
7. THE SYSTEM SHALL BE FULLY SUPERVISED SUCH THAT CIRCUIT OPENS OR GROUNDS, POWER FAILURES, OR DISARRANGEMENT OF SYSTEM COMPONENTS AND WIRING SHALL BE INDICATED AT THE CONTROL PANEL.
8. THE SYSTEM SHALL HAVE PROVISIONS FOR CENTRAL STATION MONITORING VIA A DIGITAL COMMUNICATOR. CENTRAL STATION MONITORING SHALL BE DONE BY A U.L. LISTED STATION.
9. THE SYSTEM SHALL BE PROVIDED WITH SUFFICIENT BATTERY TO OPERATE THE ENTIRE SYSTEM UPON LOSS OF NORMAL 120 VAC POWER IN A NORMAL SUPERVISORY MODE FOR A PERIOD OF TWENTY-FOUR (24) HOURS WITH FIVE (5) MINUTES OF ALARM INDICATION AT THE END OF THIS PERIOD OR AS REQUIRED.
10. AREA SMOKE DETECTOR SHALL BE REQUIRED BY THE APPLICATION FOR DETECTION. DETECTOR SHALL INCLUDE DRY CONTACTS WHERE REQUIRED FOR CONTROL FUNCTIONS. DETECTORS SHALL BE PHOTOELECTRIC TYPE.
11. DUCT MOUNT SMOKE DETECTORS SHALL BE PHOTOELECTRIC TYPE WITH APPROPRIATE SAMPLING TUBE, REMOTE MONITOR STATION, AND DRY CONTACTS FOR AHU SHUT-DOWN, (ADDITIONAL CONTACTS FOR AHU SHUT-DOWN WHERE MULTIPLE UNITS ARE SERVICING A COMMON AREA), SELF-RESTORING, WHITE COLOR. AIR DUCT HOUSING WITH SAMPLING TUBE RUN ENTIRE WIDTH OF DUCT. DETECTORS TO BE SUPPLIED BY THE ELECTRICAL CONTRACTOR, INSTALLED IN THE DUCT WORK BY THE MECHANICAL CONTRACTOR, AND WIRED BY THE ELECTRICAL CONTRACTOR.
12. FLOW AND TAMPER SWITCHES TO BE SUPPLIED AND INSTALLED IN THE PIPING BY THE PLUMBING CONTRACTOR, AND WIRED BY THE ELECTRICAL CONTRACTOR.
13. THE COMPLETED SYSTEM SHALL BE FULLY TESTED BY THE CONTRACTOR AND THE MANUFACTURER'S CERTIFIED TECHNICAL REPRESENTATIVE IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE.
14. PROVIDE 12 MONTH GUARANTEE ON ALL WORKMANSHIP AND MATERIALS EFFECTIVE THE DATE OF BENEFICIAL USE.
15. THE SYSTEM SHALL OPERATE ON 120 VOLT POWER. FAILURE TO THE NORMAL POWER SOURCE SHALL AUTOMATICALLY TRANSFER TO THE STANDBY BATTERY.
16. SYSTEM OPERATION:
    A) ACTIVATION OF A WATER FLOW DEVICE SHALL OPERATE AUDIBLE HORN AND VISUAL SIGNAL IN CONTROL PANEL AND INDICATE WHERE THE SIGNAL ORIGINATED. IT SHALL TRANSMIT AN ALARM SIGNAL TO AN OFF PREMISE SECURITY MONITORING COMPANY (APPROVED SUPERVISING STATION).
    B) ACTIVATION OF A DUCT MOUNTED SMOKE DETECTOR SHALL OPERATE AUDIBLE HORN AND VISUAL SIGNAL IN CONTROL PANEL AND INDICATE WHERE THE SIGNAL ORIGINATED. CONTROL PANEL SHALL TRANSMIT A SUPERVISORY SIGNAL TO THE OFF PREMISE SECURITY MONITORING COMPANY.
    C)ALL AUDIBLE SIGNAL DEVICES SHALL SOUND CONTINUOUSLY UNTIL ACKNOWLEDGED AND VISUAL SIGNALS SHALL ILLUMINATE UNTIL RESET.
17. THE SYSTEM SHALL BE FULLY SUPERVISED SUCH THAT ANY CIRCUIT OPENS OR GROUNDS, POWER FAILURES, OR DISARRANGEMENT OF SYSTEM COMPONENTS OR WIRING SHALL BE INDICATED AT THE CONTROL PANEL.
18. THE SYSTEM SHALL HAVE MONITORING VIA A DIGITAL COMMUNICATOR.

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SPRINKLER AND HVAC MONIT. SYSTEM RISER AND NOTES

REV #	DATE	COMMENTS
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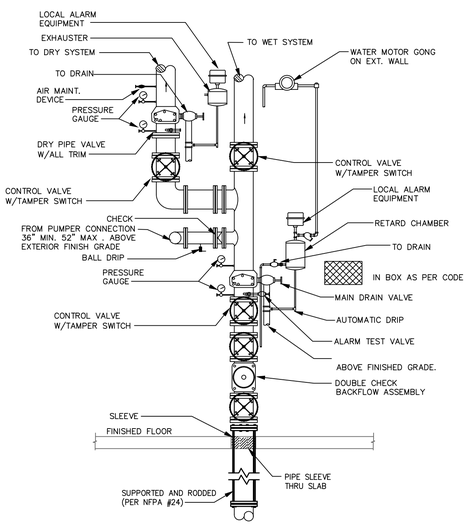
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PROJECT NO.: 22018
DRAWN: ZLT
DATE: 07/18/22

FA103

16 OF 16

Save Date: July 18, 2022 - 10:00 AM - ZR
Plot Date: July 18, 2022 - 10:02 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018FA103_SPRINKLER AND HVAC MONITORING SYSTEM RISER AND NOTES.dwg



2 WET/DRY RISER DETAIL

NOT TO SCALE

GENERAL NOTES

A. ALL PIPING IN EXPOSED AREAS TO BE RUN TIGHT TO THE ROOF DECK & RUN THROUGH JOIST WEBBING.

B. ALL ABOVE CEILING PIPING TO BE COORDINATED WITH OTHER TRADES TO PROVIDE FOR THE REQUIRED CLEARANCES.

DRAWING KEYNOTES

1. COORDINATE EXACT LOCATION OF UPRIGHT HEADS IN STORAGE WITH SHELVING TO AVOID CONFLICTS. MAINTAIN 18" CLEAR DISTANCE BETWEEN HEADS AND SHELVES.
2. NO SPRINKLER MAIN OR BRANCH PIPING INSIDE OR OVER IDF, MDF OR COMPUTER ROOMS. PROVIDE CAGES OVER SPRINKLER HEADS.
3. PROVIDE FIRE PROTECTION IN STAIRWELLS PER NFPA 13.

DEFERRED SUBMITTAL NOTE

FIRE PROTECTION SYSTEM IS A DEFERRED SUBMITTAL. ALL INFORMATION SHOWN IS FOR REFERENCE ONLY. FIRE PROTECTION CONTRACTOR TO PROVIDE A COMPLETE FIRE PROTECTION SYSTEM, INCLUDING SHOP DRAWINGS, HYDRAULIC CALCULATIONS, DEVICES LAYOUT, SPRINKLER HEAD LOCATIONS, RISER(S), BACKFLOW PREVENTER, FITTINGS, VALVES, SIESMIC BRACING, ETC. AND SUBMIT TO FIRE MARSHAL OR AHJ FOR REVIEW AND APPROVAL AS REQUIRED.

DESIGN CRITERIA

OFFICES, PUBLIC SPACES

OCCUPANCY CLASSIFICATION – LIGHT HAZARD
DENSITY – .10 GPM/1500 SQ.FT.
SYSTEM – WET PIPE

MATERIALS, VALVES, HANGERS SHALL BE PER NFPA 13, 24 AND 25.

MAXIMUM HEAD COVERAGE 168 SQ.FT.
DESIGN SHALL BE PER NFPA 13, 24 AND 25.

COMMON AREAS INCLUDE: CORRIDORS, OFFICES, PLAY ROOMS, RESTROOMS, EAVES AND OVERHANGS WITH COMBUSTIBLE CONSTRUCTION.

O2 CLOSET

OCCUPANCY CLASSIFICATION – EXTRA HAZARD GROUP 1
DENSITY – .3 GPM/2500 SQ.FT.
SYSTEM – WET PIPE

MATERIALS, VALVES, HANGERS SHALL BE PER NFPA 13.

COVERED EXTERIOR SPACES

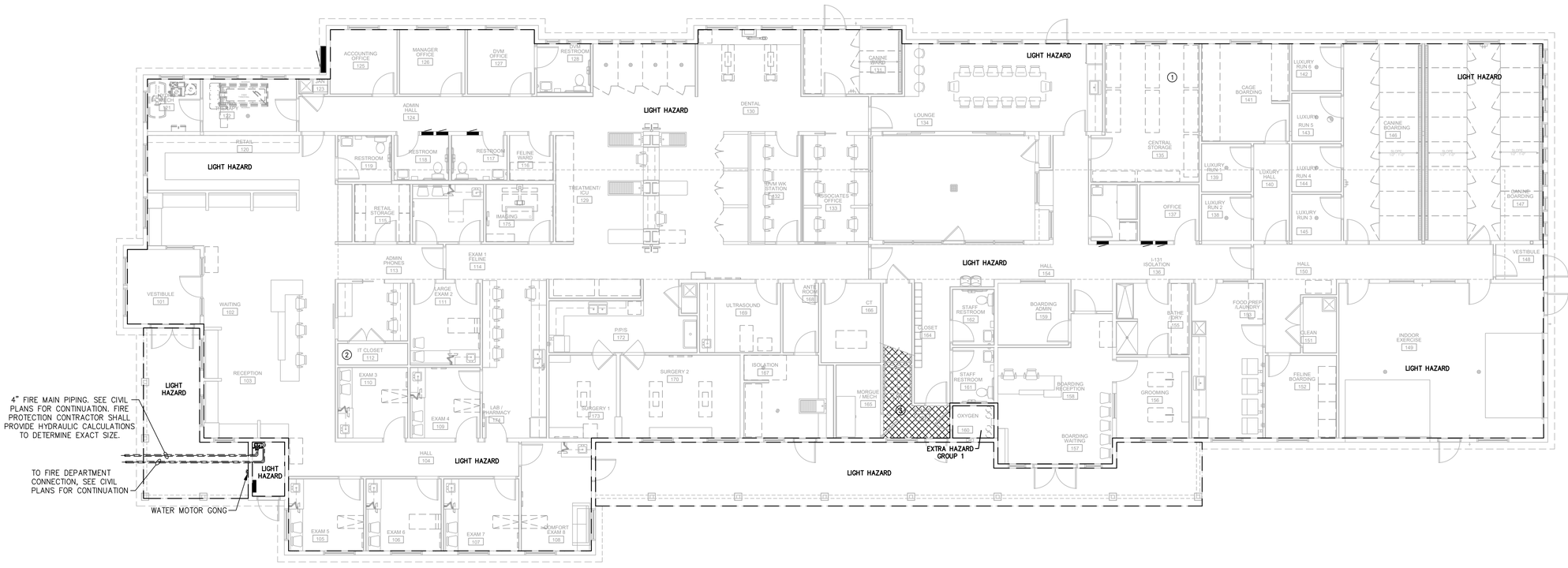
OCCUPANCY CLASSIFICATION – ORDINARY HAZARD GROUP 1
DENSITY – .15 GPM/1950 SQ.FT.
SYSTEM – DRY PIPE

MATERIALS, VALVES, HANGERS SHALL BE PER NFPA 13.

MAXIMUM HEAD COVERAGE 130 SQ.FT. (STD. HEADS)
DESIGN SHALL BE PER NFPA 13, 24 AND 25.

FIRE PROTECTION NOTES

1. FIRE PROTECTION CONTRACTOR SHALL COORDINATE WORK PRIOR TO INSTALLATION WITH MECHANICAL, ELECTRICAL, STRUCTURAL, PLUMBING & ARCHITECTURAL SYSTEMS TO AVOID CONFLICTS.
2. FIRE PROTECTION CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL FIRE RATINGS WHERE PIPES PENETRATE FIRE RATED ASSEMBLIES. FIRE SAFING MATERIAL SHALL BE UL LISTED.
3. SUBMIT FIRE PROTECTION SHOP DRAWINGS TO LOCAL FIRE MARSHALL AND OWNER'S INSURANCE UNDERWRITER FOR APPROVAL.
4. ALL SPRINKLER PIPING INSTALLATION SHALL CONFORM TO NFPA 13, NFPA 24 AND NFPA 25. MOST CURRENT EDITIONS SHALL APPLY.
5. ALL SPRINKLER HEADS SHALL BE CENTERED IN CEILING TILE WHERE APPLICABLE.
6. FIRE PROTECTION CONTRACTOR SHALL PROVIDE HEADS BELOW OBSTRUCTIONS 48" AND WIDER PER. NFPA 13. MOST CURRENT EDITION SHALL APPLY.
7. FIRE PROTECTION CONTRACTOR SHALL COORDINATE HEAD LOCATIONS AND ELEVATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN.
8. THE INSTALLED SPRINKLER SYSTEM SHALL BE TESTED IN ACCORDANCE TO NFPA-25, INSPECTION, TESTING AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEM.
9. FIRE PROTECTION CONTRACTOR SHALL ROUTE ALL EXPOSED PIPING PERPENDICULAR AND PARALLEL TO STRUCTURE. ALL WORKMANSHIP SHALL BE NEAT AND CLEAN IN APPEARANCE.
10. PIPE MATERIALS, HANGERS, ETC. SHALL BE IN ACCORDANCE TO NFPA 13, NFPA 24 AND NFPA 25. MOST CURRENT EDITIONS SHALL APPLY.
11. FIRE PROTECTION CONTRACTOR SHALL REFER TO FIRE PROTECTION SPECIFICATIONS, WET-PIPE FIRE SUPPRESSION SPRINKLERS, FOR ADDITIONAL INFORMATION.
12. SEE ELECTRICAL DRAWINGS & FIRE ALARM RISER DETAIL FOR ADDITIONAL INFORMATION RELATING TO SYSTEM ACTIVATION, CONTROLS, INTERLOCKS, FIRE ALARM STROBES, ALARMS, ETC.
13. SEE CIVIL SITE UTILITY DRAWINGS FOR PIPE ROUTING AND CONNECTION TO CITY UTILITIES, BACKFLOW PREVENTION, ETC. THIS DRAWING IS FOR INFORMATIONAL PURPOSES ONLY.



1 MAIN LEVEL PLAN – FIRE SPRINKLER

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

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Brian Watson, DVM

MAIN FLOOR PLAN - FIRE SPRINKLER

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REVIEWS

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PROJECT NO.: 22018
DRAWN: CLS
DATE: 07/18/22

FS101

1 OF 2

Save Date: July 14, 2022 - 6:08 PM, Cheveel
Plot Date: July 14, 2022 - 6:17 PM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018FS101 MAIN LEVEL PLAN - FIRE SPRINKLER.dwg

GENERAL NOTES

A. ALL PIPING IN EXPOSED AREAS TO BE RUN TIGHT TO THE ROOF DECK & RUN THROUGH JOIST WEBBING.

B. ALL ABOVE CEILING PIPING TO BE COORDINATED WITH OTHER TRADES TO PROVIDE FOR THE REQUIRED CLEARANCES.

DRAWING KEYNOTES

1. COORDINATE EXACT LOCATION OF UPRIGHT HEADS IN STORAGE WITH SHELVING TO AVOID CONFLICTS. MAINTAIN 18" CLEAR DISTANCE BETWEEN HEADS AND SHELVES.
2. NO SPRINKLER MAIN OR BRANCH PIPING INSIDE OR OVER IDF, MDF OR COMPUTER ROOMS. PROVIDE CAGES OVER SPRINKLER HEADS.
3. PROVIDE FIRE PROTECTION IN STAIRWELLS PER NFPA 13.

DEFERRED SUBMITTAL NOTE

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DESIGN CRITERIA

OFFICES, PUBLIC SPACES

OCCUPANCY CLASSIFICATION – LIGHT HAZARD
DENSITY – .10 GPM/1500 SQ.FT.
SYSTEM – WET PIPE

MATERIALS, VALVES, HANGERS SHALL BE PER NFPA 13, 24 AND 25.

MAXIMUM HEAD COVERAGE 168 SQ.FT.
DESIGN SHALL BE PER NFPA 13, 24 AND 25.

COMMON AREAS INCLUDE: CORRIDORS, OFFICES, PLAY ROOMS, RESTROOMS, EAVES AND OVERHANGS WITH COMBUSTIBLE CONSTRUCTION.

COVERED EXTERIOR SPACES

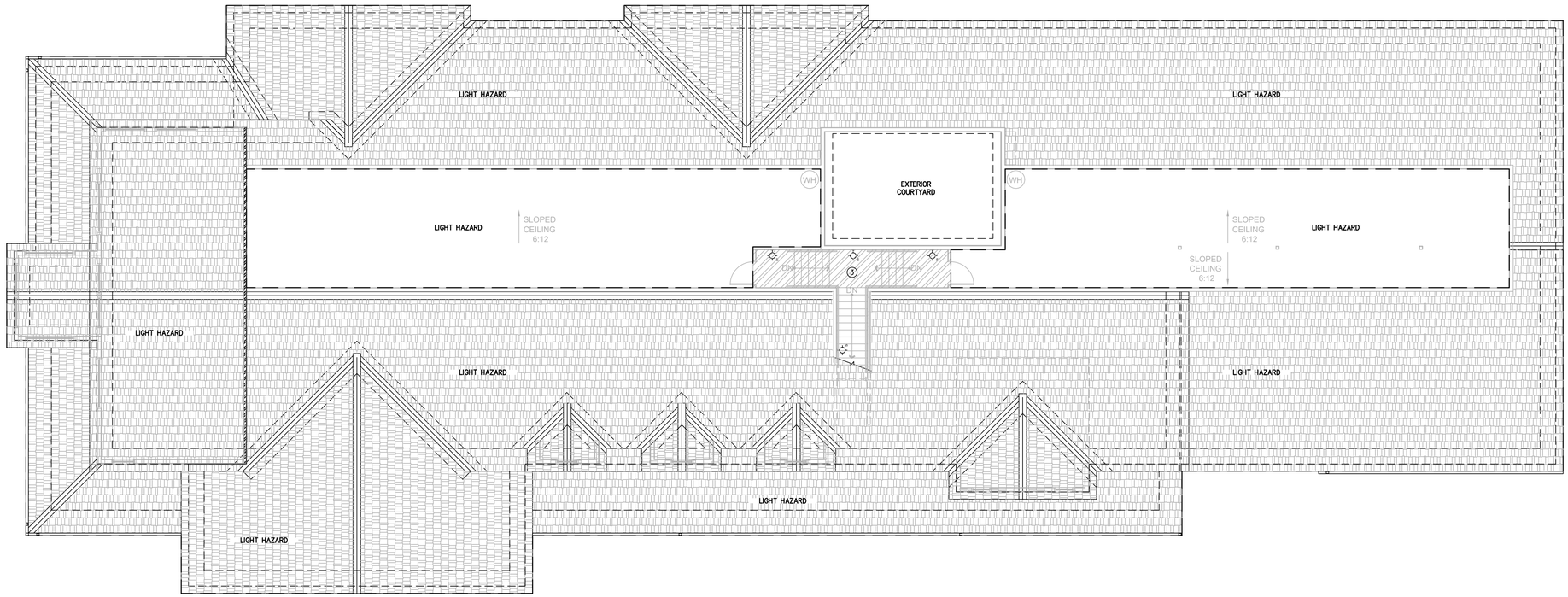
OCCUPANCY CLASSIFICATION – ORDINARY HAZARD GROUP 1
DENSITY – .15 GPM/1950 SQ.FT.
SYSTEM – DRY PIPE

MATERIALS, VALVES, HANGERS SHALL BE PER NFPA 13.

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DESIGN SHALL BE PER NFPA 13, 24 AND 25.

FIRE PROTECTION NOTES

1. FIRE PROTECTION CONTRACTOR SHALL COORDINATE WORK PRIOR TO INSTALLATION WITH MECHANICAL, ELECTRICAL, STRUCTURAL, PLUMBING & ARCHITECTURAL SYSTEMS TO AVOID CONFLICTS.
2. FIRE PROTECTION CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL FIRE RATINGS WHERE PIPES PENETRATE FIRE RATED ASSEMBLIES. FIRE SAFING MATERIAL SHALL BE UL LISTED.
3. SUBMIT FIRE PROTECTION SHOP DRAWINGS TO LOCAL FIRE MARSHALL AND OWNER'S INSURANCE UNDERWRITER FOR APPROVAL.
4. ALL SPRINKLER PIPING INSTALLATION SHALL CONFORM TO NFPA 13, NFPA 24 AND NFPA 25. MOST CURRENT EDITIONS SHALL APPLY.
5. ALL SPRINKLER HEADS SHALL BE CENTERED IN CEILING TILE WHERE APPLICABLE.
6. FIRE PROTECTION CONTRACTOR SHALL PROVIDE HEADS BELOW OBSTRUCTIONS 48" AND WIDER PER. NFPA 13. MOST CURRENT EDITION SHALL APPLY.
7. FIRE PROTECTION CONTRACTOR SHALL COORDINATE HEAD LOCATIONS AND ELEVATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN.
8. THE INSTALLED SPRINKLER SYSTEM SHALL BE TESTED IN ACCORDANCE TO NFPA-25, INSPECTION, TESTING AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEM.
9. FIRE PROTECTION CONTRACTOR SHALL ROUTE ALL EXPOSED PIPING PERPENDICULAR AND PARALLEL TO STRUCTURE. ALL WORKMANSHIP SHALL BE NEAT AND CLEAN IN APPEARANCE.
10. PIPE MATERIALS, HANGERS, ETC. SHALL BE IN ACCORDANCE TO NFPA 13, NFPA 24 AND NFPA 25. MOST CURRENT EDITIONS SHALL APPLY.
11. FIRE PROTECTION CONTRACTOR SHALL REFER TO FIRE PROTECTION SPECIFICATIONS, WET-PIPE FIRE SUPPRESSION SPRINKLERS, FOR ADDITIONAL INFORMATION.
12. SEE ELECTRICAL DRAWINGS & FIRE ALARM RISER DETAIL FOR ADDITIONAL INFORMATION RELATING TO SYSTEM ACTIVATION, CONTROLS, INTERLOCKS, FIRE ALARM STROBES, ALARMS, ETC.
13. SEE CIVIL SITE UTILITY DRAWINGS FOR PIPE ROUTING AND CONNECTION TO CITY UTILITIES, BACKFLOW PREVENTION, ETC. THIS DRAWING IS FOR INFORMATIONAL PURPOSES ONLY.



1 UPPER LEVEL PLAN – FIRE SPRINKLER
SCALE: 1/8" = 1'-0"

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UPPER FLOOR PLAN - FIRE SPRINKLER

REV.#	DATE	COMMENTS
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REVIEWS
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PROJECT NO.: 22018
DRAWN: CLS
DATE: 07/18/22

FS102

2 OF 2

Save Date: July 14, 2022 - 6:08 PM - CHeisel
Plot Date: July 14, 2022 - 6:17 PM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018FS102_UPPER LEVEL PLAN - FIRE SPRINKLER.dwg

INTERIOR SPECIFICATION SCHEDULE

2004	NO.	MANUFACTURER	MATERIAL	SERIES	COLOR	SIZE	NUMBER	REMARKS	CONTACT
FLOOR	F1	DALTILE	PORCELINE TILE	SADDLE BROOK XT	FARMHOUSE	6"X36"	SD84		JAMIE OCKSRIDER 505-850-6209
	F2	ALTRO	VINYL SHEET	ALTRO WOOD	VINTAGE CHERRY	6' 7" X 65' 5"	WSA2002		
	F3	ALTRO	SHEET VYNIL FLOORING	ALTRO SYMPHONIA	SWORDFISH	6'7" X 66'	PH2037		
	F4	MONDO	RUBBER SHEET	RAMFLEX	BLUE	6MM	G710		
	F5	DUR-A-FLEX	RESIONUS	SEE ARCH. SPEC	COBALT				
	F6	SOLOMON COLOR	CONCRETE SEALER	SEE ARCH. SPEC	CLEAR				
	F7	ROPPE	RUBBER STAIR	RUBBER TREAD	SMOKE		174	STAIR TREAD AND RISERS	
BASE	B1	DALTILE	PORCELINE TILE	SADDLE BROOK XT	FARMHOUSE	CUT TO 4" HEIGHT	SD84	USE WITH F1	JAMIE OCKSRIDER 505-850-6209
	B2	ROPPE	RUBBER BASE	700 SERIES	FIG	4" HEIGHT	125	USE WITH F2	
	B3	ROPPE	RUBBER BASE	700 SERIES	SMOKE	4" HEIGHT	174	USE WITH F3/F4/F7	
GROUT	GR1	MAPEI	GROUT	COLORFLEX CQ	CHAMOIS		5	USE WITH F1	
	GR2	MAPEI	GROUT	COLORFLEX CQ	AVALANCHE		38	USE WITH WALL TILE	
PAINT	P1	SHERWIN WILLIAMS	INTERIOR FIELD PAINT	SEE ARCH. SPEC	ANEW GREY		SW7030		
	P2	SHERWIN WILLIAMS	INTERIOR ACCENT PAINT	SEE ARCH. SPEC	BLUEBIRD FEATHER		SW9062		
	P3	SHERWIN WILLIAMS	INTERIOR ACCENT PAINT	SEE ARCH. SPEC	TBD		TBD		
	P4	SHERWIN WILLIAMS	INTERIOR ACCENT PAINT	SEE ARCH. SPEC	LOYAL BLUE		SW6510		
	P5	SHERWIN WILLIAMS	INTERIOR TRIM AND FRAME	SEE ARCH. SPEC	ICE CUBE		SW6252		
	P6	SHERWIN WILLIAMS	WOOD STAIN	SEE ARCH. SPEC	GREENWOOD		MW413		
WALL- COVERING	W1	AMERICAN OLEAN	GLASS TILE	COLOR APPEAL	POWDER	2X6	C109	FACE OF RECEPTION	JAMIE OCKSRIDER 505-850-6209
	W2	DALTILE	PORCELAIN TILE	ARTICULO	EDITORIAL WHITE	12X24	AR06		JAMIE OCKSRIDER 505-850-6209
	W3	MDC	VINYL WALL PAPER	MODERN INDUSTRY	GUNMETAL	53 X 54"	3063MI		
	W4	KOROGUARD		WALL PROTECTION SYSTEM	SERENE GREY			TEXTURE P1 DUNE	
PLASTIC LAMINATE	PL1	FORMICA	PLASTIC LAMINATE	MATTE FINISH	HAZEL WALNUT		5788- NG		
	PL2	WILSONART	PLASTIC LAMINATE	PREMIUM LAMINATE	MARMO BIANCO		1885K-07		
	PL3	FORMICA	PLASTIC LAMINATE	MATTE FINISH	FOG		961-58		
EDGE BANDING	E1	FRAMA-TECH	PVC EDGE BANDING		HAZEL WALNUT	3 MIL	5788- NG		TYSON STOUS (214) 803-7404
	E1	FRAMA-TECH	PVC EDGE BANDING		MARMO BIANCO	3 MIL	1885K-07		TYSON STOUS (214) 803-7404
	E2	FRAMA-TECH	PVC EDGE BANDING		FOG	1 MIL	961-58		TYSON STOUS (214) 803-7404
									TYSON STOUS (214) 803-7404
UPHOLSTERY	FB1	ARC COM	UPHOLSTERY	TASK FORCE	MIDNIGHT		AC-61270		
	FB2	ARC COM	UPHOLSTERY	INTAGLIO 2	COCOA		AC-61413		
GENERAL	SS1	AVONITE	SOLID SURFACE	STUDIO COLLECTION	BLUEBELL		8605		
	SS2	WILSONART	SOLID SURFACE		ARTIC DUNE		9253CM		
	G1	MASONITE	DOOR	ASPIRO-WHITE BIRCH	ROTARY-COCOA BEAN				
	LF1	TBD	TBD	TBD	TBD	TBD	TBD		
	LF2	TBD	TBD	TBD	TBD	TBD	TBD		
TRIM	TR1	SCHLUTER	FLOOR TANSITION	RENO-U	ANODIZED ALUMINUM		AEU100		
	TR2	ROPPE	FLOOR TANSITION	#59	SMOKE				
	TR3	ROPPE	FLOOR TANSITION	#21	SMOKE				
	TR4	ROPPE	FLOOR TANSITION	#50	SMOKE				

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Email: info@bdaarc.com

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DAVID S. GASSER
Lic. No. 0401019577
ARCHITECT
07-19-22

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

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INTERIOR SPECIFICATIONS

REV.#	DATE	COMMENTS
-		
-		
-		

REVISION:
REVISION:
REVISION:
REVISION:

REVIEWS

INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

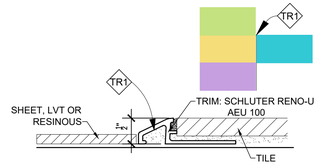
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PROJECT NO.: 2004
DRAWN: CF
DATE: 8/11/2022

I001

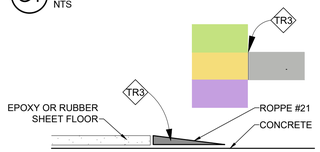
1 OF 4

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Plot Date: August 11, 2022 - 10:49 AM
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G1 FLOOR TRANSITION
NTS

G2 FLOOR TRANSITION
NTS



F1 FLOOR TRANSITION
NTS

F2 FLOOR TRANSITION
NTS

F5 FLOOR TILE PATTERN
3/4" = 1'-0"

SHEET KEYNOTES

1. ISO A1/I201 – CABINETS TYP.
2. ISO A5/I201 – PASS THRU.
3. RETAIL CABINET –ISO D4/I202
4. RECEPTION DESK
   4.1. ISO A7/I201 – RECEPTION DESK
   4.2. SOFFIT ABOVE REGISTRATION DESK – PAINT (P3)
   4.3. SEE RENDERING – D8/I202
5. DOG RUNS – ISO A9/I201
   5.1. WALL ELEVATION A1/I202
6. HALF WALL – ISO D1/I201
7. WING WALL W/ DESK – ISO D3/I201
8. CT AT SINK ONLY – ISO D5/I201
9. T AT WET WALLS, RUBBER BASE AT WALLS WITHOUT WALL TILE
10. EXAM ROOM
    10.1. TABLE – ISO D7/I201
    10.2. SEE RENDERING – D6/I202
11. SHELF/COUNTER – ISO G5/I201
12. BENCH – ISO G7/I201
13. SEE I102 FOR PAINT LOCATIONS
14. NOT USED
15. ELEVATION A1/I202 – FULL WALL TILE PATTERN
16. ELEVATION A4/I202 – +78 TILE PATTERN
17. ELEVATION D8/I202 – +72" TILE PATTERN
18. ELEVATION A6/I202 – RESTROOM TILE LAYOUT
    18.1. TILE AT GRAB BAR WALLS ONLY
19. ELEVATION A8/I202 – +48" WALL TILE LAYOUT
20. TUB TOWER – ISO D1/I202
21. BENCH TABLE – ISO D9/I201

GENERAL NOTES

A. SEE SHEET I001 FOR INTERIOR FINISHES AND SPECIFICATIONS SCHEDULE
B. ALL WALLS TO BE PAINTED P1 U.N.O.
   B.A. VERIFY ALL ACCENT PAINT COLORS WIHT OWNER PRIOR TO PAINTING
C. ALL PGB CEILINGS TO BE PAINTED P1 U.N.O.
D. SCHLUTER - TO MATCH TILE THICKNESS, FINISHED IN SATIN ANODIZED ALUMINUM
E. ALL TRANSITIONS SHALL BE ACCESSIBLE PER THE ADA

INTERIOR FINISHES

- F1 - PORCELAIN TILE
  B1 - MATCHING WALL BASE
  SEE A10/I101 FOR TILE PATTERN
- F2 - SHEET FLOORING
  B2 - RUBBER BASE OR FLASH COVE
- F3 - SHEET FLOORING
  B3 - RUBBER BASE OR FLASH COVE
- F4 - RUBBER FLOORING
  B2 - RUBBER BASE
- F5 - EPOXY FLOORING
  FLASH COVE BASE
- SEALED CONCRETE
  B2 - RUBBER BASE
- F7 - RUBBER FLOORING
  B2 - RUBBER BASE



A1 FINISHES FLOOR PLAN
1/8" = 1'-0"

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REFERENCE FLOOR PLAN

REV #	DATE	COMMENTS
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-	-	-
-	-	-
-	-	-

REVISION:
REVISION:
REVISION:
REVISION:

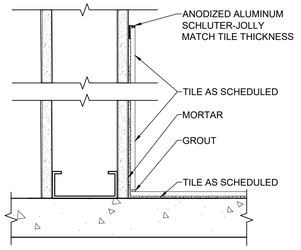
REVIEWS	
INITIALS	
-	BDA DSGN. REV.
-	BDA TECH REV.

WATSON
PROJECT NO.: 2004
DRAWN: CF
DATE: 8/11/2022

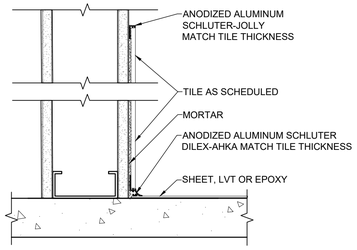
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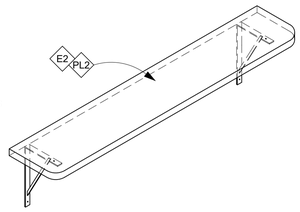
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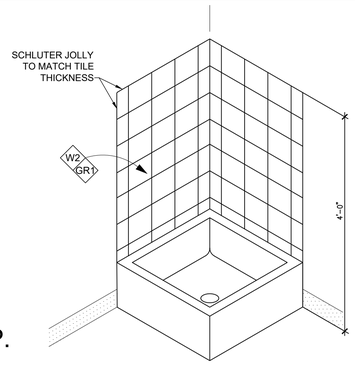
G6 TYPICAL TILE EDGE
3" = 1'-0"



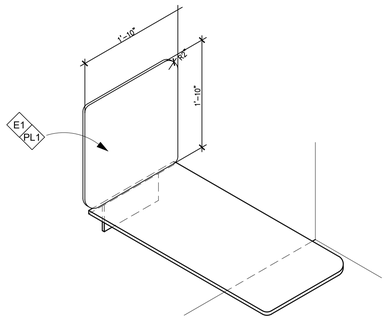
G7 TYPICAL TILE EDGE
3" = 1'-0"



G4 SHELF COUNTER TYP.
3/4" = 1'-0"



F6 JANITORIAL TYP.
3/4" = 1'-0"



F8 WALL PROTECTION AT EXAM TABLE
3/4" = 1'-0"

GENERAL NOTES

A. REFER TO ARCHITECTURAL DRAWINGS FOR CABINET TYPE, SIZES, LOCATIONS, AND MOUNTING HEIGHTS

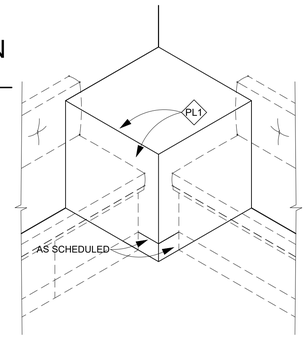
B. SEE I001 - INTERIOR FINISHES SCHEDULE AND SPECIFICATION SCHEDULE

C. EXPOSED SHELVES ARE FINISHED TO MATCH FACE OF CABINETS

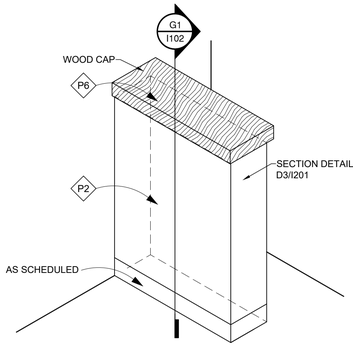
D. CABINETS INTERIOR TO BE FINISHED IN MELAMINE

E. EDGEBANDING USED SHALL MATCH PLASTIC LAMINATE FACE

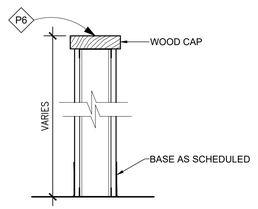
F. SCHLUTER - FINISHED IN SATIN/MAT ANODIZED ALUMINUM



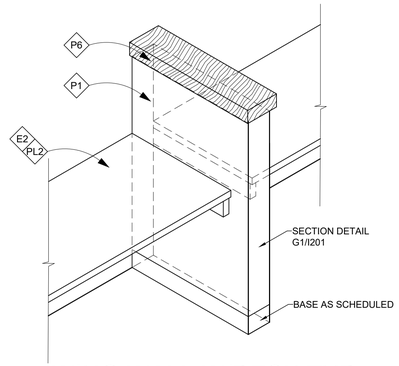
E1 END TABLE AT BENCH TYP.
1/2" = 1'-0"



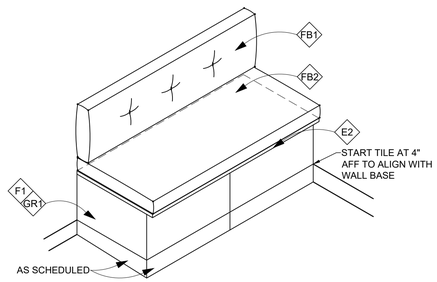
D1 HALF WALLTYP.
3/4" = 1'-0"



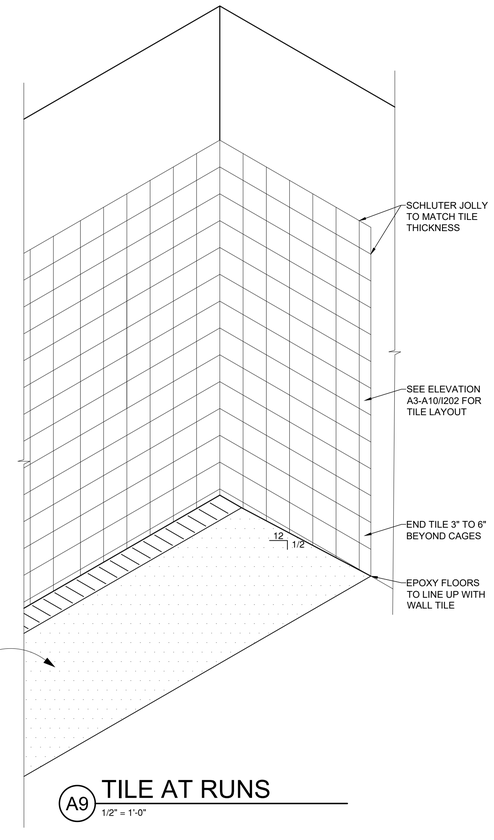
D3 HALF WALL SECTION
N.T.S.



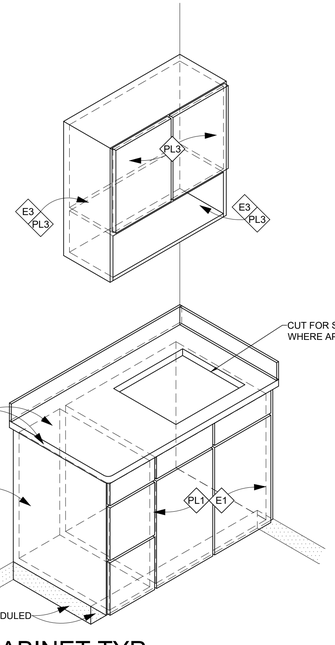
D4 WING WALL W/DESK TYP.
3/4" = 1'-0"



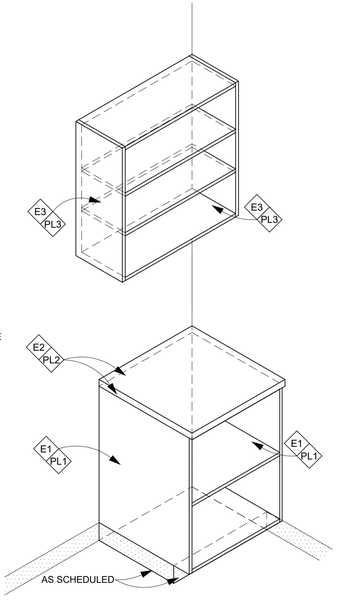
D7 BENCH TYP.
3/4" = 1'-0"

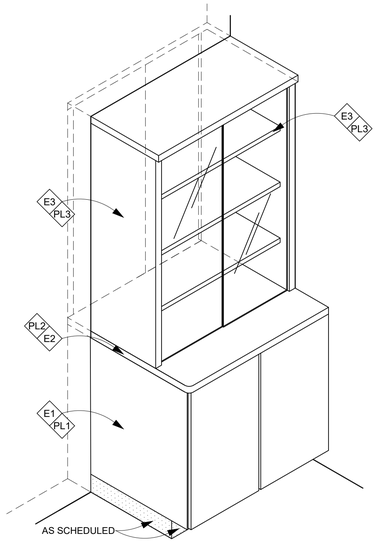


A9 TILE AT RUNS
1/2" = 1'-0"

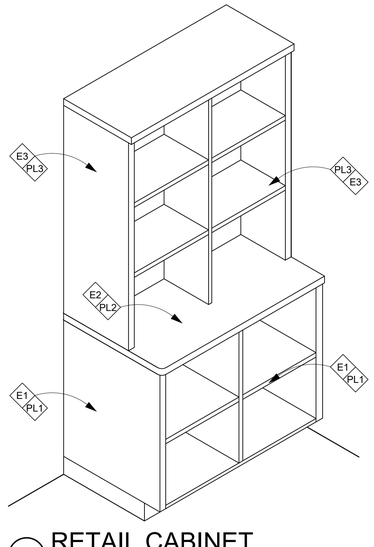


A1 CABINET TYP.
3/4" = 1'-0"





A5 PASS THRU
3/4" = 1'-0"



A7 RETAIL CABINET
3/4" = 1'-0"

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07-19-22

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INTERIOR ELEVATIONS

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-	BDA TECH REV.

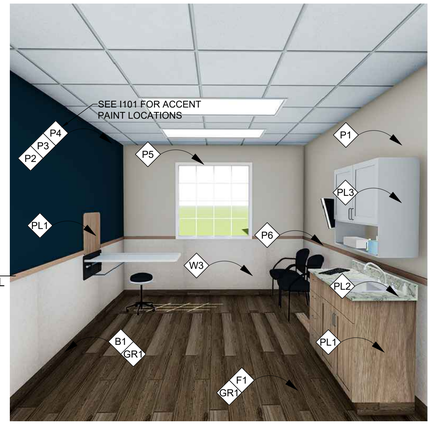
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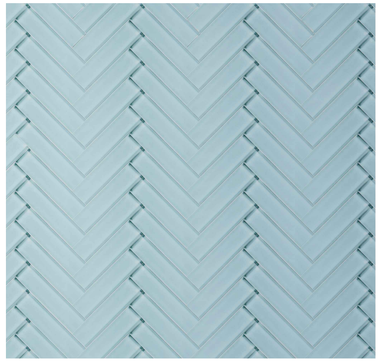
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3 OF 4

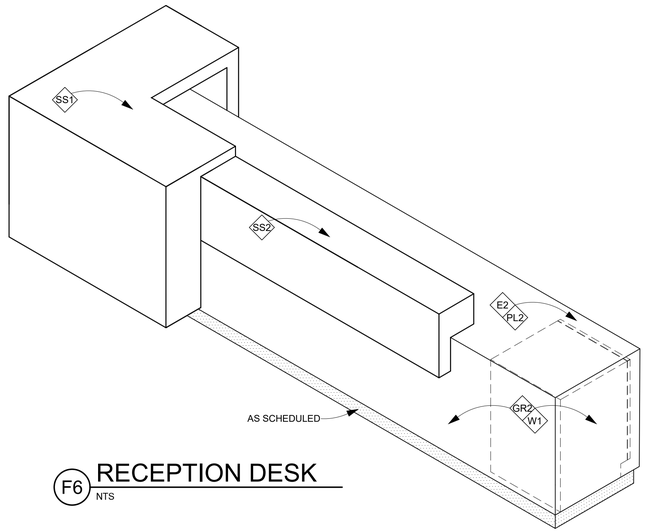
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F1 EXAM ROOM
NTS RENDERING



F4 HARRING BONE TILE PATTERN
NTS RECEPTION DESK AND NOOK WALL



F6 RECEPTION DESK
NTS

GENERAL NOTES

A. REFER TO ARCHITECTURAL DRAWINGS FOR CABINET TYPE, SIZES, LOCATIONS, AND MOUNTING HEIGHTS

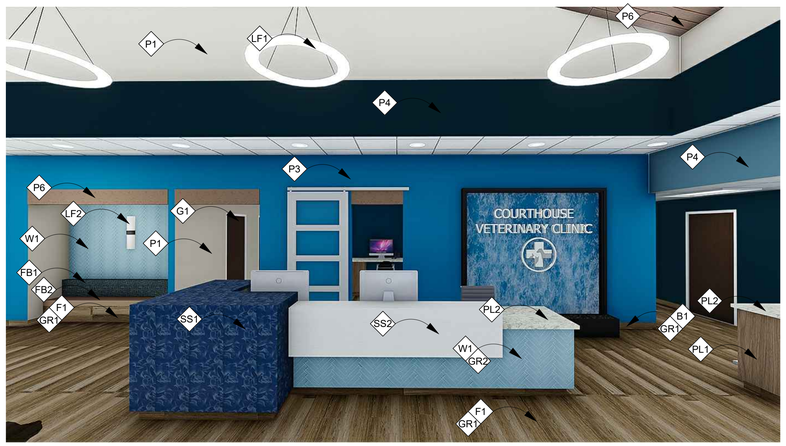
B. SEE I001 - INTERIOR FINISHES SCHEDULE AND SPECIFICATION SCHEDULE

C. EXPOSED SHELVES ARE FINISHED TO MATCH FACE OF CABINETS

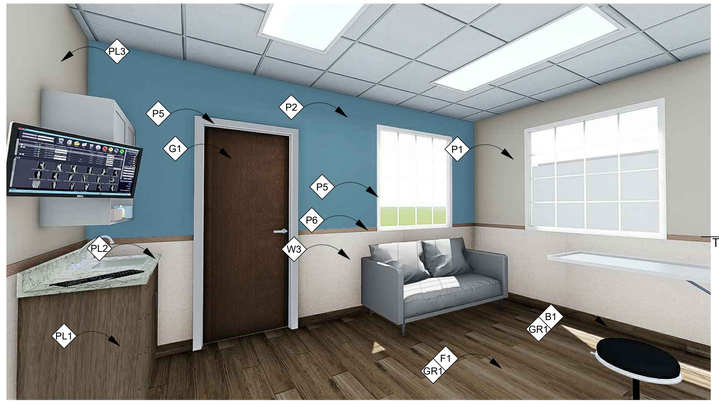
D. CABINETS INTERIOR TO BE FINISHED IN MELAMINE

E. EDGEBANDING USED SHALL MATCH PLASTIC LAMINATE FACE

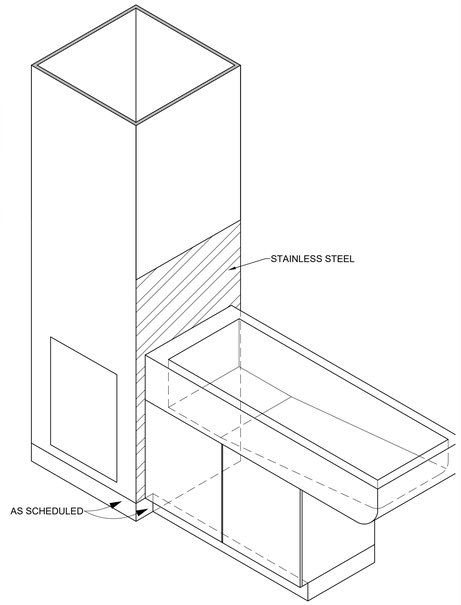
F. SCHLUTER - FINISHED IN SATIN/MAT ANODIZED ALUMINUM



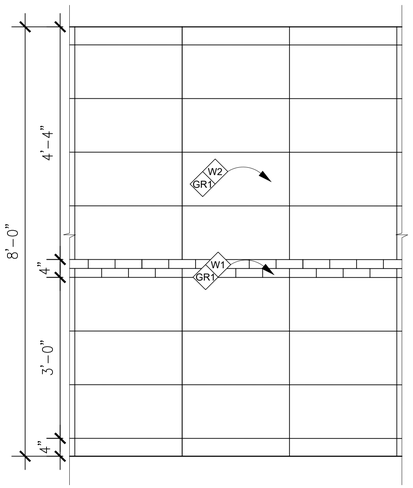
D1 RECEPTION
NTS RENDERING



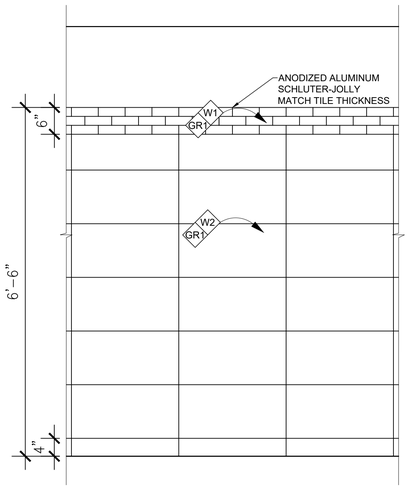
D5 COMFORT EXAM
NTS RENDERING



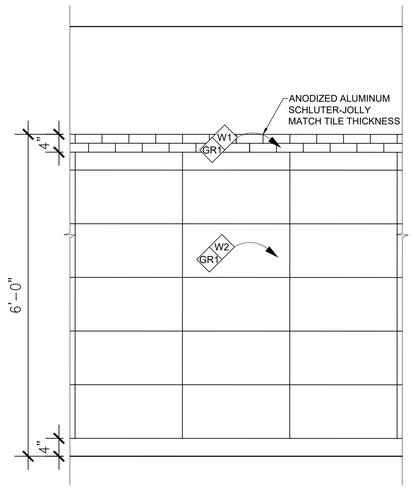
D9 TUB AT TREATMENT
3/4" = 1'-0"



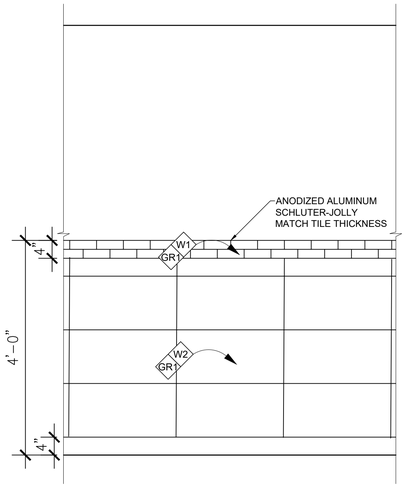
A1 TILE PATTERN
3/4" = 1'-0" FULL HEIGHT



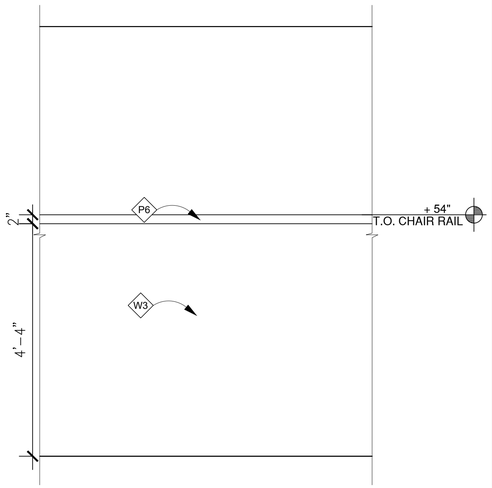
A3 TILE PATTERN
3/4" = 1'-0" +78 HEIGHT



A5 TILE PATTERN
3/4" = 1'-0" +72 HEIGHT



A7 TILE PATTERN
3/4" = 1'-0" + 48" HEIGHT



A9 WALLPAPER PATTERN
3/4" = 1'-0" +54 HEIGHT

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INTERIOR ELEVATIONS

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REVIEWS	
INITIALS	
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-	BDA TECH REV.

WATSON
PROJECT NO.: 2004
DRAWN: CF
DATE: 8/11/2022

I202

4 OF 4

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Plot Date: August 11, 2022 - 10:50 AM
Drawing Name: G:\Archive\2020\2004 - Watson\BDA\DWGS\Construction Documents\Courthouse Veterinary Sheets\2004-I202 Interior Elevations.dwg

MECHANICAL NOTES

1. ALL MECHANICAL SYSTEMS AND COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE 2018 VIRGINIA BUILDING CODES INCLUDING MECHANICAL, FIRE, FUEL GAS AND ENERGY CODES AS ARE APPLICABLE TO THE PROJECT IN ADDITION TO ALL NATIONAL FIRE CODES AND LOCAL AHJ AND/OR UTILITY REQUIREMENTS WHICH APPLY.
2. ALL MECHANICAL EQUIPMENT SHALL BE CLOSELY COORDINATED WITH STRUCTURAL SYSTEM, PLUMBING SYSTEM AND ELECTRICAL SYSTEM TO ENSURE PROPER COMPLIANCE WITH CODES AND ENSURE THAT ALL TRADES WILL NOT CONFLICT WITH EACH OTHER.
3. DO NOT SCALE DRAWINGS, DRAWINGS ARE DIAGRAMMATIC. SCALE WHERE INDICATED IS FOR REFERENCE ONLY.
4. PROVIDE TWO COPIES OF INSTALLATION, OPERATION, AND MAINTENANCE MANUALS TO THE OWNER WITHIN 15 CALENDAR DAYS OF ACCEPTANCE OF THE SYSTEM.
5. PROVIDE A ONE YEAR WARRANTY FOR ALL WORK PERFORMED BEGINNING ON THE DAY THE SYSTEM IS COMPLETELY OPERATIONAL AND ACCEPTABLE BY THE OWNER.
6. MECHANICAL MECHANICAL CONTRACTOR SHALL HAVE A FULL TEST AND BALANCE REPORT FOR REVIEW/APPROVAL. MECHANICAL CONTRACTOR SHALL PROVIDE A CERTIFIED TEST AND BALANCE REPORT FOR REVIEW PRIOR TO CERTIFICATE OF OCCUPANCY. SEE MECHANICAL SPECIFICATIONS FOR REQUIREMENTS.
7. THE GENERAL CONTRACTOR SHALL RETAIN THE SERVICES OF AN INDEPENDENT TEST AND BALANCE AGENCY THAT IS INDEPENDENT OF ANY CONTRACTOR, SUBCONTRACTOR, OR MANUFACTURER TO PERFORM THE TESTING AND BALANCING AND PREPARE REPORTS TO THE GENERAL CONTRACTOR. THE INDEPENDENT TEST AND BALANCE AGENCY SHALL BE A CERTIFIED MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU. RECORD DATA ON STANDARD AABC OR NEBB FORMS. MECHANICAL CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR TO ENSURE THAT ANY AND ALL REQUIRED AIR BALANCE TESTING PROCEDURE COSTS ARE INCORPORATED AND COVERED BY CONTRACTOR'S BASE BID.

INSTALLATION/MATERIALS NOTES

1. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID INTERFERENCE.
2. PENETRATIONS OF NONRATED WALLS, PARTITIONS AND FLOORS OF NON– COMBUSTIBLE CONSTRUCTION SHALL BE FIRESTOPPED WITH NONCOMBUSTIBLE MATERIALS. PENETRATIONS OF NONRATED WALLS, PARTITIONS AND FLOOR OF COMBUSTIBLE CONSTRUCTION SHALL BE FIRESTOPPED WITH MATERIALS EQUIVALENT TO TWO INCHES OF WOOD. FIRESTOPPING SHALL COMPLY WITH ASTM E–814.
3. MECHANICAL CONTRACTOR SHALL PROVIDE FIRE DAMPERS WHERE DUCTWORK PENETRATES ANY/ALL FIRE RATED WALLS/CEILINGS/PARTITIONS WHETHER FIRE DAMPERS INDICATED ON DRAWINGS OR NOT. COORDINATE WITH ARCH. DWGS FOR FIRE RATED LOCATIONS.
4. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND HVAC EQUIPMENT FOR MAINTENANCE AND FILTER REMOVAL

   MECHANICAL MECHANICAL CONTRACTOR SHALL VERIFY LOCATION OF ROOF PENETRATIONS FOR RELIEF HOODS AND OUTSIDE AIR HOODS WITH ARCHITECT & OWNER PRIOR TO INSTALLATION.
5. MECHANICAL CONTRACTOR SHALL COORDINATE ANY AND ALL PAINTING OR FINISHING REQUIREMENTS WITH ARCHITECT PRIOR TO PURCHASING ANY MATERIALS.
6. MECHANICAL MECHANICAL CONTRACTOR SHALL LOCATE EXHAUST FANS, OUTLETS, AND GAS FLUES A MINIMUM OF 10'–0" FROM ANY OUTSIDE AIR INTAKE.
7. MECHANICAL MECHANICAL CONTRACTOR SHALL LOCATE ALL ROOF MOUNTED EQUIPMENT A MINIMUM OF 10'–0" FROM EDGE OF ROOF AND/OR PARAPET AS REQUIRED BY CODE REGARDLESS OF LOCATIONS INDICATED ON PLANS. COORDINATE INSTALLATION LOCATIONS WITH ARCHITECTURAL AND STRUCTURAL PRIOR TO ROUGHING–IN.
8. ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED IN A WATERPROOF MANNER.
9. COORDINATE ROOFTOP EQUIPMENT WITH BUILDING STRUCTURE AND WORK BY OTHERS TO DETERMINE EXACT EQUIPMENT INSTALLATION LOCATION.
10. SPACE ABOVE CEILING IS LIMITED. MECHANICAL CONTRACTOR TO FIELD VERIFY EXACT DUCTWORK INSTALLATION LOCATION AND ROUTING PRIOR TO DUCTWORK FABRICATION.

SHEETMETAL/INSULATION NOTES

1. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS. ALL DUCT DIMENSIONS ON PLANS ARE SHEET METAL SIZE. DUCT DIMENSIONS HAVE BEEN INCREASED IN SIZE TO ALLOW FOR LINER WHERE REQUIRED, SIZES LISTED ARE O.D., DUCT FABRICATION DIMENSIONS. SPIRAL DUCTWORK SHALL BE DOUBLE WALL TYPE. ALL DUCT RUNOUTS TO GRD AIR TERMINAL DEVICES TO BE PROVIDED AS ROUND SPIRAL DUCT WITH EXTERNAL WRAP. ALL DUCT RUNOUTS TO BE SIZED PER GRD AIR TERMINAL NECK SIZE AS INDICATED ON GRD SCHEDULE. COORDINATE ALL DUCT SIZES PRIOR TO BIDDING, NO EXCEPTIONS. SEE MECHANICAL SPECIFICATIONS (DUCTWORK INSULATION SCHEDULE) FOR REQUIREMENTS.
2. ALL RECTANGULAR SUPPLY AND RETURN DUCTS SHALL BE LINED WITH 1" THICK DUCT LINER FOR THE FIRST 10FT FROM THE UNIT OR INDICATED ON PLANS. LINED DUCTWORK SHALL BE LABELED AS –"X–" (L). DUCT DIMENSIONS HAVE BEEN INCREASED IN SIZE TO ALLOW FOR LINER WHERE REQUIRED. ALL WRAPPED DUCTS SHALL BE WRAPPED WITH 2" THICK DUCT INSULATION. WRAPPED DUCTS SHALL BE LABELED AS –"X –" (WR).
3. OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 2" FIBERGLASS DUCT WRAP WITH VAPOR BARRIER IN LIEU OF DUCT LINER.
4. FLEXIBLE DUCT SHALL BE INSULATED FLEXMASTER TYPE 9M (OR EQUAL). MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE A MAXIMUM OF 4'–0".
5. PORTIONS OF DUCTWORK ABOVE CEILING VISIBLE THROUGH GRILLES, DIFFUSERS, AND REGISTERS SHALL HAVE INTERIOR AND EXTERIOR OF DUCTWORK PAINTED FLAT BLACK. IF EXTERIOR OF DUCTWORK IS INSULATED, WRAP VISIBLE INSULATION WITH FLAT BLACK VINYL WRAP.
6. ALL EXPOSED DUCTWORK TO BE PROVIDED WITH PAINT GRIP AND PAINTED TO MATCH WITH STRUCTURE OR COLOR SELECTED BY ARCHITECT, PAINTING BY GENERAL CONTRACTOR. ALL EXPOSED WRAPPED DUCTWORK TO BE PROVIDED WITH CONTINUOUS WHITE VINYL WRAP.
7. UNLESS OTHERWISE NOTED, BRANCH TAKE–OFF DUCTS SHALL BE EQUAL TO NECK SIZE OF THE GRILLE/DIFFUSER/REGISTER.

CONTROLS NOTES

1. ANY DEVICE REQUIRING A THERMOSTAT FOR CONTROL SHALL BE FURNISHED WITH A THERMOSTAT WHETHER INDICATED ON THE PLANS OR NOT. LOCATE ALL THERMOSTATS AND SWITCHES ±4'–0" ABOVE FINISH FLOOR. VERIFY EXACT LOCATION OF THERMOSTATS WITH THE OWNER/ARCHITECT BEFORE ROUGHING–IN. PROVIDE THERMOSTAT WITH INSULATED SUB–BASE OPTION WHERE INSTALLED ON EXTERIOR WALL. PROVIDE THERMOSTAT WITH WATER RESISTANT OPTION WHERE USED IN WET ENVIRONMENT AREA.
2. PROVIDE MAGNETIC MOTOR STARTER WITH HAND–OFF–AUTO (H.O.A) SELECTOR SWITCH FOR EACH MOTOR SPECIFIED TO OPERATE AT 200 VOLTS OR HIGHER. PROVIDE MANUAL STARTER WITH HAND–OFF–AUTO (H.O.A) SELECTOR SWITCH FOR EACH MOTOR SPECIFIED TO OPERATE AT 120 VOLTS. ALL EQUIPMENT SUPPLIED WITH INTEGRAL STARTERS SHALL BE PROVIDED WITH ADDITIONAL SEPARATE DISCONNECT BY ELECTRICAL CONTRACTOR, NO EXCEPTIONS. COORDINATE EQUIPMENT DISCONNECTS WITH ELECTRICAL CONTRACTOR.
3. DUCT MOUNTED SMOKE DETECTORS SHALL BE WIRED TO SUPERVISORY INDICATOR DEVICES TO MEET NFPA 72 REQUIREMENTS. EACH DEVICE MUST BE PERMANENTLY LABELED TO ACCURATELY IDENTIFY THE UNIT SERVED TO MEET NFPA 72 REQUIREMENTS. SEE PLANS FOR INFORMATION.
4. ALL CONTROL VOLTAGE WIRING IN EXPOSED AREAS TO BE IN RIGID CONDUIT. ALL CONTROL VOLTAGE INSTALLED WITHIN A PLENUM RATED CEILING SHALL UTILIZE PLENUM RATED CABLE OR BE INSTALLED IN PLENUM RATED RIGID CONDUIT.
5. COORDINATE THE EXACT LOCATION OF ALL THERMOSTATS WITH FINAL FURNITURE LAYOUT, EQUIPMENT LAYOUT, ARCH AND OWNERS REPRESENTATIVES.

PIPING NOTES

1. PROVIDE UNIONS, FLANGES OR COUPLINGS AT CONNECTION TO ALL VALVES AND EQUIPMENT. DO NOT USE DIRECT WELDED OR THREADED CONNECTIONS TO VALVES, EQUIPMENT OR OTHER APPARATUS.
2. PROVIDE NON–CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
3. ALL VALVES AND SPECIALTIES SHALL BE LINE SIZE UNLESS NOTED OTHERWISE, USING ECCENTRIC REDUCERS ON PUMP SUCTION AND AUTOMATIC VALVES AND CONCENTRIC REDUCERS ON PUMP DISCHARGE.
4. ALL PIPING BELOW ROOF SHALL BE SUPPORTED WITH CARBON STEEL, ADJUSTABLE, CLEVIS HANGERS AT 10'–0" ON CENTER. ADDITIONAL HANGERS SHALL BE PROVIDE AS REQUIRED TO PREVENT WEIGHT OF EQUIPMENT BEING PLACED ON EQUIPMENT. PROVIDE RIGID INSULATION AND SHEET METAL PIPE SHIELDS AT HANGER LOCATIONS.
5. EXTEND ALL DRAIN LINES TO THE NEAREST FLOOR DRAIN OR AS INDICATED ON PLANS. COORDINATE DISCHARGE REQUIREMENTS WITH LOCAL AHJ PRIOR TO ROUGHING–IN.
6. CONDENSATE DRAIN PIPING, TRAPS, AND FITTINGS SHALL BE COPPER TYPE "L", SCHEDULE 40 PVC PIPE AND FITTINGS SHALL BE ACCEPTABLE FOR PIPE INSTALLED ON ROOF ONLY. DRAINS FROM HVAC EQUIPMENT SHALL BE TRAPPED. TERMINATE ROOFTOP UNIT DRAINS ON A CONCRETE SPLASHBLOCK.
7. ALL REFRIGERANT PIPE SHALL BE NITROGENIZED ACR COPPER TUBE AND INSULATED WITH 1" ARMAFLEX.

MECHANICAL LEGEND

SYMBOLS (NOT ALL SYMBOLS SHOWN ARE USED)

- SUPPLY AIR DUCT
- RETURN AIR DUCT
- EXHAUST AIR DUCT
- SUPPLY DUCT TURNING UP
- RETURN/EXHAUST DUCT TURNING UP
- SUPPLY DUCT TURNING DOWN
- RETURN/EXHAUST DUCT TURNING DOWN
- R — RISE IN DUCT
- D — DROP IN DUCT
- TRANSITION IN DUCT, SQUARE TO SQUARE
- DUCT ROUTED UP/DOWN
- TRANSITION IN DUCT, SQUARE TO ROUND
- DUCT CAPPED AND SEALED
- DUCTWORK WITH INTERNAL LINER (X"LINED)
- DUCTWORK TRANSITION FROM HARD ROUND TO FLEXIBLE
- SQUARE THROAT DUCT ELBOW WITH TURNING VANES
- SQUARE THROAT DUCT ELBOW WITHOUT TURNING VANES
- FULL RADIUS ELBOW
- FLEXIBLE DUCT CONNECTION
- 45 DEGREE TAP
- CONICAL TAP
- SPIN–IN FITTING W/ VOLUME DAMPER & FLEXIBLE DUCT
- ROUND FLEXIBLE DUCT
- VOLUME BALANCING DAMPER
- BOTTOM REGISTER
- SQUARE–TO–ROUND BRANCH DUCT TAKE–OFF
- TRANSITION
- TEE WITH TURNING VANES AND SPLITTER DAMPER
- SQUARE ELBOW WITH TURNING VANES
- S.A. CFM / R.A. CFM / E.A. CFM — SEE AIR DISTRIBUTION SCHEDULE AIR QUANTITY REQUIRED
- PIPE UP
- PIPE DOWN
- VALVE IN VERTICAL
- G — GAS PIPING ON ROOF, SIZED PER PLANS
- G — GAS PIPING BELOW ROOF, SIZED PER PLANS
- CD — CONDENSATE DRAIN PIPING
- RS — REFRIGERANT SUCTION LINE
- RL — REFRIGERANT LIQUID LINE
- HG — REFRIGERANT HOT GAS LINE
- CONNECT NEW TO EXISTING
- XX / XXX — THROUGH PLAN SECTION
- ACCESS DOOR/PANEL
- 3" MIN — EQUIPMENT ELECTRICAL ACCESS WITH SERVICE CLEARANCE OUTLINE

SYMBOLS (NOT ALL SYMBOLS SHOWN ARE USED)

- SUPPLY AIR DIFFUSER
- RETURN AIR DIFFUSER
- EXHAUST AIR DIFFUSER
- SUPPLY AIR SPIRAL DUCT DIFFUSER
- SUPPLY AIR SPIRAL DUCT DIFFUSER
- U — 1" DOOR UNDERCUT, COORD /W G.C. & ARCH
- T — WALL MOUNTED THERMOSTAT
- KE — KITCHEN HOOD MANUAL ACTUATION DEVICE
- P — WALL MOUNTED PRESSURE CONTROLLER
- 120V M — 120V/1ø MOTOR OPERATED DAMPER
- SD — DUCT MOUNTED SMOKE DETECTOR
- SPLITTER DAMPER
- ELECTRIC WALL HEATER /W INTEGRAL THERMOSTAT
- IN–LINE EXHAUST FAN
- CEILING EXHAUST FAN
- SPLIT AIR HANDLING UNIT (HORIZONTAL)
- SPLIT SYSTEM OUTDOOR UNIT
- ERV–# — ENERGY RECOVERY VENTILATOR (ERV)
- MINI–SPLIT SYSTEM OUTDOOR UNIT
- MINI–SPLIT SYSTEM INDOOR WALL–MOUNTED UNIT
- CEILING MOUNTED FAN FILTER UNIT
- EQUIPMENT CLEARANCES, TYPICAL
- X / XXX — ENLARGED PLAN SHEET REFERENCE

ABBREVIATIONS (NOT ALL ABBREVIATIONS SHOWN ARE USED)

AHU	AIR HANDLING UNIT
AC	AIR CURTAIN
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
ATC	AUTOMATIC TEMPERATURE CONTROLS
BC	BRANCH CONROL BOX
BE	BOTTOM ELEVATION
BHP	BRAKE HORSE POWER
BTUH	BRITISH THERMAL UNITS PER HOUR
CUH	CABINET UNIT HEATER
CC	COOLING COIL
CD	CONDENSATE DRAIN LINE
CL	CENTERLINE
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
CHWS/R	CHILLED WATER SUPPLY/RETURN
CW	CITY WATER (DOMESTIC)
CP	CONDENSATE PUMP
D	DRAIN
DB	DRY BULB TEMPERATURE
DIA, ø	DIAMETER
DN	DOWN
DWS	DOUBLE WALL SPIRAL DUCTWORK
DWG	DRAWING
EA	EXHAUST AIR
EAD	EXHAUST AIR DAMPER
EDP	EMERGENCY DRIP PAN
EG	EXISTING GAS PIPING
(E)	EXISTING
(ER)	EXISTING RELOCATED
(ERR)	EXISTING REMOVED AND RELOCATED
ESP	EXTERNAL STATIC PRESSURE
EF	EXHAUST FAN
FCU	FAN COIL UNIT
F	FAN
FC	FLEXIBLE CONNECTION
G	GRILLE
GF	GAS FURNACE
GL	GLYCOL PIPING (BY OTHERS)
HC	HEATING COIL
HG	HOT GAS PIPING
HP	HORSEPOWER
HWS/R	HEATING HOT WATER SUPPLY/RETURN
KEF	KITCHEN EXHAUST FAN
(L)	LINED DUCTWORK
LPS	LOW PRESSURE STEAM
MUW	MAKE UP WATER
MAX	MAXIMUM
MA	MIXED AIR
MBH	ONE THOUSAND BTUH
MD	MOTORIZED DAMPER
MTD	MOUNTED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAD	OUTSIDE AIR DAMPER
OC	ON CENTER
OSD	OPEN SITE DRAIN
PC	PUMPED CONDENSATE
PCR	PUMPED CONDENSATE RETURN
PD	PRESSURE DROP
PH	PHASE
PMU	PAD MOUNTED UNIT
RA	RETURN AIR
RAD	RETURN AIR DAMPER
RAG	RETURN AIR GRILLE
(R)	REMOVE
R	RETURN FAN
RS/RL	REFRIGERANT SUCTION/LIQUID LINES
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SENS	SENSIBLE
TD	TRANSFER DUCT
TYP	TYPICAL
TOS	TOP OF SLAB
UH	UNIT HEATER
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VF	VENTILATION FAN
VRV	VARIABLE REFRIG. VOLUME
V	VOLTS
VD	VOLUME DAMPER
VIF	VERIFY IN FIELD
W/	WITH
WMS	WIRE MESH SCREEN
WO	WALL OPENING
(WR)	WRAPPED DUCTWORK

MECHANICAL DRAWING SCHEDULE

DRAWING NUMBER	DESCRIPTION
M001	MECHANICAL LEGENDS & GENERAL NOTES
M002	MECHANICAL SPECIFICATIONS
M003	MECHANICAL SCHEDULES
M004	MECHANICAL SCHEDULES
M005	MECHANICAL CALCULATIONS
M006	MECHANICAL DETAILS
M007	MECHANICAL SECTIONS
M101	MAIN FLOOR PLAN – MECHANICAL
M102	UPPER FLOOR PLAN – MECHANICAL
M103	UPPER FLOOR PLAN – GAS PIPING
M201	MECHANICAL COMMISSIONING

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MECHANICAL LEGENDS & GENERAL NOTES

REV #	DATE	COMMENTS
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REVIEWS

INITIALS	

TEG
PROJECT NO.: 22018
DRAWN: DRH
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M001

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MECHANICAL SPECIFICATIONS

HVAC GENERAL
REFER TO ALL OTHER DRAWINGS AND SPECIFICATIONS, AND BE RESPONSIBLE FOR ALL APPLICABLE PROVISIONS THEREIN. FURNISH AND INSTALL ALL NECESSARY LABOR AND MATERIALS FOR A COMPLETE SYSTEM. ANY APPLIANCES OR MATERIALS OBVIOUSLY A PART OF THE SYSTEM AND NECESSARY FOR ITS PROPER OPERATION, ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN, SHALL BE FURNISHED AND INSTALLED AS IF CALLED FOR IN DETAIL. WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL CODES, NFPA 90A, AND THE BUILDING REGULATIONS. ATTAIN AND PAY FOR ALL REQUIRED PERMITS AND FEES. EQUIPMENT AND MATERIALS SHALL BE NEW UNLESS OTHERWISE SPECIFIED. MECHANICAL CONTRACTOR SHALL BE LICENSED TO HANDLE CFC REFRIGERANTS.

DRAWINGS ARE GENERALLY DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EVERY FITTING, OFFSET, DROP AND RISE OF RUNS, AND DETAIL. INSTALL DUCTS, EQUIPMENT, AND CONTROLS IN A NEAT, WORKMANLIKE MANNER AND IN ACCORDANCE WITH GOOD PRACTICE FOR A COMPLETE, WORKABLE INSTALLATION. AVOID CONFLICT WITH OTHER WORK; MAKE ADEQUATE PROVISIONS FOR PREVENTING NOISE AND VIBRATION. DRAWINGS INDICATE LOCATIONS OF FIXTURES, APPARATUS, DUCTWORK, AND PIPING; WHILE THESE ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE, IF IT IS NECESSARY TO CHANGE THE LOCATION OF SOME TO ACCOMMODATE BUILDING CONDITIONS, MAKE CHANGES WITHOUT ADDITIONAL COST TO THE OWNER AND AS APPROVED BY THE ARCHITECT. PROVIDE ADEQUATE ACCESS TO EQUIPMENT AND APPARATUS REQUIRING OPERATION, SERVICE, OR MAINTENANCE WITHIN THE LIFE OF THE SYSTEM. DO NOT RUN PIPING OR DUCTWORK, OR LOCATE EQUIPMENT (WITH RESPECT TO SWITCHBOARDS, PANEL BOARDS, POWER PANELS, MOTOR CONTROL CENTERS OR DRY TYPE TRANSFORMERS) WITHIN 42 INCHES IN FRONT OF EQUIPMENT, OVER EQUIPMENT, OR WITHIN 36 INCHES HORIZONTALLY OF SAME SPACE.

EXISTING CONDITIONS
CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE JOB CONDITIONS BEFORE SUBMITTING HIS PROPOSAL. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS AND SIZES OF ALL EXISTING UTILITY SERVICES PRIOR TO SUBMITTING HIS PROPOSAL. NO CONSIDERATION WILL BE GIVEN TO CLAIMS FOR EXTRA COST ARISING FROM CONTRACTOR'S FAILURE TO BE FULLY COGNIZANT OF JOB OR SITE CONDITIONS EXISTING AT TIME OF ACCEPTANCE OF BID

IF, DURING THIS INSPECTION, THE CONTRACTOR FINDS ANY OBSTRUCTION OR INTERFERENCE THAT MAY PROHIBIT THE PROPER INSTALLATION OF HIS WORK, HE IS TO MAKE IT KNOWN TO THE BUILDING MANAGEMENT AND/OR OWNER AND TENANT BEFORE AND AT THE TIME OF SUBMITTING HIS PROPOSAL.

BY SUBMISSION OF THE BID, IT IS UNDERSTOOD THAT SUCH INSPECTION HAS BEEN MADE AND INCLUDES ALL THE MATERIALS AND REQUIRED RELOCATION FOR ALL WORK.

ACTIVE SERVICES: WHEN ENCOUNTERED IN WORK, PROTECT, BRACE, OR SUPPORT EXISTING ACTIVE SEWERS, GAS, AND OTHER SERVICES REQUIRED FOR PROPER EXECUTION OF WORK. IF EXISTING ACTIVE SERVICES ARE ENCOUNTERED THAT REQUIRE RELOCATION, RELOCATE AS APPROVED. DO NOT PREVENT OR DISTURB OPERATION OF ACTIVE SERVICES THAT ARE TO REMAIN.

INACTIVE SERVICES: WHEN ENCOUNTERED IN WORK, REMOVE, CAP, OR PLUG INACTIVE SERVICES, AS INDICATED. OPENINGS IN THE DUCTWORK SHALL BE PATCHED WITH SHEET METAL, SEALED AIRTIGHT WITH DUCT SEALANT, AND RE-INSULATED.

INTERRUPTION OF SERVICES: WHERE WORK MAKES TEMPORARY SHUTDOWNS OF SERVICES UNAVOIDABLE, SHUT DOWN AT NIGHT, OR AT SUCH TIMES AS APPROVED BY OWNER AND THE BUILDING MANAGEMENT WHICH WILL CAUSE LEAST INTERFERENCE WITH ESTABLISHED OPERATING ROUTINE. ARRANGE WORK TO ASSURE THAT SERVICES WILL BE SHUT DOWN ONLY DURING TIME ACTUALLY REQUIRED TO MAKE NECESSARY CONNECTION TO EXISTING WORK.

WHERE EXISTING WALLS, CEILINGS, FLOORS, ETC., ARE CUT OR OTHERWISE DAMAGED DURING CONSTRUCTION, REPAIR ALL SURFACES TO THEIR ORIGINAL CONDITION.

COORDINATION
COORDINATE ALL WORK UNDER THIS DIVISION WITH THE WORK UNDER OTHER DIVISIONS. PROVIDE ADJUSTMENTS AS NECESSARY. EQUIPMENT, APPARATUS, DUCTWORK, PIPING, ETC., INSTALLED WITHOUT REGARD FOR THE SPEC REQUIREMENTS OR OTHER TRADES WILL BE REWORKED AT THE EXPENSE OF THE INSTALLING SUBCONTRACTOR IF IT CREATES AN UNNECESSARY HINDRANCE TO THE INSTALLATION OF ANOTHER TRADE'S WORK. ALL ITEMS MOUNTED OR BELOW THE CEILING, AND ANY ITEM PENETRATING THE CEILING, SHALL BE COORDINATED WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.

PROTECTION OF WORK DURING CONSTRUCTION
PROVIDE PROTECTIVE COVERS, SKIDS, PLUGS OR CAPS TO PROTECT EQUIPMENT AND MATERIALS FROM DAMAGE AND DETERIORATION DURING CONSTRUCTION. PROTECT EXPOSED COILS WITH PLYWOOD OR OTHER SUITABLE RIGID COVERS TO AVOID DAMAGE TO FINS.

CONTRACTOR SHALL TAKE PRECAUTIONS AGAINST DAMAGING OR DISRUPTING BUILDING SYSTEMS, WIRING OR CONTROL TUBING FOR ADJACENT TENANTS. ANY DAMAGE SHALL BE REPAIRED AT THE CONTRACTOR'S COST.

PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE. ANY DAMAGE SHALL BE REPAIRED USING THE SAME MATERIALS AT THE CONTRACTOR'S COST.

TEST AND BALANCE
TEST AND BALANCE HVAC AIR SYSTEMS TO WITHIN +10%, -5% OF DESIGN FLOW.

CHECK ALL FANS, INSTRUMENTATION DEVICES, CONTROL DEVICES, DAMPERS, ETC., FOR PROPER OPERATION AND CALIBRATION. REPORT DEFICIENCIES THAT CANNOT BE CORRECTED. MARK AND LOCK DAMPER AT THEIR PROPER POSITION. ADJUST FANS FOR THE CFM SHOWN ON THE FLOOR PLAN.

ADJUST, TEST AND CONFIRM DESIGN AIR FLOW RATES, PRESSURES, TEMPERATURES, AIR QUANTITIES, EQUIPMENT SPEED, AND MOTOR AMPERAGES FOR EACH SEGMENT BRANCH AND COMPONENT OF EACH SYSTEM.

VERIFY THAT DIFFUSER DISCHARGE PATTERNS HAVE BEEN PROPERLY SET. AIR FLOWS SHALL BE BALANCED WITH THE VOLUME DAMPERS INSTALLED IN BRANCH DUCTWORK. OPPOSED BLADE DAMPERS (OBD) IN THE DIFFUSERS SHALL BE SET IN THE FULLY OPEN POSITION DURING BALANCING. AFTER THE MAIN SYSTEM IS BALANCED WITHIN LIMITS SPECIFIED ABOVE, OBD CAN BE USED FOR MINOR ADJUSTMENT.

ADJUSTMENTS AND TESTS SHALL BE MADE UNDER SIMULATED MAXIMUM LOAD CONDITIONS.

THE GENERAL CONTRACTOR SHALL RETAIN THE SERVICES OF AN INDEPENDENT TEST AND BALANCE AGENCY THAT IS INDEPENDENT OF ANY CONTRACTOR, SUBCONTRACTOR, OR MANUFACTURER TO PERFORM THE TESTING AND BALANCING AND PREPARE REPORTS TO THE GENERAL CONTRACTOR. THE INDEPENDENT TEST AND BALANCE AGENCY SHALL BE A CERTIFIED MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU. RECORD DATA ON STANDARD AABC OR NEBB FORMS. MECHANICAL CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR TO ENSURE THAT ANY AND ALL REQUIRED AIR BALANCE TESTING PROCEDURE COSTS ARE INCORPORATED AND COVERED BY CONTRACTOR'S BASE BID.

THE TEST AND BALANCE AGENCY SHALL PROVIDE EQUIPMENT, PERSONNEL, AND A COPY OF THE TEST AND BALANCE REPORT AT THE ENGINEER'S FINAL INSPECTION FOR SPOT-CHECKING. ANY SYSTEM FOUND IMPROPERLY BALANCED OR NOT IN AGREEMENT WITH THE REPORT SHALL BE RE-BALANCED AND A REVISED REPORT SHALL BE SUBMITTED.

THE TEST AND BALANCE AGENCY SHALL PERFORM A "COMFORT" BALANCE 45 DAYS AFTER TENANT MOVES IN.

RECORD DRAWINGS
UPON COMPLETION OF PROJECT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF REPRODUCIBLE DRAWINGS REFLECTING THE "AS BUILT" CONDITION OF THE MECHANICAL SYSTEMS.

OPERATING AND MAINTENANCE MANUALS
MECHANICAL CONTRACTOR SHALL SUBMIT OPERATING AND MAINTENANCE MANUALS UPON COMPLETION OF THE PROJECT. MANUALS TO BE IN ACCORDANCE WITH C408.2.5.2 OF 2018 VIRGINIA ENERGY CONSERVATION CODE

GUARANTEE
MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AGAINST DEFECTS FOR ONE YEAR. PROVIDE ADDITIONAL FOUR YEARS WARRANTY ON ALL COMPRESSORS.

SLEEVES
SLEEVES SHALL BE PROVIDED WHERE PIPES PASS THROUGH WALLS, FLOORS, AND ROOFS; IRON PIPES PASSING THROUGH MASONRY WALL MAY BE BUILT INTO THE WALL. SLEEVES SHALL BE STANDARD WEIGHT STEEL PIPE, EXCEPT SLEEVES FOR CONCEALED PIPING THROUGH FLOORS NOT IN STRUCTURAL MEMBERS; THEY MAY BE 25 GAUGE GALVANIZED SHEET METAL. FLOOR SLEEVES FOR PIPING SHALL EXTEND FROM THE BOTTOM OF THE SLAB TO 2 INCHES ABOVE THE FINISHED FLOOR. WALL SLEEVES SHALL BE FULL THICKNESS OF WALLS. SEAL BETWEEN PIPING AND SLEEVE WITH FIRE-RATED CAULK AT ALL PENETRATIONS OF FIRE-RATED WALLS, PARTITIONS OR FLOORS. MAKE SLEEVES THROUGH OUTSIDE WALLS WATERTIGHT. CAULK BETWEEN UN-INSULATED PIPE AND SLEEVE. SIZE SLEEVES FOR INSULATED PIPES TO ALLOW FULL THICKNESS INSULATION.

ELECTRICAL WORK
ALL ELECTRICAL WORK AND INSTALLATION PROVIDED UNDER THIS DIVISION SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE AND THE REQUIREMENTS OF DIVISION 16. ALL POWER WIRING AND FINAL POWER CONNECTIONS TO THE SYSTEM SHALL BE PROVIDED UNDER DIVISION 16. CONTROL WIRING (120V AND LESS) SHALL BE PROVIDED UNDER DIVISION 15 AND EXTENDED FROM THE 120V POWER CIRCUITS INDICATED ON THE ELECTRICAL DRAWINGS. ALL WIRING FOR VOLTAGES HIGHER THAN 30 VOLTS SHALL BE DONE BY A LICENSED ELECTRICIAN. ALL ELECTRICAL CHARACTERISTICS SHALL BE TAKEN FROM THE ELECTRICAL DRAWINGS AND SPECIFICATIONS AND COORDINATED BEFORE EQUIPMENT IS ORDERED OR SUBMITTED. ALL WIRING IN THE CEILING PLENUM SHALL BE PLENUM-RATED CABLE OR IN CONDUIT.

EQUIPMENT IDENTIFICATION
PROVIDE LABELS FOR EACH EQUIPMENT, STARTER, AND CONTROL SWITCH. LABELS TO BE ENGRAVED, LAMINATED, BAKELITE NAMEPLATES WITH ¼ INCH HIGH WHITE CUT LETTERS; SECURE TO STARTER OR SWITCH.

EQUIPMENT, MATERIALS AND BID BASIS
SPECIFIED MANUFACTURER'S NAMES AND MODEL NUMBERS ARE FOR THE PURPOSE OF DESCRIBING TYPE, CAPACITY, FUNCTION, AND QUALITY OF EQUIPMENT AND MATERIALS TO BE USED. UNLESS "OR EQUAL" OR SPECIFICALLY STATED, BIDS SHALL BE BASED ON EQUIPMENT NAMES. CAPACITIES INDICATED TAKE PRECEDENCE OVER MODEL NUMBERS.

EQUIPMENT SUPPORT
SUPPORT ALL CEILING-MOUNTED EQUIPMENT, DUCTWORK, AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OF SUPPORTS AND EQUIPMENT, PROVIDE ADDITIONAL STEEL FRAMING.
THIS CONTRACTOR SHALL COORDINATE SUPPORTS WITH THE BUILDING MANAGEMENT AND SUBMIT THE METHOD OF SUPPORT FOR REVIEW TO THE BUILDING MANAGEMENT.

OPENINGS THROUGH ROOF
PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOF INTEGRITY OF THIS BUILDING AS REQUIRED BY THE REMOVAL AND/OR INSTALLATION OF PIPES, DUCTS, CONDUITS, AND EQUIPMENT. SUBMIT FOR REVIEW TO THE BUILDING MANAGEMENT.

VIBRATION ISOLATORS
VIBRATION ISOLATORS FOR FANS SHALL BE THE HANGER TYPE AND SHALL CONTAIN A STEEL SPRING AND 0.3" DEFLECTION NEOPRENE ELEMENT IN SERIES. THE NEOPRENE ELEMENT SHALL BE MOLDED WITH A ROD ISOLATION BUSHING THAT PASSES THROUGH THE HANGER BOX.

SPRING DIAMETERS AND HANGER BOX LOWER HOLE SIZES SHALL BE LARGE ENOUGH TO PERMIT THE HANGER ROD TO SWING THROUGH A 15 DEGREE ARC BEFORE CONTACTING THE HOLE AND SHORT CIRCUITING THE SPRING. SPRINGS SHALL HAVE A MINIMUM ADDITIONAL TRAVEL TO SOLID HEIGHT EQUAL TO 50% OF THE RATED DEFLECTION.

SUSPENDED EQUIPMENT SHALL BE PROVIDED WITH VIBRATION ISOLATION HANGERS WHICH SHALL BE FURNISHED WITH THE UNIT, AND ISOLATOR SHALL BE MATCHED TO EQUIPMENT WEIGHT AND SUPPORT LOCATIONS. ISOLATION HANGERS SHALL BE COMBINATION STEEL SPRING AND NEOPRENE-IN-SHEAR WITH STEEL HOUSING. ISOLATORS SHALL HAVE A MINIMUM OPERATING DEFLECTION OF 1 ½". SPRINGS SHALL HAVE A MINIMUM ADDITIONAL TRAVEL FOR 50% BETWEEN THE DESIGN HEIGHT AND THE SOLID HEIGHT.

HVAC INSULATION
QUALITY ASSURANCE: SPECIFIED COMPONENTS OF THIS INSULATION SYSTEM, INCLUDING FACINGS, MASTICS AND ADHESIVES, SHALL HAVE A FIRE HAZARD RATING NOT TO EXCEED 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED RATING, AS PER TESTS CONDUCTED IN ACCORDANCE WITH ASTM E84 (NFPA 255) METHODS.

PIPE INSULATION:
TYPE P1 ASTM C547, CLASS 1 (-20 DEGREES F TO 500 DEGREES F):
FIBERGLASS, MINIMUM 4 POUNDS PER CUBIC FOOT (P.C.F.) DENSITY, K FACTOR 0.23 MAXIMUM AT 75 DEGREES F MEAN, WITH FACTORY-APPLIED ALL-SERVICE-JACKET (ASJ) COMPOSED OF REINFORCED KRAFT AND ALUMINUM FOIL LAMINATE. JACKET SHALL HAVE SELF-SEALING LAP TO FACILITATE CLOSING LONGITUDINAL AND END JOINTS.

APPROVED PRODUCTS:
CERTAINED 500 DEGREE SNAP-ON ASJ/SSL
MANVILLE MICRO-LOK AP-T
OWENS/CORNING FIBERGLASS 25 ASJ/SSL
KNAUF PIPE INSULATION ASJ/SSL

TYPE P2 ASTM C534 (-40 DEGREES F TO 220 DEGREES F:)
FLEXIBLE, CLOSED-CELL ELASTOMERIC, NOMINAL 6 PCF DENSITY, K FACTOR 0.27 MAXIMUM AT 75 DEGREES F MEAN.

APPROVED PRODUCTS:
ARMSTRONG AP ARMAFLEX
MANVILLE AEROTUBE II
NOMACO THERMA-CEL
RUBATEX R-180-F5

DUCT INSULATION:
TYPE D1 ASTM C553 TYPE 1, CLASS B3:
FIBERGLASS, NOMINAL 1 P.C.F. DENSITY BLANKET, K FACTOR 0.31 MAXIMUM AT 75 DEGREES F MEAN, WITH FACTORY APPLIED FSK (FOIL-SCRIM-KRAFT) VAPOR BARRIER JACKET, FOR TEMPERATURES TO TEMPERATURES 250 DEGREES F.

APPROVED PRODUCTS:
CERTAINED "STANDARD DUCT WRAP"
MANVILLE "MICROLITE"
OWENS/CORNING FIBERGLASS RFK-75
KNAUF "DUCTWRAP"

TYPE D3:
FIBERGLASS, NOMINAL 2.0 P.C.F. DENSITY LINER, K FACTOR 0.26 MAXIMUM AT 75 DEGREES F MEAN, BLACK COATING, FOR TEMPERATURES TO 250 DEGREES F.

APPROVED PRODUCTS:
CERTAINED ULTRALITE DUCT LINER 200
MANVILLE LINACOUSTIC
KNAUF DUCT LINER M

INSTALLATION OF PIPE INSULATION:
INSTALL INSULATION ON PIPE SYSTEMS SUBSEQUENT TO TESTING AND ACCEPTANCE OF TEST.

MAINTAIN INTEGRITY OF VAPOR-BARRIER JACKETS ON PIPE INSULATION, AND PROTECT TO PREVENT PUNCTURE OR OTHER DAMAGE. SEAL OPEN ENDS OF INSULATION WITH MASTIC. SECTIONALLY SEAL ALL BUTT ENDS OF ALL COLD WATER PIPING INSULATION AT FITTINGS WITH WHITE VAPOR BARRIER COATING.

COVER VALVES, FLANGES, FITTINGS, AND SIMILAR ITEMS IN EACH PIPING SYSTEM WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN. INSTALL FACTORY MOLDED, PRECUT OR JOB FABRICATED UNITS (AT INSTALLER'S OPTION). FINISH COLD PIPE FITTINGS WITH WHITE VAPOR BARRIER COATING AND HOT PIPING WITH WHITE VINYL ACRYLIC MASTIC, BOTH REINFORCED WITH GLASS CLOTH.

EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PIPING PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.

INSTALL PROTECTIVE METAL SHIELDS AND FOAM GLASS INSERTS WHERE PIPE HANGERS BEAR ON OUTSIDE ON INSULATION.

INSTALLATION OF DUCTWORK INSULATION:
MAINTAIN INTEGRITY OF VAPOR-BARRIER ON DUCTWORK INSULATION, AND PROTECT IT TO PREVENT PUNCTURE AND OTHER DAMAGE. TAPE ALL PUNCTURES. SECURE ALL DUCTWORK WITH GALVANIZED WIRE 12" O.C. SECURE DUCTWORK WITH OUTWARD CLINCHING STAPLES. SEAL ALL LONGITUDINAL AND CIRCUMFERENTIAL JOINTS WITH FSK TAPE.

EXTEND DUCTWORK INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS, AND SIMILAR DUCTWORK PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.

EXCEPT AS OTHERWISE INDICATED, OMIT INSULATION ON DUCTWORK WHERE INTERNAL INSULATION OR SOUND ABSORBING LININGS HAVE BEEN INSTALLED.

ALL INTERNAL INSULATION SHALL BE ADHERED TO THE DUCT WITH 100% COVERAGE OF APPROVED FIRE RETARDANT MASTIC. ALL EDGES SHALL BE SEALED. ANY ABRASIONS OR TEARS REPAIRED WITH MASTIC.
DUCT DIMENSIONS HAVE BEEN INCREASED IN SIZE TO ALLOW FOR LINER WHERE REQUIRED.

INSULATION REQUIREMENTS:

INSULATION SCHEDULE

LOCATION	WRAP	WRAP SIZE (IN.)	WRAP TYPE	WRAP R-VAL	LINER	LINER SIZE (IN.)	LINER LOCATION	LINER TYPE	LINER R-VAL
INDOOR CONCEALED SA/RA	☒	2"	D1	6.0	☒	1"	FIRST 10' FROM UNIT	D3	4.2
INDOOR EXPOSED SA/RA	☐	–	–	–	☒	1"	CONTINUOUS	D3	4.2
OUTDOOR CONCEALED SA/RA	☒	2"	D1	8.0	☒	2"	CONTINUOUS	D3	8.0
OUTDOOR EXPOSED SA/RA	☐	–	–	–	☐	–	–	–	–
INDOOR CONCEALED OA	☒	2"	D1	6.0	☐	–	–	–	–
INDOOR EXPOSED OA	☐	–	–	–	☐	–	–	–	–
INDOOR EA	☐	2"	D1	6.0	☐	–	–	–	–
INDOOR TRANSFER	☐	–	–	–	☐	1"	CONTINUOUS	D3	4.2
TYPE I KITCHEN EA	☐	–	–	–	☐	–	–	–	–
REFRIGERANT PIPING	☒	1/2"	P1	CODE MIN.	☐	–	–	–	–
CONDENSATE PIPING	☒	1/2"	P1	CODE MIN.	☐	–	–	–	–

MAINTENANCE AND SERVICE
THIS CONTRACTOR SHALL INCLUDE AND ASSUME COMPLETE RESPONSIBILITY FOR START-UP, 24 HOURS A DAY SERVICE WITH A RESPONSE TIME NOT TO EXCEED FOUR (4) HOURS.
MAINTENANCE ON A QUARTERLY BASIS (FOUR MAINTENANCE INSPECTIONS A YEAR) FOR A PERIOD OF ONE YEAR FOR ALL HVAC EQUIPMENT, INCLUDING PRE PURCHASED EQUIPMENT AS IS SAID PRE PURCHASED EQUIPMENT WERE PURCHASED BY THIS CONTRACTOR, AND INCLUDING EXISTING EQUIPMENT WITHIN TENANT SPACE.
PROVIDE COST TO PERFORM PREVENTATIVE MAINTENANCE FOR THE FIRST YEAR ONLY.

THIS ONE-YEAR MAINTENANCE CONTRACT SHALL INCLUDE, BUT IS NOT LIMITED TO THE FOLLOWING WORK:
CHECK LINES FOR LEAKAGE OF REFRIGERANT/WATER
REFILL LINES IF NECESSARY
LUBRICATE MOTORS
CHECK OPERATION OF THERMOSTATS
REPLACE RETURN AIR FILTERS
CLEAN CONDENSER COILS
CHECK AND TIGHTEN ELECTRICAL CONNECTIONS
CHECK CONTROLS
CHECK FOR NOISE AND VIBRATION
CHECK REFRIGERANT PRESSURE DURING OPERATION
CHECK CURRENT (AMPERAGE) DRAW OF ALL MOTORS
CHECK OPERATION OF CONDENSATE DRAIN SYSTEM
CHECK AND ADJUST BLOWER FAN BELT TENSION

SHEET METAL WORK
EXCEPT AS OTHERWISE NOTED, ALL DUCTWORK AND OTHER SHEET METAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH LATEST EDITION OF THE SHEET METAL AND AIR CONDITIONING CONTRACTOR NATIONAL ASSOCIATION, INC. (SMACNA), HVAC CONSTRUCTION STANDARDS MANUAL. DUCTWORK SHALL BE GALVANIZED SHEET STEEL, UNLESS OTHERWISE NOTED. FIBERGLASS DUCTWORK IS NOT ACCEPTABLE.

MINIMUM DUCTWORK STATIC PRESSURE CONSTRUCTION SHALL BE 2" W.G. DUCTWORK STATIC PRESSURE CONSTRUCTION SHALL BE 4" W.G. FOR OPERATING PRESSURES ABOVE 2" W.G. AND UP TO 4" W.G. ALL DUCTS SHALL BE SEAL CLASS "A".

LOW PRESSURE FLEXIBLE DUCT SHALL BE SIMILAR TO FLEX MASTER TYPE 5, OR APPROVED EQUAL, WITH 1" THICK INSULATION AND SHALL CONFORM TO U.L. 181 AND NFPA BULLETIN 90A.

MEDIUM PRESSURE FLEXIBLE DUCT TAKE-OFFS TO VARIABLE VOLUME TERMINAL UNITS TO BE THERMAFLEX 11 TYPE ST-L OR APPROVED EQUAL.

FIRE DAMPERS: FIRE DAMPERS SHALL BE DYNAMIC TYPE SIMILAR TO RUSKIN CURTAINTYPE DIBD2, WITH BLADES OUTSIDE AIR STREAM, GALVANIZED STEEL CONSTRUCTION, EQUIPPED WITH FUSIBLE LINK, U.L. LISTED AND INSTALLED IN CONFORMANCE WITH U.L. AND NFPA STANDARD 90A, AND APPROVED FOR USE BY AUTHORITIES HAVING JURISDICTION. PROVIDE ACCESS DOOR IN DUCTWORK FOR EACH FIRE DAMPER.

VOLUME DAMPERS: SAME MATERIAL AS DUCT, PER SMACNA, EXCEPT PROVIDE BEARING AT ONE END OF DAMPER ROD AND QUADRANT WITH LEVER AND LOCKING SCREW AT OTHER END. FOR INSULATED DUCTS, QUADRANTS MOUNTED ON COLLAR SHALL CLEAR INSULATION; INSTALL WITH LEVERS ACCESSIBLE OUTSIDE INSULATION. BALANCING DAMPERS SHALL BE THE OPPOSED BLADE TYPE.

PROVIDE AND INSTALL INSULATED HINGED ACCESS PANELS FOR ALL FIRE AND COMBINATION FIRE/SMOKE DAMPERS.

FLEXIBLE CONNECTIONS: NEOPRENE-COATED GLASS FABRIC, 30 OZ. PER SQUARE YARD WITH SEWED AND CEMENTED SEAMS, SIMILAR TO VENT FABRICS. PROVIDE FLEXIBLE CONNECTIONS BETWEEN ALL EQUIPMENT AND RIGID DUCTWORK. FABRIC CONNECTIONS SHALL BE AT LEAST FOUR (4) INCHES LONG AND HAVE METAL COLLAR AT EACH END; ALLOW AT LEAST 1" SLACK TO ELIMINATE VIBRATION TRANSMISSION.

TURNING VANES: GALVANIZED STEEL, SINGLE THICKNESS VANES WITH MINIMUM TWO (2) INCHES INSIDE RADIUS. ALL SQUARE ELBOWS SHALL HAVE TURNING VANES.

ACCESS TILE IDENTIFICATIONS: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF ALL CONCEALED VALVES, DAMPERS, AND EQUIPMENT. SUBMIT TO ARCHITECT FOR APPROVAL.

DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS. WHERE INTERNAL INSULATION IS CALLED FOR, DUCT DIMENSIONS HAVE BEEN INCREASED IN SIZE TO ALLOW FOR LINER WHERE REQUIRED.

PORTIONS OF DUCTWORK VISIBLE THROUGH SUPPLY AND RETURN AIR OPENINGS SHALL BE PAINTED FLAT BLACK.

TRANSITION RECTANGULAR DUCTWORK ON THE BOTTOM AND SIDES. MAINTAIN DUCTWORK LEVEL AND AS HIGH AS POSSIBLE UNLESS NOTED OTHERWISE.

FLEXIBLE DUCT RUNOUTS TO ALL GRILLES, DIFFUSERS SHALL BE INSTALLED FREE OF KINKS AND SAGS. ALL BRANCH DUCTWORK SHALL BE SIZED TO MATCH THE INLET OF THE GRILLES, DIFFUSERS SERVED. FLEXIBLE DUCT SHALL NOT BE ANY LONGER THAN 4 FEET.

ALL DUCT TRANSITIONS FROM SQUARE TO ROUND SHALL BE SMOOTH SQUARE TO ROUND TRANSITIONS. SPIN-IN FITTINGS AT THE END OF CAPPED DUCTS ARE NOT ACCEPTEPTABLE

ALL OPEN ENDED DUCTS SHALL BE REINFORCED WITH 1½" x ½" x ⅛" GALVANIZED STEEL ANGLES BOLTED OR RIVETED 6" ON CENTER ALL AROUND THE EXTERIOR PERIMETER OF THE DUCT.

FOR ROUND DUCT TAKE-OFFS FROM METAL DUCTS, USE GENFLEX MODEL NUMBER SM-1DEL "SPIN-IN" FITTING.

PIPING
GENERAL: PIPING SHALL BE COMPLETE WITH PIPE FITTINGS, VALVES, COUPLING, STRAINERS, HANGER RODS, HANGERS, SUPPORTS, GUIDES, SLEEVES, AND ACCESSORIES IN CONFORMANCE WITH THE LATEST CODES AND ASME, ANSI, ASTM AND MSS STANDARDS.

NO PIPING SHALL BE LESS THAN ¾", UNLESS OTHERWISE NOTED.

FOR PIPE SIZES NOT INDICATED ON PLANS, SEE MANUFACTURER'S EQUIPMENT CONNECTION DETAILS.

PROVIDE FITTINGS FOR CHANGE IN PIPE SIZE AND FOR FINAL CONNECTION AT EQUIPMENT, AS REQUIRED.

AVOID ENTRY OF FOREIGN MATTER INTO PIPING DURING CONSTRUCTION.

PROVIDE MINIMUM PITCH TO INSURE ADEQUATE VENTING AND DRAINAGE.

PIPING SUPPORTS:

HORIZONTAL PIPING AND PIPING HANGERS SHALL BE ADJUSTABLE CLEVIS TYPE "CARPENTER AND PATTERSON" FIGURE NUMBER 100 OR 100SH, OR APPROVAL EQUAL. HANGER RODS SHALL BE ON THE FOLLOWING DIAMETER:

PIPE SIZE: 1¼" & BELOW; ROD DIAMETER: ⅜"; MAX SPACING: 6'
PIPE SIZE: 1½" & 2"; ROD DIAMETER: ⅜"; MAX SPACING: 8'

PROVIDE ADDITIONAL SUPPORTS AT CHANGE OF DIRECTION, RUNOUTS, AND CONCENTRATED LOADS DUE TO VALVES, ETC.

PIPING MATERIAL:

REFRIGERANT PIPING SHALL BE COPPER ASTM #B280, FACTORY CLEANED, NITROGEN CHARGED, AND CAPPED.

CONDENSATE DISCHARGE PIPING AND FITTINGS SHALL BE COPPER TYPE "L" PIPE. SCHEDULE 40 PVC SHALL BE ACCEPTABLE FOR PIPE INSTALLED ON ROOF ONLY.

PIPING AND FITTINGS SHALL BE SUITABLE FOR OPERATING PRESSURES OF 150 PSI.

FITTINGS:

PROVIDE DIELECTRIC GASKETS FOR JOINTS OF DISSIMILAR METALS: ISOLATING GASKETS, SLEEVES AND WASHERS BETWEEN FLANGES, BOLTS AND NUTS.

FOR MANUAL AIR VENTS, PROVIDE LINE SIZE AIR CHAMBER WITH ½" VALVE. PROVIDE VALVES AT ALL HIGH POINTS AND WHERE FLOW CHANGES FROM HORIZONTAL TO DOWNWARD.

TRAP SEAL IN CONDENSATE DRAIN PIPING SHALL BE MINIMUM 1" GREATER THAN THE STATIC PRESSURE IN SYSTEM.

VALVES:

VALVES FOR WATER PIPING SHALL BE SUITABLE FOR THE SERVICE PRESSURE AND TEMPERATURE AND SHALL BE:

GLOBE VALVE: "JENKINS" FIGURE 556P, FIGURE 1200, FIGURE 613-C, OR FIGURE 923-C, OR APPROVED EQUAL.

REFRIGERANT PIPE SIZE:

LIQUID AND SUCTION REFRIGERANT LINES SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATIONS. HOWEVER, LIQUID LINE VELOCITY SHALL NOT EXCEED 360 FPM, AND THE PRESSURE DROP SHALL BE LIMITED TO A MAXIMUM EQUIVALENT OF 2 DEGREES F OF TEMPERATURE CHANGE. THE SUCTION LINE VELOCITY SHALL BE A MINIMUM OF 500 FPM IN HORIZONTAL LINES, AND A MINIMUM OF 1000 FPM IN VERTICAL RISERS (IF PART LOAD CONDITIONS EXIST, A DOUBLE RISER MAY BE REQUIRED); THE PRESSURE DROP SHALL BE LIMITED TO A MAXIMUM EQUIVALENT OF 2 DEGREES F OF TEMPERATURE CHANGE.

AIR DISTRIBUTION
DIFFUSERS, REGISTERS, AND GRILLES SHALL BE MATCHED AS SCHEDULE OR AS APPROVED EQUAL.

CEILING DIFFUSERS SHALL BE 4-WAY THROW, UNLESS SHOWN OTHERWISE ON DRAWINGS.

ALL REGISTERS SHALL BE FURNISHED WITH OPPOSED BLADE DAMPERS.

EXACT LOCATION OF ALL CEILING MOUNTED DIFFUSERS, GRILLES, AND REGISTERS TO BE COORDINATED WITH LIGHTING LAYOUT AND REFLECTED CEILING PLAN.

AUTOMATIC CONTROLS
MECHANICAL CONTRACTOR SHALL PROVIDE CONTROLS THAT MATCH THE MANUFACTURER'S RECOMMENDATION FOR ALL EQUIPMENT PROVIDED.

CONTROL WIRING SHALL BE #12 CU THHN INSTALLED IN EMT CONDUIT (MINIMUM ½" DIAMETER OR PLENUM RATED CABLE.

ALL AUTOMATIC CONTROL VALVES AND DAMPERS SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.

PROVIDE OCCUPANCY SENSORS AS REQUIRED BASED ON SEQUENCE OF OPERATIONS IF NOT PROVIDED FOR LIGHTING CONTROLS OTHERWISE BE ELECTRICAL CON

AIR HANDLING UNIT SCHEDULE

TAG	AREA SERVED	S.A. CFM	O.A. CFM	E.S.P. (IN.WC)	COOLING CAPACITY			IFM	ELECT. HEAT		ELECTRICAL DATA			CONFIGURATION	OPERATING WEIGHT	MANUFACTURER TRANE & MODEL	NOMINAL TONS	ADDITIONAL OPTIONS
					TC (MBH)	SC (MBH)	EFFICIENCY	HP	KW	STEPS	MCA	MOCP	VOLTAGE					
AHU-1	WAITING/RETAIL	2440	350	1.0	75.1	54.4	EER 12.7	1-1/2	18.7	2	71.5	80	208V-3ø	HORIZONTAL	360 LBS	TWE7243BAA	6	A,F,G
AHU-7	SURGERY	2500	325	1.0	73.7	52.3	EER 12.7	1-1/2	18.7	2	71.5	80	208V-3ø	HORIZONTAL	360 LBS	TWE7243BAA	6	A,F,G

OPTIONS (ALL UNITS)
- 7-DAY PROGRAMMABLE DIGITAL THERMOSTAT W/ HUMIDISTAT
- FILTER KIT /W 2" FILTERS
- CONDENSATE DRAIN PAN OVERFLOW SWITCH
- 2000+ CFM: DUCT SMOKE DETECTOR, SEE NOTE #3
- SINGLE POINT ELECTRICAL CONNECTION
- MANUAL O.A. DAMPER
- GALVANIZED CONDENSATE DRAIN PAN
- FACTORY INSTALLED ELECTRIC HEATER KIT

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: CONDENSATE PUMP, DIVERSITECH CP-22 120V/1ø
B: 24V MOTORIZED O.A. DAMPER
C: 120V/1ø MOTORIZED O.A. DAMPER
D: STAINLESS STEEL DRAIN PAN
E: CO2 SENSOR, WALL MOUNTED
F: TRANE 'SES' MODULE FOR HUMIDITY CONTROL
G: UV LIGHT EQUAL TO ULTRAVATION MODEL 'UVPHOTOMAX'

NOTES:
1. ALL UNITS SHALL BE U.L. LABELED.
2. ALL UNITS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE EACH UNIT WITH A SMOKE DETECTOR.
   THE SMOKE DETECTOR SHALL BE IONIZATION TYPE WIRED TO SHUT-DOWN UNIT WHEN ACTIVATED.
   THE SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.
   THE SMOKE DETECTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR TO AN AN HVAC MONITORING PANEL.
   THE PANEL SHALL PROVIDE VISUAL AND AUDIBLE SIGNAL. THE SIGNAL SHALL INDICATE AND BE LABELED AS AIR DETECTOR TROUBLE.
   THE PANEL SHALL BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.
   PROVIDE SMOKE DETECTOR WITH REMOTE ALARM OR SUPERVISORY INDICATING DEVICES.
   EACH REMOTE DEVICE SHALL BE PERMANENTLY LABELED TO ACCURATELY IDENTIFY THE UNIT SERVED.
4. ELECTRIC HEATER SHALL BE BY UNIT MANUFACTURER.

GAS FURNACE SCHEDULE

TAG	AREA SERVED	S.A. CFM	O.A. CFM	E.S.P. (IN.WC)	COOLING COOLING CAPACITY			HEATING CAPACITY (GAS)			ELECTRICAL DATA			CONFIGURATION	OPERATING WEIGHT	MANUFACTURER TRANE & MODEL	NOMINAL TONS	ADDITIONAL OPTIONS
					TC (MBH)	SC (MBH)	MANUFACTURER TRANE & MODEL	INPUT (MBH)	OUTPUT (MBH)	AFUE (%)	MCA	MOCP	VOLTAGE					
GF-2	OFFICES	1470	330	0.7	48.1	35.8	4TXCC007DS3	80	77.6	96	14.1	15	115V-1ø	HORIZONTAL	190 LBS	S9X1C080U5PSBA	4	
GF-3	ICU TREATMENT	1600	265	0.7	48.7	37.6	4TXCC007DS3	80	77.6	96	14.1	15	115V-1ø	HORIZONTAL	190 LBS	S9X1C080U5PSBA	4	
GF-4	DENTAL/CANINE	715	80	0.7	24.2	17.2	4TXCB003DS3	40	38.8	96	8.8	15	115V-1ø	HORIZONTAL	165 LBS	S9X1B040U3PSBA	2	
GF-5	DVM OFFICES	1545	140	0.7	48.4	36.9	4TXCC007DS3	80	77.6	96	14.1	15	115V-1ø	HORIZONTAL	190 LBS	S9X1C080U5PSBA	4	
GF-6	EXAM ROOMS	1800	295	0.7	48.1	35.8	4TXCC007DS3	80	77.6	96	14.1	15	115V-1ø	HORIZONTAL	190 LBS	S9X1C080U5PSBA	5	
GF-8	BOARDING WAIT	1565	170	0.7	48.5	37.1	4TXCC007DS3	80	77.6	96	14.1	15	115V-1ø	HORIZONTAL	190 LBS	S9X1C080U5PSBA	4	
GF-9	FELINE BOARDING	1250	115	0.7	35.3	27.8	4TXCB006DS3	40	38.8	96	8.8	15	115V-1ø	HORIZONTAL	165 LBS	S9X1B040U3PSBA	3	
GF-10	CANINE BOARDING	1550	165	0.7	48.4	36.9	4TXCC007DS3	80	77.6	96	14.1	15	115V-1ø	HORIZONTAL	190 LBS	S9X1C080U5PSBA	4	
GF-11	LUXURY RUNS	1475	130	0.7	41.9	32.8	4TXCB006DS3	60	58.2	96	10.3	15	115V-1ø	HORIZONTAL	173 LBS	S9X1C080U5PSBA	3.5	
GF-12	LOUNGE	1200	135	0.7	35.1	27.2	4TXCB006DS3	40	38.8	96	8.8	15	115V-1ø	HORIZONTAL	165 LBS	S91XB040U3PSBA	3	
GF-13	INDOOR EXERCISE	800	165	0.7	24.6	18.3	4TXCB003DS3	40	38.8	96	8.8	15	115V-1ø	HORIZONTAL	165 LBS	S9X1B040U3PSBA	2	

OPTIONS (ALL UNITS)
- 7-DAY PROGRAMMABLE DIGITAL THERMOSTAT W/ HUMIDISTAT
- HI-EFFICIENCY
- FILTER KIT /W 2" FILTERS
- CONDENSATE DRAIN PAN OVERFLOW SWITCH
- CONCENTRIC VENT KIT
- ROOF VENT TERMINATION KIT
- 2000+ CFM: DUCT SMOKE DETECTOR, SEE NOTE #3
- MANUAL O.A. DAMPER
- GALVANIZED CONDENSATE DRAIN PAN
- REDUCING COUPLING
- GAS REGULATOR
- GAS SHUT-OFF VALVE
- SINGLE POINT ELECTRICAL CONNECTION

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: CONDENSATE PUMP, DIVERSITECH CP-22 120V/1ø
B: 24V MOTORIZED O.A. DAMPER
C: 120V/1ø MOTORIZED O.A. DAMPER
D: STAINLESS STEEL DRAIN PAN
E: CO2 SENSOR, WALL MOUNTED
F: TRANE 'SES' MODULE FOR HUMIDITY CONTROL
G: UV LIGHT EQUAL TO ULTRAVATION MODEL 'UVPHOTOMAX'

NOTES:
1. ALL UNITS SHALL BE AGA CERTIFIED AND U.L. LABELED.
2. ALL UNITS SHALL HAVE R-410A REFRIGERANT.
3. ALL UNITS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE EACH UNIT WITH A SMOKE DETECTOR.
   THE SMOKE DETECTOR SHALL BE IONIZATION TYPE WIRED TO SHUT-DOWN UNIT WHEN ACTIVATED.
   THE SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.
   THE SMOKE DETECTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR TO AN AN HVAC MONITORING PANEL.
   THE PANEL SHALL PROVIDE VISUAL AND AUDIBLE SIGNAL. THE SIGNAL SHALL INDICATE AND BE LABELED AS AIR DETECTOR TROUBLE.
   THE PANEL SHALL BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.
   PROVIDE SMOKE DETECTOR WITH REMOTE ALARM OR SUPERVISORY INDICATING DEVICES.
   EACH REMOTE DEVICE SHALL BE PERMANENTLY LABELED TO ACCURATELY IDENTIFY THE UNIT SERVED.

MINI SPLIT SYSTEM/HEAT PUMP SCHEDULE

TAG	AREA SERVED	S.A. (CFM)	EVAPORATOR SECTION							CONDENSING SECTION				EFFICIENCY	MANUFACTURER MITSUBISHI & MODEL	ADDITIONAL OPTIONS
			RATED TC (MBH)	MIN./MAX TC (MBH)	SC (MBH)	MIN./MAX HEAT (MBH)	WEIGHT (LBS)	ELECTRICAL DATA MCA	ELECTRICAL DATA VOLTAGE	ELECTRICAL DATA MCA	ELECTRICAL DATA MOCP	ELECTRICAL DATA VOLTAGE	WEIGHT (LBS)			
DAH-1/DHP-1	173 SURGERY 1	550	17.2	5.8/18.0	14.8	5.4/20.9	28	1	208V-1ø	10	15	208V-1ø	81	16 SEER/3.1 COP	MSZ-WR18NA/MUZ-WR18NA	F
DAH-2/DHP-2	170 SURGERY 2	550	17.2	5.8/18.0	14.8	5.4/20.9	28	1	208V-1ø	10	15	208V-1ø	81	16 SEER/3.1 COP	MSZ-WR18NA/MUZ-WR18NA	F

OPTIONS (ALL UNITS)
- WALL MOUNTED 7-DAY PROGRAMMABLE DIGITAL THERMOSTAT
- CONDENSATE DRAIN PAN OVERFLOW SWITCH
- SINGLE POINT ELECTRICAL CONNECTION
- GALVANIZED CONDENSATE DRAIN PAN
- INTEGRAL CONDENSATE PUMP
- 4" THICK PREFABRICATED PAD OR CONCRETE PAD FOR OUTDOOR UNIT
- PRE-CHARGED REFRIGERANT LINE SETS
- MANUFACTURER MINIMUM CLEARANCES

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: CONDENSATE PUMP, DIVERSITECH CP-22 120V/1ø
B: 24V MOTORIZED O.A. DAMPER
C: 120V/1ø MOTORIZED O.A. DAMPER
D: STAINLESS STEEL DRAIN PAN
E: OUTDOOR UNIT WIND RESTRAINTS
F: UV LIGHT EQUAL TO ULTRAVATION MODEL 'UVPHOTOMAX' MOUNTED IN AIRSTREAM

NOTES:
1. ALL UNITS SHALL BE U.L. LABELED.
2. ALL UNITS SHALL HAVE R-410A REFRIGERANT.
3. ALL UNITS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
4. INDOOR UNIT POWERED BY OUTDOOR UNIT, SINGLE POINT ELECTRICAL CONNECT AT OUTDOOR UNIT ONLY.
   DISCONNECT SWITCH REQUIRED BY ELECTRICAL CONTRACTOR AT BOTH INDOOR AND OUTDOOR UNIT LOCATION.
5. CONTRACTOR SHALL VERIFY EQUIPMENT SUPPLIER EXACT ROUTING AND SIZE OF INSULATED REFRIGERANT PIPING. INSTALL PER MANUFACTURER RECOMMENDATIONS.

FAN FILTER UNIT SCHEDULE

TAG	AREA SERVED	FAN FILTER INFORMATION				ELECTRICAL INFORMATION			MANUFACTURER ENVIRCO & MODEL	ADDITIONAL OPTIONS
		NOMINAL UNIT SIZE	ACTIVE FILT. FACE AREA (SQ.FT.)	MAXIMUM CFM	DESIGN CFM	WATTS AT MAXIMUM CFM	FLA	VOLTAGE		
FFU-1	173 SURGERY 1	2x4 RSRE	5.3	610	275	300	1.5	208V-1PH	MAC-10-LAF	A,B,C,D
FFU-2	170 SURGERY 2	2x4 RSRE	5.3	610	525	300	1.5	208V-1PH	MAC-10-LAF	A,B,C,D

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: RSRE OPTION FOR ROOM SIDE MAINTENANCE ON FILTER AND MOTOR/BLOWER ASSEMBLY
B: AIRFLOW INDICATOR LIGHT
C: SOLID STATE SPEED CONTROL
D: FILTER REPLACEMENT INDICATOR LIGHT

CONTRACTOR NOTE:
FAN FILTER UNITS SHALL BE WIRED DIRECTLY TO PANEL FOR CONTINUOUS RUN 24/7. COORDINATE WITH ELECTRICAL CONTRACTOR TO HAVE TAG-OUT-LOCK-OUT PROVISIONS MADE AT PANEL FOR FUTURE MAINTENANCE.

HEAT PUMP SCHEDULE

TAG	COOLING CAPACITY				COMPRESSOR		FAN	ELECTRICAL DATA			MANUFACTURER TRANE & MODEL	OPERATING WEIGHT	NOMINAL TONS	MATCHING INDOOR UNIT
	TC (MBH)	SC (MBH)	EFFICIENCY	OA DB (°F)	RLA	LRA	FLA	MCA	MOCP	VOLTAGE				
HP-1	75.1	54.4	EER 12.7	95	10.4/10.4	73.0/73.0	2.2	26	35	208V-3ø	TWA07243D	360 LBS	6	AHU-1
HP-7	73.7	52.3	EER 12.7	95	10.4/10.4	73.0/73.0	2.2	26	35	208V-3ø	TWA07243D	360 LBS	6	AHU-7

OPTIONS (ALL UNITS)
- 4" THICK PREFABRICATED PAD OR CONCRETE PAD
- PRE-CHARGED REFRIGERANT LINE SETS
- MANUFACTURER MINIMUM CLEARANCES

OPTIONS IF TOTAL EQUIVALENT REFRIGERANT LENGTH ≥ 50'-0" & ≤ 175'-0"
- COMPRESSOR CRANKCASE HEATER
- COMPRESSOR START ASSIST CAPACITOR AND RELAY (NOT REQUIRED FOR SCROLL COMPRESSORS OR 3 PHASE UNITS)
- OUTDOOR UNIT CYCLE PROTECTOR (5 MINUTE)
- WIND BAFFLES (UNITS MOUNTED ON ROOF)
- FOR HORIZONTAL CONFIGURATION: PROVIDE LIQUID LINE SOLENOID WITHIN 2'-0" OF OUTDOOR UNIT WITH FLOW ARROW POINTING TOWARD OUTDOOR UNIT. VAPOR LINE SHOULD SLOPE TOWARD INDOOR UNIT.
- FOR INDOOR UNIT LOCATED ABOVE HEAT PUMP (50'-0" MAX); A LIQUID LINE (BI-FLOW) SOLENOID MUST BE INSTALLED WITHIN 2'-0" OF OUTDOOR UNIT WITH FLOW ARROW POINTING TOWARD OUTDOOR UNIT. AN INVERTED VAPOR LINE TRAP MUST BE INSTALLED AT INDOOR UNIT. THE TOP OF THE TRAP MUST BE GREATER THAN THE HEIGHT OF THE INDOOR COIL.
- FOR INDOOR UNIT LOCATED BELOW HEAT PUMP (150'-0" MAX); A LIQUID LINE (BI-FLOW) SOLENOID MUST BE INSTALLED WITHIN 2'-0" OF OUTDOOR UNIT.

NOTES:
1. ALL UNITS SHALL BE U.L. LABELED.

CONDENSING UNIT SCHEDULE

TAG	COOLING CAPACITY				COMPRESSOR		FAN	ELECTRICAL DATA			MANUFACTURER TRANE & MODEL	OPERATING WEIGHT	NOMINAL TONS	MATCHING INDOOR UNIT
	TC (MBH)	SC (MBH)	EFFICIENCY	OA DB (°F)	RLA	LRA	FLA	MCA	MOCP	VOLTAGE				
CU-2	48.1	35.8	SEER 15.0	93	18.5	124.0	0.93	24.0	40	208V-1ø	4TWR5048	250 LBS	4	GF-2
CU-3	48.7	37.6	SEER 15.0	93	18.5	124.0	0.93	24.0	40	208V-1ø	4TWR5048	250 LBS	4	GF-3
CU-4	24.2	17.2	SEER 15.0	93	10.9	62.9	0.64	14.0	25	208V-1ø	4TEWR4024	250 LBS	2	GF-4
CU-5	48.4	36.9	SEER 15.0	93	18.5	124.0	0.93	24.0	40	208V-1ø	4TWR5048	250 LBS	4	GF-5
CU-6	48.1	35.8	SEER 15.0	93	23.7	152.5	2.80	32.5	50	208V-1ø	4TWR5060	251 LBS	5	GF-6
CU-8	48.5	37.1	SEER 15.0	93	18.5	124.0	0.93	24.0	40	208V-1ø	4TWR5048	250 LBS	4	GF-8
CU-9	35.3	27.8	SEER 15.0	93	14.1	72.2	0.64	18.0	30	208V-1ø	4TWR5036	199 LBS	3	GF-9
CU-10	48.4	36.9	SEER 15.0	93	18.5	124.0	0.93	24.0	40	208V-1ø	4TWR5048	250 LBS	4	GF-10
CU-11	41.9	32.8	SEER 15.0	93	16.7	109.0	0.93	22.0	35	208V-1ø	4TWR5042	227 LBS	3.5	GF-11
CU-12	35.1	27.2	SEER 15.0	93	14.1	72.2	0.64	18.0	30	208V-1ø	4TWR5036	199 LBS	3	GF-12
CU-13	24.6	18.3	SEER 15.0	93	10.9	62.9	0.64	14.0	25	208V-1ø	4TWR4024	250 LBS	2	GF-13

OPTIONS (ALL UNITS)
- 4" THICK PREFABRICATED PAD OR CONCRETE PAD
- PRE-CHARGED REFRIGERANT LINE SETS
- MANUFACTURER MINIMUM CLEARANCES

OPTIONS IF TOTAL EQUIVALENT REFRIGERANT LENGTH ≥ 50'-0" & ≤ 175'-0"
- COMPRESSOR CRANKCASE HEATER
- COMPRESSOR START ASSIST CAPACITOR AND RELAY (NOT REQUIRED FOR SCROLL COMPRESSORS OR 3 PHASE UNITS)
- OUTDOOR UNIT CYCLE PROTECTOR (5 MINUTE)
- WIND BAFFLES (UNITS MOUNTED ON ROOF)
- FOR HORIZONTAL CONFIGURATION: PROVIDE LIQUID LINE (SINGLE FLOW) SOLENOID OR HARD SHUT-OFF THERMAL EXPANSION VALVE WITHIN 2'-0" OF INDOOR UNIT WITH FLOW ARROW POINTING TOWARD INDOOR UNIT. VAPOR LINE SHOULD SLOPE TOWARD INDOOR UNIT.
- FOR INDOOR UNIT LOCATED ABOVE CONDENSING UNIT (50'-0" MAX); A SOLENOID IS NOT REQUIRED. AN INVERTED VAPOR LINE TRAP MUST BE INSTALLED AT INDOOR UNIT. THE TOP PEAK OF THE TRAP MUST BE GREATER THAN THE HEIGHT OF THE COIL.
- FOR INDOOR UNIT LOCATED BELOW CONDENSING UNIT (150'-0" MAX); A SOLENOID IS NOT REQUIRED.

NOTES:
1. ALL UNITS SHALL U.L. LABELED.

ENERGY RECOVERY VENTILATOR SCHEDULE

TAG	CFM		SUMMER PERFORMANCE				WINTER PERFORMANCE				ELECTRICAL DATA			WEIGHT (LBS)	MANUFACTURER & MODEL	
	OUTSIDE AIR	EXHAUST AIR	OA EAT (°F) DB/WB	SA LAT (°F) DB/WB	RA LAT (°F) DB/WB	EA EAT (°F) DB/WB	OA EAT (°F) DB/WB	SA LAT (°F) DB/WB	RA LAT (°F) DB/WB	EA EAT (°F) DB/WB	MCA	MOCP	VOLTAGE			
ERV-1	715	715	93/77	79/66	75/63	89/74	20/17	58/47	70/54	31/27	20.5	25	120/1/60	240	GREENHECK	MINIVENT-750-VG
ERV-2	1250	1250	93/77	79/67	75/63	86/74	20/17	60/48	70/54	29/26	17.6	25	208/1/60	732	GREENHECK	ERV-20-15L
ERV-3	1550	1550	93/77	79/67	75/62	89/73	20/17	59/47	70/54	30/27	25.2	35	208/1/60	732	GREENHECK	ERV-20-15L
ERV-4	1475	1475	93/77	79/66	75/63	89/74	20/17	59/47	70/54	30/27	23.0	30	208/1/60	732	GREENHECK	ERV-20-15L

NOTES:
1. EXTERNAL STATIC PRESSURE - 0.7" (TOTAL ALL SIDES)
2. UNITS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
3. TWO MOTORS REQUIRED ON ALL UNITS, ONE ELECTRICAL CONNECTION.
4. ENERGY RECOVERY UNIT PROVIDED WITH: SUPPLY FAN. EXHAUST FAN, MOTOR STARTER, RELAY AND AUX. CONTACTORS, 2" MERV 8 SUPPLY FILTERS, 2" MERV 8 SUPPLY FILTERS.
5. PROVIDE UNIT WITH AN AUXILIARY DRAIN PAN AND A WATER-LEVEL DETECTION DEVICE CONFORMING TO UL 508 TO SHUT DOWN EQUIPMENT UPON WATER DETECTION IN DRAIN PAN PRIOR TO OVERFLOW OF THE PAN. PROVIDE AND INSTALL PER 2018 NORTH CAROLINA CODE CHAPTER 3 REQUIREMENTS.

ELECTRIC HEATER SCHEDULE

TAG	AREA SERVED	HEATER TYPE	ELECTRICAL DATA KW	ELECTRICAL DATA AMPS	ELECTRICAL DATA VOLTAGE	OPERATING WEIGHT	MANUFACTURER MARKEL & MODEL	ADDITIONAL OPTIONS
EWH-1	RISER RM	WALL	3	14.4	208V-1ø	- LBS	F3423T	A,E

OPTIONS (ALL UNITS)
- BUILT-IN THERMOSTAT
- TAMPER PROOF CONTROLS
- MOUNTING BRACKETS/HARDWARE

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: FLUSH MOUNTING KIT, FULLY RECESSED
B: WALL MOUNTED THERMOSTAT /W INSULATED SUB BASE
C: WET LISTED FOR USE IN WET ENVIRONMENT
D: STAINLESS STEEL FINNED HEATING ELEMENTS
E: RATED WALL BOX (WHERE APPLICABLE)
F: ADJUSTABLE DISCHARGE LOUVERS

NOTES:
1. ALL HEATERS SHALL BE U.L. LABELED.
2. ALL HEATERS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. VERIFY MOUNTING HEIGHTS AND EXACT LOCATION WITH THE OWNER/ARCHITECT PRIOR TO INSTALLING UNIT.

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COMMONWEALTH OF VIRGINIA
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Lic. No. 039957
PROFESSIONAL ENGINEER
07/18/2022

TEETER ENGINEERING GROUP, P.A.

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING
2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

MECHANICAL SCHEDULES

REV #	DATE	COMMENTS
-		
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REVISION:
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REVIEWS
INITIALS

TEG
PROJECT NO.: 22018
DRAWN: DRH
DATE: 07/18/22

M003
3 OF 12

Save Date: July 18, 2022 - 8:48 AM - RyanH
Plot Date: July 18, 2022 - 9:21 AM
Drawing Name: \\server\Jobs2\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018M003_MECHANICAL SCHEDULES.dwg

FAN SCHEDULE

TAG	AREA SERVED	FAN TYPE	CFM (MIN/MAX)	E.S.P. (IN.WC)	DRIVE TYPE	RPM	ELECTRICAL DATA			SONES	OPERATING WEIGHT	MANUFACTURER GREENHECK & MODEL	OPTIONS
							H.P.	WATTS	VOLTAGE				
EF-1	116 FELINE WARD	CEILING EXHAUST	50	0.25	DIRECT	858	–	16.8	115V-1ø	0.4	12 LBS	SP-A70	A,B,F,L,R,S
EF-2	117 REST ROOM	CEILING EXHAUST	70	0.25	DIRECT	900	–	18	115V-1ø	0.4	12 LBS	SP-A90	A,B,F,L,R,S
EF-3	118 REST ROOM	CEILING EXHAUST	70	0.25	DIRECT	900	–	18	115V-1ø	0.4	12 LBS	SP-A90	A,B,F,L,R,S
EF-4	119 REST ROOM	CEILING EXHAUST	70	0.25	DIRECT	900	–	18	115V-1ø	0.4	12 LBS	SP-A90	A,B,F,L,R,S
EF-5	128 DVM REST ROOM	CEILING EXHAUST	70	0.25	DIRECT	900	–	18	115V-1ø	0.4	12 LBS	SP-A90	A,B,F,L,R,S
EF-6	ICU BOARDING	IN-LINE EXHAUST	95	0.25	BELT	1618	1/4	–	115V-1ø	6.9	80 LBS	BSQ-70	A,B,F,Q
EF-7	LAB/PPS/ISOLATION	IN-LINE EXHAUST	325	0.25	DIRECT	1071	1/4	–	115V-1ø	7.7	54 LBS	BSQ-80	A,B,F,Q
EF-8	161 STAFF RR	CEILING EXHAUST	70	0.25	DIRECT	900	–	18	115V-1ø	0.4	12 LBS	SP-A90	A,B,F,L,R,S
EF-9	162 STAFF RR	CEILING EXHAUST	70	0.25	DIRECT	900	–	18	115V-1ø	0.4	12 LBS	SP-A90	A,B,F,L,R,S
EF-10	122 HYDRO THERAPY	CEILING EXHAUST	100/200	0.25	VARI GREEN	858	–	16.8	115V-1ø	0.4	12 LBS	SP-A70	A,B,F,P,T,V
EF-11	136 ISOLATION	CEILING EXHAUST	80	0.25	DIRECT	858	–	16.8	115V-1ø	0.4	12 LBS	SP-A70	A,B,F,G,L,R
EF-12	167 ISOLATION	CEILING EXHAUST	135	0.25	DIRECT	1100	–	19.2	115V-1ø	0.4	18 LBS	SP-A110	A,B,F,G,L,R
EF-13	112 I.T. CLOSET	CEILING EXHAUST	100	0.25	DIRECT	1100	–	19.2	115V-1ø	0.4	18 LBS	SP-A110	A,B,F,L,R,S
EF-14	156 GROOMING	CEILING EXHAUST	125	0.25	DIRECT	1100	–	19.2	115V-1ø	0.4	18 LBS	SP-A110	A,B,F,L,V
EF-15	155 BATHE/DRY	CEILING EXHAUST	125	0.25	DIRECT	1100	–	19.2	115V-1ø	0.4	18 LBS	SP-A110	A,B,F,L,V
EF-16	ATTIC (LEFT 1/2)	INLINE EXHAUST	250	0.25	DIRECT	1325	1/20	–	115V-1ø	5.4	41 LBS	SQ-80	A,B,F,M,W
EF-17	ATTIC (RIGHT 1/2)	INLINE EXHAUST	250	0.25	DIRECT	1325	1/20	–	115V-1ø	5.4	41 LBS	SQ-80	A,B,F,M,W
RF-1	RELIEF FAN ATTIC	IN-LINE EXHAUST	800 – 1000	0.5	VARI GREEN	1725	1/4	–	115V-1ø	7.0	56 LBS	SQ-100-VG	A,B,J,W
RF-2	RELIEF FAN ATTIC	IN-LINE EXHAUST	1200 – 1470	0.5	VARI GREEN	1719	3/4	–	115V-1ø	7.1	67 LBS	SQ-140-VG	A,B,J,W
RF-3	RELIEF FAN ATTIC	IN-LINE EXHAUST	1540 – 2500	0.5	VARI GREEN	1140	3/4	–	115V-1ø	7.3	144 LBS	SQ-160-VG	A,B,J,W

OPTIONS

A: DISCONNECT SWITCH
B: BACKDRAFT DAMPER
C: PREFAB. ROOF CURB
D: BIRDSCREEN
E: SHORT BASE OPTION
F: HANGING BRACKETS WITH VIBRATION ISOLATION
G: WALL MOUNTED SWITCH (W/PILOT LIGHT)
H: 2-SPEED FAN:
- LOW SPEED CONNECTED TO HVAC FAN UNIT
- HIGH SPEED MANUAL OVERRIDE BY SPRING WOUND TIMER ON WALL (6 AC/H, 12 AC/H)

I: WALL MOUNTED THERMOSTAT
J: PROVIDE FACTORY FAN SPEED CONTROLLER TO BALANCE FAN
K: INTERLOCKED WITH LIGHTING FIXTURE SWITCH
L: WL, WALL LOUVER DISCHARGE
M: RFC, ROOF CAP (FLAT ROOF) RL, ROOF CAP (PITCHED ROOF) WITH MANUAL DAMPER
N: MOTORIZED DAMPER – 120V
O: WASHABLE ALUMINUM FILTERS
P: FAN TO BE SELECTED WITH VARI-GREEN MOTOR AND 2-SPEED CONTROL BOARD
Q: INTERLOCK WITH ASSOCIATED SPLIT SYSTEM TO ENERGIZE FAN RTU IS ENERGIZED
R: EXHAUST GRILLE
S: INTERLOCKED WITH LIGHTING OCCUPIED SENSOR (PROVIDED BY E.C. – SEE ELEC. DWGS FOR LOCATION)
T: RUN CONTINUOUSLY DURING OCCUPIED HOUR USE, CONNECTED VIA LIGHTING CONTROL. (CONTROL PROVIDED BY E.C. – SEE ELEC. DWGS FOR LOCATION)
U: FAN CONTROLLED BY HOOD CONTROL PANEL
V: SPRING–WOUND TIMER CONTROL SWITCH, 15 MIN MAX
W: WALL MOUNTED HUMIDISTAT

NOTES:
1. ALL FANS SHALL BE U.L. LABELED.
2. ALL FANS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. EF-10: FAN SHALL BE WIRED SUCH THAT CONTINUOUS RUN OPERATION AT 100 CFM RATE AND MANUAL OVERRIDE VIA SPRING–WOUND TIMER SWITCH FOR ROOM PURGING UPON DEMAND AT 200 CFM RATE.
4. PROVIDE RELIEF FANS RF–1,2,3 WITH VARIABLE SPEED (VARI–GREEN) MOTOR, CONSTANT PRESSURE CONTROL, CONTROLS TRANSFORMER, REMOTE DIAL BY FAN MANUFACTURER
5. EF–14 & 15: FAN SHALL BE CONTROLLED BY SPRING–WOUND TIMER CONTROL SWITCH (15–MIN MAX RUN TIME) FOR ROOM PURGING OF BATHE/DRY AREAS.

GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE

TAG	SERVICE	CFM RANGE	FACE SIZE (IN)	NECK SIZE (IN)	TYPE	OBD	MANUFACTURER PRICE & MODEL	ADDITIONAL OPTIONS
Ⓐ	SUPPLY	0 – 100	24x24	6"ø	SQUARE PLAQUE	NO	SPD	
Ⓑ	SUPPLY	105 – 175	24x24	8"ø	SQUARE PLAQUE	NO	SPD	
Ⓒ	SUPPLY	180 – 270	24x24	10"ø	SQUARE PLAQUE	NO	SPD	
Ⓓ	SUPPLY	275 – 425	24x24	12"ø	SQUARE PLAQUE	NO	SPD	
Ⓔ	SUPPLY	430 – 700	24x24	14"ø	SQUARE PLAQUE	NO	SPD	
Ⓕ	SUPPLY	0 – 100	12x12	6"ø	SQUARE PLAQUE	NO	SPD	
Ⓖ	SUPPLY	0 – 190	MFG	10"x4"	DOUBLE DEFLECTION LOUVERED FACE	YES	520 D	B,E
Ⓗ	SUPPLY	195 – 325	MFG	18"x4"	DOUBLE DEFLECTION LOUVERED FACE	YES	520 D	B,E
Ⓙ	SUPPLY	100 – 150	MFG	6"x6"	3–WAY LOUVERED FACE	YES	SMD	
A	RETURN	0 – 175	24x24	8"ø	PERFORATED FACE	NO	PDDR	
B	RETURN	180 – 275	24x24	10"ø	PERFORATED FACE	NO	PDDR	
C	RETURN	280 – 390	24x24	12"ø	PERFORATED FACE	NO	PDDR	
D	RETURN	395 – 620	24x24	14"ø	PERFORATED FACE	NO	PDDR	
E	RETURN	625 – 1250	24x24	15"x15"	PERFORATED FACE	NO	PDDR	
F	RETURN	130 – 350	MFG	18"x4"	45° DEFL. LVRD FACE, 3/4" SPACING	NO	530 D	B,E
G	RETURN	505 – 800	MFG	22"x12"	45° DEFL. LVRD FACE, 3/4" SPACING	NO	530 D	B,E
Ⓐ	EXHAUST	0 – 175	24x24	8"ø	PERFORATED FACE	NO	PDDR	
Ⓑ	EXHAUST	180 – 270	24x24	10"ø	PERFORATED FACE	NO	PDDR	
Ⓒ	EXHAUST	275 – 400	24x24	12"ø	PERFORATED FACE	NO	PDDR	
Ⓓ	EXHAUST	395 – 620	24x24	14"ø	PERFORATED FACE	NO	PDDR	
Ⓔ	RELIEF	1300	24x24	15"x15"	PERFORATED FACE	NO	PDDR	

ADDITIONAL OPTIONS (AS NOTED)

A: ADJUST FROM HORIZONTAL DISCHARGE TO VERTICAL DISCHARGE. PROVIDE DIFFUSER WITH SQUARE TO ROUND NECK ADAPTOR, MODEL #SR
B: PROVIDE REGISTER WITH ROUND NECK ADAPTOR WHERE REQUIRED.
C: PROVIDE LINEAR SLOT AND/OR LINEAR BAR GRILLE WITH END CAPS, BORDER SUITABLE FOR INSTALLING ON GYB CEILING/SIDEWALL.
D: PROVIDE SPIRAL DUCT GRILLE SIZED TO MATCH DUCT SIZE O.D., END FRAMES TO MATCH DUCT SIZE O.D., CLOSED CELL FOAM GASKET FACTORY COLOR TO MATCH DUCTWORK COLOR, AIR SCOOP ACCESSORY, AND OPPOSED BLADE DAMPER, NO EXCEPTIONS.
E: PROVIDE LOUVERED FACE GRILLE WITH STEEL OBD, FACTORY INSTALLED.

NOTES:
1. ALL DEVICES SHALL BE FINISHED WITH AN ENAMEL FINISH, COLOR BY ARCHITECT. COORDINATE DEVICE COLOR(S) WITH ARCHITECT PRIOR TO ORDERING. COLOR COORDINATION SHALL INCLUDE BUT NOT BE LIMITED TO DIFFUSER FACE, CENTER TEE, FRAME INTERIOR, PATTERN CONTROLLER, ETC.
2. ALL DEVICES SHALL BE FURNISHED WITH FRAMES SUITABLE FOR TYPE OF INSTALLATION REQUIRED, NO EXCEPTIONS.
3. PROVIDE EXTERNAL BACK INSULATION, FACTORY INSTALLED FOR ALL DIFFUSER/GRILLE HOUSING.
4. ALL LINEAR SLOT DIFFUSERS AND BAR GRILLES SHALL BE FURNISHED WITH END CAPS.
5. ALL DEVICES INSTALLED IN HARD CEILINGS, WALLS, OR DIRECTLY ATTACHED TO DUCTS SHALL BE PROVIDED WITH OBD'S.
6. UNLESS OTHERWISE NOTED, ALL LINEAR SLOTS, BAR GRILLES, LOUVERED AND/OR EGGCRATE FACE GRILLES/REGISTERS SHALL BE PROVIDED WITH AN INSULATED PLENUM BOX FACTORY INSTALLED BY MANUFACTURER. PLENUM BOX SHALL BE FACTORY INSULATED WITH FIBER FREE FOAM, COLOR BLACK. PROVIDE PLENUM BOX WITH DUCT COLLAR AND WITH CABLE/FACE OPERATED FULL FLOW MANUAL CONTROL DAMPER ACCESSIBLE FROM FACE OF LINEAR SLOT OR BAR GRILLE.
7. COORDINATE GRILLES/DIFFUSERS WITH ARCHITECTURAL CEILING AND STRUCTURAL FRAMING LAYOUTS PRIOR TO ORDERING. COORDINATION SHALL INCLUDE TYPE OF INSTALLATION, MOUNTING REQUIREMENTS, T–BAR SPACING/SIZE, GYPBOARD FRAMING, INSTALLATION CLEARANCES, ETC.
8. ADJUST PATTERN CONTROLLERS ON ALL LINEAR SLOTS AND LINEAR BAR GRILLES PRIOR TO AIR BALANCE (T&B).
9. SEE AIR DEVICE TAG FOR DUCT INLET SIZE. ALL DUCT RUNOUTS TO BE SIZED PER GRD AIR TERMINAL NECK SIZE ON SCHEDULE AND/OR AS INDICATED ON PLANS IN CONJUNCTION WITH REQUIREMENTS BY GRD MANUFACTURER. COORDINATE ALL DUCT SIZES PRIOR TO BIDDING, NO EXCEPTIONS. DUCT SIZE SHALL MATCH GREILLE/LOUVER SIZE IF NO DUCTWORK SIZE INDICATED ON PLANS. CONTRACTOR SHALL REFERENCE DUCTWORK INSULATION SCHEDULE FOR ALL DUCTWORK INSULATION REQUIREMENTS.
10. CONTRACTOR SHALL PAINT ALL VISIBLE SURFACES THROUGH GRD'S FLAT BLACK. PLENUM BOX INSULATION SHALL BE COLOR BLACK FROM FACTORY.
11. PROVIDE TAPERED TRANSITIONS FOR ALL SUPPLY DIFFUSERS WITH NECK SIZES DIFFERENT THAN SUPPLY DUCT RUN–OUT SIZES.
12. PROVIDE SPIN–IN TAP WITH MANUAL VOLUME DAMPER AT EACH BRANCH TAKE–OFF. SEE DETAILS SHEET AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
13. TEE–BAR CEILING GRID IS USED. GENERAL CONTRACTOR SHALL MAKE SURE THE GRILLES/DIFFUSERS/LIGHTING FIXTURES WILL FIT PROPERLY IN THE NARROW GRID.

VIRGINIA ENERGY CODE

(2018 Virginia Energy Conservation Code)

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT METHOD OF COMPLIANCE:

PRESCRIPTIVE [X] ENERGY COST BUDGET [ ]

THERMAL ZONE: 4A

EXTERIOR DESIGN CONDITIONS

winter dry bulb	20° F.
summer dry bulb	93° F.

INTERIOR DESIGN CONDITIONS

winter dry bulb	72° F.
summer dry bulb	75° F.
relative humidity	50% R.H.
BUILDING HEATING LOAD	268.3 MBH (peak)
BUILDING COOLING LOAD	435.5 MBH (peak)

MECHANICAL SPACING CONDITIONING SYSTEM

UNITARY

description of unit	SPLIT SYSTEM HEAT PUMPS/GAS FURNACES
heating efficiency	SEE SCHEDULES
cooling efficiency	SEE SCHEDULES
heat output of unit	SEE SCHEDULES
cooling output of unit	SEE SCHEDULES

BOILER

total boiler output of unit	N/A

CHILLER

total chiller capacity	N/A

LIST EQUIPMENT EFFICIENCIES

Equipment schedules with motors (mechanical systems)

motor horsepower	N/A
number of phases	N/A
minimum efficiency	N/A
motor type	N/A
# of poles	N/A

501.2 APPLICATION COMPLIANCE / 506 ADDITIONAL PRESCRIPTIVE COMPLIANCE:

[ ] 506.2.1 MORE EFFICIENT MECH. EQUIPMENT
[ ] 506.2.4 HIGHER EFF DOMESTIC HW
[X] 506.2.2 REDUCED LTG DENSITY
[ ] 506.2.5 ON–SITE RENEWABLE ENERGY
[ ] 506.2.3 ENERGY RECOVERY SYSTEM
[ ] 506.2.6 DAYLIGHT CONTROLS

DESIGNER STATEMENT: 1

To the best of my knowledge and belief, the design of this building complies with the mechanical systems, service systems and equipment requirements of the 2018 Virginia Energy Conservation.

SIGNED:

NAME: CHARLES A DRIGGERS, JR., P.E.

TITLE: MECHANICAL ENGINEER

HVAC SEQUENCE OF OPERATIONS

MECHANICAL CONTRACTOR SHALL PROVIDE CONTROLS THAT MATCH THE MANUFACTURER'S RECOMMENDATION FOR ALL EQUIPMENT PROVIDED. SEE SPECIFICATIONS FOR ADDITIONAL CONTROLS INFORMATION.

THE SEQUENCE OF OPERATIONS PROVIDED IN THE CONTRACT DOCUMENTS IS INTENDED TO COMMUNICATE THE GENERAL DESIGN INTENT TO THE CONTROLS SUBCONTRACTOR AND IS NOT INTENDED TO BE FULLY DEVELOPED OR COMPLETE. IN THE CONTROLS SUBMITTAL, THE SUBCONTRACTOR SHALL FULLY DEVELOP THE SEQUENCE OF OPERATIONS FOR ALL SYSTEMS IDENTIFIED AND SHALL PRESENT ALL SETPOINTS, CONTROL PARAMETERS, AND ALARM POINTS. THE CONTROLS SUBCONTRACTOR SHALL INCORPORATE STANDARD FEATURES SUCH AS MINIMUM RUN TIME DELAYS AND DEAD BANDS FROM SETPOINTS TO PREVENT EQUIPMENT FROM SHORT CYCLING AND WHEN HOVERING AROUND SETPOINTS. ALL MONITORED POINTS SHALL INCLUDE EARLY HIGH/LOW ALARM NOTIFICATIONS PRIOR TO HAVING TO TAKE CORRECTIVE ACTIONS OR EQUIPMENT SHUTDOWNS. TRANSMITTERS SHALL INCLUDE OUT–OF–RANGE, FAIL–SAFE POSITIONING FOR OPEN CIRCUITS OR LOSS OF COMMUNICATION. CONTROL CONTRACTOR SHALL SPECIFY TO FAIL DE–ENERGIZER, HOLD LAST STATE, OR DEFAULT TO A PREDETERMINED SETPOINT. THESE BASIC FEATURES THAT ARE NECESSARY AND ARE PART OF A ROBUST CONTROLS INSTALLATION SHALL BE ASSUMED INCLUDED IN THE SCOPE OF SERVICES FOR DELIVERABLES AT NO ADDITIONAL COSTS TO THE OWNER.

GENERAL AREAS:

THE AHU'S & GF'S WILL BE FULLY CONTROLLED BY INTERNAL CONTROLS. THE UNITS WILL BE PROVIDED WITH STAND–ALONE CONTROLLERS.

AHU'S & GF'S SHALL BE CONTROLLED BY 7–DAY PROGRAMMABLE THERMOSTAT WITH HUMIDISTAT FEATURE OR ZONE SENSORS /W UNIT SENSORS/CONTROLS (SEE PLANS FOR INFORMATION). ROOFTOP UNITS SHALL SWITCH TO OCCUPIED MODE (74° – ADJUSTABLE, ± 4°F) ONE HOUR PRIOR TO BUILDING OCCUPANCY AND SHALL SWITCH TO UNOCCUPIED MODE (85°F COOLING, 68°F HEATING) ONE HOUR AFTER BUILDING OCCUPANCY. OCCUPANCY TIME TO BE DETERMINED BY OWNER. 3–HOUR OVERRIDES SHALL BE PROVIDED AS NEEDED FOR RETAIL PERSONNEL. DUCT MOUNTED HUMIDITY SENSORS SHALL BE INSTALLED IN R.A. DUCTWORK INTERLOCKED WITH 7–DAY PROGRAMMABLE THERMOSTAT WITH BUILT IN HUMIDISTAT FEATURE TO ENERGIZE ROOFTOP UNITS AND CORRESPONDING COMPRESSOR(S) TO MAINTAIN 50% RH WITH ±3°F OCCUPIED AND UNOCCUPIED DEADBAND AND MINIMUM UNIT RUNTIME OF 15 MINUTES DURING HUMIDITY OVERRIDE.

OPTIMAL START/STOP
THE AHU & GF SYSTEM WILL BE STARTED AND STOPPED AS DEFINED BY OWNER BUILDING SCHEDULE. THE SYSTEM WILL START/STOP BY SCHEDULED OCCUPANCY TIME.

UNOCCUPIED COOLING
THE AHU'S & GF'S TO HAVE AN UNOCCUPIED COOLING SET POINT (85 DEG F, ADJUSTABLE AT EACH RTU). TO MAINTAIN DURING UNOCCUPIED PERIODS. ONCE ENERGIZED, THE RTU WILL PROVIDE COOLING AS SCHEDULED. THE SYSTEM WILL REMAIN ENERGIZED UNTIL SPACE SCHEDULED SET POINTS ARE MET.

UNOCCUPIED HEATING
THE AHU'S & GF'S TO HAVE AN UNOCCUPIED HEATING SET POINT (65 DEG F, ADJUSTABLE AT EACH AHU/GF). TO MAINTAIN DURING UNOCCUPIED PERIODS. ONCE ENERGIZED, THE OUTSIDE AIR DAMPER WILL REMAIN CLOSED AND THE SUPPLY FAN WILL MAINTAIN THE DUCT STATIC PRESSURE SET POINT. THE SYSTEM WILL REMAIN ENERGIZED UNTIL NO ZONES REQUIRE UNOCCUPIED HEATING.

OCCUPANCY OVERRIDE
EACH SYSTEM WILL BE AVAILABLE FOR OCCUPANCY OVERRIDE. DURING UNOCCUPIED MODE, THE UNIT CONTROLLER WILL OVERRIDE THE ASSOCIATED SYSTEM INTO OCCUPIED MODE FOR 3 HOURS (ADJ.).

SUPPLY FAN CONTROL
WHEN THE AHU/GF IS ENERGIZED, THE SUPPLY FAN VFD OR ECM MOTOR, WILL MODULATE TO MAINTAIN THE DUCT STATIC PRESSURE SET POINT (ADJ.). FAN SHALL MODULATE CAPACITY TO MAINTAIN 55° FLAT.

MECHANICAL COOLING
IF OUTSIDE AIR IS NOT SUFFICIENT TO PROVIDE COOLING, THE DX COMPRESSORS WILL BE TASKED WITH MAINTAINING THE DISCHARGE AIR TEMPERATURE SET POINT WHEN THE SYSTEM IS ENERGIZED AND NOT IN MORNING WARM–UP. STAGES OF DX COOLING WILL BE ENERGIZED AS NEEDED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT. COMPRESSOR STAGING CONTROL WILL BE DETERMINED BY THE AHU'S & GF'S INTERNAL CONTROLS. THE DISCHARGE AIR TEMPERATURE SET POINT SHALL MODULATE TO CONTROL SPACE TEMPERATURE AND/OR HUMIDITY AS SCHEDULED.

THE ECONOMIZER WILL BE ENABLED BY A COMPARATIVE ENTHALPY. THE AHU'S & GF'S SHOULD BE PROVIDED WITH AN OUTSIDE AIR TEMP AND HUMIDITY SENSOR AS WELL AS A RETURN AIR TEMP AND HUMIDITY SENSOR. OUTSIDE AIR ENTHALPY AND RETURN AIR ENTHALPY WILL BE CALCULATED. IF THE OUTSIDE ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY, FREE COOLING IS AVAILABLE AND THE ECONOMIZER WILL BE ENABLED. AFTER BEING ENABLED, INTERNAL TRANE AHU/GF CONTROLS WILL MODULATE THE OUTSIDE AIR AND RETURN AIR DAMPERS TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT.

HUMIDITY CONTROL
RETURN TEMPERATURE AND HUMIDITY WILL BE MONITORED AT EACH AHU/GF, AND ZONE CONTROLLER LOCATION. IF THE RETURN AND /OR SPACE HUMIDITY RISES ABOVE SET POINT. THE DISCHARGE AIR TEMPERATURE SET POINT WILL RESET AND UNIT FAN SPEED AND CAPACITY SHALL MODULATE AS REQUIRED TO MAINTAIN SPACE HUMIDITY SET POINTS.

MINIMUM OA DAMPER POSITION
THE OUTSIDE AIR DAMPER WILL GO TO MINIMUM POSITION DURING SCHEDULED OCCUPIED TIMES IF NOT IN ECONOMIZER MODE. THE MINIMUM POSITION WILL BE DEFINED BY THE TEST AND BALANCE CONTRACTOR AND BE BASED ON OUTDOOR AIR INTAKE AS LISTED IN RTU SCHEDULE.

DISCHARGE AIR TEMPERATURE RESET
IF NOT IN MORNING WARM–UP, MORNING COOL–DOWN, OR HUMIDITY CONTROL, THE DISCHARGE AIR TEMPERATURE SET POINT WILL BE RESET ACCORDING TO THE OUTSIDE AIR TEMPERATURE. (ADJ.):

DUCT SMOKE DETECTORS:

CONTRACTOR SHALL PROVIDE SMOKE DETECTORS AS OUTLINED ON PLANS FOR ALL SPLIT SYSTEMS. SEE AHU/GF UNIT SCHEDULE FOR INFORMATION.

RESTROOM EXHAUST FANS:

CEILING MOUNTED RESTROOM EXHAUST FANS ARE TO BE INTERLOCKED WITH LOCAL LIGHTING CIRCUIT TO ACTIVATE UPON RESTROOM OCCUPANCY. ROOF MOUNTED FANS SERVING MULTIPLE SPACES, INCLUDING RESTROOMS, SHALL BE INTERLOCKED WITH A TIME CLOCK AND OPERATE CONTINUOUSLY BUILDING IS IN OPERATION.

EXHAUST SYSTEMS SEQUENCES OF OPERATION

GENERAL REST ROOM EXHAUST:
- ALL EXHAUST FANS SERVING REST ROOMS, SHOWER ROOMS, LOCKER ROOMS, ETC. SHALL BE INTERLOCKED WITH ASSOCIATED ROOM LIGHTING OCCUPANCY SENSOR FOR CONTROL.

ISOLATION ROOM EXHAUST:
- ISOLATION ROOM(S) WILL REQUIRE 100 PERCENT OUTSIDE AIR WHEN IN USE; NO RETURN FROM THIS ROOM. FAN SHALL BE CONTROLLED VIA MANUAL SWITCH ON INTERIOR ROOM WALL. SWITCH SHALL BE PROVIDED WITH A PILOT LIGHT LOCATED ON ADJACENT EXTERIOR OF ROOM FOR VISUAL CONFIRMATION THE FAN IS OPERATING WHEN NEEDED.

ANIMAL AREAS ROOM EXHAUST:
- ALL ANIMAL AREAS (E.G. RUNS, WARDS, HOLDING KENNELS, ETC.) SHALL BE PROVIDED WITH AN ENERGY RECOVERY VENTILATOR THAT IS INTERCONNECTED WITH ASSOCIATED HVAC SYSTEM(S) SERVING EXHAUST SPACE. ERV EXHAUST FAN(S) SHALL ENERGIZE AND DE–ENERGIZE WITH THE ACTIVATION AND DE–ACTIVATION OF INTERLOCKED AHU/GF FOR GENERAL SPACE CONDITIONING. MECHANICAL CONTRACTOR SHALL COORDINATE ALL REQUIRED CONTROL(S) SYSTEMS, WIRING, SWITCHES BETWEEN FAN MANUFACTURER AND RTU MANUFACTURER TO ENSURE INTERCONNECTION IS POSSIBLE.

AREAS OF FOCUS THIS PROJECT:
146/147 CANINE BOARDING
LUXURY RUNS 1–6
149 INDOOR EXERCISE
131 CANINE WARD
130 DENTAL
156 GROOMING
158 BATHE/DRY

CHARLES A. DRIGGERS, JR, PE
3400 SOUTH ITTNER ST., SUITE D
VIRGINIA BEACH, VA 23452
P: 704.376.2999 • F: 704.376.2999

CHARLES A. DRIGGERS, JR HEREBY ESTATES TO COMMON LAW AND STATUTORY COPYRIGHT PROTECTION FOR ANY AND ALL PLANS AND ANY ASSOCIATED SPECIFICATIONS, DESIGN CONCEPTS, DETAILS AND IDEAS. THESE PLANS AND ANY ASSOCIATED SPECIFICATIONS, DESIGN CONCEPTS, DETAILS AND IDEAS SHALL NOT BE REPRODUCED, REVISED OR COPIED IN WHOLE OR IN PART, NOR SHALL THEY BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE COMPETITIVE BID OR TARGET BUDGET PROPOSAL FROM CHARLES A. DRIGGERS, JR. THESE PLANS ARE NOT TO BE USED FOR COMPETITIVE BID OR TARGET BUDGET PROPOSALS ONLY. COMPETITIVE BIDDERS SHALL NOT BE CONSIDERED UNLESS THEY HAVE PURCHASED THE PLANS AND SPECIFICATIONS FROM CHARLES A. DRIGGERS, JR. AND ARE PARTICIPATING UNDER A SIGNED AGREEMENT. PLANS ARE NOT TO BE USED FOR PURPOSES ONLY COMPETITIVE BIDS SHALL NOT BE CONSIDERED UNLESS OR IN FACT WITHOUT A WRITTEN AGREEMENT WITH CHARLES A. DRIGGERS, JR.

COMMONWEALTH OF VIRGINIA
CHARLES A. DRIGGERS, JR.
Lic. No. 036957
PROFESSIONAL ENGINEER
07/18/2022

TEETER ENGINEERING GROUP, P.A.

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

MECHANICAL SCHEDULES

REV #	DATE	COMMENTS
-		

REVISION: - | REVISION: - | REVISION: - | REVISION: -

REVIEWS

INITIALS	

TEG

PROJECT NO.: 22018
DRAWN: DRH
DATE: 07/18/22

M004

4 OF 12

Save Date: July 18, 2022, 9:10 AM \ RyanH
Plot Date: July 18, 2022, 9:21 AM
Drawing Name: \\server\Jobs\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018M004_MECHANICAL SCHEDULES.dwg

Ventilation Sizing Summary for AHU-1

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:19AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**320**	CFM
System Ventilation Efficiency (Ev)	**0.919**	
Outdoor Air Intake (Vot)	**349**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
101 Vestibule	1	278	108.0	0.06	0.0	5.00	0.80	**8**	*6*	1.106
102 Waiting	1	860	408.0	0.18	9.0	7.50	0.80	**176**	*141*	0.930
120 Retail	1	792	510.0	0.18	6.0	7.50	0.80	**171**	*137*	0.919
121 Hydro Mech Rm	1	175	56.0	0.06	0.0	5.00	0.80	**4**	*3*	1.111
122 Hydro Therapy	1	273	99.0	0.18	2.0	7.50	0.80	**41**	*33*	0.984
Totals (incl. Space Multipliers)		**2377**							**320**	**0.919**

Ventilation Sizing Summary for GF-2

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:23AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**101**	CFM
System Ventilation Efficiency (Ev)	**0.760**	
Outdoor Air Intake (Vot)	**133**	CFM
Outdoor Air Intake, Corrected for Exhaust Air	**330**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
114 Feline Exam 1	1	120	82.0	0.18	2.0	7.50	0.80	**37**	*30*	0.760
115 Retail Storage	1	78	63.0	0.12	0.0	5.00	0.80	**9**	*8*	0.949
116 Feline Ward	1	62	40.0	0.18	0.0	7.50	0.80	**9**	*7*	0.925
117 RR	1	62	50.0	0.00	0.0	0.00	0.80	**0**	*0*	1.070
118 RR	1	62	50.0	0.00	0.0	0.00	0.80	**0**	*0*	1.070
119 RR	1	62	50.0	0.00	0.0	0.00	0.80	**0**	*0*	1.070
124 Admin Hall	1	211	192.0	0.06	0.0	0.00	0.80	**14**	*12*	1.002
125 Account. Office	1	181	86.0	0.06	1.0	5.00	0.80	**13**	*10*	1.000
126 Manager Office	1	174	86.0	0.06	1.0	5.00	0.80	**13**	*10*	0.997
127 DVM Office	1	174	86.0	0.06	1.0	5.00	0.80	**13**	*10*	0.997
175 Imaging	1	178	77.0	0.06	2.0	5.00	0.80	**18**	*15*	0.967
128 DVM RR	1	84	53.0	0.00	0.0	0.00	0.80	**0**	*0*	1.070
Totals (incl. Space Multipliers)		**1447**							**101**	**0.760**

Ventilation Sizing Summary for GF-3

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:24AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**209**	CFM
System Ventilation Efficiency (Ev)	**1.000**	
Outdoor Air Intake (Vot)	**262**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
129 Treatment ICU	1	1418	830.0	0.18	8.0	7.50	0.80	**262**	*209*	1.000
Totals (incl. Space Multipliers)		**1418**							**209**	**1.000**

Ventilation Sizing Summary for GF-4

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:24AM

1. Summary

Ventilation Sizing Method	**Sum of Space OA Airflows**	
Design Ventilation Airflow Rate, Corrected for Exhaust Air	**715**	CFM
Design Ventilation Airflow Rate	**0**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
130 Dental	1	132.0	2.0	350.7	0.00	0.00	0.0	0.0	0.0
131 Canine Ward	1	128.0	1.0	272.8	0.00	0.00	0.0	0.0	0.0
131 Canine Ward Corr	1	82.0	0.0	91.5	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				**715.0**					**0.0**

Ventilation Sizing Summary for GF-5

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:25AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**85**	CFM
System Ventilation Efficiency (Ev)	**0.941**	
Outdoor Air Intake (Vot)	**90**	CFM
Outdoor Air Intake, Corrected for Exhaust Air	**140**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
132 DVM Wk. Stations	1	288	106.0	0.06	4.0	5.00	0.80	**33**	*26*	0.941
133 Assoc Corr	1	376	171.0	0.06	0.0	0.00	0.80	**13**	*10*	1.022
133 Associates Office	1	592	138.0	0.06	6.0	5.00	0.80	**48**	*38*	0.975
161 Staff RR	1	58	47.0	0.00	0.0	0.00	0.80	**0**	*0*	1.056
162 Staff RR	1	58	47.0	0.00	0.0	0.00	0.80	**0**	*0*	1.056
164 Closet	1	154	171.0	0.06	0.0	0.00	0.80	**13**	*10*	0.972
Totals (incl. Space Multipliers)		**1526**							**85**	**0.941**

Ventilation Sizing Summary for GF-6

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:25AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**281**	CFM
System Ventilation Efficiency (Ev)	**0.887**	
Outdoor Air Intake (Vot)	**317**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
109 Exam 4	1	161	98.0	0.18	2.0	7.50	0.80	**41**	*33*	0.887
111 Large Exam 2	1	180	114.0	0.18	2.0	7.50	0.80	**44**	*36*	0.895
104 Hall	1	174	158.0	0.06	0.0	0.00	0.80	**12**	*9*	1.073
105 Exam 5	1	274	108.0	0.18	2.0	7.50	0.80	**43**	*34*	0.983
106 Exam 6	1	235	108.0	0.18	2.0	7.50	0.80	**43**	*34*	0.958
107 Exam 7	1	235	108.0	0.18	2.0	7.50	0.80	**43**	*34*	0.958
108 Comfort Exam	1	365	153.0	0.18	2.0	7.50	0.80	**53**	*43*	0.995
110 Exam 3	1	162	99.0	0.18	2.0	7.50	0.80	**41**	*33*	0.887
113 Admin Phones	1	210	79.0	0.06	4.0	5.00	0.80	**31**	*25*	0.994
Totals (incl. Space Multipliers)		**1995**							**281**	**0.887**

Ventilation Sizing Summary for AHU-7

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:20AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**262**	CFM
System Ventilation Efficiency (Ev)	**0.926**	
Outdoor Air Intake (Vot)	**283**	CFM
Outdoor Air Intake, Corrected for Exhaust Air	**325**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
165 Morgue/Mech	1	156	66.0	0.06	1.0	5.00	0.80	**11**	*9*	1.037
167 Isolation	1	249	147.0	0.18	0.0	7.50	0.80	**33**	*26*	0.976
168 Ante Rm	1	73	49.0	0.18	0.0	7.50	0.80	**11**	*9*	0.958
169 Ultrasound	1	240	112.0	0.18	2.0	7.50	0.80	**44**	*35*	0.926
170 Surgery 2	1	519	199.0	0.18	4.0	7.50	0.80	**82**	*66*	0.950
172 PrP/S	1	303	160.0	0.06	3.0	5.00	0.80	**31**	*25*	1.007
173 Surgery 1	1	254	115.0	0.18	2.0	7.50	0.80	**45**	*36*	0.933
166 CT	1	254	94.0	0.18	1.0	7.50	0.80	**31**	*24*	0.988
174 Lab/Pharmacy	1	360	197.0	0.06	4.0	5.00	0.80	**40**	*32*	0.998
Totals (incl. Space Multipliers)		**2409**							**262**	**0.926**

Ventilation Sizing Summary for GF-8

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:25AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**152**	CFM
System Ventilation Efficiency (Ev)	**0.901**	
Outdoor Air Intake (Vot)	**168**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
157 Boarding Waiting	1	675	298.0	0.18	7.0	7.50	0.80	**133**	*106*	0.901
159 Boarding Admin	1	136	86.0	0.06	1.0	5.00	0.80	**13**	*10*	1.005
154 Hall	1	552	284.0	0.06	0.0	0.00	0.80	**21**	*17*	1.059
136 Isolation	1	77	52.0	0.18	0.0	7.50	0.80	**12**	*9*	0.946
137 Office	1	109	67.0	0.06	1.0	5.00	0.80	**11**	*9*	0.994
Totals (incl. Space Multipliers)		**1548**							**152**	**0.901**

Ventilation Sizing Summary for GF-9

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:26AM

1. Summary

Ventilation Sizing Method	**Sum of Space OA Airflows**	
Design Ventilation Airflow Rate, Corrected for Exhaust Air	**1250**	CFM
Design Ventilation Airflow Rate	**0**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
152 Feline Boarding	1	119.0	1.0	294.9	0.00	0.00	0.0	0.0	0.0
153 Food Prep/Laundry	1	219.0	1.0	604.9	0.00	0.00	0.0	0.0	0.0
155 Bathe/Dry	1	104.0	1.0	267.0	0.00	0.00	0.0	0.0	0.0
156 Grooming	1	117.0	1.0	268.8	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				**1435.6**					**0.0**

Ventilation Sizing Summary for GF-10

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:20AM

1. Summary

Ventilation Sizing Method	**Sum of Space OA Airflows**	
Design Ventilation Airflow Rate, Corrected for Exhaust Air	**1550**	CFM
Design Ventilation Airflow Rate	**0**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
146 Canine Boarding	1	310.0	1.0	734.7	0.00	0.00	0.0	0.0	0.0
147 Canine Boarding	1	470.0	1.0	1251.5	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				**1986.2**					**0.0**

Ventilation Sizing Summary for GF-11

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:21AM

1. Summary

Ventilation Sizing Method	**Sum of Space OA Airflows**	
Design Ventilation Airflow Rate, Corrected for Exhaust Air	**1475**	CFM
Design Ventilation Airflow Rate	**0**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
135 Central Storage	1	274.0	0.0	553.0	0.00	0.00	0.0	0.0	0.0
138 Luxury Run 2	1	47.0	0.0	93.6	0.00	0.00	0.0	0.0	0.0
139 Luxury Run 1	1	47.0	0.0	93.6	0.00	0.00	0.0	0.0	0.0
140 Luxury Hall	1	70.0	0.0	112.3	0.00	0.00	0.0	0.0	0.0
141 Cage Boarding	1	171.0	0.0	424.9	0.00	0.00	0.0	0.0	0.0
143 Luxury Run 5	1	47.0	0.0	93.6	0.00	0.00	0.0	0.0	0.0
142 Luxury Run 6	1	47.0	0.0	103.1	0.00	0.00	0.0	0.0	0.0
144 Luxury Run 4	1	47.0	0.0	93.6	0.00	0.00	0.0	0.0	0.0
145 Luxury Run 3	1	47.0	0.0	93.6	0.00	0.00	0.0	0.0	0.0
150 Hall	1	229.0	0.0	327.9	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				**1989.5**					**0.0**

Ventilation Sizing Summary for GF-12

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:23AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**107**	CFM
System Ventilation Efficiency (Ev)	**1.000**	
Outdoor Air Intake (Vot)	**134**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
134 Lounge	1	1185	372.0	0.06	17.0	5.00	0.80	**134**	*107*	1.000
Totals (incl. Space Multipliers)		**1185**							**107**	**1.000**

Ventilation Sizing Summary for GF-13

Project Name: Courthouse Veterinary Hospital (Watson) 07/18/2022
Prepared by: Teeter Engineering Group 07:23AM

1. Summary

Ventilation Sizing Method	**ASHRAE Std 62.1-2010**	
Design Condition	**Heating operation**	
Occupant Diversity (D)	**1.000**	
Uncorrected Outdoor Air Intake (Vou)	**130**	CFM
System Ventilation Efficiency (Ev)	**1.000**	
Outdoor Air Intake (Vot)	**162**	CFM

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
149 Indoor Exercise	1	574	638.0	0.18	2.0	7.50	0.80	**162**	*130*	1.000
Totals (incl. Space Multipliers)		**574**							**130**	**1.000**

EXHAUST AIR CALCULATION

ASHRAE 62.1–2013 TABLE 6.5

ROOM NAME	AREA (SQ.FT) NET	NUMBER OF UNIT	CFM/UNIT	NUMBER OF SHOWERS	CFM/UNIT	NET AREA O.A. RATE (CFM/SQ FT)	REQUIRED EXHAUST (CFM)	PROVIDED EXHAUST (MIN/MAX) (CFM)	SERVED BY
116 FELINE WARD	40	–	–	–	–	0.9	36	50	EF–1
117 REST ROOM	51	1	70	–	–	–	70	70	EF–2
118 REST ROOM	51	1	70	–	–	–	70	70	EF–3
119 REST ROOM	51	1	70	–	–	–	70	70	EF–4
128 DVM REST ROOM	51	1	70	–	–	–	70	70	EF–5
TREATMENT BOARDING	102	–	–	–	–	0.9	92	95	EF–6
174 LAB/PHARMACY	197	–	–	–	–	0.9	177	460	EF–7
172 PPS	160	–	–	–	–	0.9	144		
161 STAFF REST ROOM	46	1	70	–	–	–	70	70	EF–8
162 STAFF REST ROOM	46	1	70	–	–	–	70	70	EF–9
122 HYDRO THERAPY	98	–	–	–	–	0.9	88	100	EF–10
136 ISOLATION	52	–	–	–	–	0.9	47	50	EF–11
167 ISOLATION	147	–	–	–	–	0.9	132	135	EF–12
112 IT CLOSET	30	–	–	–	–	1.0	30	100	EF–13
130 DENTAL	132	–	–	–	–	0.9	119	715	ERV–1
131 CANINE WARD	128	–	–	–	–	0.9	115		
155 BATHE/PREP	104	–	–	–	–	1.0	104	1250	ERV–2
153 FOOD PREP	219	–	–	–	–	0.9	197		
152 FELINE BOARDING	119	–	–	–	–	0.9	107		
146 CANINE BOARDING	310	–	–	–	–	0.9	279	1550	ERV–3
147 CANINE BOARDING	470	–	–	–	–	0.9	423		
139 LUXURY RUN 1	46	–	–	–	–	0.9	41	1475	ERV–4
138 LUXURY RUN 2	46	–	–	–	–	0.9	41		
146 LUXURY RUN 3	46	–	–	–	–	0.9	41		
144 LUXURY RUN 4	46	–	–	–	–	0.9	41		
143 LUXURY RUN 5	46	–	–	–	–	0.9	41		
142 LUXURY RUN 6	46	–	–	–	–	0.9	41		
141 CAGE BOARDING	171	–	–	–	–	0.9	154		

NOTE: ONE (1) UNIT = ONE (1) FLUSHING FIXTURE AND/OR SHOWERHEAD.

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07/18/2022

TEETER ENGINEERING GROUP, P.A.

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

MECHANICAL CALCULATIONS

REV #	DATE	COMMENTS
REVISION: -		
REVISION: -		
REVISION: -		
REVISION: -		

REVIEWS

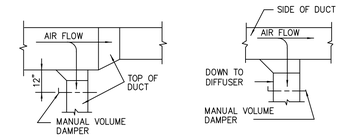
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DATE: 07/18/22

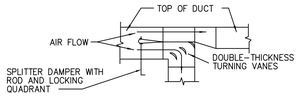
M005

5 OF 12

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Plot Date: July 18, 2022 - 9:15 AM
Drawing Name: H:\BOA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018M005_MECHANICAL CALCULATIONS.dwg



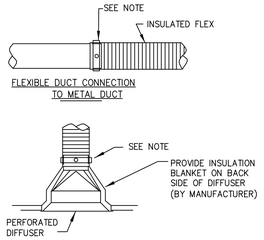
①BRANCH TAKE-OFF SINGLE DROP



②BRANCH TAKE-OFF

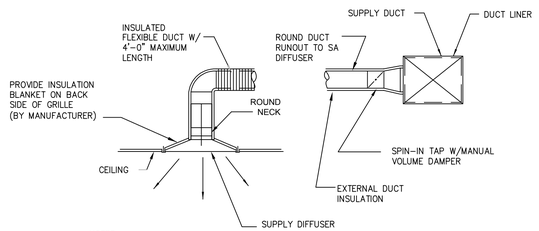
NOTE:
1. USE BRANCH TAKE-OFF ① WHEN MAIN AND BRANCH DUCTS ARE DIFFERENT DEPTHS
2. USE BRANCH TAKE-OFF ② WHEN MAIN AND BRANCH DUCTS ARE SAME DEPTHS

1 DUCTWORK DETAIL
SCALE: NONE



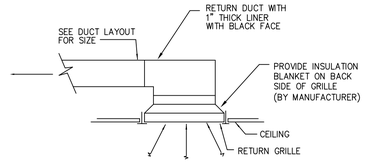
NOTE:
1. ALL FLEXIBLE DUCT CONNECTIONS TO SHEET METAL SHALL BE SECURED WITH NYLON STRAP AND 2 SHEET METAL SCREWS (MIN.).
2. PROVIDE INSULATION BLANKET ON BACK OF GRILLE FACE, TAPE EDGES DOWN TO GRILLE AND FLEX CONNECTION

2 FLEX. CONNECTION DETAIL
SCALE: NONE

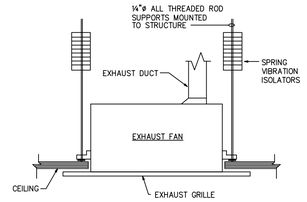


NOTES:
1. PROVIDE TRANSITION FROM ROUND DUCT TO DIFFUSER IF REQ'D.
2. PROVIDE EACH SUPPLY GRILLE A OPPOSED BLADE DAMPER (OBD)

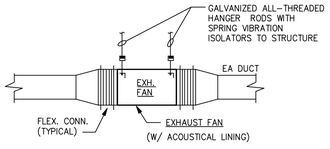
3 SPIN TAP TO ROUND NECK DIFFUSER
SCALE: NONE



4 RETURN GRILLE DETAIL
SCALE: NONE

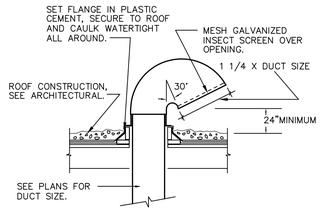


5 CEILING FAN DETAIL
SCALE: NONE

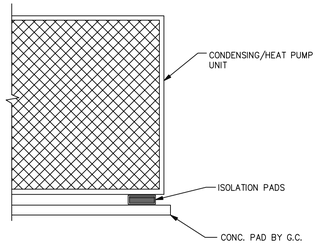


NOTES:
1. COORDINATE LOCATION OF FAN WITH OTHER TRADES TO INSURE SERVICE CLEARANCES.
2. MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS DOOR IN CEILING IF REQUIRED.

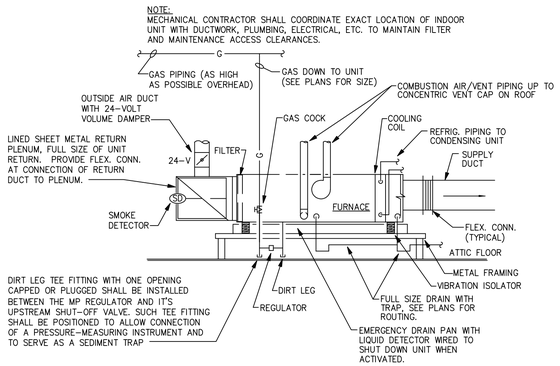
6 INLINE EXH. FAN DETAIL
SCALE: NONE



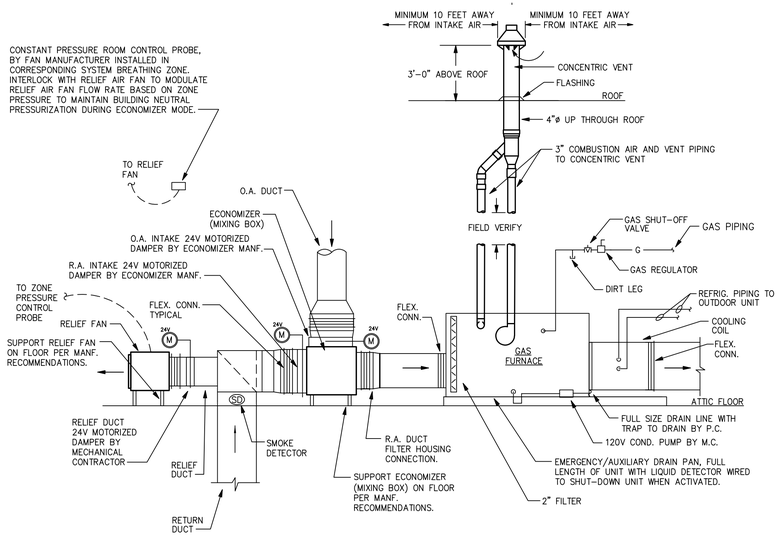
7 GOOSENECK DETAIL
SCALE: NONE



8 OUTDOOR UNIT MOUNTING DETAIL
SCALE: NONE



9 HORIZONTAL FURNACE
SCALE: NONE



HORIZONTAL GAS FURNACE W/ ECONOMIZER BOX DETAIL
SCALE: NONE

NOTES:
1. MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF INDOOR UNIT WITH DUCTWORK, PLUMBING, ELECTRICAL, ETC. TO MAINTAIN FILTER AND MAINTENANCE ACCESS CLEARANCES.
2. GENERAL CONTRACTOR SHALL PROVIDE EQUIPMENT FILTER HOUSING AND UNIT SUPPORT AS REQUIRED.

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TEETER ENGINEERING GROUP, P.A.

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virgina Beach, Virginia 23456
Brian Watson, DVM

MECHANICAL DETAILS

REV #	DATE	COMMENTS
-		
-		
-		
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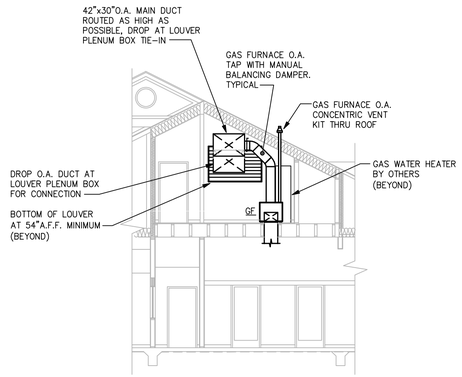
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DRAWN: DRH
DATE: 07/18/22

M006

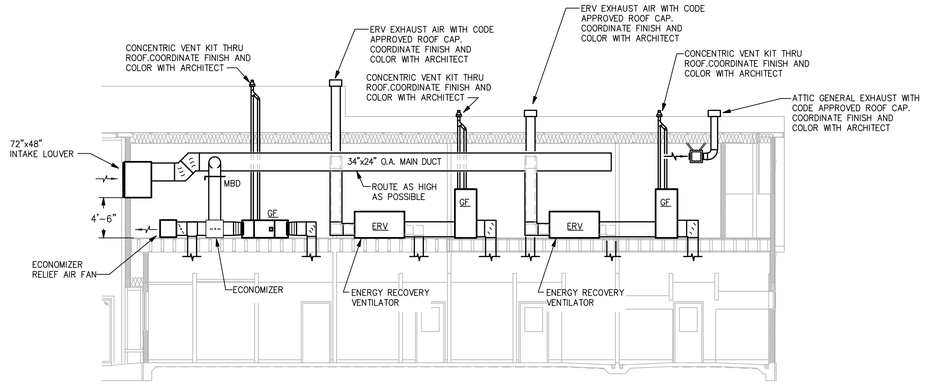
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Save Date: July 15, 2022 - 1:07 PM, RyanH
Plot Date: July 18, 2022 - 9:21 AM
Drawing Name: \\drivers\Jobs2\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018M006_MECHANICAL DETAILS.dwg



1 MECHANICAL ATTIC BUILDING SECTION

SCALE: NONE



2 MECHANICAL ATTIC BUILDING SECTION

SCALE: NONE

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MECHANICAL SECTIONS

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REVIEWS

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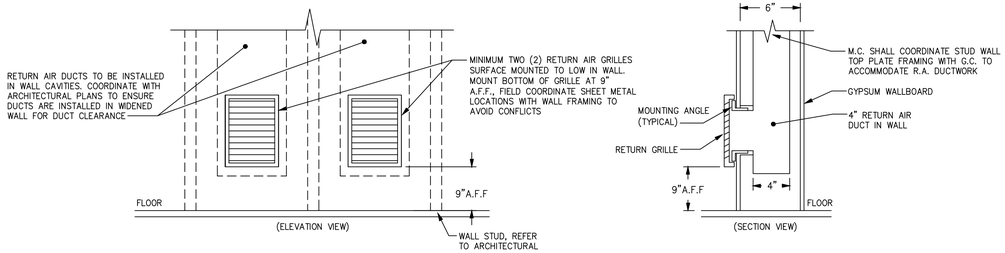
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PROJECT NO.: 22018
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M007

7 OF 12

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Plot Date: July 18, 2022 - 9:21 AM
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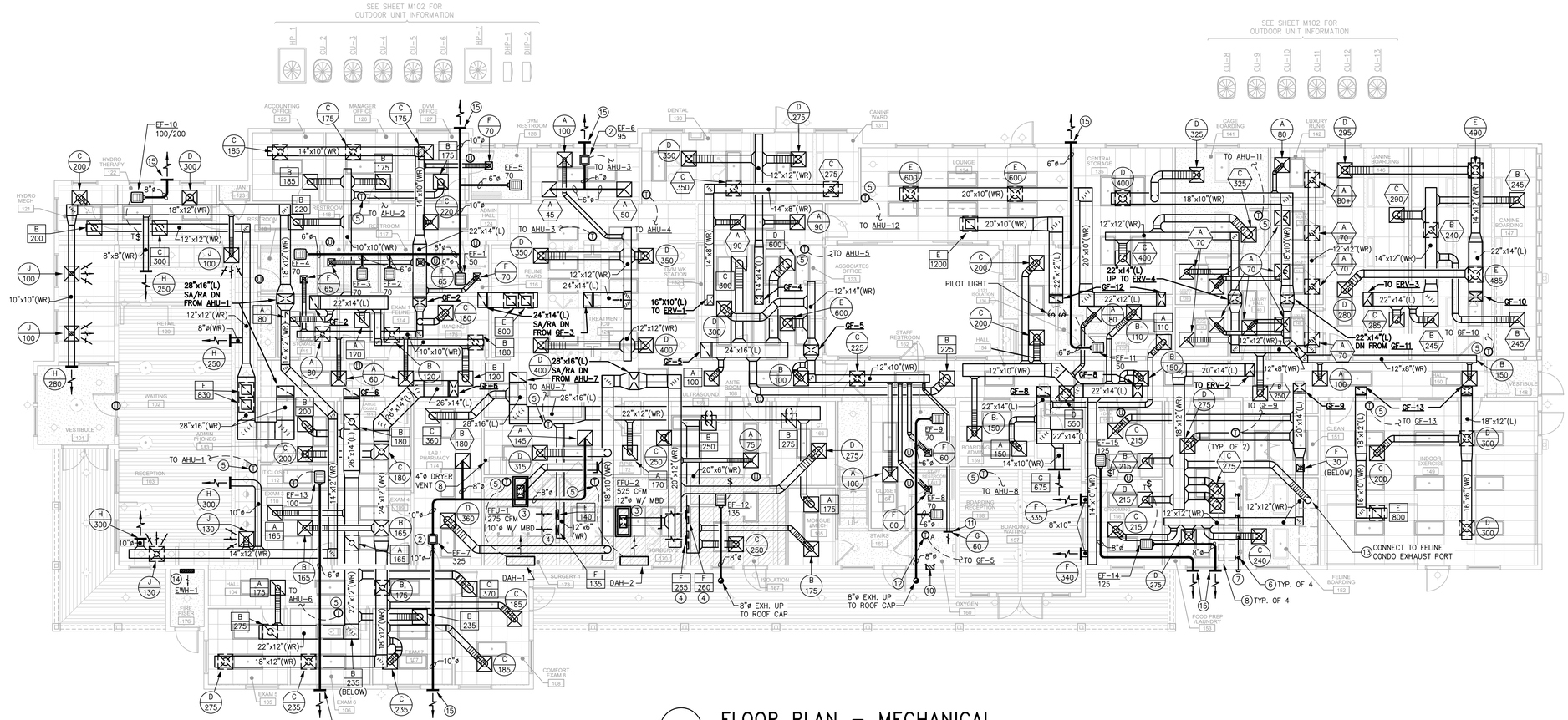


2 SURGERY ROOM RETURN AIR GRILLE DETAIL

SCALE: NO SCALE

NOTES THIS SHEET

1. SEE SHEETS M001–006 FOR SPECIFICATIONS, LEGENDS, GENERAL NOTES, SCHEDULES AND DETAILS.
2. INLINE EXHAUST FAN (EF–#) TO BE INSTALLED ABOVE CEILING. COORDINATE EXACT LOCATION OF FAN WITH ALL ABOVE CEILING CONDITIONS TO AVOID CONFLICT. PROVIDE UNIT IDENTIFICATION LABEL AT NEAREST CEILING TILE FOR MAINTENANCE. FAN SHALL BE INTERLOCKED WITH ASSOCIATED GAS FURNACE TO ENERGIZE AND DE–ENERGIZE WITH GAS FURNACE OPERATION.
3. SURGERY ROOMS: MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL FAN FILTER UNIT (FFU–#) IN CEILING, SIZED AS INDICATED. COORDINATE WITH OWNER AND SURGERY ROOM EQUIPMENT SUPPLIER FOR EXACT LOCATION OF FFU PRIOR TO ROUGHING–IN. ENSURE THAT FFU MAINTAINS ALL REQUIRED MAINTENANCE AND OPERATIONAL CLEARANCES PER MANUFACTURER'S INSTRUCTION. FFU SHALL BE WIRED DIRECTLY TO ELECTRICAL PANEL FOR CONTINUOUS OPERATION AND SHALL RUN 24/7. COORDINATE WITH ELECTRICAL CONTRACTOR TO HAVE LOCK–OUT–TAG–OUT PROVISIONS MADE AT PANEL FOR FUTURE MAINTENANCE OF UNIT.
4. SURGERY ROOMS: TWO (2) RETURN AIR GRILLES SHALL BE LOCATED LOW IN WALL (BOTTOM OF GRILLE TO BE 9" A.F.F.). GRILLE LOCATIONS SHALL BE COORDINATED WITH OWNER PRIOR TO ROUGHING–IN. PROVIDE AND INSTALL SHEET METAL R.A. DUCTS IN WALL SIZED AS INDICATED BELOW. FIELD COORDINATE DUCT LOCATIONS WITH STUD WALLS TO AVOID CONFLICT.
   173 SURGERY 1 – 4"x12" R.A. SHEET METAL DUCT IN WALL
   170 SURGERY 2 – 4"x20"(WR) R.A. SHEET METAL DUCT IN WALL
5. COORDINATE THERMOSTAT/SWITCH LOCATION WITH OWNER PRIOR TO ROUGHING–IN.
6. MECHANICAL CONTRACTOR SHALL ROUTE 4"ø DRYER VENT FROM 12" A.F.F. PROVIDE WITH CODE APPROVED CLEAN–OUT AND DRYER CONNECTION.
7. ROUTE RIGID CODE APPROVED DRYER DUCT TO EXTERIOR WALL/ROOF AS REQUIRED. PROVIDE WITH CODE APPROVED DRYER VENT CAP AND BACKDRAFT DAMPER. SEE DETAIL ON SHEET M004 FOR ADDITIONAL INFORMATION. PROVIDE WALL PENETRATION WITH FLASHING AND COUNTER FLASHING SEALED AIR AND WATER TIGHT. CONTRACTOR SHALL PAINT WALL CAP TO MATCH EXTERIOR WALL ADJACENT SURFACES, COLOR BY ARCHITECT.
8. GAS DRYER BY OTHERS. SEE SHEET M201 FOR GAS PIPING SCOPE OF WORK. REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION.
10. 160 OXYGEN: TWO(2) 6"x6" STATIONARY NON–CLOSABLE LOUVERED VENTS EQUAL TO RUSKIN ELF6375DX. INSTALL ONE(1) LOUVERED VENT WITHIN 6" OF THE FLOOR AND ONE(1) WITHIN 6" OF THE CEILING PER 2015 IFC 5306.2.1 OR APPLICABLE CODE. PROVIDE LOUVERED VENTS WITH BIRD/INSECT SCREEN AND EXTENDED SILL. COORDINATE FRAME REQUIREMENTS AND EXACT INSTALLATION WITH ARCHITECTURAL WALL CONSTRUCTION PRIOR TO ORDERING. LOUVERED VENTS SHALL BE PAINTED TO MATCH EXTERIOR WALL ADJACENT SURFACES, COLOR BY ARCHITECT. PROVIDE WALL PENETRATION WITH FLASHING AND COUNTER FLASHING SEALED WATER TIGHT.
11. 160 OXYGEN: S.A. DIFFUSER INSTALLED ON WALL AS LOW AS POSSIBLE . FIELD VERIFY EXACT INSTALLATION HEIGHT A.F.F. PRIOR TO ROUGHING–IN. NO FLEXIBLE DUCTWORK SHALL BE USED.
12. 160 OXYGEN: MECHANICAL CONTRACTOR SHALL PROVIDE AVERAGING THERMOSTATS TO BE INSTALLED ON WALL IN OXYGEN CLOSET. INSTALL ON WALL ±48" A.F.F. INTERLOCK AVERAGING THERMOSTATS WITH GF–5.
13. MECHANICAL CONTRACTOR SHALL CONNECT 10"ø EXHAUST DUCT TO FELINE CONDO EXHAUST PORT. FIELD VERIFY EXACT LOCATION OF CONNECTION PORT PRIOR TO ROUGHING–IN.
14. ELECTRIC WALL HEATER TO BE FLUSH MOUNTED. COORDINATE EXACT LOCATION OF HEATER PRIOR TO ROUGHING–IN.
15. APPROXIMATE LOCATION OF SIDEWALL EXHAUST DISCHARGE. PROVIDE WITH CODE APPROVED DISCHARGE LOUVER WITH GRAVITY BACKDRAFT DAMPER. COORDINATE LOUVER FINISH AND FINAL LOCATION WITH ARCHITECT.



1 FLOOR PLAN – MECHANICAL

SCALE: 1/8" = 1'–0"

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MAIN LEVEL FLOOR PLAN - MECHANICAL

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REVIEWS

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PROJECT NO.: 22018
DRAWN: DRH
DATE: 07/18/22

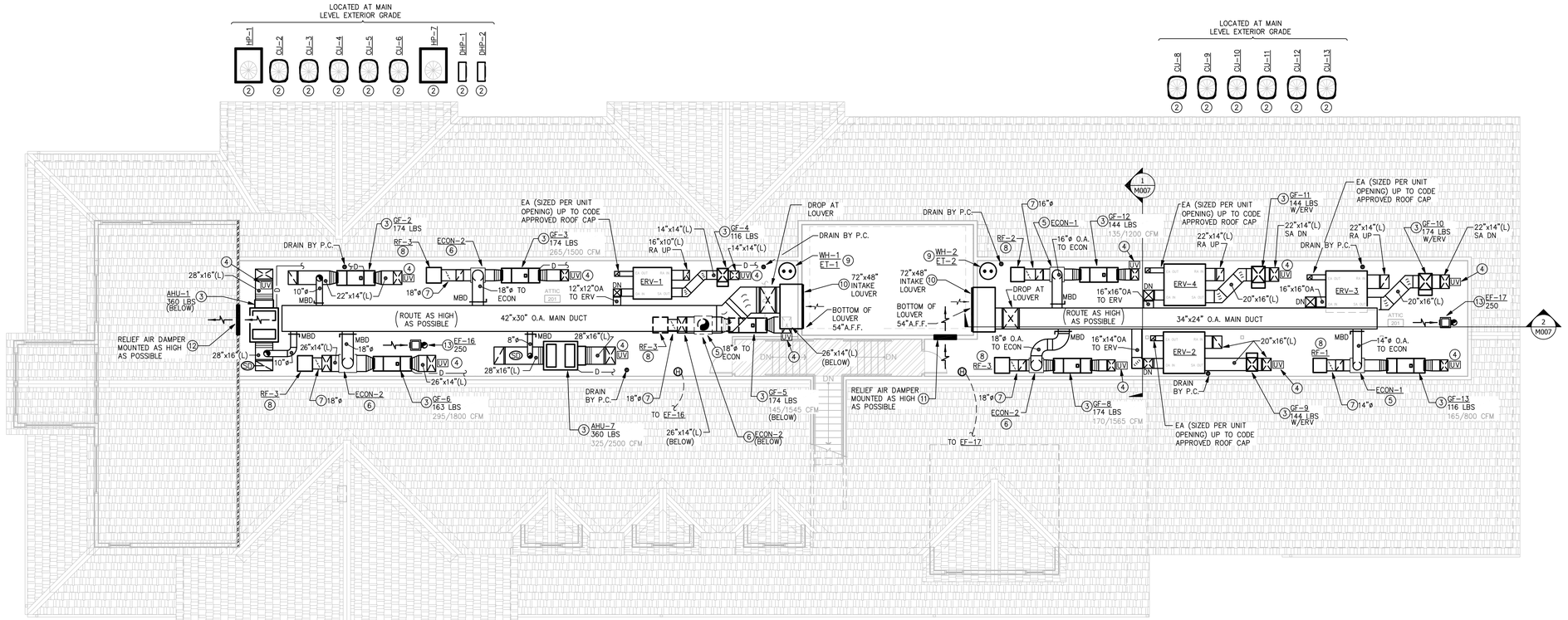
M101

8 OF 12

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Plot Date: July 18, 2022 - 9:36 AM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018M101_MAIN FLOOR PLAN - MECHANICAL.dwg

NOTES THIS SHEET

1. SEE SHEETS M001–006 FOR SPECIFICATIONS, LEGENDS, GENERAL NOTES, SCHEDULES AND DETAILS.
2. SPLIT SYSTEM OUTDOOR UNIT (HP–# / CU–# / DHP–#) [LOCATED AT GRADE LEVEL] SHALL BE INSTALLED ON PRE–MANUFACTURED SUPPORT PAD AT EXTERIOR GRADE, MAKE DEAD LEVEL. COORDINATE ALL REFRIGERANT LINESET CONCEALMENT REQUIREMENTS PRIOR TO ROUGHING–IN. MECHANICAL CONTRACTOR SHALL FULLY COORDINATE EXACT LOCATION OF OUTDOOR UNIT WITH ARCHITECT PRIOR TO BEGINNING ANY WORK.
3. SPLIT SYSTEM GAS FURNACE (GF–#) TO BE INSTALLED ON ATTIC FLOOR PER MANUFACTURER RECOMMENDATIONS. INSTALL UNITS TO MAINTAIN MANUFACTURER AND CODE REQUIRED WORKING CLEARANCES. ROUTE CONDENSATE DRAIN LINE TO AREA DRAIN BY PLUMBING CONTRACTOR AND SPILL INDIRECTLY WITH CODE MINIMUM AIR GAP. PROVIDE UNIT WITH AN EMERGENCY DRAIN PAN BENEATH THE UNIT. THE DRAIN PAN SHALL BE FABRICATED FROM MINIMUM 20–GAUGE G–90 GALVANIZED STEEL. THE LENGTH AND WIDTH OF THE DRAIN PAN SHALL EXTEND A MINIMUM OF 3–INCHES IN EACH DIRECTION BEYOND THE OUTSIDE DIMENSIONS OF THE AIR HANDLING UNIT. THE DRAIN PAN SHALL HAVE 3–INCH HIGH EDGE TURNED UP ALL AROUND WITH ALL JOINTS SOLDERED AND PROVEN WATER TIGHT PRIOR TO INSTALLATION. PROVIDE THE PAN WITH DRAIN PAN OVERFLOW SWITCH AND LEAK DETECTOR ALARM CONTROL TO SHUT DOWN BOTH INDOOR AND OUTDOOR UNIT UPON DETECTION.
4. UV LIGHT EQUAL TO ULTRAVATION MODEL 'UVPHOTOMAX'. UV LIGHT SHALL BE PROVIDED AND INSTALLED IN THE SUPPLY DUCT BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR. COORDINATE ALL WORK INVOLVED PRIOR TO ROUGHING–IN. UV LIGHT SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS.
5. ECON–1: MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL DIFFERENTIAL ENTHALPY ECONOMIZER (MIXING BOX) AT GAS FURNACE R.A. INLET. ECONOMIZER (MIXING BOX) SHALL BE EQUAL TO MICROMETL #MB–GP10CB–D2EH (800 – 1,500 CFM CAPACITY). ECONOMIZER O.A., R.A., AND REMOTE E.A. DAMPERS SHALL BE INTERLOCKED WITH ECONOMIZER AND GAS FURNACE CONTROLS. SEE GAS FURNACE SCHEDULE ON SHEET M003 AND VERTICAL GAS FURNACE DETAIL ON SHEET M004 FOR ADDITIONAL INFORMATION.
6. ECON–2: MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL DIFFERENTIAL ENTHALPY ECONOMIZER (MIXING BOX) AT GAS FURNACE R.A. INLET. ECONOMIZER (MIXING BOX) SHALL BE EQUAL TO MICROMETL #MB–GP10CB–D2EH (1,500 – 2,000 CFM CAPACITY). ECONOMIZER O.A., R.A., AND REMOTE E.A. DAMPERS SHALL BE INTERLOCKED WITH ECONOMIZER AND GAS FURNACE CONTROLS. SEE GAS FURNACE SCHEDULE ON SHEET M003 AND VERTICAL GAS FURNACE DETAIL ON SHEET M004 FOR ADDITIONAL INFORMATION.
7. RELIEF AIR DUCT (SIZED AS INDICATED) WITH 24V MOTORIZED DAMPER INSTALLED ON R.A. DUCT ABOVE ATTIC FLOOR. INTERLOCK RELIEF DAMPER WITH IN–LINE RELIEF FAN AND GAS FURNACE ECONOMIZER CONTROLS TO OPEN WHEN UNIT IS IN ECONOMIZER MODE. DAMPER SHALL BE NORMALLY SHUT, SPRING CLOSED, 24V POWER OPENED. LOW VOLTAGE POWER TO BE PROVIDED BY MECHANICAL CONTRACTOR FROM CORRESPONDING GAS FURNACE. SEE GAS FURNACE DETAILS SHEET M007 FOR ADDITIONAL INFORMATION. RELIEF SHALL BE DISCHARGED TO ATTIC SPACE.
8. RELIEF AIR FAN (RF–#) INSTALLED ON OUTLET OF RELIEF AIR DUCT. INTERLOCK FAN WITH RELIEF DUCT DAMPER AND GAS FURNACE ECONOMIZER CONTROLS TO ENERGIZE FAN WHEN UNIT IS IN ECONOMIZER MODE. CONTRACTOR SHALL INSTALL CONSTANT PRESSURE ROOM CONTROL PROBE, BY FAN MANUFACTURER, IN CORRESPONDING SYSTEM BREATHING ZONE AND INTERLOCK WITH RELIEF AIR FAN TO MODULATE RELIEF AIR FAN FLOW RATE BASED ON ZONE PRESSURE TO MAINTAIN BUILDING NEUTRAL PRESSURIZATION DURING ECONOMIZER MODE. RELIEF AIR SHALL BE DISCHARGED TO ATTIC SPACE.
9. GAS WATER HEATER (WH–#) BY OTHERS. MECHANICAL CONTRACTOR SHALL INSTALL 4"ø VENT AND 4"ø COMBUSTION AIR ROUTED TO CONCENTRIC VENT KIT BY WATER HEATER MANUFACTURER. COORDINATE ROUTING FLUE AND COMBUSTION AIR VENT TO/FROM WATER HEATER FROM CONCENTRIC VENT KIT WITH PLUMBING CONTRACTOR PRIOR TO ROUGHING–IN. SEE SHEET M101 FOR CONTINUATION.
10. 72"X48" INTAKE LOUVER EQUAL TO RUSKIN #ELF6375DX SERIES, 6" DEPTH. INSTALL AS HIGH AS POSSIBLE ON WALL ABOVE ATTIC FLOOR, COORDINATED WITH WALL FRAMING. PROVIDE WITH INSULATED PLENUM, MINIMUM 36" DEEP, FULL SIZE OF LOUVER. THE LOUVER SHALL BE PROVIDED WITH GRAVITY DAMPER, BIRD SCREEN, AND EXTENDED SILL. LOUVER TO BE INSTALLED CENTERED ON EXTERIOR WALL PER ARCHITECTURAL ELEVATIONS AND PAINTED TO MATCH ADJACENT EXTERIOR WALL SURFACES, COLOR BY ARCHITECT. PROVIDE WALL PENETRATION WITH FLASHING AND COUNTER FLASHING SEALED AIR AND WATER TIGHT.
11. 36"x36" ECONOMIZER AIR RELIEF LOUVER EQUAL TO RUSKIN #ELBD375E SERIES, WALL DEPTH. INSTALL AS HIGH AS POSSIBLE ON WALL ABOVE ATTIC FLOOR, COORDINATED WITH WALL FRAMING. THE LOUVER SHALL BE PROVIDED WITH GRAVITY BACKDRAFT DAMPER, BIRD SCREEN, AND EXTENDED SILL. LOUVER TO BE INSTALLED CENTERED ON EXTERIOR WALL PER ARCHITECTURAL ELEVATIONS AND PAINTED TO MATCH ADJACENT EXTERIOR WALL SURFACES, COLOR BY ARCHITECT. PROVIDE WALL PENETRATION WITH FLASHING AND COUNTER FLASHING SEALED AIR AND WATER TIGHT.
12. 48"x40" ECONOMIZER AIR RELIEF LOUVER EQUAL TO RUSKIN #ELBD375E SERIES, WALL DEPTH. INSTALL AS HIGH AS POSSIBLE ON WALL ABOVE ATTIC FLOOR, COORDINATED WITH WALL FRAMING. THE LOUVER SHALL BE PROVIDED WITH GRAVITY BACKDRAFT DAMPER, BIRD SCREEN, AND EXTENDED SILL. LOUVER TO BE INSTALLED CENTERED ON EXTERIOR WALL PER ARCHITECTURAL ELEVATIONS AND PAINTED TO MATCH ADJACENT EXTERIOR WALL SURFACES, COLOR BY ARCHITECT. PROVIDE WALL PENETRATION WITH FLASHING AND COUNTER FLASHING SEALED AIR AND WATER TIGHT.
13. INLINE EXHAUST FAN SUSPENDED FROM STRUCTURE, INSTALLED AS HIGH AS POSSIBLE FOR GENERAL ATTIC VENTILATION. PROVIDE WITH 9"ø EXHAUST DUCT UP TO CODE APPROVED ROOF CAP. COORDINATE ROOF CAP STYLE, FINISH, AND COLOR WITH ARCHITECT PRIOR TO PURCHASE. FAN SHALL BE CONTROLLED VIA HUMIDISTAT CONTROLLER WITHIN ATTIC SPACE.



1 UPPER LEVEL FLOOR PLAN – MECHANICAL
SCALE: 1/8" = 1'–0"

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NOTES THIS SHEET

1. SEE SHEETS M001–007 FOR SPECIFICATIONS, LEGENDS, GENERAL NOTES, SCHEDULES, CALCULATIONS AND DETAILS.
2. SPLIT SYSTEM GAS FURNACE (GF–#) TO BE INSTALLED AS INDICATED.
3. GAS FIRED WATER HEATER (WH–#) BY PLUMBING CONTRACTOR. FIELD VERIFY EXACT LOCATION OF WATER HEATER PRIOR TO ROUGHING–IN BRANCH GAS LINE.
4. CONCENTRIC VENT ROOF TERMINATION KIT. FULLY COORDINATE EXACT LOCATION OF ROOF KIT PENETRATION TO MAINTAIN ANY LINE OF SIGHT REQUIREMENTS BY ARCHITECT PRIOR TO BEGINNING ANY WORK. COLOR AND FINISH OF CONCENTRIC KIT SHALL BE COORDINATED WITH ARCHITECT. MAINTAIN ALL MANUFACTURER REQUIRED LIMITATIONS AND CLEARANCES. FIELD VERIFY ALL EXACT ROUTING OF CONCENTRIC VENT PIPING, ELEVATION OF PIPING, AND ALL INSTALLATION WORK INVOLVED PRIOR TO ROUGHING–IN.
5. M.C. SHALL PROVIDE AND INSTALL A CARBON MONOXIDE GAS DETECTOR
   - POWER REQUIREMENT: 24VAC NOMINAL, 60 HZ, 0.35A; 24VDC NOMINAL WITH REMOTE SENSOR, 7W MAX.
   - DETECTION RANGE: CO: 0 – 250 PPM;
   - DIGITAL DISPLAY, AUDIBLE ALARM
   - UL LISTED
   - WALL MOUNTED @ ±60" A.F.F. TO THE TOP OF DETECTOR
   - TIE DETECTOR INTO MAIN CO GAS DETECTION PANEL COORDINATE WITH EQUIPMENT AND OTHER TRADES FOR EXACT DETECTOR LOCATION.
6. M.C. SHALL PROVIDE & INSTALL A MAIN CO GAS DETECTION PANEL:
   - POWER REQUIREMENT: 24VAC NOMINAL, 60 HZ, 0.35A; 24VDC NOMINAL
   - DEDICATED TRANSFORMER
   - DIGITAL DISPLAY AND AUDIBLE ALARM
   - ETL & ANSI/UL LISTED
   - WALL MOUNTED @ ± 60" A.F.F.
   - THE CONTROLLER WITH INPUTS FOR CO DETECTOR(S). ALARM SHALL SOUND WHEN CO LEVELS REACH 25 PPM.

GAS PIPE SIZING

- TABLE: 2018 VIRGINIA FUEL GAS CODE TABLE 402.4(5)
- TOTAL GAS INPUT: 940 MBH
- INLET PRESSURE: 2.0 PSI
- PRESSURE DROP: 1.0 PSI
- LENGTH: 227 LN/FT
- FITTINGS FACTOR: 20%
- TOTAL EQUIVALENT LENGTH: 272 LN/FT

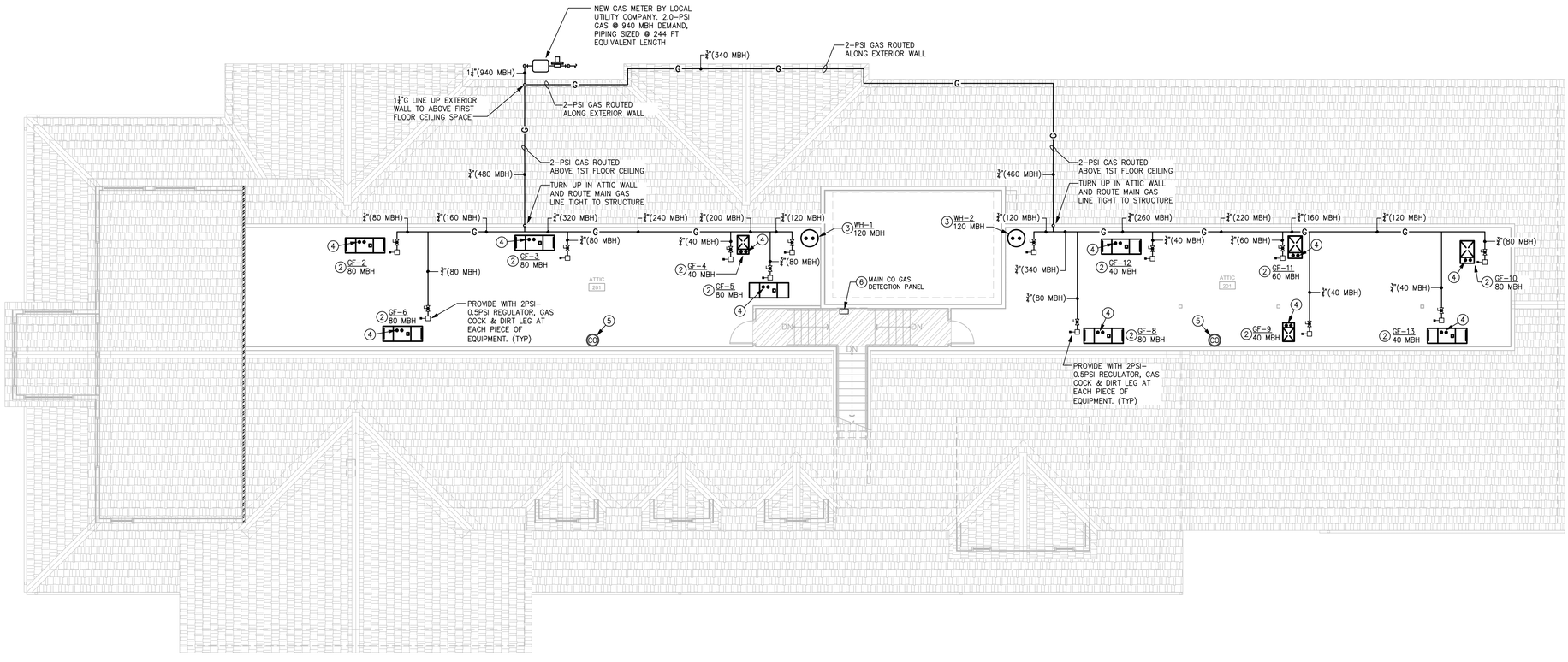
PIPE SIZE (INCHES)	CAPACITY (MBH)
3/4	528
1	945
1–1/4	1,940

GAS LOAD REQUIREMENTS

TAG	DESCRIPTION	QTY	INPUT MBH	TOTAL MBH
GF–2	GAS FURNACE	1	80	80
GF–3	GAS FURNACE	1	80	80
GF–4	GAS FURNACE	1	40	40
GF–5	GAS FURNACE	1	80	80
GF–6	GAS FURNACE	1	80	80
GF–8	GAS FURNACE	1	80	80
GF–9	GAS FURNACE	1	40	40
GF–10	GAS FURNACE	1	80	80
GF–11	GAS FURNACE	1	60	60
GF–12	GAS FURNACE	1	40	40
GF–13	GAS FURNACE	1	40	40
WH–1	GAS WATER HEATER	1	120	120
WH–2	GAS WATER HEATER	1	120	120
TOTAL BUILDING LOAD MBH				940

GAS PIPING NOTES

1. GAS PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST ISSUE OF THE INTERNATIONAL OR STATE FUEL GAS CODE AND NFPA STANDARD NO. 54 WHICH APPLY.
2. GAS PIPING SHALL BE TESTED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN NFPA NO 54. ANY OTHER TEST AS REQUIRED BY THE LOCAL GAS INSPECTION DEPARTMENT OR GAS COMPANY SHALL ALSO BE PERFORMED.
3. MINIMUM GAS PIPING SIZING SHALL BE 3/4".
4. GAS PIPING COLOR/LABELS:
   EXTERIOR:
   A. LABEL ALL GAS PIPING "GAS/PRESSURE" ON PIPE AT 5'–0' CENTERS.
   B. COLOR: ON ROOF PAINT WITH TWO COATS OF YELLOW ENAMEL, ON VERTICAL WALLS PAINT TO MATCH WALL COLOR.
   INTERIOR:
   A. LABEL ALL GAS PIPING "GAS/PRESSURE", SPACING AND COLOR PER ANSI/ASME A13.1 CODE REQUIREMENTS.
5. GAS PIPING SUPPORTS:
   EXTERIOR:
   A. PIPING ROUTED ON ROOF SHALL BE STRAPPED TO MANUFACTURED SUPPORTS "QUICK–BLOCK" OR EQUAL. GAS SUPPORTS SPACED PER NFPA 54 7.2.5.2.
   INTERIOR:
   A. PIPING TO BE SUPPORTED BY CLEVIS HANGERS W/ THREADED ROD OR UNI–STRUT SYSTEM. GAS SUPPORTS SPACED PER NFPA 54 7.2.5.2.
6. GAS VALVES SHALL BE ANSI/CSA APPROVED, 125 PSI RATED, 2 PIECE, FULL PORT, BALL VALVES W/BRASS BODY AND BALL. PROVIDE W/ LEVER HANDLE.
7. PROVIDE UNIONS, FLANGES OR COUPLINGS AT CONNECTION TO ALL VALVES AND EQUIPMENT. DO NOT USE DIRECT WELDED OR THREADED CONNECTIONS TO VALVES, EQUIPMENT OR OTHER APPARATUS.
8. PROVIDE NON–CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
9. PROVIDE DIRT LEG, GAS VALVE AND GAS REGULATOR AT EACH PIECE OF EQUIPMENT INSTALLED IN ACCESSIBLE LOCATION WITH–IN 36" OF EQUIPMENT. USE VENT–LESS REGULATORS INDOORS WHEN POSSIBLE. ROUTE VENTED REGULATOR VENTS TO EXTERIOR.



1 UPPER LEVEL FLOOR PLAN – GAS PIPING

SCALE: 1/8" = 1'–0"

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UPPER LEVEL FLOOR PLAN - GAS PIPING

REV.#	DATE	COMMENTS
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REVIEWS

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PROJECT NO.: 22018
DRAWN: DRH
DATE: 07/18/22

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11 OF 12

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COMMISSIONING OF BUILDING MECHANICAL SYSTEMS

01 GENERAL

COMMISSIONING OF THE **BUILDING MECHANICAL** SYSTEM SHALL BE PERFORMED BY THE MECHANICAL CONTRACTOR, OBSERVED BY A REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY IN ACCORDANCE WITH THE **2018 VIRGINIA ENERGY CONSERVATION CODE, SECTION C408** AND PROVIDED AS PART OF MECHANICAL CONTRACT. NO EXCEPTIONS.

MECHANICAL CONTRACTOR SHALL PROVIDE EVIDENCE OF MECHANICAL SYSTEMS COMPLETION IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION.

02 COMMISSIONING DESCRIPTION

BUILDING MECHANICAL COMMISSIONING PROCESS INCLUDES THE FOLLOWING TASKS:

A. TESTING, STARTUP AND VERIFICATION CHECKS OF EQUIPMENT AND SYSTEMS.
B. PROVIDE QUALIFIED PERSONNEL TO ASSIST IN COMMISSIONING TESTS.
C. ASSISTANCE IN FUNCTIONAL PERFORMANCE TEST TO ASSURE EQUIPMENT AND SYSTEMS ARE FULLY OPERATIONAL.
D. PROVIDE EQUIPMENT, MATERIALS, AND LABOR NECESSARY TO CORRECT DEFICIENCIES FOUND DURING COMMISSIONING PROCESS TO FULFILL CONTRACT AND WARRANTY REQUIREMENTS.
E. PROVIDE OPERATION AND MAINTENANCE INFORMATION AND RECORD DRAWINGS TO OWNERS PROJECT MANAGER.
F. PROVIDE TRAINING FOR SYSTEMS SPECIFIED. COORDINATE WITH OWNERS PROJECT MANAGER.

EQUIPMENT AND SYSTEMS TO BE COMMISSIONED:

A. UNITARY AND PACKAGED HVAC EQUIPMENT
B. ECONOMIZERS
C. UNIT HEATERS
D. FANS
E. PUMPS
F. HVAC CONTROLS
G. HEATING/COOLING COILS
H. AIR DISTRIBUTION SYSTEMS
I. SUPPLY AIR OUTLETS
J. KITCHEN HOODS
K. MAKE–UP AIR UNITS
L. ALL PROJECT SPECIFIC EQUIPMENT AS SCHEDULED (NOT LISTED)

FUNCTIONS TO BE TESTED:

A. EACH SEQUENCE IN SEQUENCE OF OPERATION
B. ALL CONTROLS SYSTEM FUNCTIONS
C. EQUIPMENT ENTERING/LEAVING AIR TEMPERATURE & FLOW RATES
D. EQUIPMENT CAPACITY
E. HEAT RECOVERY OPERATION
F. NIGHT SET BACK AND MORNING WARM–UP
G. ECONOMIZER FUNCTIONS
   – START–UP, WARM–UP, & SHUT–DOWN MODES
   – OCCUPIED & UNOCCUPIED MODES
   – FREE COOLING MODE
   – MINIMUM/MAXIMUM OUTSIDE AIR MODE
   – FIRE/SMOKE ALARM MODE
   – FREEZE PROTECTION
H. FAN INTERLOCKS & OPERATION
I. CONDENSATE OVERFLOW SWITCH OPERATION
J. DUCT & SYSTEM STATIC PRESSURE
K. ALL ALARMS
L. HEATING AND/OR COOLING COIL CAPACITY
M. OWNER/BUILDING SCHEDULES & SETPOINTS
N. AIR DISTRIBUTION FLOW RATES
O. S.A. CFM AT EACH SUPPLY AIR OUTLET
P. OCCUPANT OVERRIDES
Q. DAMPER OPERATION, POSITION, SETPOINTS, & INTERLOCKS
R. MINIMUM OUTDOOR AIR FLOW RATES
S. SYSTEM OPERATION AT OCCUPIED AND UNOCCUPIED HOURS
T. FIRE/SMOKE SHUTDOWN AND CONTROL SEQUENCE (IF APPLICABLE)
U. TERMINAL UNIT AIR BALANCING & OPERATION
V. SYSTEM TO SYSTEM INTERFACE
W. LOSS AND RESTORATION OF POWER MODES
X. FUNCTIONS RECOMMENDED BY MANUFACTURER (NOT LISTED)

CONDITIONS TESTS SHALL BE PERFORMED:

C1 – COOLING SEASON, WITHIN 5% OF DESIGN
C2 – HEATING SEASON, WITHIN 5% OF DESIGN
C3 – FULL OUTSIDE AIR/EXHAUST DESIGN CONDITIONS
C4 – NOT REQUIRED IF DESIGN CONDITIONS CAN BE SIMULATED

A. UNITARY AND PACKAGED HVAC EQUIPMENT: C1,C2,C3
B. ECONOMIZERS: C1,C2,C3
C. UNIT HEATERS: C2
D. FANS: C4
E. PUMPS: C4
F. HVAC CONTROLS: C1,C2,C3
G. HEATING/COOLING COILS: C1,C2
H. AIR DISTRIBUTION SYSTEMS: C4
I. SUPPLY AIR OUTLETS: C4
J. KITCHEN HOODS: C3
K. MAKE–UP AIR UNITS: C3

03 COMMISSIONING SUBMITTALS

DRAFT FORMS: SUBMIT DRAFT OF SYSTEM VERIFICATION FORM AND FUNCTIONAL PERFORMANCE TEST CHECKLIST.

BALANCING REPORT: SUBMIT A SYSTEM BALANCING REPORT AS OUTLINED REQUIRED IN PROJECT SPECIFICATIONS.

TEST REPORTS: INDICATE DATA ON SYSTEM VERIFICATION FORM FOR EACH PIECE OF EQUIPMENT INSTALLED. A WRITTEN TEST AND BALANCE REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED.

FIELD REPORTS: INDICATE DEFICIENCIES PREVENTING COMPLETION OF EQUIPMENT OR SYSTEM VERIFICATION CHECKS EQUIPMENT OR SYSTEM TO ACHIEVE SPECIFIED PERFORMANCE.

04 CLOSEOUT SUBMITTALS

PROJECT RECORD DOCUMENTS: RECORD REVISIONS TO EQUIPMENT AND SYSTEM DOCUMENTATION NECESSITATED BY COMMISSIONING.

OPERATION AND MAINTENANCE DATA: SUBMIT REVISIONS TO OPERATION AND MAINTENANCE MANUALS WHEN NECESSARY REVISIONS ARE DISCOVERED DURING COMMISSIONING.

05 QUALITY ASSURANCE

PERFORM WORK IN ACCORDANCE WITH STATE CODES AND LOCAL AHJ GUIDELINES.

06 COMMISSIONING RESPONSIBILITIES

MECHANICAL CONTRACTOR:

A. ENSURE PARTICIPATION OF EQUIPMENT MANUFACTURERS IN APPROPRIATE STARTUP, TESTING, AND TRAINING ACTIVITIES WHEN REQUIRED BY INDIVIDUAL EQUIPMENT SPECIFICATIONS.
B. REVIEW FUNCTIONAL PERFORMANCE TEST PROCEDURES TO ENSURE FEASIBILITY, SAFETY AND EQUIPMENT PROTECTION.
C. PERFORM AND DOCUMENT STARTUP AND SYSTEM OPERATIONAL CHECKOUT PROCEDURES, PROVIDE COPY TO OWNERS PROJECT MANAGER.
D. COORDINATE WITH EQUIPMENT MANUFACTURERS TO DETERMINE SPECIFIC REQUIREMENTS TO MAINTAIN VALIDITY OF WARRANTIES.
E. CONFIRM SENSORS SELECTED ARE WITHIN DEVICE RANGES.
F. PROVIDE INSTRUCTIONS AND DEMONSTRATIONS FOR OWNER PERSONNEL.
G. REVIEW SEQUENCES OF OPERATION AND OBTAIN CLARIFICATION FROM ARCHITECT/ENGINEER AS NEEDED.
H. PROVIDE WRITTEN SEQUENCES OF OPERATION FOR PACKAGED CONTROLLED EQUIPMENT. EQUIPMENT MANUFACTURERS' STOCK SEQUENCES MAY BE INCLUDED, WHEN ACCOMPANIED BY ADDITIONAL NARRATIVE TO REFLECT PROJECT CONDITIONS.
I. DEMONSTRATE SYSTEM PERFORMANCE AND OPERATION TO OWNER PROJECT MANAGER AND LOCAL CODE OFFICIAL AS REQUESTED.
J. PROVIDE CONTROL SYSTEM TECHNICIAN TO ASSIST DURING COMMISSIONING AUTHORITY VERIFICATION CHECK AND FUNCTIONAL PERFORMANCE TESTING.
K. PROVIDE CONTROL SYSTEM TECHNICIAN TO ASSIST TESTING, ADJUSTING, AND BALANCING AGENCY DURING PERFORMANCE OF TESTING, ADJUSTING, AND BALANCING WORK.
L. PERFORM OPERATION AND MAINTENANCE TRAINING SESSIONS. SCHEDULE WITH OWNER PROJECT MANAGER.

REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY:

A. ENSURE TESTING, ADJUSTING, AND BALANCING IS PERFORMED AS SPECIFIED.
B. ENSURE SUBCONTRACTORS PERFORM ASSIGNED COMMISSIONING RESPONSIBILITIES.
C. PARTICIPATE IN VERIFICATION OF TESTING, ADJUSTING, AND BALANCING REPORT FOR VERIFICATION OR DIAGNOSTIC PURPOSES. REPEAT SAMPLE OF PERCENT OF MEASUREMENTS CONTAINED IN TESTING, ADJUSTING, AND BALANCING REPORT AS INDICATED IN COMMISSIONING PLAN.
D. ASSIST IN PERFORMING OPERATION AND MAINTENANCE TRAINING SESSIONS.

MECHANICAL CONTRACTOR AND REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY:

A. SCHEDULE AND ATTEND COMMISSIONING MEETINGS WITH ALL INVOLVED PARTIES.
B. DEVELOP STARTUP/ FUNCTIONAL PERFORMANCE TESTING PLAN USING MANUFACTURER'S STARTUP AND OPERATIONAL PROCEDURES FOR EQUIPMENT/SYSTEMS TO BE COMMISSIONED.
C. PROVIDE REPORTS DOCUMENTING EQUIPMENT OPERATION IN ALL MODES AND SEQUENCE OF OPERATION INCLUDING:
   1. ALL MODES DESCRIBED IN SEQUENCE OF OPERATION OR EQUIPMENT O&M MANUAL.
   2. REDUNDANT OR AUTOMATIC BACK–UP MODES, IF AVAILABLE
   3. PERFORMANCE OF ALARMS.
   4. MODE OF OPERATION UPON A LOSS OF POWER AND RESTORATION OF POWER, IF REQUIRED.

07 SCHEDULING

PREPARE SCHEDULE INDICATING ANTICIPATED START DATES FOR THE FOLLOWING:
A. EQUIPMENT AND SYSTEM STARTUPS.
B. TESTING, ADJUSTING, AND BALANCING.
C. MECHANICAL SYSTEM ORIENTATION, INSPECTIONS AND TRAINING SESSIONS.
D. OPERATION AND MAINTENANCE MANUAL SUBMITTALS.

SCHEDULE OCCUPANCY SENSITIVE TESTS OF EQUIPMENT AND SYSTEMS DURING CONDITIONS OF BOTH MINIMUM AND MAXIMUM OCCUPANCY AND OR USE.

08 DESIGN DOCUMENT AND SUBMITTAL REVIEWS

A. SUBMIT PRODUCT SUBMITTALS FOR REVIEW PRIOR TO ORDERING, NO EXCEPTIONS.
B. SUBMIT SEQUENCE OF OPERATIONS TO OWNERS PROJECT MANAGER, ARCHITECT AND MECHANICAL ENGINEER.
C. SUBMIT FULLY DETAILED PROJECT OPERATING AND MAINTENANCE REPORT TO OWNERS PROJECT MANAGER, ARCHITECT AND ENGINEER.

09 MANUALS

O&M MANUALS SHALL BE PROVIDED AND SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

A. SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.
B. MANUFACTURER'S OPERATION AND MAINTENANCE MANUAL FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT.
C. NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY.
D. CONTROLS SYSTEM MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SEQUENCE DESCRIPTIONS. DESIRED OR FIELD DETERMINED SET POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS, AT EQUIPMENT OR IN SYSTEM PROGRAMMING.
E. A NARRATIVE OF HOW EACH SYSTEM OPERATES, AND SET POINTS.

10 INSTALLATION, START–UP, TESTING AND BALANCING

A. STARTUP, TESTING AND BALANCING REPORTS SHALL BE GENERATED BY THE **MECHANICAL** CONTRACTOR FOR ALL EQUIPMENT/SYSTEMS AND SUBMITTED TO THE REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY.
B. PLACE SYSTEMS AND EQUIPMENT INTO FULL OPERATION AND CONTINUE OPERATION DURING EACH WORKING DAY OF COMMISSIONING.
C. INSTALL ADDITIONAL BALANCING, CHECK AND PRESSURE REDUCING VALVES, HEAT TRAPS, ETC. REQUIRED BY COMMISSIONING PLAN.
D. COORDINATE FINAL COMMISSIONING REPORT REQUIREMENTS, TESTING DATES AND WORK INVOLVED WITH OWNERS PROJECT MANAGER AND SCHEDULE ALL FUTURE TESTING PRIOR TO RECEIVING A CERTIFICATE OF OCCUPANCY.
E. PRIOR TO START OF FUNCTIONAL PERFORMANCE TEST, INSTALL REPLACEMENT FILTERS IN EQUIPMENT.

11 COMMISSIONING

A. TEST **BUILDING MECHANICAL SYSTEM** EQUIPMENT AT DESIGN CONDITIONS.

B. BE RESPONSIBLE TO PARTICIPATE IN INITIAL AND ALTERNATE PEAK SEASON TEST OF SYSTEMS REQUIRED TO DEMONSTRATE PERFORMANCE.

C. OCCUPANCY SENSITIVE FUNCTIONAL PERFORMANCE TESTS:

– TEST EQUIPMENT AND SYSTEMS AFFECTED BY OCCUPANCY VARIATIONS AT MINIMUM AND PEAK LOADS TO OBSERVE SYSTEM PERFORMANCE.

– PROVIDE AND PARTICIPATE IN FUTURE TESTING DELAYED BEYOND FINAL COMPLETION TO TEST PERFORMANCE WITH ACTUAL OCCUPANCY AND SEASONAL CONDITIONS. COORDINATE REQUIREMENTS WITH OWNER PROJECT MANAGER.

D. A PRELIMINARY REPORT OF COMMISSIONING TEST PROCEDURES AND RESULTS SHALL BE COMPLETED AND CERTIFIED BY THE REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY AND PROVIDED TO THE ARCHITECT AND BUILDING OWNER. THE REPORT SHALL BE IDENTIFIED AS "PRELIMINARY COMMISSIONING REPORT" AND SHALL INCLUDE:

1. ITEMIZATION OF DEFICIENCIES FOUND DURING TESTING REQUIRED BY THIS SECTION THAT HAVE NOT BEEN CORRECTED AT THE TIME OF REPORT PREPARATION.
2. DEFERRED TESTS THAT CANNOT BE PERFORMED AT THE TIME OF REPORT PREPARATION BECAUSE OF CLIMATIC CONDITIONS.
3. CLIMATIC CONDITIONS REQUIRED FOR PERFORMANCE OF THE DEFERRED TESTS.
4. DEFERRED TESTING INFORMATION (DATES, CONDITIONS, INCLUSIONS)

BUILDINGS, OR PORTIONS THEREOF, SHALL NOT PASS THE FINAL MECHANICAL INSPECTION UNTIL SUCH TIME AS THE CODE OFFICIAL HAS RECEIVED A LETTER OF TRANSMITTAL FROM THE ARCHITECT AND/OR BUILDING OWNER ACKNOWLEDGING THAT THE BUILDING OWNER HAS RECEIVED THE PRELIMINARY COMMISSIONING REPORT.

THE CODE OFFICIAL SHALL BE PERMITTED TO REQUIRE THAT A COPY OF THE PRELIMINARY COMMISSIONING REPORT BE MADE AVAILABLE FOR REVIEW BY THE CODE OFFICIAL.

E. A FINAL REPORT OF TEST PROCEDURES AND RESULTS IDENTIFIED AS "FINAL COMMISSIONING REPORT" SHALL BE DELIVERED TO THE ARCHITECT AND BUILDING OWNER AND SHALL INCLUDE:

1. RESULTS OF FUNCTIONAL PERFORMANCE TESTS.
2. DISPOSITION OF DEFICIENCIES FOUND DURING TESTING, INCLUDING DETAILS OF CORRECTIVE MEASURES USED OR PROPOSED.
3. FUNCTIONAL PERFORMANCE TEST PROCEDURES USED DURING THE COMMISSIONING PROCESS INCLUDING MEASURABLE CRITERIA FOR TEST ACCEPTANCE, PROVIDED HEREIN FOR REPEATABILITY.

COORDINATE FINAL COMMISSIONING REPORT REQUIREMENTS, TESTING DATES AND WORK INVOLVED WITH AAA PROJECT MANAGER AND SCHEDULE ALL FUTURE TESTING PRIOR TO RECEIVING A CERTIFICATE OF OCCUPANCY.

12 DOCUMENT REQUIREMENTS

THE REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY SHALL PROVIDE A STATEMENT OF SYSTEM COMMISSIONING TO THE CODE OFFICIAL AND OWNER IN ACCORDANCE WITH THE **2015 INTERNATIONAL ENERGY CONSERVATION CODE SECTION C408 REQUIREMENTS**. ANY/ALL INCOMPLETE OR DEFERRED COMMISSIONING REQUIREMENTS SHALL BE IDENTIFIED AS DEFERRED TESTS, INCLUDING TESTS THAT CANNOT BE PERFORMED BECAUSE OF CLIMATIC CONDITIONS OR OTHER NOTED DEFICIENCIES ASSOCIATED WITH COMMISSIONING, ACCORDINGLY ON THE STATEMENT OF SYSTEM COMMISSIONING PRIOR TO SUBMITTAL TO THE CODE OFFICIAL AND OWNER.

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MECHANICAL COMMISSIONING

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12 OF 12

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PLUMBING SPECIFICATIONS

01 GENERAL CONDITIONS

GENERAL AND SPECIAL CONDITIONS ARE HEREBY MADE AN INTEGRAL PART OF THIS DIVISION OF THE SPECIFICATIONS IN THAT THEY ARE APPLICABLE TO THE WORK UNDER THIS DIVISION UNLESS OTHERWISE NOTED.

PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL SYSTEMS IN THIS SECTION OF WORK IN ACCORDANCE WITH ALL APPLICABLE CODES.

PERMITS: APPLY FOR AND PAY FOR ALL NECESSARY PERMITS, FEES, AND INSPECTIONS REQUIRED BY ANY PUBLIC AUTHORITY HAVING JURISDICTION. ACREAGE CHARGES, BOND PROPERTY ASSESSMENTS AND FACILITIES CHARGE ARE NOT TO BE CONSTRUED TO BE A PART OF THIS CONTRACT.

WARRANTY: PROVIDE ALL MATERIALS AND EQUIPMENT UNDER THIS SECTION OF THE SPECIFICATIONS WITH A ONE YEAR WARRANTY FROM THE DATE OF ACCEPTANCE OF WORK BY THE OWNER.

THE CONTRACTOR SHALL TIE INTO CIVIL PROVIDED TAP AS INDICATED ON PLANS. ALL COSTS FOR THIS SERVICE SHALL BE PART OF HIS BID CONTRACT PRICE.

PROTECT COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS, AND CLIPS SHALL BE COPPER OR COPPER PLATED.

PROTECT COPPER PIPING AGAINST CONTACT WITH ALL MASONRY. WHERE COPPER IS SLEEVED THROUGH MASONRY, PROVIDE COPPER OR RED BRASS SLEEVES.

MAKE SURE PROVISIONS ARE INSTALLED IN ALL PIPING SO NO STRAIN OR BREAKAGE RESULTS FROM EXPANSION OR CONTRACTION.

INSTALL WATER PIPING IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.

PITCH ALL WATER PIPES SO THAT ALL PARTS MAY BE DRAINED. THE FORMATION OF SAGS AND TRAPS SHALL BE AVOIDED.

PROVIDE SHOCK ARRESTORS WHERE SHOWN ON PLANS FOR THE COMPLETE ELIMINATION OF WATER HAMMER.

STERILIZE DOMESTIC WATER PIPING IN ACCORDANCE WITH THE AMERICAN WATER WORKS ASSOCIATION'S SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.

SANITARY PIPING 2.5" OR LESS SHALL BE SLOPED AT 1/4" PER FOOT. SANITARY PIPING 3" OR LARGER SHALL BE SLOPED AT 1/8" PER FOOT, UNLESS OTHERWISE REQUIRED BY CODE OR NOTED.

WHERE WASTE PIPING IS EXPOSED IN REST ROOM AREAS, PROVIDE CHROME PLATED BRASS PIPING, WITH MATCHING STOPS AND ESCUTCHEONS.

PROVIDE REMOVABLE TRAPS WITH INTEGRAL CLEAN-OUT PLUG FOR ALL LAVATORIES. INSTALL CLEAN-OUTS IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.

INSTALL CLEAN-OUTS IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.

02 MATERIALS AND EQUIPMENT

ALL NEW WORK SHALL BE OF MATERIALS LISTED BELOW OR SHALL MATCH EXISTING. IF A CONFLICT EXISTS BETWEEN MATERIALS AND/OR EQUIPMENT, THE MORE STRINGENT SHALL APPLY AS ADJUDGED BY THE ARCHITECT/ENGINEER. THE CONTRACTOR SHALL FIELD VERIFY MATERIAL TYPE AND EQUIPMENT.

A. SANITARY SEWER PIPE AND FITTINGS – BELOW GRADE:
SCHEDULE 40 PVC DWV PIPE, (ASTM D1784 – D1785), PVC SOCKET FITTINGS AND SOLVENT CEMENTED FITTINGS. (ASTM D2665)

B. SANITARY SEWER/VENT PIPE AND FITTINGS – ABOVE GRADE:
SCHEDULE 40 PVC DWV PIPE, (ASTM D1784 – D1785), PVC SOCKET FITTINGS AND SOLVENT CEMENTED FITTINGS. (ASTM D2665)

C. DOMESTIC WATER PIPING BELOW GRADE:
3" AND BELOW.
CROSSLINKED POLYETHYLENE (PEX A) BY WIRSBO AQUAPEX (ASTM F876 AND ASTM F877) WITH PEX-A COLD EXPANSION FITTINGS, PROPEX INSERT WITH CORRESPONDING PROPEX RING. (ASTM F1960)
MINIMUM BEND RADIUS (COLD BENDING): NO LESS THAN SIX TIMES THE OUTSIDE DIAMETER. USE A BEND SUPPORT AS SUPPLIED BY THE PEX TUBING MANUFACTURER FOR TUBING WITH A BEND RADIUS LESS THAN STATED.
MANIFOLDS: UPONOR PROPEX 1 OR UPONOR ENGINEERED PLASTIC (EP) MANIFOLDS. ALL MANIFOLDS MANUFACTURED WITH THE APPROPRIATE SIZED PROPEX FITTINGS.
PROVIDE RED PEX PIPE FOR HOT WATER, BLUE PEX PIPE FOR COLD WATER SYSTEMS.

D. DOMESTIC WATER PIPING AND JOINTS ABOVE GRADE:
3" AND BELOW.
CROSSLINKED POLYETHYLENE (PEX A) BY WIRSBO AQUAPEX (ASTM F876 AND ASTM F877) WITH PEX-A COLD EXPANSION FITTINGS, PROPEX INSERT WITH CORRESPONDING PROPEX RING. (ASTM F1960)
MINIMUM BEND RADIUS (COLD BENDING): NO LESS THAN SIX TIMES THE OUTSIDE DIAMETER. USE A BEND SUPPORT AS SUPPLIED BY THE PEX TUBING MANUFACTURER FOR TUBING WITH A BEND RADIUS LESS THAN STATED.
MANIFOLDS: UPONOR PROPEX 1 OR UPONOR ENGINEERED PLASTIC (EP) MANIFOLDS. ALL MANIFOLDS MANUFACTURED WITH THE APPROPRIATE SIZED PROPEX FITTINGS.
PROVIDE RED PEX PIPE FOR HOT WATER, BLUE PEX PIPE FOR COLD WATER SYSTEMS.

E. OXYGEN PIPING AND JOINTS ABOVE GRADE:
COPPER MEDICAL GAS TUBING, TYPE 'L', STANDARD COLOR MARKING "OXY" (ASTM B 819) WITH WROUGHT-COPPER JOINTS (ASME B16.22), PRESSURE TYPE OR MSS-SP-73 WITH DIMENSIONS FOR BRAZED JOINTS; COPPER UNIONS, WROUGHT-COPPER OR CAST-COPPER ALLOY (ASME B16.22).

F. ANESTHIA EVACUATION PIPE AND FITTINGS – ABOVE GRADE:
SCHEDULE 40 PVC DWV PIPE, (ASTM D1784 – D1785), PVC SOCKET FITTINGS AND SOLVENT CEMENTED FITTINGS. (ASTM D2665)

03 INSULATION

INSULATE DOMESTIC WATER PIPING ABOVE GRADE (EXCEPT EXPOSED CONNECTIONS TO PLUMBING FIXTURES) WITH PREFORMED FIBERGLASS OR ENGINEERED POLYMER FOAM INSULATION. FOLLOW THIS SCHEDULE:

SERVICE	PIPE SIZE	THICKNESS
DOMESTIC HOT WATER (105 –140 F)	ALL	1"
DOMESTIC HOT WATER RETURN	ALL	1"
DOMESTIC COLD WATER	ALL	1/2"

PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES ARE REQUIRED TO MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY (ASTM E84/NFPA 255) METHOD.
INSULATE HORIZONTAL STORM DRAIN PIPING ABOVE GRADE AND ROOF DRAIN BODIES WITH 1.5" PREFORMED FIBERGLASS OR ENGINEERED POLYMER FOAM INSULATION

04 VALVES

SHUT OFF VALVES: BRASS/BRONZE, BALL TYPE, FULL PORT, TWO-PIECE, 125 PSI WORKING PRESSURE, NSF 61 APPROVED.
CHECK VALVES: BRASS/BRONZE, SWING TYPE, 125 PSI WORKING PRESSURE, NSF 61 APPROVED.
INSTALL IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS. PROVIDE ACCESS DOORS IF REQUIRED.

05 TESTS

ALL SOIL, WASTE, VENT AND WATER PIPING SHALL BE TESTED BY THE CONTRACTOR IN THE PRESENCE OF THE PLUMBING INSPECTOR AND SHALL BE APPROVED BY THE ENGINEER BEFORE ACCEPTANCE. ALL PIPING LOCATED UNDERGROUND OR CONCEALED IN BUILDING CONSTRUCTION SHALL BE TESTED BEFORE BACKFILLING OR CONCEALING PIPE. ALL TESTS REQUIRED FOR EQUIPMENT SHALL BE FURNISHED BY THE CONTRACTOR WITHOUT ADDITIONAL CHARGE TO THE OWNER.

06 SEISMIC REQUIREMENTS

PROPERLY SUPPORT AND BRACE VERTICALLY AND HORIZONTALLY ALL PIPING, APPARATUS, EQUIPMENT, ETC. IN ACCORDANCE WITH APPLICABLE CODES TO PREVENT EXCESSIVE MOVEMENT DURING SEISMIC CONDITIONS.

07 GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THE COMPLETE PLUMBING SYSTEM AGAINST DEFECTS DUE TO FAULTY MATERIALS, WORKMANSHIP OR FAILURE DUE TO NEGLIGENCE OF THE CONTRACTOR. THIS GUARANTEE SHALL EXTEND 12 MONTHS FROM DATE OF FINAL ACCEPTANCE. ALL SERVICE CALLS DURING THIS PERIOD SHALL BE PROVIDED BY THE CONTRACTOR.

PLUMBING LEGEND

NEW WORK

- DOMESTIC COLD WATER
- E — DOMESTIC EXISTING COLD WATER
- DOMESTIC 120° WATER
- E — DOMESTIC EXISTING 120° WATER
- DOMESTIC 120° WATER RETURN
- E — DOMESTIC EXISTING 120° WATER RETURN
- 140 — DOMESTIC 140° WATER
- 140HWR — DOMESTIC 140° WATER RETURN
- F — FILTERED WATER
- SANITARY
- E — EXISTING SANITARY
- SANITARY VENT
- E — EXISTING SANITARY VENT
- RL — STORM DRAIN (ABOVE SLAB)
- ORL — OVERFLOW STORM DRAIN (ABOVE SLAB)
- SD — STORM DRAIN (BELOW SLAB OR GRADE)
- ESD — EXISTING STORM DRAIN (BELOW SLAB OR GRADE)
- CD — CONDENSATE
- D — DRAIN
- P — PUMPED DISCHARGE
- A — COMPRESSED AIR
- G — NATURAL GAS
- O — OXYGEN
- AE — ANESTHESIA EVACUATION
- V — SURGICAL SUCTION (MEDICAL VACUUM)
- N — NITROGEN
- PIPE TURNING DOWN
- PIPE TURNING UP
- PIPE CAP
- FIXTURE SUPPLY WITH SHUT-OFF
- SHUT-OFF VALVE
- CHECK VALVE
- EXPANSION VALVE
- BALANCING VALVE
- GAS COCK AND GAS REGULATOR
- PRESSURE REDUCING/REGULATING VALVE
- STRAINER
- UNION
- SAFETY OR RELIEF VALVE
- SOLENOID VALVE
- OS&Y VALVE
- FD — FLOOR DRAIN
- HD — HUB DRAIN
- FLOOR SINK
- TRENCH DRAIN
- RD — ROOF DRAIN
- OD — OVERFLOW ROOF DRAIN
- FCO — FLOOR CLEANOUT
- PCO — END-OF-LINE CLEANOUT
- WCO — WALL CLEANOUT
- PRESSURE GAGE
- THERMOMETER
- SA-"A" — SHOCK ARRESTER (SUFFIX INDICATES PDI SIZE)
- BACKFLOW PREVENTER (REDUCED PRESSURE)
- BACKFLOW PREVENTER (DOUBLE CHECK)
- M — METER (GAS OR WATER)
- PUMP
- FPH — FREEZE PROOF WALL HYDRANT
- FPHB — FREEZE PROOF WALL HYDRANT BOX
- HB — HOSE BIB
- TRAP PRIMER
- FS — TP — FLOW SWITCH – FS#1
- DIRECTION OF FLOW
- EJ — EXPANSION JOINT
- PIPE ANCHOR
- PIPE SLEEVE
- FLEXIBLE CONNECTION
- 1 — REVISION NOTES
- POINT OF CONNECTION NEW TO EXISTING
- W-1 — DOMESTIC WATER RISER DESIGNATION
- W-1 — WASTE RISER DESIGNATION
- 1 / P001 — SECTION OR DETAIL NO. SECTION OR DETAIL LOCATED ON THIS SHT.

ABBREVIATIONS

AAV	AIR ADMITTANCE VALVE
AC	ABOVE CEILING
ADB	AUXILIARY DRAIN BOX
AFF	ABOVE FINISH FLOOR
BF-1	BACKFLOW PREVENTER
BFF	BELOW FINISH FLOOR
BG	BELOW GRADE
BTUH	BRITISH THERMAL UNIT/HOUR
BS	BELOW SLAB
BS-1	BREAK ROOM SINK
BV	BALANCING VALVE
℄	CENTER LINE
C-1	WATER COOLER/FOUNTAIN
CA	COMPRESSED AIR
CB-1	CATCH BASIN
CO	CLEANOUT
CV	CHECK VALVE
CW	COLD WATER
DC	DOWNSPOUT COVER
DN	DOWN
DW	DISHWASHER
EC	ELECTRICAL CONTRACTOR
ECO	EXISTING CLEANOUT
ES	EMERGENCY SHOWER/EYEWASH
ET-1	THERMAL EXPANSION TANK
EW	EMERGENCY EYEWASH
EX	EXISTING
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FPH	FREEZE PROOF HYDRANT
FS	FLOOR SINK
G	NATURAL GAS
GC	GENERAL CONTRACTOR
GCO	GRADE CLEANOUT
GI	GREASE INTERCEPTOR
GW	GREASE WASTE SANITARY
HB	HOSE BIBB
HCP	HANDICAP
HW	HOT WATER
HWR	HOT WATER RETURN
INV:	INVERT ELEVATION
IMB	ICE MAKER BOX
KW	KITCHEN WASTE
L-1	LAVATORY
MBH	MILLION BTU
MC	MECHANICAL CONTRACTOR
MS-1	MOP SINK
N	NITROGEN
NIC	NOT IN CONTRACT
PC	PLUMBING CONTRACTOR
OD	OVERFLOW ROOF DRAIN
ORL	OVERFLOW ROOF LEADER
OW	OIL WASTE SANITARY
OWS	OIL WASTE SEPATATOR
RCP-1	RECIRCULATION PUMP
RD	ROOF DRAIN
RL	ROOF LEADER
S-1	SINK
SA	SHOCK ARRESTOR
SS	SANITARY
SH-1	SHOWER
SD	STORM DRAIN
TD-1	TRENCH DRAIN
TP	TRAP PRIMER
T&P	TEMPERATURE AND PRESSURE
TW	TEMPERED WATER
TYP	TYPICAL
U-1	URINAL
V	VENT
VB	VACUUM BREAKER
VLV	VALVE
VS	VENT STACK
VP	VENT PIPE
VTR	VENT THRU ROOF
W-1	WATER CLOSET
WCO	WALL CLEANOUT
WH-1	WATER HEATER
WP	WASTE PIPE
WS	WASTE STACK

PLUMBING NOTES

1. ALL PLUMBING SHALL BE INSTALLED IN ACCORDANCE WITH THE 2018 VIRGINIA PLUMBING CODE AND THE NATIONAL FIRE CODES WHICH APPLY.
2. ALL PLUMBING PIPING SHALL BE CLOSELY COORDINATED WITH STRUCTURAL SYSTEM, MECHANICAL SYSTEM AND ELECTRICAL SYSTEM TO INSURE PROPER COMPLIANCE WITH CODES AND INSURE THAT ALL TRADES WILL NOT CONFLICT WITH EACH OTHER.
3. IF ANY SUBSTITUTED EQUIPMENT IS SUBMITTED AND APPROVED WITH PLUMBING CONNECTIONS OTHER THAN THAT SHOWN ON THE DRAWINGS AND SCHEDULES, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE PROPER PLUMBING CONNECTIONS TO THIS EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER.
4. DO NOT SCALE DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF DOORS, WINDOWS, WALLS, FIXTURES, ETC.
5. ALL CLEANOUTS SHALL HAVE TOPS ESPECIALLY DESIGNED FOR SPECIFIC FLOOR FINISHES SUCH AS CARPET, TILE, ETC. UNLESS OTHERWISE SPECIFIED.
6. ALL FLOOR CLEANOUT, FLOOR DRAIN AND CATCH BASIN TOPS SHALL BE COVERED DURING CONSTRUCTION TO PREVENT DAMAGE.
7. VENTS WILL BE COLLECTED ABOVE THE CEILING AND EXTENDED THROUGH THE ROOF AT AS FEW POINTS AS POSSIBLE. VENT PENETRATIONS SHALL AVOID MECHANICAL EQUIPMENT INTAKE AIR LOCATIONS PER CODE REQUIREMENTS.
8. EXCEPT WHERE PIPE SPACE IS PROVIDED OR UNLESS OTHERWISE NOTED, ALL SUPPLY, WASTE AND VENT RISERS SHALL BE RUN IN WALLS AND PARTITIONS.
9. PROVIDE ACCESS PANELS AS REQUIRED AT VALVE LOCATIONS TO PROVIDE ACCESS TO CONTROL VALVES. COORDINATE TYPE AND LOCATION WITH GENERAL CONTRACTOR.
10. PROVIDE FOR ACCESS TO ALL EQUIPMENT REQUIRING CLEANING OR ADJUSTMENT.
11. P.C. SHALL PROVIDE A PRESSURE REDUCING VALVE WHERE WATER MAIN ENTERS BUILDING IF PRESSURE EXCEEDS 80 PSI. SET PRV @ 75 PSI.

PIPE LABEL LEGEND

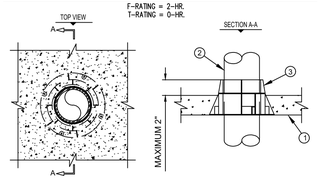
PLAN DESIGNATION	PIPE LABEL
CW	DOMESTIC WATER
HW	DOMESTIC HOT WATER
HWR	DOMESTIC HOT WATER RETURN
SS	SANITARY SEWER
SV	SANITARY VENT
O	OXYGEN
AE	ANESTHESIA EVACUATION

NOTES:
ALL PIPING WITH THE DESIGNATIONS ABOVE WILL BE LABELED PER ANSI/ASME A13.1 NON-POTABLE SYSTEMS WILL BE LABELED PER IPC SECTION 608.8

PLUMBING DRAWING SCHEDULE

DRAWING NUMBER	DESCRIPTION
P001	PLUMBING SPECIFICATIONS, LEGEND, GENERAL NOTES
P002	PLUMBING SCHEDULES
P003	PLUMBING DETAILS
P101	MAIN FLOOR PLAN – WASTE
P102	UPPER FLOOR PLAN – WASTE
P201	MAIN FLOOR PLAN – WATER
P202	UPPER FLOOR PLAN – WATER
P301	MAIN FLOOR PLAN – MED GAS

UL SYSTEM NO. FA-2053
PLASTIC PIPE THROUGH CONCRETE FLOOR OR CONCRETE OVER METAL DECKING
F-RATING = 2-HR.
T-RATING = 0-HR.



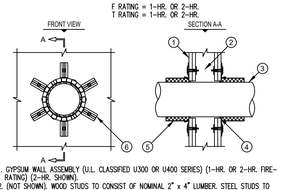
1. CONCRETE FLOOR ASSEMBLY (2-HR. FIRE-RATING) :
   A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MIN. 2-1/2" THICK).
   B. STEEL FLOOR UNIT/FLOOR ASSEMBLY – NORMAL WEIGHT CONCRETE FLOOR (MIN. 2-1/2" THICK) OVER METAL DECKING.
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING (SEE TABLE BELOW) :
   A. MAXIMUM 6" NOMINAL DIAMETER PVC PLASTIC PIPE (CELLULAR AND SOLID CORE).
   B. MAXIMUM 6" NOMINAL DIAMETER CPVC PLASTIC PIPE.
3. HILTI CP 680 CAST-IN FIRESTOP DEVICE, CAST OR GROUTED INTO CONCRETE FLOOR (SEE TABLE BELOW).

NOM. PIPE DIAMETER	TYPE OF PIPE	PRODUCT DESCRIPTION
1-1/2" TO 2"	PVC, CPVC	CP680 75/2.5"
3" TO 4"	PVC, CPVC	CP680 110/4"
6"	PVC, CPVC	CP680 160/6"

NOTES: 1. CLOSED OR VENTED PIPING SYSTEMS (PVC = SCHEDULE 40, CPVC = SDR 17).
2. FOR CONCRETE FLOOR OVER METAL DECKING APPLICATIONS, A CP 680 METAL DECK ADAPTER IS REQUIRED.
3. PLASTIC PIPES USED IN CONJUNCTION WITH HILTI CP 680 110/4" AND CP 680 160/6" MUST BE INSTALLED FROM THE TOP SIDE OF THE ASSEMBLY.

1 FIRE STOP DETAIL
SCALE: NONE

U.L. SYSTEM NO. WL2078
PLASTIC PIPE THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY
F RATING = 1-HR. OR 2-HR.
T RATING = 1-HR. OR 2-HR.



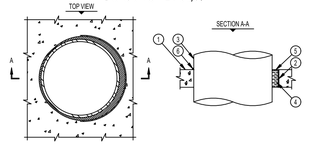
1. GYPSUM WALL ASSEMBLY (U.L. CLASSIFIED U300 OR U400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. (NOT SHOWN). WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING (SEE NOTE NO. 3 BELOW) :
   A. MAXIMUM 6" NOMINAL DIAMETER PVC PLASTIC PIPE (CELLULAR OR SOLID CORE).
   B. MAXIMUM 6" NOMINAL DIAMETER ABS PLASTIC PIPE (CELLULAR OR SOLID CORE).
   C. MAXIMUM 6" NOMINAL DIAMETER FRPP PLASTIC PIPE.
   D. MAXIMUM 6" NOMINAL DIAMETER CPVC PLASTIC PIPE.
4. SEE NOTE NO. 1 BELOW.
5. HILTI CP 642 OR HILTI CP 643 FIRESTOP COLLAR (SEE TABLE BELOW).
6. FASTEN EACH MOUNTING TAB TO WALL ASSEMBLY WITH APPROPRIATE HILTI ANCHORS.

NOM. PIPE DIA.	PRODUCT DESCRIPTION	NO. OF MOUNTING TABS	MAX. HOLE SIZE
1-1/2"	CP 643 50/1.5"	2	2-1/8"
2"	CP 643 63/2"	2	2-5/8"
3"	CP 643 90/3"	3	4"
4"	CP 643 110/4"	3	5"
6"	CP 642 160/6"	6	7"

NOTES : 1. TO IMPEDE COLD SMOKE, PROVIDE 1/4" DEPTH HILTI FS-ONE INTUMESCENT FIRE-STOP SEALANT IN ANNULAR SPACE AROUND PLASTIC PIPE.
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1/2".
3. CLOSED OR VENTED PIPING SYSTEMS. (PVC, ABS, FRPP = SCH. 40, CPVC= SDR 17).

2 FIRE STOP DETAIL
SCALE: NONE

UL/cUL SYSTEM NO. CAJ1226
METAL PIPE THROUGH A SLEEVE IN CONCRETE FLOOR/WALL OR BLOCK WALL
F RATING = 3-HR.
T RATING = 0-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400° F = 4 CFM/SQ. FT.

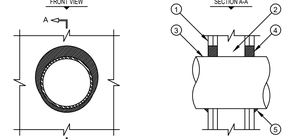


1. CONCRETE FLOOR OR WALL ASSEMBLY (3-HR FIRE-RATING):
   A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR OR WALL (MIN. 4-1/2" THICK).
   B. ANY UL/ULC CLASSIFIED CONCRETE BLOCK WALL.
2. OPTIONAL: MAXIMUM 32" NOMINAL DIAMETER STEEL PIPE SLEEVE (SCHEDULE 40 OR HEAVIER).
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 30" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 30" NOMINAL DIAMETER CAST IRON PIPE.
   C. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
   D. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
   E. MAXIMUM 4" NOMINAL DIAMETER EMT.
4. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED.
5. MINIMUM 1/4" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
6. MINIMUM 1/4" CROWN HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT APPLIED AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 32".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-7/8".
3. MINIMUM 1/4" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT IS REQUIRED ON BOTH SIDES OF A WALL ASSEMBLY.

3 FIRE STOP DETAIL
SCALE: NONE

UL/cUL SYSTEM NO. WL1054
METAL PIPE THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY
F RATING = 1-HR. OR 2-HR.
T RATING = 0-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = 4 CFM/SQ. FT.



1. GYPSUM WALL ASSEMBLY (UL/ULC CLASSIFIED U300 OR U400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. (NOT SHOWN). WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
   A. MAXIMUM 30" DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 30" DIAMETER CAST IRON PIPE.
   C. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
   D. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
   E. MAXIMUM 4" NOMINAL DIAMETER EMT.
4. HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT :
   A. MINIMUM 5/8", FOR A 1-HR. FIRE-RATING.
   B. MINIMUM 1-1/4" DEPTH, FOR A 2-HR. FIRE-RATING.
5. MINIMUM 1/2" BEAD HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING :
A. 32-1/4" FOR STEEL STUD WALLS.
B. 14-1/2" FOR WOOD STUD WALLS.
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2-1/2".

4 FIRE STOP DETAIL
SCALE: NONE

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07/18/2022

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2497 North Landing Road
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SPECIFICATIONS, LEGEND, GENERAL NOTES

REV #	DATE	COMMENTS
REVISION: 1		
REVISION: 2		
REVISION: 3		
REVISION: 4		

REVIEWS
INITIALS

TEG
PROJECT NO.: 22018
DRAWN: CLS
DATE: 07/18/22

P001

1 OF 8

Save Date: July 14, 2022 - 6:12 PM, Chereet
Plot Date: July 14, 2022 - 6:17 PM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018P001_PLUMBING SPECIFICATIONS, LEGEND, GENERAL NOTES.dwg

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE TYPE	DESCRIPTION	SERVICE CONNECTIONS				REMARKS
			SAN	VENT	HW	CW	
W-1	BARRIER-FREE WATER CLOSET TANK-TYPE	WATER CLOSET SHALL BE EQUAL TO AMERICAN STANDARD "CADET PRO" MODEL #215AA.104.020, WHITE, VITREOUS CHINA, ELONGATED BOWL, TANK TYPE, 1.28 GPF, FLOOR MOUNTED, BOTTOM OUTLET, 12" ROUGH-IN. SEAT SHALL BE EQUAL TO CHURCH MODEL #9500SSCT, ELONGATED WHITE OPEN FRONT SEAT LESS COVER. WATER CLOSET SHALL BE PROVIDED WITH CHROME PLATED SUPPLY WITH LOOSE KEY STOP EQUAL TO McGUIRE #172.	3"	2"	–	1/2"	FIXTURE RIM TO FINISHED FLOOR MOUNTING HEIGHT SHALL BE 17". LOCATE FLUSH LEVER ON WIDE SIDE OF STALL.
L-1	BARRIER-FREE LAVATORY WALL HUNG	LAVATORY SHALL BE EQUAL TO AMERICAN STANDARD "LUCERNE" MODEL #0355.012.020, VITREOUS CHINA, WALL HUNG. PROVIDE FAUCET EQUAL TO TO DELTA MODEL #21C134 CENTERSET FAUCET WITH LEVER HANDLES. PROVIDE LAVATORY COMPLETE WITH GRID DRAIN, PREWRAPPED INSULATED, CAST BRASS, OFFSET TAILPIECE AND P-TRAP WITH CLEANOUT (EQUAL TO McGUIRE #PW2150WC) AND CHROME PLATED SUPPLIES (EQUAL TO McGUIRE #175).	2"	1 1/2"	1/2"	1/2"	PROVIDE ASSE 1070 MIXING VALVE, MV-1 AT EACH FIXTURE. SET TEMP TO 110°F.
S-1	EXAM SINK	SINK SHALL BE EQUAL TO DAYTON MODEL #DCFU1210, SINGLE BOWL, 18 GAUGE TYPE 304 STAINLESS STEEL. PROVIDE FAUCET EQUAL TO ZURN MODEL #Z812C4-XL, DUAL LEVER HANDLES, VANDAL RESISTANT AERATOR. PROVIDE SINK COMPLETE WITH ONE STAINLESS STEEL BASKET STRAINER AND TAILPIECE (EQUAL TO McGUIRE #151A), CHROME PLATED SEMI-CAST BRASS P-TRAP (EQUAL TO McGUIRE #8902), AND CHROME PLATED SUPPLIES WITH LOOSE KEY STOPS (EQUAL TO McGUIRE #175LK).	2"	1 1/2"	1/2"	1/2"	
S-2	EXAM SINK	SINK SHALL BE EQUAL TO DAYTON MODEL #DCFU2115, SINGLE BOWL, 18 GAUGE TYPE 304 STAINLESS STEEL. PROVIDE FAUCET EQUAL TO ZURN MODEL #Z812C4-XL, DUAL LEVER HANDLES, VANDAL RESISTANT AERATOR. PROVIDE SINK COMPLETE WITH ONE STAINLESS STEEL BASKET STRAINER AND TAILPIECE (EQUAL TO McGUIRE #151A), CHROME PLATED SEMI-CAST BRASS P-TRAP (EQUAL TO McGUIRE #8902), AND CHROME PLATED SUPPLIES WITH LOOSE KEY STOPS (EQUAL TO McGUIRE #175LK).	2"	1 1/2"	1/2"	1/2"	
S-3	DOUBLE BOWL SINK	SINK SHALL BE EQUAL TO DAYTON MODEL #DCFU31189, DOUBLE BOWL, 18 GAUGE TYPE 304 STAINLESS STEEL. PROVIDE FAUCET EQUAL TO T&S BRASS MODEL #B-2347-05, DUAL LEVER HANDLES, VANDAL RESISTANT AERATOR. PROVIDE SINK COMPLETE WITH ONE STAINLESS STEEL BASKET STRAINER AND TAILPIECE (EQUAL TO McGUIRE #151A), CHROME PLATED SEMI-CAST BRASS P-TRAP (EQUAL TO McGUIRE #8902), AND CHROME PLATED SUPPLIES WITH LOOSE KEY STOPS (EQUAL TO McGUIRE #175LK).	2"	1 1/2"	1/2"	1/2"	
S-4	SCRUB SINK	SINK SHALL BE TRI-STAR MODEL #300-35 WITH #5EF-ID-WGA AC ADAPTER WALL MOUNTED FAUCET. CONTRACTOR SHALL COORDINATE WITH OWNER FOR CONNECTION SIZES, ROUGH-IN REQUIREMENTS AND NECESSARY ACCESORIES. PROVIDE SINK COMPLETE WITH GRID DRAIN, ANGLE STOPS, FLEXIBLE RISER AND P-TRAP UPON COORDINATION WITH OWNER.	2"	1 1/2"	1/2"	1/2"	
S-5	UTILITY SINK	SINK SHALL BE EQUAL TO FIAT MODEL #FL-1, FLOOR MOUNTED, MOLDED STONE. PROVIDE FAUCET EQUAL TO FIAT MODEL #830-AA, INTEGRAL STOPS, VACUUM BREAKER, THREADED SPOUT, AND LEVER HANDLES. PROVIDE SINK COMPLETE WITH P-TRAP.	3"	1 1/2"	3/4"	3/4"	PROVIDE CHECK VALVE STOPS ON HW & CW SUPPLIES WITH ACCESS DOOR ABOVE FAUCET.
S-6	BREAK SINK (ADA)	SINK SHALL BE EQUAL TO ELKAY MODEL #LRAD252165, SINGLE BOWL, 18 GAUGE TYPE 304 STAINLESS STEEL. PROVIDE FAUCET EQUAL TO ZURN MODEL #Z812C4-XL, DUAL LEVER HANDLES, VANDAL RESISTANT AERATOR. PROVIDE SINK COMPLETE WITH ONE STAINLESS STEEL BASKET STRAINER, OFFSET TAILPIECE AND P-TRAP WITH CLEANOUT (EQUAL TO MCGUIRE #PW1152WC) AND CHROME PLATED SUPPLIES WITH LOOSE KEY STOPS (EQUAL TO MCGUIRE #175LK).	2"	1 1/2"	1/2"	1/2"	
T-1	GROOMING TUB	TUB AND FAUCET SHALL BE OWNER FURNISHED AND CONTRACTOR INSTALLED. PROVIDE VACUUM BREAKER AND HAIR INTERCEPTOR. PROVIDE TUB COMPLETE WITH STAINLESS STEEL FLEXIBLE RISERS, ANGLE STOPS AND P-TRAP.	2"	1 1/2"	1/2"	1/2"	
T-2	TABLE TUB UNIT	TABLE AND FAUCET SHALL BE OWNER FURNISHED AND CONTRACTOR INSTALLED. PROVIDE VACUUM BREAKER AND HAIR INTERCEPTOR. PROVIDE TUB COMPLETE WITH STAINLESS STEEL FLEXIBLE RISERS, ANGLE STOPS AND P-TRAP.	2"	1 1/2"	1/2"	1/2"	
T-3	TABLE TUB UNIT	TABLE AND FAUCET SHALL BE OWNER FURNISHED AND CONTRACTOR INSTALLED. PROVIDE VACUUM BREAKER AND HAIR INTERCEPTOR. PROVIDE TUB COMPLETE WITH STAINLESS STEEL FLEXIBLE RISERS, ANGLE STOPS AND P-TRAP.	2"	1 1/2"	1/2"	1/2"	
HI	HAIR INTERCEPTOR	HAIR INTERCEPTOR SHALL BE MARBLE PRODUCTS CATCH-ALL HAIR TRAP IN LIEU OF FIXTURE TRAP, WITH REMOVABLE PERFORATED SCREEN, 1-1/2" THREADED INLET AND OUTLET.	1 1/2"	–	–	–	
MS-1	MOP SINK	SINK SHALL BE EQUAL TO FIAT MODEL #MSB2424, 24"x24"x10", MOLDED STONE. PROVIDE FAUCET EQUAL TO FIAT MODEL #830-AA, INTEGRAL STOPS, VACUUM BREAKER, PAIL HOOK, THREADED SPOUT, AND LEVER HANDLES. PROVIDE SINK COMPLETE WITH MOP HANGER, HOSE WITH BRACKET, AND P-TRAP.	3"	1 1/2"	3/4"	3/4"	PROVIDE CHECK VALVE STOPS ON HW & CW SUPPLIES WITH ACCESS DOOR ABOVE FAUCET.
EW	EMERGENCY EYE/FASH WASH	EMERGENCY EYE/FACE WASH SHALL BE HAWS MODEL 7610 BARRIER-FREE SINK/COUNTERTOP EYE/FACE WASH. INCLUDE AN AXION MSR EYE/FACE WASH HEAD, POLISHED CHROME BRASS SINGLE ACTION PULL-DOWN VALVE BODY, WHEEL CHAIR ACCESSIBILITY, UNIVERSAL SIGN AND 1/2" O.D. SLIP JOINT INLET. PROVIDE WITH TEMPERED WATER BLENDING VALVE MODEL 9201EFE.	2"	1 1/2"	1/2"	1/2"	
SH-1	SHOWER	TILED SHOWER BY OTHERS. PROVIDE SHOWER COMPLETE WITH DRAIN, GRAB BARS, TRANSFER SEAT AND CURTAIN. BATH VALVE SHALL BE EQUAL TO DELTA MODEL #T13291 WITH #RPW324HDF.	2"	1 1/2"	1/2"	1/2"	
C-1	BARRIER-FREE BI-LEVEL ELECTRIC WATER COOLER	ELECTRIC WATER COOLER SHALL BE EQUAL TO OASIS MODEL #PGBSBFSL BI-LEVEL, STAINLESS STEEL, EZH20 BOTTLE FILLING STATION. PROVIDE WATER COOLER COMPLETE WITH ANGLE SUPPLY LOOSE KEY STOP (EQUAL TO McGUIRE #175LK), P-TRAP (EQUAL TO McGUIRE #8902), AND CARRIER. REFER TO ARCHITECTURAL FOR ADA COMPLIANT MOUNTING HEIGHTS.	2"	1 1/2"	–	1/2"	
IMB	ICE MACHINE BOX	ICE MACHINE BOX SHALL BE EQUAL TO GUY GRAY MODEL #FRIB-12 FIRE RATED.	–	–	–	1/2"	W/ VACCUM BREAKER
WMB	WASHING MACHINE BOX	WASHING MACHINE BOX SHALL BE OATEY MODEL #38470, 1/4 TURN 1/2"HW AND 1/2"CW MIP X SWEAT VALVES WITH MOUNTED WATER HAMMER ARRESTORS, AND WASHER BOX FABRICATED OF MOLDED PLASTIC.	2"	1 1/2"	1/2"	1/2"	W/ VACCUM BREAKER AND SA#1
FPH	WALL HYDRANT	FREEZE PROOF HYDRANT SHALL BE EQUAL TO WOODFORD MODEL #65.	–	–	–	1/2"	
HS	HOSE STATION	HOSE BIBB SHALL BE EQUAL TO WOODFORD MODEL #V122 WITH MOUNTING PLATE.	–	–	1/2"	1/2"	PROVIDE WITH METAL HANDLE AND DRYWALL MOUNTING PLATE.
HB	HOSE BIBB	HOSE BIBB SHALL BE EQUAL TO WOODFORD MODEL #24.	–	–	–	1/2"	PROVIDE WITH METAL HANDLE
FD	FLOOR DRAIN	FLOOR DRAIN SHALL BE SIOUX CHIEF MODEL #832-36PNRV, PVC BODY, NICKEL BRONZE STRAINER ASSEMBLY, VANDAL RESISTANT STRAINER SCREWS, DEEP SEAL P-TRAP, PLUG TRAP PRIMER CONNECTION, DIAMETER OF OUTLET AS SHOWN ON DRAWINGS. COMPLETE WITH TRAP GUARD MODEL SURE SEAL SS3009V, SIZE TO MATCH FLOOR DRAIN, SIZE PER PLANS.	SEE DWGS.	–	–	–	PROVIDE TRAP GUARD CONNECTION AS REQUIRED.
TD	TRENCH DRAIN	TRENCH DRAIN SHALL BE TRI-STAR 4"WIDE, INTEGRAL SLOPE, STAINLESS STEEL GRATE WITH 1/2"HOLES, 14 GA. STAINLESS STEEL CONSTRUCTION, DEEP SEAL P-TRAP (PVC DEEP SEAL P-TRAP), 4" NO-HUB CONNECTION, CUSTOM ORDER, DRAIN SYSTEM, COORDINATE WITH GENERAL CONTRACTOR FOR LENGTH.	SEE DWGS.	–	–	–	
HD	HUB DRAIN	HUB DRAIN SHALL BE EQUAL TO ZURN MODEL #ZN-415 WITH TYPE "L" STRAINER.	SEE DWGS.	–	–	–	
AD	AREA DRAIN	AREA DRAIN SHALL BE EQUAL TO ZURN MODEL #Z-504-DG-HP-Y, HEAVY DUTY, TRAFFIC RATED, HEEL PROOF GRATE.	SEE DWGS.	–	–	–	
FCO	FLOOR CLEANOUT	FLOOR CLEANOUT SHALL BE EQUAL TO ZURN MODEL #ZS-1400. CLEANOUT.	SEE DWGS.	–	–	–	GAS/WATER TIGHT ABS PLUG
WCO	WALL CLEANOUT	WALL CLEANOUT SHALL BE EQUAL TO ZURN MODEL #ZS-1468, ACCESS COVER AND PLUG.	SEE DWGS.	–	–	–	GAS/WATER TIGHT ABS PLUG
GCO	CLEANOUT TO GRADE	CLEANOUT TO GRADE SHALL BE EQUAL TO ZURN MODEL #ZS-1400. PROVIDE CLEANOUT IN 18"x18"x6" CONCRETE PAD.	SEE DWGS.	–	–	–	GAS/WATER TIGHT ABS PLUG

GAS WATER HEATER SCHEDULE

TAG	DESCRIPTION	GAS BURNER DATA						UNIT TOTAL	RECOVERY GPH TOTAL	FLUE SIZE TYPE	SELECTION BASED ON		REMARKS/OPTIONS
		GAS TYPE N	GAS TYPE P	INLET PRESSURE	GALLONS STORAGE	MBH INPUT	RECOVERY GPH/RISE				MANUFACTURER	MODEL NUMBER	
WH-1	BUILDING	X		7" WC	60	120	154/90°	1	154	3"PVC	A.O. SMITH	BTH-120	NOTE 1, A,C,E
WH-2	BUILDING	X		7" WC	60	120	154/90°	1	154	3"PVC	A.O. SMITH	BTH-120	NOTE 1, A,C,E

OPTIONS (ALL UNITS)
- CODE APPROVED VACUUM BREAKER, TEMPERATURE/PRESSURE RELIEF VALVE AND INTERGAL OR FIELD SUPPLIED HEAT TRAPS.
- THERMAL EXPANSION TANK ON CW MAKE-UP. SEE TANK SCHEDULE.
- SERVICE BALL VALVES ON HW/CW MAINS

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: CONCENTRIC VENT KIT FOR EACH HEATER. INSTALL PER MANUFACTURER'S REQUIREMENTS.
B: WATER HEATER ASSEMBLIES ARE MANIFOLDED TOGETHER – PROVIDE PIPING MANIFOLDS.
C: PROVIDE CONDENSATE NEUTRALIZATION KIT ON CONDENSATE DISCHARGE LINE.
D: WATER HEATERS SUPPLING KITCHENS SHALL BE N.S.F. APPROVED.
E: ELECTRONIC IGNITION CONTROLS (120/1ø/60). COORDINATE WITH E.C
F: POWERED EXHAUST/ELECTRONIC IGNITION (120V/1ø/60) COORDINATE WITH E.C.

NOTES:
1. INSTALL WATER HEATER PER MANUFACTURERS REQUIREMENTS. COORDINATE ALL CONNECTION POINTS IN THE FIELD.

EXPANSION TANK SCHEDULE

TAG	DESCRIPTION	VOLUME (GALLONS)	DIAMETER (INCHES)	HEIGHT (INCHES)	SELECTION BASED ON		REMARKS
					MANUFACTURER	MODEL NUMBER	
ET-1	BLADDER TYPE	4.4	11"	15"	AMTROL	ST-12	NOTE 1
ET-2	BLADDER TYPE	4.4	11"	15"	AMTROL	ST-12	NOTE 1

NOTES:
1. INSTALL EXPANSION TANK ON IN-COMING COLD WATER PER MANUFACTURERS REQUIREMENTS.

PUMP SCHEDULE

TAG	DESCRIPTION	TYPE	CAPACITY		ELECTRICAL DATA				SELECTION BASED ON		REMARKS/OPTIONS
			GPM	HEAD (ft.)	HP	V	PH	HZ	MANUFACTURER	MODEL NUMBER	
RCP-1	HOT WATER RECIRC. PUMP	IN-LINE	3	20	1/12	120	1	60	BELL & GOSSETT	PL-30-B	NOTE 1,2
RCP-2	HOT WATER RECIRC. PUMP	IN-LINE	2	13	1/12	120	1	60	BELL & GOSSETT	PL-30-B	NOTE 1,2

OPTIONS (ALL RCP UNITS)
- AQUA-STAT & NIGHT TIMER
- FLANGED PUMP
- BALANCING VALVE & CHECK VALVE
- MAINTENANCE BALL VALVES ON BOTH SIDES OF PUMP

OPTIONS (ALL SUMP UNITS)
- 30"x30"x30" BASIN BY G.C.
- DISCHARGE CHECK VALVE
- DISCHARGE BALL VALVE
- ---

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: OIL-MINDER ALARM/CONTROL SYSTEM
B:
C:
D:

NOTES:
1. SET AQUA-STAT WITH SET POINT 10 DEGREES BELOW SYSTEM SUPPLY TEMP.
2. INSTALL RECIRCULATION PUMP PER MANUFACTURERS REQUIREMENTS.
3. INSTALL OIL-MINDER ALARM/CONTROL PANEL ON WALL AT ELEVATOR PER MANUFACTURERS REQUIREMENTS. FIELD VERIFY EXACT LOCATION.

MIXING VALVE SCHEDULE

TAG	DESCRIPTION	MAXIMUM GPM	MINIMUM GPM	PRESSURE LOSS	SELECTION BASED ON		REMARKS/OPTIONS
					MANUFACTURER	MODEL NUMBER	
MV-1	THERMOSTATIC MIXING VALVE	3.5	.25	5	LEONARD	270-LF	NOTE 1, A

OPTIONS (ALL UNITS)
- LEAD FREE NSF APPROVED
- PROVIDE T'STAT ON TEMPERED LINE

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: ASSE 1070 APPROVED, SET @ 100° F. ¼" INLETS/ ⅜" OUTLET, MOUNT BELOW FIXTURE

NOTES:
1. INSTALL MIXING VALVE PER MANUFACTURERS REQUIREMENTS. PROVIDE ALL PIPING AND VALVES PER O&M MANUAL.

MEDICAL GASES FIXTURE SCHEDULE

TAG	FIXTURE TYPE	DESCRIPTION	REMARKS
OM	OXYGEN MANIFOLD	OXYGEN MANIFOLD SHALL BE AMICO MODEL M3EC-S-HH-U-OXY. MANIFOLD SHALL SWITCH FROM "RIGHT BANK IN USE" TO "LEFT BANK IN USE" ONCE THE RIGHT BANK DEPLETES. MANUAL OPERATION SHALL BE REQUIRED AT THE TIME OF CHANGING CYLINDERS TO ENSURE SWITCH-OVER BY MOVING LEVER. PRESSURE SWITCH CONTROLS REMOTE ALARMS WHICH INDICATE "RIGHT BANK IN USE" TO "LEFT BANK IN USE" SUPPLY SWITCH-OVER AND THAT CYLINDER REPLACEMENT IS NECESSARY. PROVIDE WITH HEADER BAR ASSEMBLY M2-HBTC-04U-OXY AND WALL BRACKET FOR HEADER BAR ASSEMBLY, MODEL M-X-HB-WLBRKT. PROVIDE ALL REQUIRED FITTINGS FOR OPERATION AS REQUIRED.	
02	OXYGEN GAS CEILING OUTLET	OXYGEN GAS CEILING OUTLET SHALL BE AMICO NO. O-DISCEI-E-OXY, LATCH VALVE AMICO NO. O-FASE-XX-U-OXY, DISS CEILING MOUNTED, UL LISTED, NFPA 99/CSA COMPLIANT, PRIMARY AND SECONDARY CHECKS, INDEXED FOR OXYGEN. PROVIDE ONE QUICK DETACH LATCH VALVE ASSEMBLY FOR EACH DISS OUTLET AND TURN OVER TO OWNER.	
02W	OXYGEN GAS WALL OUTLET	OXYGEN GAS WALL OUTLET SHALL BE AMICO DISS COMPACT WALL OUTLET, LATCH VALVE AMICO NO. O-FASE-XX-U-OXY, DISS WALL MOUNTED, UL LISTED, NFPA 99/CSA COMPLIANT, PRIMARY AND SECONDARY CHECKS, INDEXED FOR OXYGEN. PROVIDE ONE QUICK DETACH LATCH VALVE ASSEMBLY FOR EACH DISS OUTLET AND TURN OVER TO OWNER.	
AE	ANETHESIA EVAC OUTLET	ANESTHESIA EVAC OUTLET SHALL BE SUPERA EVACUATION CEILING OUTLET, FOR ANESTHESIA EVAC. CEILING MOUNTED OUTLET WITH DISTRIBUTION TYPE CONNECTION. OWNER FURNISHED CONTRACTOR INSTALLED DROP HOSE, END FITTINGS AND LENGTH OF HOSE AS SELECTED BY OWNER.	
SUAE	SCAVENGER UNIT	SCAVENGER UNIT, ANESTHESIA EVACUATION SHALL BE SUPERA ACTIVE EVACUATION SYSTEM MODEL EVC3000. PROVIDE SYSTEM COMPLETED, INCLUDING POWER UNIT, VENT PIPE, DISTRIBUTION PIPING, PIPING CONNECTIONS, HOSE AND HOSE DROPS (AT EACH LOCATION), SCAVENGING INTERFACE, GAUGE AND TUBING. 120V/1PH, FLA 0.30, 50/60 HZ. CONNECTION INLET AND OUTLET SIZE: 2".	
MGAB	MEDICAL GAS ALARM BUZZER	MEDICAL GAS ALARM BUZZER SHALL BE AMICO NO. M2-REM-AL-NEMA, MEDICAL ALARM BUZZER, OXYGEN SENSORS 110V POWER, PROVIDE TRANSFORMER.	
MGVB-1	MEDICAL GAS VALVE BOX	MEDICAL GAS VALVE BOX SHALL BE AMICO NO. VBU-M05 WITH W-ISO-G-05, MEDICAL VALVE BOX, SINGLE GAS, LABELED FOR OXYGEN SERVICE, SHUT-OFF VALVE AND GAUGE, SECTION ISOLATION VALVE WITH GAUGE PORT AND PRE-ATTACHED EXTENSIONS, 3-PIECE, FULL PORT BALL VALVE.	

SHOCK ARRESTOR TABLE

TAG	PDI WH201 DESIGNATION	FIXTURE UNITS	SELECTION BASED ON		REMARKS
			MANUFACTURER	MODEL NUMBER	
SA#1	AA	1-3	SIOUX CHIEF	660	NOTE 1
SA#2	A	4-11	SIOUX CHIEF	652-A	NOTE 1
SA#3	B	12-32	SIOUX CHIEF	653-B	NOTE 1
SA#4	C	33-60	SIOUX CHIEF	654-C	NOTE 1
SA#5	D	61-113	SIOUX CHIEF	655-D	NOTE 1

NOTES:
1. INSTALL ARRESTORS PER PDI WH201 AND MANUFACTURERS REQUIREMENTS.

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Virginia Beach, Virginia 23456
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PLUMBING SCHEDULES

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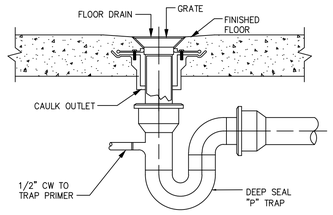
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P002

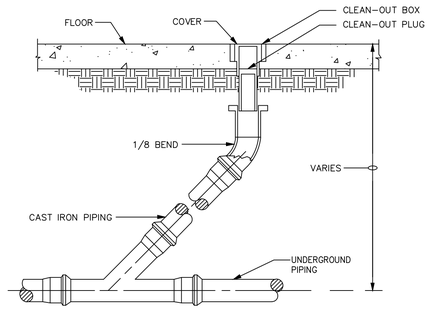
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1 TYPICAL FLOOR DRAIN DETAIL

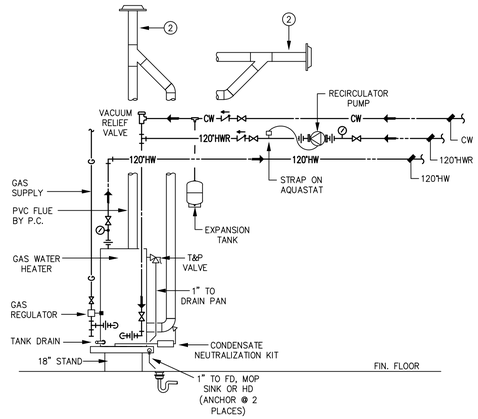
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NOTE:
P.C. SHALL PROVIDE TRAP GUARD AT DRAINS NOT WASHED BY A HOSE BIBB. TRAP GUARD = ZURN #Z1072. PROVIDE TRAP PRIMER IF REQUIRED BY AHJ. PRIMER = ZURN MODEL #Z1022 OR APPROVED EQUAL.



2 FLOOR CLEAN-OUT DETAIL

SCALE: NONE



3 GAS WATER HEATER

SCALE: NONE

NOTES:
1. DRAWINGS FOR SCHEMATIC PURPOSES ONLY. ALL VALVES & EQUIPMENT MUST BE INSTALLED PER MANUFACTURERS INSTRUCTIONS.
2. SEE PLANS FOR CONCENTRIC VENT LOCATION.

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PLUMBING SCHEDULES

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DATE: 07/18/22

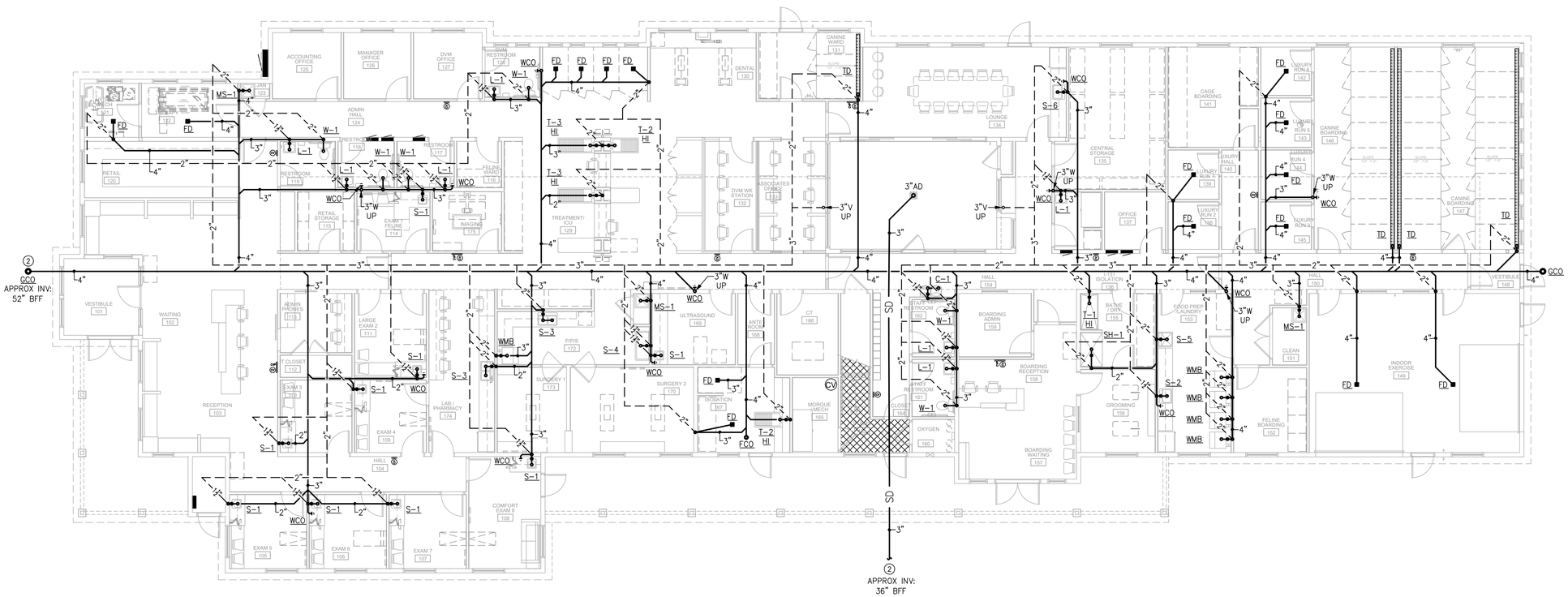
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3 OF 8

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NOTES THIS SHEET

1. SEE SHEETS P001-003 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.
2. PLUMBING CONTRACTOR SHALL TIE NEW SANITARY SEWER INTO CIVIL TAP. FIELD VERIFY EXACT LOCATION, INVERT ELEVATION AND FLOW DIRECTION.
3. PLUMBING CONTRACTOR SHALL TIE NEW STORM DRAIN INTO CIVIL TAP. FIELD VERIFY EXACT LOCATION, INVERT ELEVATION AND FLOW DIRECTION.



1 MAIN FLOOR PLAN - WASTE

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

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MAIN FLOOR PLAN - WASTE

REV #	DATE	COMMENTS
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DATE: 07/18/22

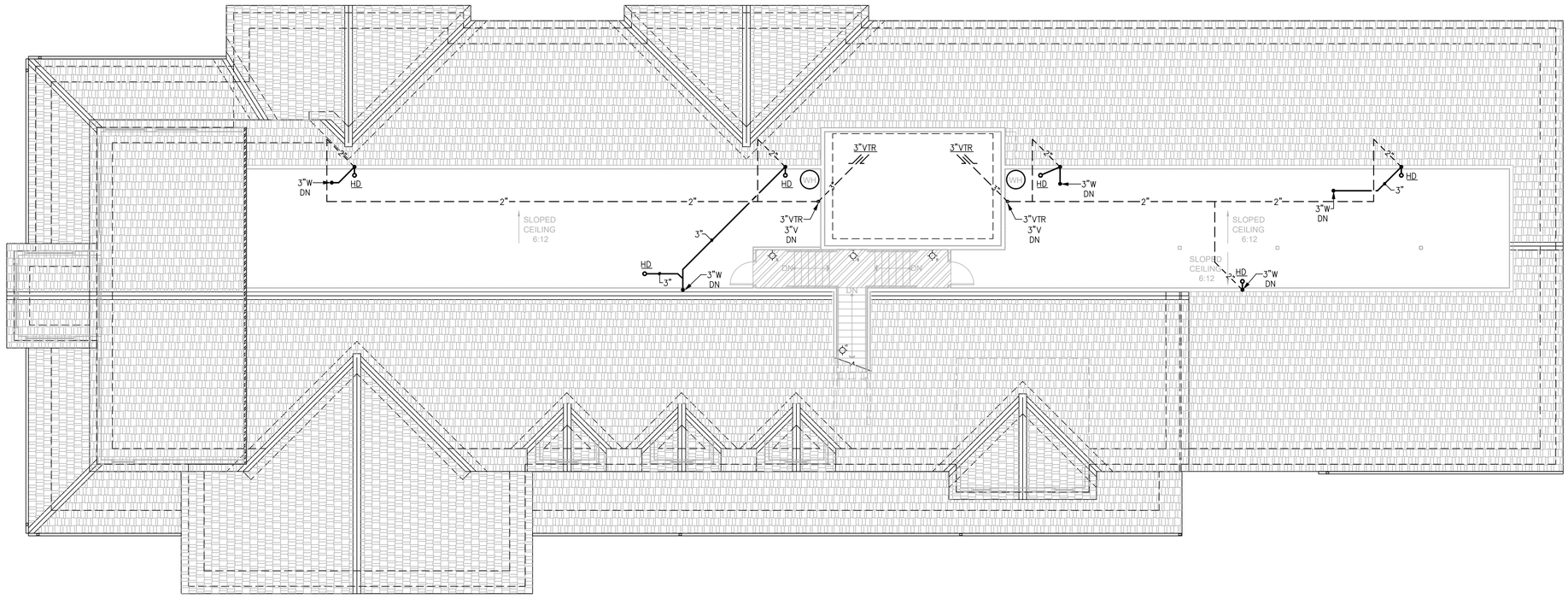
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4 OF 8

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NOTES THIS SHEET

1. SEE SHEETS P001-003 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.



1 UPPER FLOOR PLAN – WASTE

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

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COMMONWEALTH OF VIRGINIA
CHARLES A. DRIGGERS, JR.
Lic. No. 035957
PROFESSIONAL ENGINEER
07/18/2022

TEETER ENGINEERING GROUP, P.A.

COURTHOUSE VETERINARY HOSPITAL & PET BOARDING

2497 North Landing Road
Virginia Beach, Virginia 23456
Brian Watson, DVM

UPPER FLOOR PLAN - WASTE

REV.#	DATE	COMMENTS
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REVISION:
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REVIEWS

INITIALS	

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PROJECT NO.: 22018
DRAWN: CLS
DATE: 07/18/22

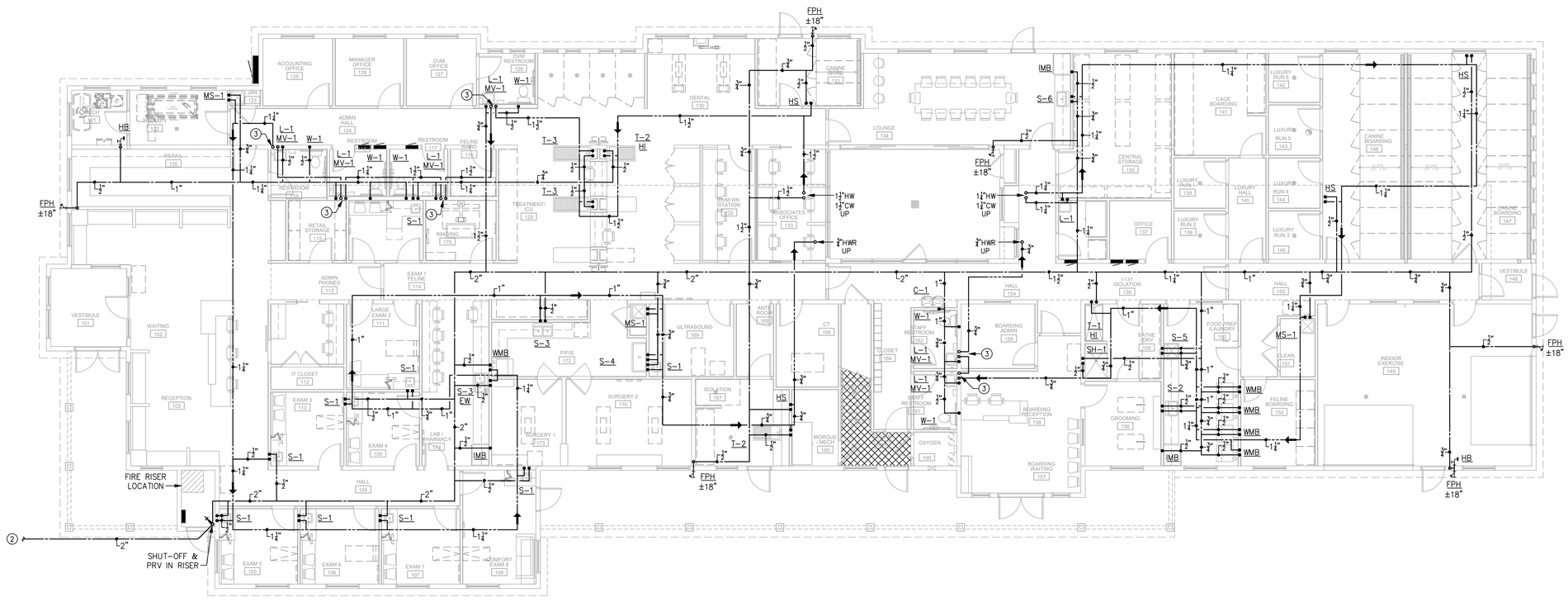
P102

5 OF 8

Save Date: July 14, 2022 - 6:14 PM - CHeisel
Plot Date: July 14, 2022 - 6:18 PM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018P102_UPPER FLOOR PLAN - WASTE.dwg

NOTES THIS SHEET

1. SEE SHEETS P001–003 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.
2. TIE NEW 1½" CW LINE INTO CIVIL PROVIDED TAP, METER AND BACKFLOW. FIELD VERIFY EXACT LOCATIONS, INVERT ELEVATION AND FLOW DIRECTION.
3. ROUTE HW DN IN WALL TO LAVATORY HW SUPPLY. PROVIDE TAP AND TURN BACK UP TO ABOVE CEILING.



1 MAIN FLOOR PLAN – WATER
SCALE: 1/8" = 1'–0"

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Brian Watson, DVM

MAIN FLOOR PLAN - WATER

REV.#	DATE	COMMENTS
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REVIEWS

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PROJECT NO.: 22018
DRAWN: CLS
DATE: 07/18/22

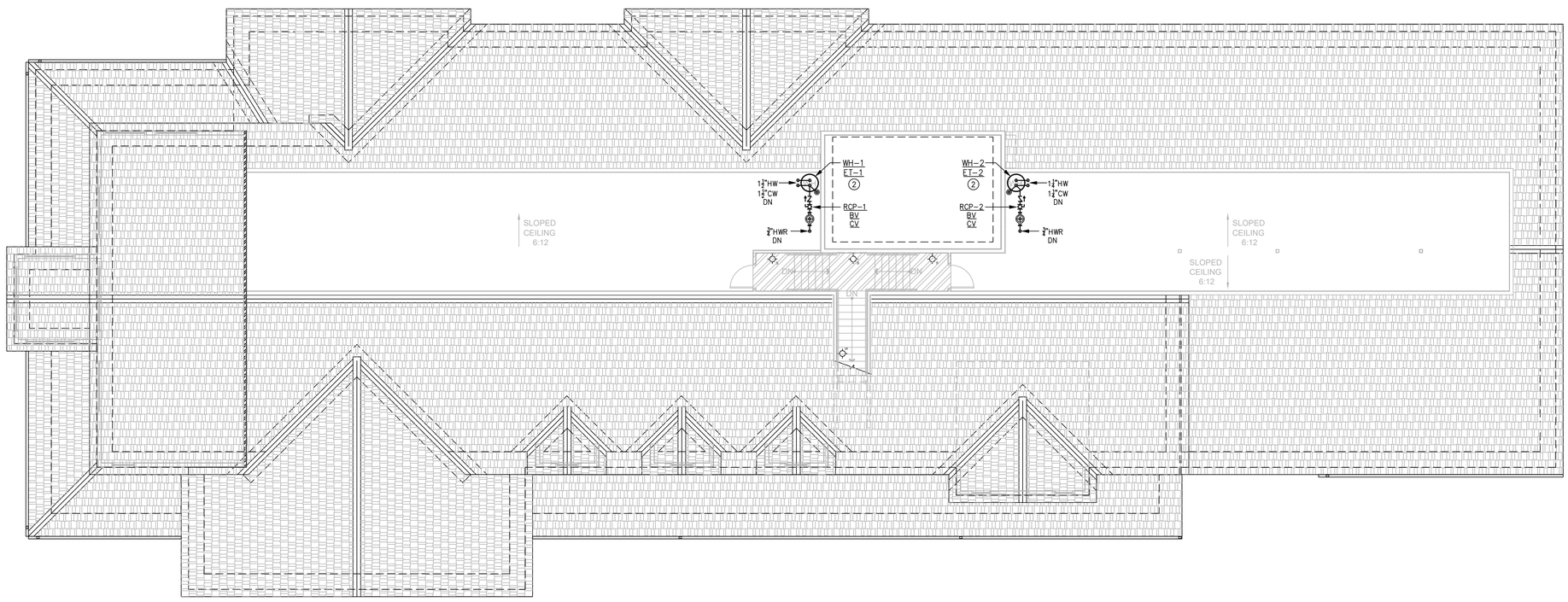
P201

6 OF 8

Save Date: July 14, 2022, 6:13 PM, Chereel
Plot Date: July 14, 2022, 6:13 PM
Drawing Name: H:\BDA Architects\2022 - Jobs\2\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018P201_MAIN FLOOR PLAN - WATER.dwg

NOTES THIS SHEET

1. SEE SHEETS P001–003 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.
2. MOUNT WATER HEATER ON 18" STAND. PROVIDE DRAIN PAN. ROUTE DRAIN PAN DRAIN TO HUB DRAIN WITH AIR GAP.



1 UPPER FLOOR PLAN – WATER

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

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UPPER FLOOR PLAN - WATER

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REVIEWS

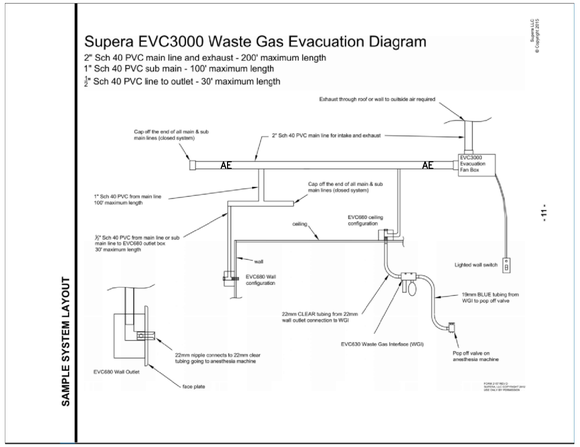
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PROJECT NO.: 22018
DRAWN: CLS
DATE: 07/18/22

P202

7 OF 8

Save Date: July 14, 2022 - 6:19 PM - CHeisel
Plot Date: July 14, 2022 - 6:19 PM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018P202_UPPER FLOOR PLAN - WATER.dwg

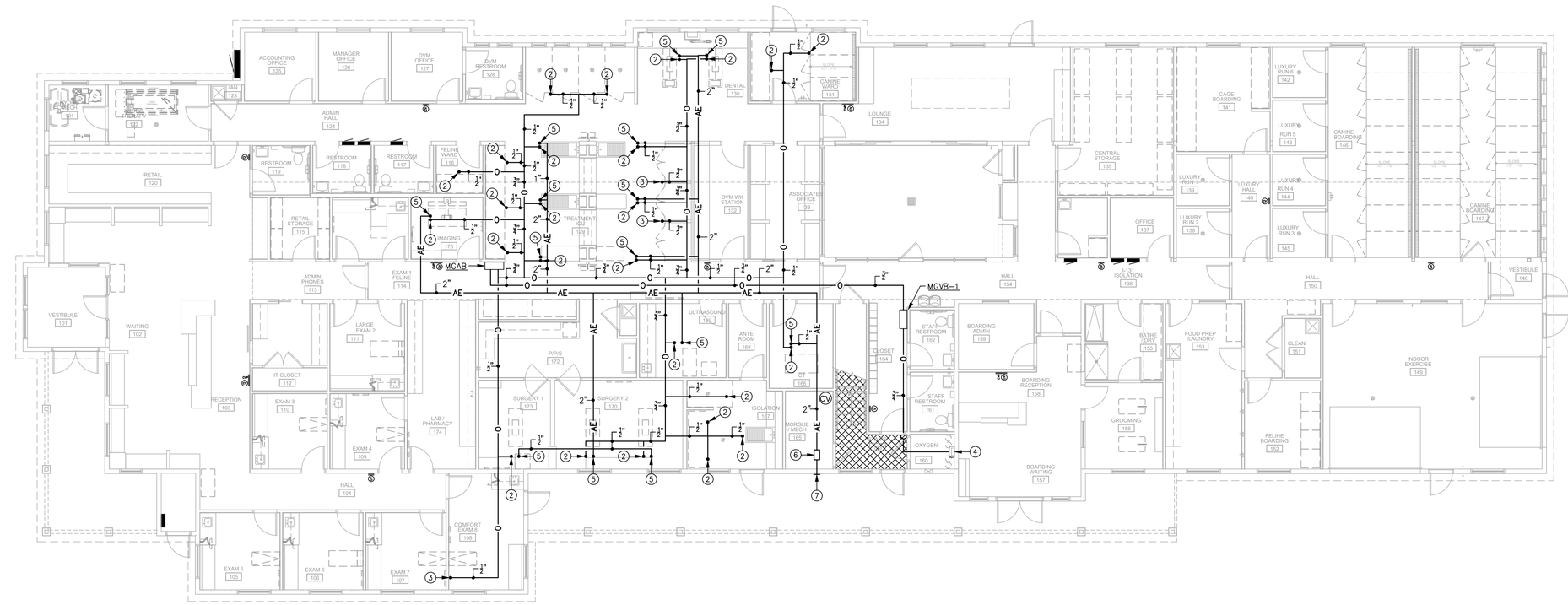


MEDICAL GAS NOTES:

1. SEE SHEETS P001–003 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.
2. ALL EQUIPMENT, PIPING, INSTALLATION, AND TESTING OF THE MEDICAL GAS SHALL COMPLY WITH NFPA 99 (2004 EDITION), EXCEPT AS NOTED, AND ALL STATE AND LOCAL CODES AND/OR ORDINANCES.
3. ALL MEDICAL GAS STORAGE SYSTEMS SHOWN ON THESE PLANS SHALL BE INSTALLED PER NATIONAL FIRE PROTECTION ASSOCIATION NFPA 55 STANDARD 2004 EDITION.
4. MEDICAL GAS MAIN LINE VALVE, PRESSURE GAUGE AND PRESSURE SWITCH SHALL BE LOCATED IMMEDIATELY DOWN STREAM OF THE MAIN SOURCE VALVES PER NFPA 99.
5. ALL MEDICAL GAS MAIN LINES SHALL BE SIZED PER NATIONAL FIRE PROTECTION ASSOCIATION 99 STANDARD 2004 EDITION.
6. PIPING LAYOUT IS DIAGRAMMATIC ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION AND COORDINATING ACTUAL LOCATION WITH ALL OTHER TRADES.
7. RECOMMENDED INSTALLATION HEIGHT OF WALL MOUNTED COMPONENTS IS 60" FROM THE CENTER LINE OF THE COMPONENT TO THE FINISHED FLOOR.
8. PIPE DROPS TO MEDICAL GAS SHALL BE ¾" NOMINAL FOR PRESSURE GASES.
9. ALL WALL PENETRATIONS SHALL BE FIRE STOPPED AS REQUIRED TO PRESERVE THE FIRE RESISTANCE RATING OF THE PENETRATED ASSEMBLY.

NOTES THIS SHEET

1. SEE SHEETS P001–003 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.
2. ¼" CEILING MOUNTED O2 OUTLET WITH SHUT–OFF PER NFPA STANDARDS. COORDINATE EXACT LOCATION WITH ARCHITECTURAL.
3. ¼" WALL MOUNTED O2W OUTLET WITH SHUT–OFF PER NFPA STANDARDS. COORDINATE EXACT LOCATION WITH ARCHITECTURAL.
4. OXYGEN GAS MANIFOLD, OM. TIE ¾" OXYGEN INTO MANIFOLD PER NFPA 99. PROVIDE ALL REQUIRED VALVES AND CONTROLS PER NFPA 99. ROUTE OXYGEN LINE ABOVE CEILING PER NFPA 99.
5. OWNER PROVIDED ¾" ANESTHESIA EVACUATION DROP WITH SUPERA EVC680 CEILING/WALL CONFIGURATION, AND EVC630 WASTE GAS INTERFACE. PROVIDE POP OFF VALVE ON ANESTHESIA MACHINE. SEE SUPERA WASTE GAS EVACUATION DIAGRAM THIS SHEET. COORDINATE DROP & EVC680 LOCATIONS WITH OWNER/ARCHITECT PRIOR TO ROUGH–IN.
6. OWNER PROVIDED SCAVENGER UNIT, SUAE, MOUNTED ABOVE CEILING. COORDINATE LOCATION WITH OWNER/ARCHITECT PRIOR TO ROUGH–IN. SCAVENGER UNIT SHALL BE CONTROLLED THROUGH A LIGHTED WALL SWITCH TO INDICATE THE DEVICE IS POWERED ON.
7. 2" SCHEDULE 40 PVC EXHAUST THROUGH WALL WITH WALL LOUVER. COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT PRIOR TO ROUGH–IN.



1 MAIN FLOOR PLAN – MED GAS

SCALE: 1/8" = 1'–0"

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Brian Watson, DVM

MAIN FLOOR PLAN - MED GAS

REV.#	DATE	COMMENTS
REVISION: -		
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REVIEWS
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PROJECT NO.: 22018
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DATE: 07/18/22

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8 OF 8

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Plot Date: July 14, 2022 - 6:19 PM
Drawing Name: H:\BDA Architects\2022 - Jobs\22018 - Courthouse Veterinary Hospital & Pet Boarding (Watson)\22018P301_MAIN FLOOR PLAN - MED GAS.dwg

GENERAL NOTES

- THESE CONTRACT DOCUMENTS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE, WORKERS AND OTHER PERSONS DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO, MEANS AND METHODS, BRACING, SHORING, FORMS, SCAFFOLDING, GUYING OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING DEMOLITION/CONSTRUCTION. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER OR STRUCTURAL OBSERVERS SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.

- TYPICAL DETAILS AND NOTES ON STANDARD SO SHEETS SHALL OTHERWISE APPLY UNLESS SPECIFICALLY SHOWN OR NOTED, CONSTRUCTION DETAILS NOT FULLY SHOWN OR NOTED SHALL BE SIMILAR TO DETAILS SHOWN FOR SIMILIAR CONDITIONS. ALL WORK, MATERIALS AND CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES, REGULATIONS AND SAFETY REQUIREMENTS.

- FOR CLARITY, ALL OPENINGS MAY NOT BE SHOWN ON DRAWINGS. SEE ALSO ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING PLANS. ALL OPENINGS AND PENETRATIONS SHALL BE LOCATED AND VERIFIED BY ALL TRADES FROM DRAWINGS MADE BY THEM. CONTRACTOR SHALL NOT PROCEED WITH ANY WORK SHOWN ON DRAWINGS IF IN CONFLICT UNTIL RECEIVING CLARIFICATION FROM ARCHITECT. FOR FRAMING AT OPENINGS, SEE TYPICAL STRUCTURAL DETAILS.

- ALL DIMENSIONS AND ELEVATIONS SHOWN ON STRUCTURAL DRAWINGS SHALL BE VERIFIED WITH ARCHITECTURAL DRAWINGS. RESOLVE ALL DISCREPANCIES WITH ARCHITECT PRIOR TO START OF CONSTRUCTION.

- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, CONDITIONS AND ELEVATIONS AT THE JOB SITE DURING CONSTRUCTION AND BRING ANY DISCREPANCIES TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK INVOLVED.

- NO STRUCTURAL CHANGE FROM THE APPROVED PLANS AND SPECIFICATIONS SHALL BE MADE IN THE FIELD UNLESS WRITTEN APPROVAL IS OBTAINED PRIOR TO MAKING SUCH CHANGE. CHANGES WITHOUT THE WRITTEN APPROVAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONDITION SHALL BE REPAIRED OR REPLACED AS DIRECTED.

DO NOT SCALE DRAWINGS

- THE MECHANICAL, ELECTRICAL, PLUMBING AND CONCRETE CONTRACTORS SHALL COORDINATE INSTALLATION OF THE REQUIRED INSERTS WITH THE GENERAL CONTRACTOR. REFER TO MECHANICAL DRAWINGS FOR SUPPORT STRUCTURES AND INSERTS.

- THE MECHANICAL,ELECTRICAL AND PLUMBING CONTRACTORS SHALL FURNISH ALL NECESSARY STRUCTURES FOR MECHANICAL EQUIPMENT, HANGING DEVICES AND INSERTS FOR INSTALLATION OF EQUIPMENT, DUCTS, PIPING, CONDUIT ETC..

SUPPLEMENTARY NOTES

- CERTIFICATIONS:

  REINFORCING OR THREADED RODS DRILLED AND EPOXIED INTO CONCRETE AS DETAILED OR NOTED ON THE CONSTRUCTION DOCUMENTS SHALL BE ONE OF THE FOLLOWING OR APPROVED EQUIVALENT:

REPORT#	PRODUCT	CURRENT REPORT	RE-EVALUATION DATE:
ESR #3187	HILTI HY--200	MAY 2021	MARCH 2022
ER #2024	DEWALT POWER DRIVEN FASTENERS	SEPT. 2021	SEPT. 2022
ESR #4057	DEWALT POWER DRIVEN FASTENERS CEILING CLIP AND SILL PLATE ANCHORAGES	APRIL 2021	APRIL 2022

  INSTALLATION OF EPOXIED DOWELS SHALL FOLLOW THE STRICT RECOMMENDATIONS OF THE MANUFACTURER AND THE APPLICABLE ER REPORT. WHERE SPALLING IS ANTICIPATED DUE TO INSUFFICIENT EDGE DISTANCE, USE THREADED ANCHOR ROD EPOXIED INTO DRILLED HOLE. CONTRACTOR SHALL HAVE ER REPORT ON-SITE DURING ALL INSTALLATIONS. THE CONTRACTOR SHALL USE THE LATEST REPORT FOR THE TIME OF INSTALLATION (FIRST OCCURENCE) BUT SHALL UTILIZE THE SAME PARTICULAR REPORT FOR THE DURATION OF THE PROJECT.

  EXPANSION BOLTS DRILLED AND INSTALLED INTO CONCRETE AS DETAILED OR NOTED ON THE CONSTRUCTION. DOCUMENTS SHALL BE ONE OF THE FOLLOWING OR APPROVED EQUIVALENT:

REPORT#	PRODUCT	CURRENT REPORT	RE-EVALUATION DATE:
ESR #1917	HILTI KWIK--BOLT TZ	MAY 2021	MAY 2022
ESR #3772	ITW REDHEAD TRUBOLT	DEC 2020	OCT. 2020
ESR #3260	DEWALT/POWERS POWER--BOLT	NOV 2020	NOV. 2020
ESR #1396	SIMPSON STRONG TIE WEDGE--ALL	MAR 2021	MARCH 2021
ESR #2024	DEWALT POWER DRIVEN FASTENERS CEILING CLIP AND SILL PLATE ANCHORAGES	APRIL 2021	APRIL 2022

  INSTALLATION OF EXPANSION BOLTS SHALL FOLLOW THE STRICT RECOMMENDATION OF THE MANUFACTURER AND THE APPLICABLE ICBO-ER REPORT. CONTRACTOR SHALL HAVE ER REPORT ON-SITE DURING ALL INSTALLATIONS. THE CONTRACTOR SHALL USE THE LATEST REPORT FOR THE TIME OF INSTALLATION (FIRST OCCURRENCE) BUT SHALL UTILIZE THE SAME PARTICULAR REPORT FOR THE DURATION OF THE PROJECT.

- MISCELLANEOUS:

  FOR STEEL CONNECTIONS SEE CONSTRUCTION DOCUMENTS. IF NOT SHOWN OR NOTED, MINIMUM CONNECTIONS TO BE INCLUDED SHALL BE TWO 3/4" DIAMETER BOLTS OR 1/4" FILLET WELD 4" LONG USING 1/4" CONNECTION MATERIAL AND DETAILED TO MINIMIZE BENDING IN CONNECTION.. PROCEED AFTER CLARIFICATION THROUGH SHOP DRAWING SUBMITTAL.

@---------- AT
A.B.---------- ANCHOR BOLT
APA ---------- AMERICAN PLYWOOD ASSOCIATION
A.S.T.M. ----- AMERICAN SOCIETY OF TESTING MATERIALS
ARCH. -------- ARCHITECTURAL
ASD ---------- ALLOWABLE STRESS DESIGN
BLDG --------- BUILDING
BLK. ---------- BLOCK
BM. ---------- BM
BN. ---------- BOUNDARY NAILING
B.O. ---------- BOTTOM OF
BTM ---------- BOTTOM
BRG. --------- BEARING
BRK ---------- BRICK
C ---------- CHANNEL
CJ. ---------- CONTROL JOINT
CGJ. --------- CONSTRUCTION CONTROL JOINT
CLR ---------- CLEAR
CMU ---------- CONCRETE MASONRY UNIT
COL ---------- COLUMN
CONC. -------- CONCRETE
CONN. -------- CONNECTION
CONT. -------- CONTINUOUS
CORR --------- CORRIDOR
DBL ---------- DOUBLE
DTL ---------- DETAIL
DIA. --------- DIAMETER
DIM. --------- DIMENSION
DL ---------- DEAD LOAD
D.T. ---------- DOUBLE TEE / DRAIN TILE
DWL ---------- DOWEL
EA ---------- EACH
EF ---------- EACH FACE
EJ ---------- EXPANSION JOINT
EL ---------- ELEVATION
ELEV -------- ELEVATOR
E.N. -------- EDGE NAILING
E.S. -------- EDGE SCREW
EQ. --------- EQUAL
EW --------- EACH WAY
EXST. ------ EXISTING
EXP. -------- EXPANSION
F.D. --------- FLOOR DRAIN
FDN --------- FOUNDATION
FTG --------- FOOTING
FT ---------- FEET
GALV. ------ GALVANIZE
GA. --------- GAUGE
HK. --------- HOOK
HORIZ. ----- HORIZONTAL
HSS --------- HOLLOW STRUCTURAL SECTION
INT ---------- INTERIOR
JST ---------- JOIST
KLF ---------- KIPS PER LINEAR FOOT
KSI ---------- KIPS PER SQUARE INCH
LL ---------- LIVE LOAD
LLH ---------- LONG LEG HORIZONTAL
LLV ---------- LONG LEG VERTICAL
LONG. -------- LONGITUDINAL
LWC ---------- LIGHT WEIGHT CONCRETE
MANUF ------- MANUFACTURER
MAS ---------- MASONRY
MAX. --------- MAXIMUM
MIN. --------- MINIMUM
MISC. -------- MISCELLANEOUS
MTL ---------- METAL
M.O. --------- MECHANICAL OPENING
N. ---------- NORTH
NTS ---------- NOT TO SCALE
O.C. --------- ON CENTER
O.D. --------- OUTSIDE DIAMETER
O.F. --------- OUTSIDE FACE
O.H. --------- OVERHEAD
OPNG. -------- OPENING
ORIG. -------- ORIGINAL
P.C. ---------- PRECAST
PLF ---------- POUND PER LINEAR FOOT
PLWD --------- PLYWOOD
PSF ---------- POUNDS PER SQUARE FOOT
PSI ---------- POUNDS PER SQUARE INCH
R. OR RAD. --- RADIUS
REINF. ------- REINFORCING
REQ'D -------- REQUIRED
S.A. ---------- STUD ANCHOR
SCHED. ------ SCHEDULE
SHT. ---------- SHEET
SIM ---------- SIMILAR
S.J. ---------- STEEL JOIST
SL ---------- SNOW LOAD
SPA. --------- SPACING/ SPACES
SPECS. ------ SPECIFICATIONS
S.S. ---------- STAINLESS STEEL
STD ---------- STANDARD
STL ---------- STEEL
TEMP --------- TEMPORARY
T & B -------- TOP & BOTTOM
T & G -------- GROOVE
THK. --------- THICK/ THICKENED
T.O. ---------- TOP OF
TRANS. ------ TRANSVERSE
TS ---------- TUBE STEEL
TYP. --------- TYPICAL
U.O.N. ------ UNLESS OTHERWISE NOTED
VERT. -------- VERTICAL
WD ---------- WOOD
WL ---------- WIND LOAD
W/ ---------- WITH
W/O ---------- WITH OUT
WT. ---------- WEIGHT
WWF --------- WELDED WIRE FABRIC

DESIGN CRITERIA

GOVERNING CODES AND MANUALS :

1. INTERNATIONAL BUILDING CODE (IBC), 2015 EDITION
2. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
   - MANUAL OF STEEL CONSTRUCTION - 15 EDITION
   - SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL BUILDINGS - ASD - 2012 NASPEC (AISI S100-2012) FOR COLD FORM STEEL
   - SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS
   - CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES
3. AMERICAN CONCRETE INSTITUTE (AC1)
   - ACI 318-14, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - ACI 301-16, SPECIFICATIONS FOR STRUCTURAL CONCRETE
4. AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)
   - ASCE 7-10 MINUMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURE
5. NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS), 2015 EDITION
   - SPECIAL DESIGN PROVISIONS FOR WIND AND SEISMIC (SDPWS) - 2015

DESIGN LOADS

VERTICAL LOADINGS :

FLOOR DEAD LOADS:
- Attic Floor = 20 PSF

ROOF DEAD LOADS:
- Main Roof = 20 PSF

WALL DEAD LOADS:
- Exterior Wall = 17 PSF

LIVE LOADS:
- Floor Live Load
  - Attic with storage and Mechanical = 120 PSF
- Roof Live Load
  - Pitched, Flat or Curved = 20 PSF

SNOW LOADS :

Ground Snow Load	Pg =	10	PSF
Importance Factor	I =	1.00	
Snow Exposure Factor	Ce =	1.00	
Thermal Factor	Ct =	1.10	
Sloped-roof Factor	Cs =	1.00	

LATERAL LOADINGS :

WIND DESIGN DATA:

Ultimate Design Wind Speed	=	121 MPH
Nominal Design Wind Speed	=	93.73 MPH
Risk Category	=	II
Exposure Category	=	C
Enclosure Classif.	=	Enclosed Building
Internal pressure Coef.	=	0.18
Directionality (Kd)	=	0.85
Windward Wall Pressures (Max) - Perp. to Ridge	=	32.27 PSF (Unfactored Ultimate)
Windward Wall Pressures (Max) - Para. to Ridge	=	26.47 PSF (Unfactored Ultimate)
Components and Cladding (10 sq.ft. Area) :		
Max. Roof Uplift Pressure	=	-81.20 PSF (Unfactored Ultimate)
Max. Roof Positive Pressure	=	19.86 PSF (Unfactored Ultimate)
Max. Overhange Uplift Pressures	=	-108.07 PSF (Unfactored Ultimate)
Max. Wall Positive Inward Pressure	=	34.47 PSF (Unfactored Ultimate)
Max. Wall Positive Outward Pressure	=	-46.15 PSF (Unfactored Ultimate)
Max. Parapet Positive Inward Pressure	=	0.00 PSF (Unfactored Ultimate)
Max. Parapet Positive Outward Pressure	=	0.00 PSF (Unfactored Ultimate)

EARTHQUAKE DESIGN DATA:

Risk Category	=	II	
Importance Factor	=	1.00	
Mapped spectral response accelerations	Ss =	8.90	%g
	S1 =	4.70	%g
Site Class	=	D	
Spectral Response Coef.	Sds =	0.09	
	Sd1 =	0.0752	
Seismic Design Category	=	B	
Basic Structural System	=	Bearing Wall Systems	
Seismic Resisting System	=	Light frame (wood) walls with structural wood shear panels	
Design Base Shear	V =	0.015	x W
Seismic Response Coef.	Cs =	0.015	
Response Modification Factor	R =	6.5	
Analysis Procedure	=	Equivalent Lateral-Force Analysis	

SOILS REPORT :

ECS MID-ATLANTIC, LLC
#11861 DATED 4, 2022 (W/ EMAILED REVISIONS BY DAVID ANDERSON PE)

SYMBOLS

SECTION / ELEVATION
FIELD WELD
ELEVATION / TOP OF BRG.

$ STEPPED FOOTING
℄ CENTERLINE
PL PLATE
L ANGLE
ø DIAMETER

GENERAL SHOP DRAWING NOTES:

- THE STRUCTURAL SHOP DRAWING REVIEW IS INTENDED TO HELP THE ENGINEER VERIFY HIS DESIGN CONCEPT. THE REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND DOES NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE DESIGN DRAWINGS AND SPECIFICATIONS, WHICH HAVE PRIORITY OVER SHOP DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMED AND CORRELATED DIMENSIONS, FABRICATION PROCESSES, MEANS, METHODS, TECHNIQUES, SAFETY AND COORDINATION OF THE WORK WITH OTHER TRADES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK HIS OWN SHOP DRAWINGS AND THOSE OF HIS SUBCONTRACTORS.

- THE STRUCTURAL SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR PRIOR TO SUBMITTAL. THE SHOP DRAWINGS WILL BE RETURNED FOR RESUBMITTAL IF A CURSORY REVIEW SHOWS MAJOR ERRORS WHICH SHOULD HAVE BEEN FOUND BY THE CONTRACTOR'S REVIEW. ALL SHOP DRAWINGS SHALL INCLUDE PLAN LAYOUTS SHOWING LOCATIONS OF ITEMS DETAILED ON THE SHOP DRAWINGS. ANY CHANGES, SUBSTITUTIONS OR DEVIATIONS FROM THE CONTRACT DOCUMENTS SHALL BE CLOUDED ON SHOP DRAWINGS. ANY OF THE CHANGES WHICH ARE NOT CLOUDED OR FLAGGED BY SUBMITTING PARTIES, SHALL NOT BE CONSIDERED REVIEWED AFTER ENGINEER'S REVIEW UNLESS NOTED ACCORDINGLY. THE SUBMITTED SHOP DRAWINGS WILL BE REVIEWED BY THE ENGINEER OF RECORD IN A TIMELY MANNER, TYPICALLY TWO WEEKS IS STANDARD, ASSUMING ALL NECESSARY SHOP DRAWING SUBMITTAL CRITERIA HAVE BEEN MET AND ALL PERTINENT SHOP DRAWING DOCUMENTS REFLECT THE MOST CURRENT CONSTRUCTION DOCUMENTS IN SOME CASES THE SCALE WILL BE STIPULATED UPON RECEIPT OF A PARTICULAR SUBMITTAL PACKAGE. IN ALL CASES THIS REVIEW PERIOD IS EXCLUSIVE OF ARCHITECTURAL REVIEW AND SUBMITTAL PROCESSING.

- SHOP DRAWINGS SHALL BE CONSIDERED RECEIVED ON THE SAME DAY IF RECEIVED BY 2:00PM (ENGINEERES LOCAL TIME) ON THE DAYTRANSMITTED ELSE THAY SHALL BE CONSIDERED RECEIVED ON THE FIRST BUSINESS DAY FOLLOWING THE DAY TRANSMITTED (INCLUDING HOLIDAYS)

REQUIRED SHOP DRAWING SUBMITTALS

THE CONTRACTOR SHALL PREPARE AND SUBMIT COMPLETE SUBMITTALS FOR EACH OF THE HIGHLIGHTED (CHECK BOX FILLED IN) TO BE INCORPORATED INTO WORK:

DIVISON 03 -CONCRETE:
- ■ CONCRETE MIX DESIGN
- ■ CONCRETE REINFORCING LAYOUT

DIVISON 04 -MASONRY:
- ☐ MASONRY PRODUCT DATA
- ☐ MASONRY MORTAR MIX DESIGN
- ☐ MASONRY GROUT MIX DESIGN
- ☐ MASONRY LAYOUT WITH REINFORCING

DIVISON 05 -METALS:
- ☐ STRUCTURAL STEEL LAYOUT
- ☐ ENGINEERED METAL TRUSS LAYOUT
- ☐ PRE-ENGINEERED OPEN WEB JOIST LAYOUT
- ☐ LIGHT GAGE METAL LAYOUT

DIVISON 06 -WOOD AND COMPOSITE:
- ■ LUMBER PRODUCT DATA
- ☐ ENGINEERED LUMBER/TIMBER PRODUCT DATA
- ■ ENGINEERED WOOD JOIST LAYOUT
- ■ PRE-ENGINEERED WOOD TRUSS DESIGN LAYOUT

GENERAL STRUCTURAL SHEET INDEX (S00 SERIES)

THE FOLLOWING SHEET INDEX INDICATES GENERAL STRUCTURAL SHEETS (S00 SERIES SHEETS). THESE SHEETS ARE STANDARDIZED TO CORRESPOND TO ASSOCIATED CSI MASTER SPECIFICATION DIVISIONS AND WILL BE HIGHLIGHTED (CHECK BOX FILLED IN) IF INCLUDED IN THIS PROJECT SET.

DIVISON 01 -GENERAL:
- ■ S01.A GENERAL PROJECT NOTES, DRAWING CONVENTIONS, DESIGN CRITERIA AND SHEET INDEX
- ■ S01.B SPECIAL INSPECTION NOTES AND TABLES
- ☐ S01.C SPECIAL INSPECTION NOTES AND TABLES

DIVISON 03 -CONCRETE:
- ■ S03.A CONCRETE GENERAL NOTES AND DETAILS
- ■ S03.B CONCRETE SLAB-ON-GRADE REQUIREMENTS
- ☐ S03.C MISCELLANEOUS CONCRETE DETAILS

DIVISON 04 -MASONRY:
- ☐ S04.A MASONRY GENERAL NOTES, REINFORCING REQUIREMENTS AND LINTEL DIAGRAMS
- ☐ S04.B MASONRY DETAILS AND MASONRY VENEER REQUIREMENTS

DIVISON 05 -METALS:
- ☐ S05.A STRUCTURAL STEEL GENERAL NOTES AND DETAILS
- ☐ S05.B STRUCTURAL METAL DECK GENERAL NOTES AND DETAILS
- ☐ S05.C MOMENT RESISTING FRAMES
- ☐ S05.D LIGHT GAGE METAL FRAMING GENERAL NOTES AND DETAILS
- ☐ S05.E GENERAL SHEARWALL SCHEDULES (LIGHT GAGE METAL STUD FRAMING)

DIVISON 06 -WOOD AND COMPOSITES:
- ■ S06.A CARPENTRY GENERAL NOTES
- ■ S06.B CARPENTRY GENERAL DETAILS
- ■ S06.C CARPENTRY GENERAL DETAILS (2)
- ☐ S06.D WOOD STAIR AND SHAFT ENCLOSURE DETAILS
- ☐ S06.E GENERAL SHEARWALL SCHEDULES (WOOD STUD FRAMING)

DIVISON 13 -SPECIAL CONSTRUCTION:
- ☐ S13.A SPECIAL DETAILS

DIVISON 31 -EARTHWORK:
- ■ S31.A EARTHWORK GENERAL NOTES AND DETAILS

DIVISON 32 -EXTERIOR IMPROVEMENTS:
- ☐ S32.A EXTERIOR DETAILS

STRUCTURAL PLAN SHEET INDEX

S100	FOUNDATION AND CONTROL JOINT PLAN
S200	FLOOR FRAMING PLAN
S300	ROOF FRAMING PLAN
S400	FOUNDATION SECTIONS
S500	ROOF /FLOOR FRAMING SECTIONS
S501	ROOF /FLOOR FRAMING SECTIONS (2)
SW0.1	SHEARWALL SCHEDULES
SW0.2	SHEARWALL ELEV. AND FRAMING DETAILS
SW1.0	ROOF TO FOUNDATION SHEARWALL PLAN

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GENERAL PROJECT NOTES

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SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

TABLE 1908 ITEM	VERIFICATION AND INSPECTION TASK	CONTINUOUS SPECIAL INSPECTION	PERIODICAL SPECIAL INSPECTION	REFERENCE STANDARD	IBC REFERENCE
1	INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	----	X	AISC 318 CH. 20, 25.2, 25.3, 26.5.1-26.5.3	1908.4
2	REINFORCING BAR WELDING:				
2 a	VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706	----	X	PER AWS D1.4 ACI 318: 26.5.4	----
2 b	INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"	----	X		
2 c	INSPECT ALL OTHER WELDS	X	----		
3	INSPECT ANCHORS CAST IN CONCRETE	----	X	ACI 318: 17.8.2	----
4	INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS:				
4 a	ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	X	----	ACI 318: 17.8.2.4	----
4 b	MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.A.	----	X	ACI 318: 17.8.2.4	----
5	VERIFY USE OF REQUIRED DESIGN MIX.	----	X	AISC 318 CH. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
6	PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	----	ASTM C 172, ASTM C 31, ACI 318: 26.4.5, 26.12	1908.10
7	INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	----	AISC 318: 26.4.5	1908.6, 1908.7, 1908.8
8	VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	----	X	AISC 318: 26.4.7-26.4.9	1908.9
9	INSPECT PRESTRESSED CONCRETE FOR:				
9 a	APPLICATION OF PRESTRESSING FORCES.	X	----	ACI 318: 26.9.2.1	----
9 b	GROUTING OF BONDED PRESTRESSING TENDONS.	X	----	ACI 318: 26.9.2.3	----
10	INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	----	X	ACI 318: CH. 26.9.2.1	----
11	VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST- TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	----	X	AISC 318: 26.10.2	1908.9
12	INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	----	X	ACI 318: CH 26.10.1 (b)	----

SPECIAL INSPECTIONS AND TESTS OF SOILS

TABLE 1705.6 ITEM	VERIFICATION AND INSPECTION TASK	FEQUENCY OF INSPECTION		REFERENCE FOR CRITERIA
		CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED	IBC SECTION
1	VERIFY MATERIAL BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	----	X	1705.6
2	VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	----	X	1705.6
3	PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	----	X	1705.6
4	VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	----	1705.6
5	PRIOR TO PLACEMENT OF COMPACTED FILL, VERIFY SUBGRADE AND VERIFY THAT THE SITE HAS BEEN PREPARED PROPERLY	X	----	1705.6

STATEMENT OF STRUCTURAL SPECIAL INSPECTIONS PER IBC 2015

1. SPECIAL INSPECTIONS / TESTING -

   SPECIAL STRUCTURAL INSPECTIONS" ARE NOT TO BE CONFUSED WITH, NOR RELIEVE THE OWNER OF OWNER'S AGENT FROM THE JURISDICTION BUILDING DEPARTMENT INSPECTIONS REQUIRED BY IBC SECTION 110. SPECIAL INSPECTIONS DOR NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE CONTRACT DOCUMENTS. MEANS AND METHODS AND JOBSITE SAFETY ARE SOLELEY THE RESPONSIBILITY OF THE CONTRACTOR. SEE SPECIFICATIONS FOR ADDITIONAL TESTING REQUIREMENTS.

2. REPORTING FOR SPECIAL INSPECTION -

   SPECIAL INSPECTION AND TESTING REPORTS SHALL BE COMPLETED AND DISTRIBUTED ON A WEEKLY BASIS. REPORT DEFICIENCIES THAT HAVE NOT BEEN RESOLVED IMMEDIATELY. PROVIDE COPIES OF REPORTS TO: CONTRACTOR, OWNER, ARCHITECT AND STRUCTURAL ENGINEER OF RECORD. SPECIAL INSPECTOR TO KEEP A NON-COMPLIANT LIST DOCUMENTING ITEMS INSPECTED NOT MEETING APPROVED CONSTRUCTION DOCUMENTS AND WHEN /HOW RESOLVED

3. REFER TO IBC SECTION 1705 AND ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING CONSTRUCTION DOCUMENTS FOR ADDITIONAL NON-STRUCTURAL SPECIAL INSPECTION ITEMS.

4. ANY FABRICATOR NEEDS TO BE APPROVED BY THE JURISDICTION BUILDING DEPARTMENT OR BE CERTIFIED BY AN INDUSTRY RECOGNIZED AGENCY QUALIFIED FOR SUCH CERTIFICATION. CERTIFICATION OF FABRICATORS ARE TO BE PROVIDED TO THE STRUCTURAL ENGINEER . THE SPECIAL INSPECTION ITEMS CONTAINED HEREIN ARE REQUIRED FOR ALL NON-CERTIFIED FABRICATORS.

5. DEFINITION OF "PERIODIC" AND "CONTINUOUS" SPECIAL INSPECTIONS:
   - CONTINUOUS: THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED.
   - PERIODIC: THE PART-TIME OF INTERMITTEMT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF THE WORK.
   - WHERE "PERIODIC" SPECIAL INSPECTION IS REQUIRED, "PART-TIME" OR "INTERMITTENT" MEANS THAT INSPECTION OF THE TASK NEED TO BE PERFORMED FROM TIME TO TIME DURING THE PROGRESS OF THE TASK. THE PERIOD OF TIME BETWEEN INSPECTIONS VARIES GREATLY FOR DIFFERENT TYPES FO WORK DEPENDING ON THE TYPE OF INSPECTION DONE.
   - THE PERIOD OF TIME BETWEEN INSPECTION ALSO DEPENDS ON THE PACE OF CONSTRUCTION, THE NUMBER OF WORKERS, AND THE QUALITY OF WORKMANSHIP, AND OTHER FACTORS.
   - IT IS THE RESPONSIBILITY OF THE SPECIAL INSPECTOR TO PROVIDE INSPECTIONS AT AN APPROPRIATE FREQUENCY AND AT APPROPRIATE TIMES DURING CONSTRUCTION. THE INSPECTOR MUST HAVE ADEQUATE EXPERIENCE AND EXHIBIT GOOD JUDGEMENT IN DETERMINING THE FREQUENCY AND TIMING OF INSPECTIONS.

GRAPHIC CONVENTIONS

TABLE ITEM	VERIFICATION AND INSPECTION TASK
1	THIS CELL WITHOUT SHADE - ITEM IS NOT SCHEDULED FOR INCORPORATION INTO THE WORK
2	THIS CELL WITH SHADE - ITEM IS TO BE INCORPORATED INTO THE WORK

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SPECIAL INSPECTION NOTES & TABLES

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CONCRETE:

PRODUCT REQUIREMENTS:

- ALL HARDROCK CONCRETE SHALL BE OF REGULAR WEIGHT OF 145 POUNDS PER CUBIC FOOT.
- AGGREGATE SIZE SHALL CONFORM TO ASTM C33.
- CONCRETE GROUT SHALL BE NON-SHRINKING WITH SUFFICIENT WATER TO ALLOW POURING. ULTIMATE COMPRESSIVE STRENGTH (Fc) AT (28) DAYS SHALL BE EQUAL TO 4000 PSI (MIN).
- ADMIXTURES TO BE INCORPORATED IN CASE-BY CASE-BASIS, REFER TO TABLE C-1

EXECUTION REQUIREMENTS:

- CONTRACTOR SHALL COORDINATE PLACEMENT OF ALL OPENINGS, CURBS, DOWELS, SLEEVES, CONDUITS, BOLTS AND EMBEDS REQUIRED WITH MECH., ELC., AND EQUIPMENT MANUFACTURER'S PRIOR TO PLACEMENT.
- REFER TO SHEET S03B FOR CONTROL/CONSTRUCTION AND ISOLATION JOINT DETAILS.
- NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN CONCRETE.
- ALL ITEMS TO BE CAST IN CONCRETE SUCH AS REINFORCING, DOWELS, BOLTS, ANCHORS, PIPES, SLEEVES ETC. SHALL BE SECURELY POSITIONED IN THE FORMS BEFORE PLACING THE CONCRETE.
- REMOVE ALL DEBRIS FROM FORMS BEFORE POURING.
- NO MORE THAN 90 MINUTES SHALL ELAPSE BETWEEN CONCRETE BATCHING AND CONCRETE PLACEMENT UNLESS APPROVED BY TESTING AGENCY. CONCRETE SHALL BE PLACED WITHIN 15 MINUTES AFTER DISCHARGE.
- ALL CONCRETE TESTS INCLUDING AIR CONTENT, SLUMP, AND TEST CYLINDERS SHALL BE TAKEN AT THE POINT OF DISCHARGE AND FROM THE DISCHARGE END OF PUMP HOSE WHEN CONCRETE IS PUMPED.
- ONE GRADE OF CONCRETE SHALL BE POURED AT THE JOB SITE AT ANY ONE TIME.
- CONCRETE SHALL NOT BE DROPPED THROUGH REINFORCING STEEL SO AS TO CAUSE SEGREGATION OF AGGREGATES. USE HOPPERS, CHUTES OR TRUNKS OF VARIOUS LENGTHS SO THAT THE FREE UNCONFINED FALL OF CONCRETE SHALL NOT EXCEED (5) FEET, AND A SUFFICIENT NUMBER SHALL BE USED TO ENSURE THE CONCRETE IS KEPT LEVEL AT ALL TIMES.
- PROTECT FRESHLY POURED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE COLD AND HOT TEMPERATURES. START CURING AS SOON AS FREE WATER HAS DISAPPEARED FROM THE CONCRETE SURFACE AFTER PLACING AND FINISHING. ALL CURING PROCEDURES TO FOLLOW ACI 308R-16.
- PROTECT CONCRETE FROM DAMAGE AND REDUCED STRENGTH CAUSED BY FROST, FREEZING ACTIONS AND LOW TEMPERATURES IN COMPLIANCE WITH ACI 306R-16.
- PROTECT CONCRETE FROM DAMAGE AND REDUCED STRENGTH CAUSED BY HIGH TEMPERATURES IN COMPLIANCE WITH ACI 305R-10. UNIFORMLY COOL WATER AND AGGREGATES BEFORE MIXING TO OBTAIN A CONCRETE MIXTURE TEMPERATURE OF NOT GREATER THAN 90 DEGREES FAHRENHEIT AT POINT OF PLACEMENT.
- CURING: PROVIDE 7-DAY MINIMUM CONTINUOUS CURE ON ALL CONCRETE SURFACES AS SPECIFIED.

CONCRETE REINFORCING:

PRODUCT REQUIREMENTS:

- ALL REINFORCING STEEL SHALL BE NEW STOCK DEFORMED BARS CONFORMING TO ASTM A615 AS FOLLOWS:
  #3 BARS..... GRADE 40
  #4 & LARGER BARS..... GRADE 60
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

EXECUTION REQUIREMENTS:

- FABRICATION AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH CRSI MSP-1 "MANUAL OF STANDARD PRACTICE" AND ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE."
- ALL BENDS SHALL BE MADE COLD.
- ALL WALLS AND COLUMNS SHALL BE DOWELED INTO FOOTING WITH BARS OF THE SAME SIZE AND SPACING AS THE BARS ABOVE (U.O.N. ON PLANS).
- ALL REINFORCING STEEL SHALL BE SECURELY WIRED AND PROPERLY SUPPORTED ABOVE THE GROUND AND AWAY FROM FORMS.
- PROVIDE CORNER BARS THE SAME SIZE AND SPACING AS THE HORIZ. REINF. AT THE CORNERS AND INTERSECTION OF ALL WALLS, BEAMS AND FOOTINGS (U.O.N. ON PLANS).
- CONTINUOUS FOOTING REINFORCEMENT SHALL HAVE A MINIMUM LAP PER SCHEDULE AND THE SPLICES IN ADJACENT BARS SHALL NOT BE LESS THAN (3) FEET APART.
- ALL DIMENSIONS SHOWING THE LOCATION OF REINFORCING STEEL NOT NOTED AS "CLEAR" ARE TO CENTER OF STEEL. MINIMUM REBAR COVER FOR CONCRETE SHALL BE AS OUTLINED IN TABLE CR-1
- TOLERANCES FOR LONGITUDINAL LOCATION OF BENDS AND ENDS OF REINFORCEMENT SHALL BE PLUS OR MINUS (2) INCHES EXCEPT AT DIS-CONTINUOUS ENDS OF MEMBERS WHERE TOLERANCES SHALL BE PLUS OR MINUS 1/2 INCH.
- REINFORCING FOR CONCRETE POURED ON GRADE SHALL BE SUPPORTED BY STEEL CHAIRS.

TABLE C-1 ADMIXTURES

ADMIXTURE TYPE	DESCTRIPTION
ACCELERATORS (ASTM C494)	ACCELERATING SETTING AND EARLY-STRENGTH DEVELOPMENT.
AIR DETRAINERS	DECREASE AIR CONTENT.
AIR-ENTRAINING ADMIXTURES (ASTM C260)	IMPROVE DURABILITY IN FREEZE-THAW, DEICER, SULFATE AND ALKALI-REACTIVE ENVIRONMENTS; IMPROVE WORKABILITY BY INTRODUCING AIR BUBBLES IN CONCRETE.
ALKALI-AGGREGATE REACTIVITY INHIBITORS	REDUCE ALKALI-AGGREGATE REACTIVITY EXPANSION.
COLORING ADMIXTURES (ASTM C979)	COLORED CONCRETE.
CORROSION INHIBITORS (ASTM C1582)	REDUCE STEEL CORROSION ACTIVITY IN A CHLORIDE-LADEN ENVIRONMENT.
HYDRATION CONTROL ADMIXTURES	SUSPEND AND REACTIVATE CEMENT HYDRATION WITH STABILIZER AND ACTIVATOR.
RETARDING ADMIXTURES (ASTM C494 AND AASHTO M 194, TYPE B)	RETARD SETTING TIME.
SHRINKAGE REDUCERS	REDUCE DRYING SHRINKAGE.
SUPERPLASTICIZERS (ASTM C1017, TYPE 1)	INCREASE FLOWABILITY OF CONCRETE; REDUCE WATER-CEMENT RATIO.
WATER REDUCER (ASTM C494 AND AASHTO M 194, TYPE A)	REDUCE WATER CONTENT AT LEAST 5%.
SYNTHETIC MICRO FIBERS	REDUCE PLASTIC AND CRAZING CRACKS

TABLE CR-1
REINFORCING STEEL CLEARANCES

CLEARANCE FROM FINISHED FACE	MINIMUM COVER	TOLERANCES + OR -
CAST AGAINST PERM. EXPOSED TO EARTH	3"	3/8"
EXPOSED TO EARTH OR WEATHER		
NO. 5 AND SMALLER BARS	1-1/2"	3/8"
NO. 6 AND LARGER BARS	2"	3/8"
NOT EXPOSED TO EARTH OR WEATHER SLABS, WALLS, JOISTS:		
NO. 11 AND SMALLER BARS	3/4"	3/8"
NO. 14 AND NO. 18 BARS	1-1/2"	3/8"

TABLE CQ-1
(CONCRETE QUALITY (ACI 318-08))
CEMENT TYPE (ASTM C150)

USE	TYPE OF PORTLAND CEMENT	DESCTRIPTION
■	TYPE I	GENERAL-PURPOSE FOR PAVEMENTS, FLOORS, REINF. CONC. BUILDINGS, BRIDGES, TANKS, RESERVOIRS, PIPE, MASONRY UNITS AND PRE-CAST CONC. PRODUCTS.
■	TYPE IA (EXTERIOR)	TYPE I CEMENT W/ AIR ENTRAINING.
☐	TYPE II	USED FOR MODERATE SULFATE ATTACK.
☐	TYPE IIA	TYPE II CEMENT W/ AIR ENTRAINING.
☐	TYPE III	HIGH EARLY STRENGTH (ONE WEEK OR LESS).
☐	TYPE IIIA	TYPE III W/ AIR ENTRAINING.
☐	TYPE IV	USED WHERE RATE/AMOUNT OF HEAT GENERATED FROM HYDRATION MUST BE BE MINIMIZED.
☐	TYPE V	USED FOR SEVERE SULFATE ATTACK.

TABLE CQ-2
COMPRESSIVE STRENGTH AND WATER-CEMENT RATIO (BY MASS)(ACI 211.1 & 211.3)

USE	COMPRESSIVE STRENGTH @ 28 DAYS (PSI)	EXPOSURE a, b CATEGORY	WATER-CEMENT RATIOS	
			NON-AIR ENTRAINED	AIR ENTRAINING
☐	7000	F0, S0, P0, C0	0.33	-
☐	6000		0.41	0.32
☐	5000		0.48	0.40
☐	4000		0.57	0.48
☐	3000		0.68	0.59
☐	2000		0.82	0.74
■	4000	P1, S1	0.50	-
☐	4500	F1, F2, F3, S2	0.45	-
☐	5000	C2, S3	0.40	-

FOOTNOTES:

(a) EXPOSURE CATEGORY

CATEGORY	DESCTRIPTION
F0, S0, P0, C0	CONCRETE PROTECTED FROM EXPOSURE TO FREEZING AND THAWING, APPLICATION OF DEICING CHEMICALS, OR AGGRESSIVE SUBSTANCES.
P1	CONCRETE INTENDED TO HAVE LOW PERMEABILITY WHEN EXPOSED TO WATER.
F1, F2, F3	CONCRETE EXPOSED TO FREEZING AND THAWING IN A MOIST CONDITION OR DEICERS.
C2	FOR CORROSION PROTECTION FOR REINFORCED CONCRETE EXPOSED TO CHLORIDES FROM DEICING SALTS, SALT WATER, BRACKISH WATER, SEAWATER, OR SPRAY FROM THESE SOURCES.

(b) * SULFATE EXPOSURE CLASS

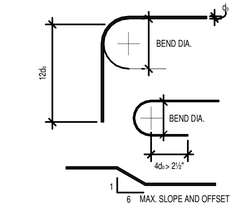
EXPOSURE CLASS	SULFATE (SO4) IN SOIL, % BY MASS	SULFATE (SO4) IN WATER, PPM
S0 NEGLIBIBLE	LESS THAN 0.10	LESS THAN 150
S1 MODERATE	0.10 TO 0.20	150 TO 1500
S2 SEVERE	0.20 TO 2.00	1500 TO 10,000
S3 VERY SEVERE	OVER 2.00	OVER 10,000

TABLE CQ-3
AIR CONTENT (ACI 211.1) (%)

USE	EXPOSURE (a)	AGGREGATE SIZE (IN)							
		3/8	1/2	3/4	1	1½	2	3	6
■	MILD	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0
☐	MODERATE (F1)	6.0	5.5	5.0	4.5	4.5	3.5	3.5	3.0
☐	SEVERE (F2 & F3)	7.5	7.0	6.0	6.0	5.5	5.0	4.5	4.0

TABLE CQ-4
SLUMP (ACI 211.1)

USE	TYPE OF CONSTRUCTION	SLUMP (IN)	
		MAXIMUM	MINIMUM
■	REINFORCED FOUNDATION WALLS AND FOOTINGS	6	3
☐	UNREINFORCED FOOTINGS, CAISSONS, AND SUB-STRUCTURE WALLS	4	3
☐	REINFORCED SLABS, BEAMS, AND WALLS	6	4.5
☐	BUILDING COLUMNS	6	4
☐	PAVEMENTS	3	1
☐	HEAVY MASS CONSTRUCTION	3	1
☐	BRIDGE DECKS	4	3
■	SIDEWALK, DRIVEWAY, AND SLABS ON GROUND	5	3



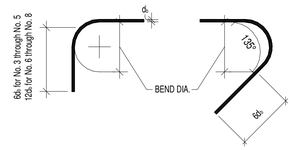


TABLE CR-2
STANDARD HOOKS FOR PRIMARY REINFORCEMENT

BAR SIZE NUMBER	MINIMUM FINISHED BEND DIAMETER (a)
3 THROUGH 8	6 d_b
9, 10, 11	8 d_b
14 AND 18	10 d_b
FOOTNOTES: (a) MEASURED ON INSIDE OF BAR	

TABLE CR-3
STANDARD HOOKS FOR STIRRUPS & TIE REINFORCEMENT

BAR SIZE NUMBER	MINIMUM FINISHED BEND DIAMETER (a)
3 THROUGH 5	4 d_b
6 THROUGH 8	6 d_b
FOOTNOTES: (a) MEASURED ON INSIDE OF BAR	

TABLE CR-4
STIRRUP SIZE/SPACING - TYPICAL (U.O.N.)

LATERAL TIES	STIRRUP SIZE	SPACING
MAIN REINFORCEMENT (d_b)		
< #10	# 3	LESSER OF: a. 16 d_b b. 48 x STIRRUP DIA. c. LEAST COL./BM. DIM
> #10	# 4	
SPIRAL TIES		
< #10	# 3	MAXIMUM SPACING = 3"
> #10	# 4	

1 S03.A STANDARD HOOK, STIRRUPS AND TIE REINFORCING DETAILS
NTS

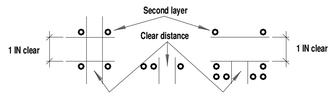
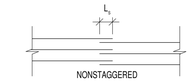


TABLE CR-5
CLEAR DISTANCES FOR REINF.

REINFORCEMENT TYPE	MEMBER TYPE	CLEAR DISTANCE
DEFORMED BARS	BEAMS / WALLS	(a) d_b > 1 INCH
	COLUMNS	(b) 1.5 d_b > 1-1/2 INCH
FOOTNOTES: (a) IF $d_b \leq$ 1 INCH, USE 1 INCH; OTHERWISE, USE d_b (b) IF $d_b \leq$ 1-1/2 INCHES, USE 1-1/2 INCHES; OTHERWISE, USE 1.5 d_b		

6 S03.A REINFORCING CLEARANCE DETAILS
NTS



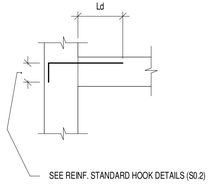


TABLE CR-6
LAP SPLICE SCHEDULE (L_S VALUES (IN))

BAR SIZE	f'_c(psi)								
	2000	3000	4000	5000	6000	7000	8000	9000	10000
#3	35	29	27	27	27	27	27	27	27
#4	47	38	33	30	27	27	27	27	27
#5	59	48	42	37	34	31	29	28	27
#6	70	58	50	45	41	38	35	33	32
#7	82	67	58	52	47	44	41	39	37
#8	94	77	66	59	54	50	47	44	42
#9	106	86	75	67	61	57	53	50	47
#10	119	97	84	75	69	64	60	56	53

TABLE CR-7
DEVELOPMENT LENGTHS SCHEDULE
(L_d VALUES (IN))

BAR SIZE	f'_c (psi)								
	2000	3000	4000	5000	6000	7000	8000	9000	10000
#3	27	22	21	21	21	21	21	21	21
#4	36	29	26	23	21	21	21	21	21
#5	45	37	32	29	26	24	23	21	21
#6	54	44	38	34	31	29	27	26	24
#7	63	52	45	40	36	34	32	30	28
#8	72	59	51	46	42	39	36	34	32
#9	81	67	58	52	47	44	41	38	36
#10	92	75	65	58	53	49	46	43	41

2 S03.A REINFORCING DEVELOPMENT LENGTHS AND SPLICES
NTS

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CONCRETE GENERAL NOTES AND DETAILS

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REVIEWS	
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-	BDA DSGN. REV.
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CONCRETE SLAB-ON-GRADE REQUIREMENTS

GENERAL

1. SAW-CUT JOINTS AS SOON AS THE SLAB WILL SUPPORT THE WEIGHT OF THE SAW AND OPERATOR WITHOUT DISTURBING THE FINAL FINISH.
2. THE DEPTH OF THE SAW-CUT WHEN USING A WET CUT SAW SHALL BE 1/4 THE SLAB THICKNESS.
3. PROVIDE CONSTRUCTION JOINT AT THE END OF CONCRETE PLACEMENT FOR THE DAY. SEE DETAIL A (THIS SHEET).
4. SEE FOUNDATION AND/OR CONTROL JOINT PLAN FOR ADDITIONAL INFORMATION.
5. SEE GENERAL NOTE SHEET S0.2 FOR ADDITIONAL CONCRETE REQUIREMENTS.
6. CONTRACTOR TO FAMILIARIZE HIMSELF WITH SOILS REPORT FOR SUBGRADE PREPARATION.

DESIGN

THE FOLLOWING MINIMUM ALLOWABLE REINFORCING RATIO USED IN THE DESIGN IS AS FOLLOWS:
.1 % FOR WELDED WIRE FABRIC
.2 % FOR REINFORCING BARS
THIS MINIMUM REINFORCING RATIO IS FOR SHRINKAGE AND KEEPING RANDOM CRACKING TIGHT. IT ALSO ALLOWS FOR LONGER JOINT SPANS.

ALSO ALLOWS FOR LONGER JOINT SPANS.

CONTROL/CONTRACTION JOINT SPACING WITH MINIMUM REINFORCING IS BASED OF THE FOLLOWING
SUBGRADE DRAG FORMULA:

As = FLW/2Fs WHERE:

As	CROSS-SECTION AREA OF STEEL, IN SQUARE INCHES PER LINEAL FOOT OF SLAB WIDTH
F	COEFFICIENT OF SUBGRADE FRICTION. (DESIGNERS USE 1.5 OR 2.0 FOR PAVEMENTS; 1.5 IS RECOMMENDED FOR CONCRETE FLOORS ON GROUND.)
L	SLAB LENGTH (OR WIDTH IF APPROPRIATE) BETWEEN FREE ENDS, IN FEET. (A FREE END IS ANY JOINT FREE TO MOVE IN A HORIZONTAL PLANE.)
W	WEIGHT OF SLAB, IN POUNDS PER SQUARE FOOT. (FOR NORMAL-WEIGHT CONCRETE, DESIGNERS USE 12.5 POUNDS PER INCH OF FLOOR THICKNESS)
Fs	ALLOWABLE WORKING STRESS OF REINFORCEMENT, IN POUNDS PER SQUARE INCH. (THE WORKING STRESS OF STEEL IS USUALLY 0.67 TO 0.75 THE YIELD STRENGTH OF THE STEEL IN POUNDS PER SQUARE INCH.)

DEFINITIONS

ISOLATION JOINTS
ISOLATION JOINTS ARE PLACED WHEREVER COMPLETE SEPARATION BETWEEN THE FLOOR AND ADJOINING CONCRETE IS NEEDED TO ALLOW THEM TO MOVE INDEPENDENTLY WITHOUT DAMAGE. ISOLATION JOINTS PERMIT HORIZONTAL AND VERTICAL MOVEMENT BETWEEN THE ABUTTING FACES OF THE FLOOR SLAB AND OTHER PARTS OF THE BUILDING BECAUSE THERE IS NO KEYWAY, BOND OR MECHANICAL CONSTRUCTION ACROSS THE JOINT.

CONTROL/CONTRACTION JOINTS

CONTROL JOINTS (ALSO CALLED CONTRACTION JOINTS) ACT TO RELIEVE STRESS AND WITH PROPER SPACING (SEE CONTROL JOINT PLAN) THEY ELIMINATE THE CAUSE OF UNCONTROLLED RANDOM CRACKING. THEY ALLOW HORIZONTAL MOVEMENT OF THE SLAB. THE OBJECTIVE IS TO FORM A PLANE OF WEAKNESS IN THE SLAB SO THAT THE CRACK WILL OCCUR ALONG THAT LINE AND NOWHERE ELSE. AS SHOWN ON SECTIONS ON THIS SHEET ALL SLAB REINFORCING MUST BE DISCONTINUOUS THROUGH JOINT. LOAD TRANSFER ACROSS THE CONSTRUCTION JOINT IS PROVIDED BY USE OF DOWELS (A BOND BREAKER IS USED ON ONE END TO ALLOW HORIZONTAL MOVEMENT).

CONSTRUCTION JOINT
CONSTRUCTION JOINTS ARE STOPPING PLACES AND FORM THE EDGE OF EACH DAY'S WORK. THEY FREQUENTLY ALIGN WITH CONTROL/CONTRACTION JOINTS OR ISOLATION JOINTS. WHENEVER CONTINUOUS CONCRETE PLACEMENT WILL BE INTERRUPTED FOR 30 MINUTES OR MORE, A BONDED OR TIED CONSTRUCTION JOINT SHOULD BE FORMED AND DEFORMED REINFORCING BARS ADDED. IF THE CONSTRUCTION JOINT OCCURS WITHIN THE PANEL (I.E. BETWEEN SPECIFIED CONTROL/CONTRACTION JOINTS) ALL REINFORCING MUST CONTINUE THROUGH THE CONSTRUCTION JOINT.

VISIBLE CONDITIONS THAT MAY OCCUR DURING CONSTRUCTION RANDOM CRACKING

WHEN RANDOM CRACKING OCCURS ON A NEWLY PLACED SLAB, IT IS USUALLY RELATED TO IMPROPER TIMING OF JOINT SAWING. THE PURPOSE OF CUTTING THE SLAB IS TO INDUCE A CRACK BENEATH THE CUT.

RANDOM CRACKING

CONCRETE NEEDS TO GAIN ADEQUATE STRENGTH BEFORE HAVING JOINTS CUT INTO IT. IDEALLY, THE TENSILE STRENGTH HOLDS THE SLAB TOGETHER, THE SAWCUT NOTCH CREATES A REDUCED SLAB SECTION, WHICH INCREASES THE TENSILE STRESSING IN THE CONCRETE BELOW THE NOTCH. IN THE REDUCED SECTION, THE TENSILE STRESS IS OF THE GREATER THAN THE CONCRETE TENSILE STRENGTH. THUS A CRACK OCCURS BELOW THE NOTCH. THE CRACK AND SAWCUT COMBINE TO RELIEVE THE STRESSES AND THUS PREVENT UNWANTED RANDOM CRACKING. BUT NEW CONCRETE IS ALWAYS TRYING TO SHRINK. AS THE SAWBLADE CUTS A JOINT IN THE CONCRETE, THE SAWCUT WEAKENS THE CONCRETE SLAB. IF SAWCUTTING IS STARTED WHEN CONTRACTION STRESS (AS A RESULT OF CONCRETE SHRINKAGE) IS GREAT AND TENSILE STRENGTH IS NOT YET ADEQUATE TO RESIST IT, CRACKS CAN JUMP AHEAD OF THE BLADE DURING JOINT CUTTING.

IF COOLING WATER (USED WITH WET SAWING) HITS THE WARM SLAB, IT CAN BE A THERMAL SHOCK THAT ADDS TO THE POTENTIAL FOR RANDOM CRACKING AHEAD OF THE SAW BLADE.

TO AVERT RANDOM CRACKING, SAWCUT JOINTING MUST BE DONE BEFORE CONCRETE COOLING AND DRYING STARTS, BUT AFTER SOME (TENSILE) STRENGTH HAS DEVELOPED (7 HOURS MAXIMUM AFTER CONCRETE IS POURED). THE NOTCH INSTALLED BY SAWCUTTING SHOULD BE DEEP ENOUGH THAT THE CRACK OCCURS BELOW THE SAWCUT (1/4 OF THE SLAB THICKNESS IS SUFFICIENT).

BLEEDING AND SET RETARDING

EXCESSIVE BLEEDING THAT OCCURS AFTER CONCRETE PLACING, STRIKEOFF, AND BULLFLOATING CAN DELAY SUBSEQUENT FINISHING STEPS. IN MOST INSTANCES, THE CAUSE OF EXCESSIVE BLEEDING IS DUE TO ONE OF THE FOLLOWING:

- A WATER-CEMENT RATIO THAT IS TOO HIGH
- POOR AGGREGATE GRADATION
- SLOW SET TIMES
- AMBIENT CONDITIONS THAT HINDER SURFACE WATER EVAPORATION: LOW TEMPERATURES, HIGH HUMIDITY, OR LACK OF AIR MOVEMENT

BLISTERING AND DELAMINATIONS

BLISTERING IS THE CONVEX RAISING OF THE SURFACE MORTAR LAYER WHILE THE CONCRETE IS STILL PLASTIC. THE BLISTERS ARE ATTRIBUTED TO SEALING THE FLOOR SURFACE BEFORE ALL THE BLEEDWATER AND AIR HAVE ESCAPED.

SIMILAR TO BLISTERING, DELAMINATION OF SURFACE MORTAR CAN OCCUR DUE TO ENTRAPMENT OF BLEEDWATER AND AIR BELOW THE PREMATURELY SEALED MORTAR SURFACE. DELAMINATIONS AFFECT LARGER SURFACE AREAS THAN BLISTERS, AND ARE VERY DIFFICULT TO DETECT DURING FINISHING. THEY BECOME APPARENT AFTER CONCRETE SURFACE DRYING WHEN THE DELAMINATED AREA IS CRUSHED UNDER TRAFFIC. THE THICKNESS OF DELAMINATED MORTAR RANGES FROM ABOUT 3 MM TO 9MM (1/8 IN TO 3/8 IN). THE AFFECTED AREA CAN BE ANYWHERE FROM A FEW SQUARE CENTIMETERS (INCHES) TO A FEW SQUARE METERS (YARDS).

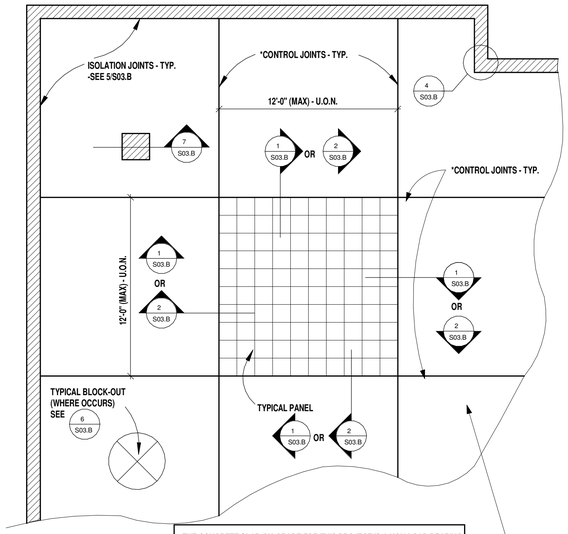
IF THE CONCRETE HAS STIFFENED FROM THE TOP DOWN, AS IT OFTEN DOES WHEN WIND SPEEDS ARE HIGHER, THERE IS A TENDENCY TO FINISH THE SLAB TOO SOON, BEFORE BLEEDING IS COMPLETE. FINISHING OPERATIONS PERFORMED WHILE THE UNDERLYING CONCRETE IS STILL SOFT (AND BLEEDING) WILL SEAL THE SLAB SURFACE, POTENTIALLY TRAPPING BLEEDWATER AND LEADING TO DELAMINATIONS.

PLASTIC SHRINKAGE CRACKING
PLASTIC SHRINKAGE CRACKING IS DUE TO CONCRETE AT THE SURFACE DRYING (AND SHRINKING) BEFORE INITIAL SET OF THE CONCRETE OCCURS. PLASTIC SHRINKAGE OCCURS DURING AND AFTER FINISHING, USUALLY WHEN THERE IS RAPID EVAPORATING OF BLEEDWATER. THE CONDITIONS THAT LEAD TO RAPID WATER EVAPORATION ARE LOW RELATIVE HUMIDITY, HIGH AIR TEMPERATURES, RAPID AIR MOVEMENT (WIND) ACROSS THE CONCRETE SURFACE, AND ELEVATED CONCRETE TEMPERATURES. UNDER THESE CONDITIONS THE CONCRETE SURFACE CAN CRUST OVER WHILE THE UNDERLYING CONCRETE IS STILL PLASTIC. AS PLASTIC SHRINKAGE CRACKS FORM, THEY START AT THE SURFACE AND EXTEND SOME DEPTH INTO THE UNHARDENED CONCRETE. FLOATING THE CONCRETE SLAB CAN REPAIR PLASTIC SHRINKAGE CRACKS, BUT ONLY IF DONE IMMEDIATELY AS THE CRACKS OCCUR.

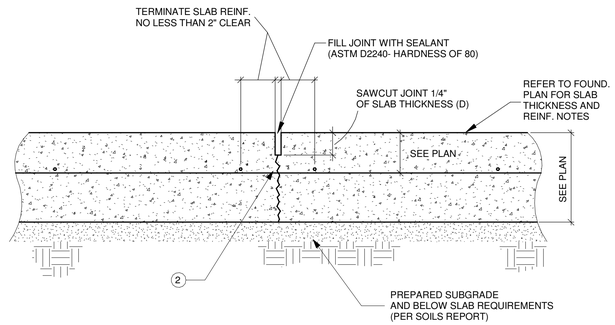
CRAZING
CRAZE CRACKS ARE FINE RANDOM CRACKS OF FISSURES IN A CONCRETE SURFACE. ON CONCRETE FLATWORK, THEY USUALLY EXTEND LESS AN 3 MM (1/4 IN) BELOW THE SURFACE. THE CRACKS OCCUR WITHIN THE PASTE-RICH SURFACE MORTAR AND GENERALLY PASS THROUGH THE PASTE AND NOT THROUGH AGGREGATE PARTICLES. IT IS TYPICAL FOR THE CRACKS TO FORM A MAP PATTERN. THE NARROW CRACKS ARE SO FINE THAT THEY ARE DIFFICULT TO SEE. IN MANY INSTANCES, THEY ARE ONLY VISIBLE DURING THE DRYING PHASE OF A WETTED SURFACE OR WHEN A TRANSLUCENT COATING IS INSTALLED. CRAZE CRACKS ARE ATTRIBUTED TO INADEQUATE CURING THAT LEADS TO CONCRETE SURFACE DRYING AND COOLING BEFORE THE MORTAR HAS GAINED SUFFICIENT STRENGTH. THESE ARE COSMETIC BLEMISHES THAT GENERALLY HAVE NO EFFECT ON THE
SERVICEABILITY OR DURABILITY OF THE FLOOR.

CURLING
WHEN THE EDGES AND CORNERS OF A FLOOR SLAB ON GROUND DISH UPWARD IN THE ABSENCE OF ANY LOADS OTHER THAN GRAVITY, THE SLAB IS SAID TO BE CURLING. IT IS USUALLY ATTRIBUTED TO DIFFERENCES IN MOISTURE CONTENT OR TEMPERATURE FROM TOP TO BOTTOM WITHIN THE SLAB. THESE TEMPERATURE AND MOISTURE GRADIENTS DEVELOP BETWEEN THE TOP AND BOTTOM SURFACE AS THE CONCRETE IN A FLOOR SLAB HARDENS. THE SLAB WILL CURL UP IF THE TOP IS TRYING AND COOLING (SHORTENING) WHILE THE BOTTOM REMAINS MOIST AND WARM. UNDER OPPOSITE
CONDITIONS, THE SLAB SHOULD THEORETICALLY CURL DOWN. DOWNWARD CURL AS SUCH, HOWEVER, DOES NOT OCCUR DUE TO SUBBASE RESTRAINT.

POPOUTS
A POPOUT IS A CONICAL GRADMENT THAT BREAKS OUT OF A CONCRETE SURFACE, LEAVING A HOLE, THE HOLE VARIES IN SIZE FROM 5MM (1/4 IN TO 2 IN), THOUGH LARGER POPOUTS ARE POSSIBLE. USUALLY, A FRACTURED AGGREGATE PARTICLE IS LOCATED AT THE BOTTOM OF THE HOLE. THE MATCHING PIECE OF THE FRACTURES PARTICLE ADHERES TO THE POINT OF THE POPOUT CONE. POPOUTS ARE CONSIDERED A COSMETIC DETRACTION AND GENERALLY DO NOT AFFECT THE SERVICE OF THE CONCRETE.



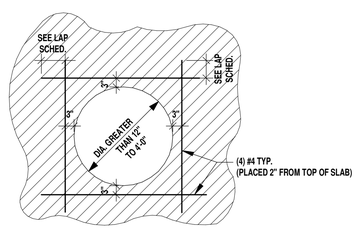
A S03.B TYPICAL JOINT LAYOUT PLAN
NTS



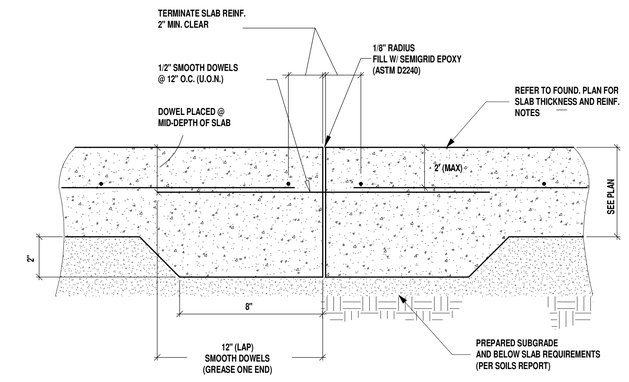
NOTES:

1. SAWCUT JOINT MUST OCCUR WITHIN 7 HOURS OF CONCRETE POUR.
2. CUT EVERY OTHER BAR @JOINT LOCATIONS TO PROVIDE A WEAK PLAN FOR INDUCED CRACKING.
3. SPACING OF JOINTS TO BE 12'-0" O.C. MAX EACH WAY (U.O.N.) ON PLAN
4. REFER TO CONTROL JOINT PLAN OR FOUNDATION PLAN FOR JOINT LOCATIONS.
5. REFER TO DEFINITIONS (THIS SHEET)

2 S03.B CONTROL/ CONTRACTION JOINT SECTION
NTS



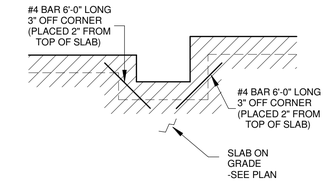
6 S03.B TYP REINFORCING AT ROUND OPENINGS AT CONC. SLAB-ON-GRADE
NTS



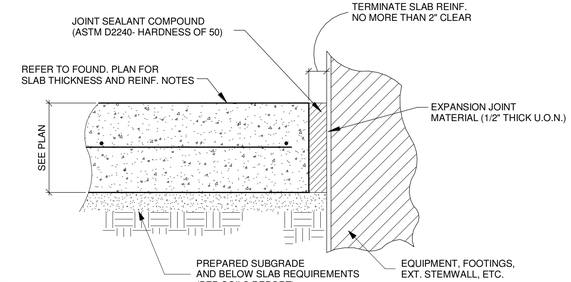
NOTES:

1. CONSTRUCTION JOINTS TO MATCH CONTROL JOINT LOCATIONS. IF NOT POSSIBLE AND LOCATED IN PANEL AREA, CONTINUE ALL REINFORCING THRU JOINT.
2. REFER TO DEFINITIONS (THIS SHEET)

1 S03.B CONSTRUCTION JOINT CONNECTION (TO OCCUR @CONTROL JOINT LOCATION)
NTS



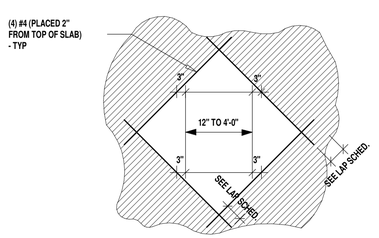
4 S03.B TYP. REINFORCING AT RE-ENTRANT CORNERS
NTS



NOTES:

1. EXPANSION JOINT MATERIAL TO BE MINIMUM 1/2" THICK (U.O.N.)
2. REFER TO DEFINITIONS (THIS SHEET)

5 S03.B ISOLATION/ EXPANSION JOINT SECTION
NTS



7 S03.B TYP, REINFORCING @SQUARE /RECTANGULAR OPENINGS AT CONC. SLAB-ON-GRADE
NTS

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CONCRETE SLAB-ON-GRADE REQUIREMENTS

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REVISION: -	-	-

REVIEWS

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-	BDA DSGN. REV.
-	BDA TECH REV.

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ROUGH CARPENTRY:

PRODUCT REQUIREMENTS:

- EACH PIECE OF STRUCTURAL LUMBER, SHEATHING AND TIMBER SHALL BE MARKED WITH GRADE BY SUCH COMPETENT AND RELIABLE ORGANIZATION WHOSE REGULAR BUSINESS IS TO ESTABLISH LUMBER GRADES.
- ALL LUMBER, EXCEPT WHERE SPECIFICALLY NOTES OTHERWISE, SHALL BE MILL SIZED AND SURFACED ON (4) SIDES. ALL SHALL BE STRAIGHT STOCK, FREE FROM WARP OR CUP, AND SINGLE LENGTH PIECES. SPLICES WILL NOT BE PERMITTED EXCEPT WHERE SPECIFCALLY SO DETAILED OR AS DIRECTED BY THE ENGINEER.
- ROUGH HARDWARE, JOIST HANGERS, STRAPS, HOLDOWNS, ETC. SHALL BE MANUFACTURED BY "SIMPSON" COMPANY OR APPROVED EQUAL. THE MAXIMUM SIZE AND NUMBER OF FASTENERS SPECIFIED BY THE MANUFACTERER SHALL BE USED UNLESS NOTED OTHERWISE.
- BLOCKING AND FIRESTOPPING TO BE INSTALLED AS REQUIRED TO SUPPORT ALL ITEMS OF FINISH SUCH AS BULKHEADS AND BUCKS. PROVIDE FIREBLOCKING TO CUT OFF ALL CONCEALED DRAFT OPENINGS, BOTH VERTICAL AND HORIZONTAL, BETWEEN CEILING AND FLOOR AREAS (AS REQUIRED BY BUILDING OFFICIAL AND ARCHITECT).
- COMMON NAILS SHOULD BE USED WHEN NAILING IS SPECIFIED ON THESE PLANS (U.O.N.), SUCH AS AT SHEARWALLS AND DIAPHRAGMS. ALL OTHER NAILING MAY BE OF THE "BOX OR SINKER" TYPE.
- SHEATHING GRADE SHALL BE CD-X WITH EXTERIOR GLUE P.S. 1-83, U.O.N. ON PLANS: PRODUCTS SHALL BE THOSE LISTED IN TABLE WS-1 (THIS SHEET)
- UNLESS OTHERWISE NOTED ON PLANS, LUMBER SHALL BE AT LEAST OF THE GRADES SHOWN IN THE TABLE BELOW. ALL LUMBER SHALL BE SURFACED AND FREE OF HEART CENTER. LUMBER SHALL MEET SPECIES AND COMMERCIAL GRADE AS INDICATED ON THE PLANS AND THE DESIGN VALUES FOR VISUALLY GRADED LUMBER IN ACCORDANCE WITH THE PLANS AND THE DESIGN VALUES FOR VISUALLY GRADED LUMBER IN ACCORDANCE WITH THE NATIONAL DESIGN SPECIFICATION BY THE NATIONAL FOREST PRODUCTS ASSOCIATION, WHICHEVER IS GREATER. BASED VALUES SHOWN MAY BE ADJUSTED IN ACCORDANCE WITH THE NATIONAL DESIGN SPECIFICATION. "DF" INDICATES DOUGLAS-FIR-LARCH, "HF" INDICATES HEM-FIR, "SPF" INDICATES SPRUCE-PINE-FIR.

EXECUTION REQUIREMENTS:

- BOLTS (IF APPLICABLE) SHALL BE INSTALLED IN HOLES BORED WITH A BIT 1/16" LARGER THAN THE DIEMETER OF THE BOLT. BOLTS AND NUTS SEATING ON WOOD SHALL HAVE CUT STEEL WASHERS UNDER HEADS AND NUTS. NUTS SHALL BE PULLED TIGHT AND AGAIN CHECKED AND TIGHTENED JUST PRIOR TO ENCLOSING BOLTED MEMBERS. COUNTER BORE FOR BOLTED HEADS OR NUTS ONLY WHERE SO INDICATED ON THE DRAWINGS AND THEN SUFFICIENT DEPTH TO HOUSE THE BOLT HEAD OR NOT AND WASHER. CUT OFF EXCESSIVE BOLT PROJECTION WHERE NECESSARY. NICK THREADS TO PREVENT LOOSENING.
- LAG SCREWS (IF APPLICABLE) SHALL BE SCREWED AND NOT DRIVEN INTO PLACE. LAG SCREWS FASTENING ONE WOOD MEMBER TO ANOTHER SHALL HAVE PENETRATION INTO FAR MEMBER OF NOT LESS THAN (2/3) OF THE LENGTH OF THE LAG SCREW MEASURED UNDER THE HEAD U.O.N. IN PLACING LAG SCREWS IN WOOD, A HOLE SHALL FIRST BE BORED OF THE SAME DIAMETER AND DEPTH OF THE SHANK OF THE SCREW. AFTER WHICH THE HOLE SHALL BE CONTINUED TO A DEPTH EQUAL TO THE LENGTH OF THE LAG SCREW WITH THE DIAMETER EQUAL TO THE DIAMETER OF THE SCREW AT THE ROOT OF THE THREAD.
- ALL ROUGH CARPENTRY WILL PRODUCE JOINTS TRUE AND TIGHT AND WELL NAILED WITH MEMBERS ASSEMBLED IN ACCORDANCE WITH THE DRAWINGS AND ALL PERTINENT BUILDING CODES. THE SHIMMING OF SILLS, JOISTS SHORT STUDS, TRIMMERS, HEADERS OR OTHER FRAMING MEMBERS SHALL NOT BE PERMITTED. ALL WALLS AND PARTITIONS SHALL BE STRAIGHT, PLUMB AND ACCURATELY LOCATED. CAREFULLY SELECT ALL STRUCTURAL MEMBERS. INDIVIDUAL PIECES SHALL BE SELECTED SO THAT KNOTS AND OBVIOUS MINOR DEFECTS WILL NOT INTERFERE WITH THE PLACING OF BOLTS, OR PROPER NAILING OR THE MAKING OS SOUND CONNECTIONS. LUMBER MAY BE REJECTED BY THE ENGINEER FOR EXCESSIVE WARP, TWIST, BOW OR CROOK, MILDEW, FUNGUS OR MOLD AS WELL AS FOR IMPROPER GRADE MARKING, DEFECTS WHICH WILL RENDER A PIECE UNABLE TO SERVE ITS INTENDED FUNCTION SHALL BE DISCARDED.

PRE-ENGINEERED TRUSSES

PRODUCT REQUIREMENTS:

- "GANG-NAIL" PRE-ENGINEERED TRUSSES ARE TO BE CONSTRUCTED WITH METAL PLATE CONNECTORS AND DESIGNED AND MANUFACTURED BY OTHERS. DESIGN, CONSTRUCTION, AND INSTALLATION SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION AND OF THE TRUSS PLATE INSTITUTE. PROVIDE ALL REQUIRED BLOCKING AND BRACING REQUIRED BY THE MANUFACTURER FOR CONSTRUCTION AND ERECTION IN ADDITION TO BLOCKING SHOWN ON THE STRUCTURAL DETAILS. MEMBERS OF A COMPLETED TRUSS ARE NEVER TO BE NOTCHED OF CUT. THE TRUSS MANUFACTURER SHALL PROVIDE DESIGN CALCULATIONS AND SHOP DRAWINGS SIGNED AND SEALED BY A STRUCTURAL ENGINEER (CONTRACTED BY TRUSS SMANUFACTURER) FOR REVIEW PRIOR TO FABRICATION. THE DESIGN SHALL ACCOUNT FOR ALL UNIFORM LOADS AND EQUIPMENT LOADS. CONTACT THE STRUCTURAL ENGINEER FOR UNIFORM LOADING AN REQUIREMENTS IF REQUIRED.

EXECUTION REQUIREMENTS:

- TRUSS SHOP DRAWINGS SHALL SHOW THE TRUSS DESIGN LOADS, SIZES AND GRADES OF THE CHORDS AND WEBS, LOCATIONS OF THE JOINTS AND CONNECTIONS, SIZE AND TYPE OF METAL PLATES AND ALL BRACING AND BLOCKING REQUIREMENTS.
- ROOF AND FLOOR TRUSSES SHALL BE DESIGNED FOR THE FOLLOWING CRITERIA:
  SEE DESIGN LOADS SHEET S0.1 FOR VERTICAL LOADS
  STRESS INCREASE FOR DURATION OF LOAD -- ROOF (15%)
- LOCATION OF TRUSS BRACING REQUIRED BY THE PLANS OR TRUSS MANUFACTURER'S DESIGN SHALL BE INDICATED ON EACH TRUSS BY PAINT MARKING.

PARALLAM MEMBERS:

- WHERE PARALLAM "PSL" MEMBERS ARE INDICATED ON THE PLANS AND SCHEDULES THEY SHALL BE MANUFACTERED BY TRUSS-JOINST MACMILLAN (NEW-482 & ICBO ER-4979), OR BE AN APPROVED EQUAL PRODUCT. MEMBERS SHOWN ON THE PLANS AND SCHEDULES ARE DETERMINED FROM MANUFACTURER SUPPLIED INFORMATION AND SHOULD BE REVIEWED FOR COMPLAINCE BY THE MANUFACTERER'S CIVIL OR STRUCTURAL ENGINEER. LOADING INFORMATION MAY BE PROVIDED UPON REQUEST. NOTCHES, HOLES OR CUTS SHOWN IN THE TYPICAL DETAILS ARE ALLOWED WITHOUT ADDITION APPROVAL; ALL OTHER MEMBER MODICATIONS ARE TO BE APPROVED BY THE STRUCTURAL ENGINEER.

PLYWOOD WEB JOISTS:

- PLYWOOD WEB JOISTS NOTED "TJI" ARE TO BE MANUFACTURED BY TRUSS-JOIST MACMILLAN (NER-200 & ICBO ER-4354) OR APPROVED EQUAL. PROVIDE BLOCKING, WEB STIFFENERS, AND BRACING OVER THE SPAN BER THESE STRUCTURAL DRAWINGS AND ALL MANUFACTURER'S RECOMMENDATIONS. TOP AND BOTTOM FLANGES OF JOISTS ARE NEVER TO BE CUT AND ALL HOLES THROUGH THE JOIST WEB ARE TO BE SPECIFICALLY APPROVED BY STRUCTURAL ENGINEER.

TABLE WS-1 :
SHEATHING PRODUCTS:

DESCRIPTION	REQUIREMENTS
ROOF SHEATHING	5/8" APA RATED T&G ROOF PLYWOOD SHEATHING. NAIL W/ 10d @ 6" O.C. BOUNDARY/EDGES AND 12" O.C. FIELD. (U.O.N. ON SHEARWALL SCHEDULE) SPAN INDEX = 48/24
ATTIC FLOOR SHEATHING	7/8" APA RATED FLOOR PLYWOOD SHEATHING. NAIL W/ 10d @ 6" O.C. BOUNDARY/EDGES AND 12" O.C. FIELD. (U.O.N. ON SHEARWALL SCHEDULE) SPAN INDEX = 48/24
WALL SHEATHING	1/2" APA RATED WALL PLYWOOD SHEATHING. NAIL W/ 10d @ 4" O.C. BOUNDARY/EDGES AND 12" O.C. FIELD. (U.O.N. ON SHEARWALL SCHEDULE)
	7/16" WAFERBOARD AND ORIENTED STRAND BOARD CONFORMING TO NER-108 AND PRODUCT STANDARD 2-92, AND WITH THE SAME EXPOSURE DURABILITY CLASSIFICATION, NOMINAL THICKNESS AND SPAN/INDEX RATIO MAY BE SUBSTITUTED FOR PLYWOOD ONLY IF APPROVED BY THE STRUCTURAL ENGINEER.
NOTES: 1. THE NAIL EDGE DISTANCE FOR 3" NOMINAL (2-1/2" ACTUAL) WIDE MEMBERS ON WHICH SHEETS ARE SPLICED SHALL BE 3/4" MIN. 2. THE NAIL EDGE DISTANCE FOR 2" NOMINAL (1-1/2" ACTUAL) WIDE MEMBERS ON WHICH SHEETS ARE SPLICED SHALL BE 3/8" MIN. CARE SHALL BE MADE NOT TO TO SPLIT THE MEMBERS. 3. NAILS MAY BE SLANT DRIVEN TO MAINTAIN MINIMUM EDGE DISTANCE.	

TABLE WL-1 :
MINIMUM LUMBER GRADES (PER NDS 2001 ED.)

TYPE	PRIMARY USE	SIZES (IN)	MIN. GRADE	BASE VALUES (PSI)				
				Fb	Fv	E a	Fc ‖	Fc ⊥
SAWN LUMBER	STUDS	2x	DF #2	700	180	1.4	850	625
	JOISTS	2" & WIDER	DF #2	900	180	1.6	1350	625
	BEAMS	5" x 5" & LARGER	DF #2	875	170	1.3	600	625
	POSTS	5" x 5" & LARGER	DF #2	750	170	1.3	700	625
MICRO-LAMS	BEAMS	ANY	LAM	2400	275	1.8	2400	500
PSL	BEAMS	ANY	LAM	2900	285	2.0	2900	750
FOOTNOTES: (a) *.0X10^6 (PSI)								

TABLE WFS-1 :
FASTENING SCHEDULE

CONNECTION	FASTENING a,m	LOCATION
1. JOIST TO SILL GIRDER	(3) 8d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	TOENAIL
2. BRIDGING TO JOIST	(2) 8d COMMON (2) 3" x 0.131" NAILS (2) 3" 14 GAGE STAPLES	TOENAIL EACH END
3. 1"X6" SUBFLOOR OR LESS TO EACH JOIST	(2) 8d COMMON	FACE NAIL
4. WIDER THAN 1"X6" SUBFLOOR TO EACH JOIST	(3) 8d COMMON	FACE NAIL
5. 2" SUBFLOOR TO JOIST OR GIRDER	(2) 16d COMMON	BLIND & FACE NAIL
6A. SOLE PLATE TO JOIST OR BLOCKING	16d @ 16" O.C. 3" x 0.131" NAILS @ 8" O.C. 3" 14 GAGE STAPLES @ 12"O.C.	TYPICAL FACE NAIL
6B. SOLE PLATE TO JOIST OR BLOCKING AT BRACED WALL PANEL	(3) 16d @ 16" (4) 3" x 0.131" NAILS @ 16" (4) 3" 14 GAGE STAPLES PER 16"	BRACED WALL PANELS
7. TOP PLATE TO STUD	(2) 16d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	END NAIL
8. STUD TO SOLE PLATE	(4) 8d COMMON (4) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	TOENAIL
	(2) 16d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	END NAIL
9. DOUBLE STUDS	16d @ 24" O.C. 3" x 0.131" NAILS @ 8" O.C. 3" 14 GAGE STAPLES @ 8" O.C.	FACE NAIL
10. DOUBLE TOP PLATE	16d @ 16" O.C. 3" x 0.131" NAILS @ 12" O.C. 3" 14 GAGE STAPLES @ 12" O.C.	TYPICAL FACE NAIL
	(8) 16d COMMON (12) 3" x 0.131" NAILS (12) 3" 14 GAGE STAPLES	LAP SPLICE
11. BLOCKING BETWEEN JOISTS OR RAFTERS TO TOP PLATE	(3) 8d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	TOENAIL
12. RIM JOIST TO TOP PLATE	8d @ 6" O.C. 3" x 0.131" NAILS @ 6" O.C. 3" 14 GAGE STAPLES @6" O.C.	TOENAIL
13. TOP PLATES, LAPS AND INTERSECTIONS	(2) 16d COMMON (3) 3" x 0.131" NAILS @ 6" O.C. (3) 3" 14 GAGE STAPLES @6" O.C.	FACE NAIL
14. CONTINUOUS HEADER, TWO PIECES	16d COMMON	16" O.C. ALONG EDGE
15. CEILING JOISTS TO PLATE	(3) 8d COMMON (5) 3" x 0.131" NAILS (5) 3" 14 GAGE STAPLES	TOENAIL
16. CONTINUOUS HEADER TO STUD	(4) 8d COMMON	TOENAIL
17. CEILING JOISTS, LAPS OVER PARTITIONS (SEE SECTION 2308.10.4.1, TABLE 2308.10.4.1)	(3) 16d COMMON, MINIMUM (4) 3" x 0.131" NAILS (4) 3" 14 GAGE STAPLES	FACE NAIL
18. CEILING JOISTS TO PARALLEL RAFTERS (SEE SECTION 2308.10.4.1, TABLE 2308.10.4.1)	(3) 16d COMMON, MINIMUM (4) 3" x 0.131" NAILS (4) 3" 14 GAGE STAPLES	FACE NAIL
19. RAFTER TO PLATE (SEE SECTION 2308.10.1, TABLE 2308.10.1)	(3) 8d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	TOENAIL
20. 1" DIAGONAL BRACE TO EACH STUD AND PLATE	(2) 8d COMMON (2) 3" x 0.131" NAILS (2) 3" 14 GAGE STAPLES	FACE NAIL
21. 1"X8" SHEATHING TO EACH BEARING WALL	(2) 8d COMMON	FACE NAIL
22. WIDER THAN 1"X8" SHEATHING TO EACH BEARING	(3) 8d COMMON	FACE NAIL
23. BUILT-UP CORNER STUDS	16d COMMON 3" x 0.131" NAILS 3" 14 GAGE STAPLES	24" O.C. 16" O.C. 16" O.C.
24. BUILT-UP GIRDER AND BEAMS	20d COMMON @ 32" O.C. 3" x 0.131" NAILS @ 24" O.C. 3" 14 GAGE STAPLES @ 24" O.C.	FACE NAIL AT TOP & BOTTOM STAGGERED ON OPPOSITE SIDES
	(2) 20d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	FACE NAIL AT ENDS AT EACH SPLICE
25. 2" PLANKS	16d COMMON	AT EACH BEARING
26. COLLAR TIE TO RAFTER	(3) 10d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	FACE NAIL
27. JACK RAFTER TO HIP	(3) 10d COMMON (4) 3" x 0.131" NAILS (4) 3" 14 GAGE STAPLES	TOENAIL
	(2) 16d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	FACE NAIL
28. ROOF RAFTER TO 2-BY RIDGE BEAM	(2) 16d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	TOENAIL
	(2) 16d COMMON (3) 3" x 0.131" NAILS (3) 3" 14 GAGE STAPLES	FACE NAIL
29. JOIST TO BAND JOIST	(3) 16d COMMON (5) 3" x 0.131" NAILS (5) 3" 14 GAGE STAPLES	FACE NAIL
30. LEDGER STRIP	(3) 16d COMMON (4) 3" x 0.131" NAILS (4) 3" 14 GAGE STAPLES	FACE NAIL

FASTENING SCHEDULE (CONTINUED)

CONNECTION	FASTENING a,m	LOCATION
31. WOOD STRUCTURAL PANELS AND PARTICLEBOARD b; SUBFLOOR, ROOF AND WALL SHEATHING (TO FRAMING):	1/2" AND LESS 19/32" TO 3/4" 7/8" TO 1"	6d c,t 2-3/8" x 0.131" NAIL n 1-3/4" 16 GAGE o 8d d OR 6d e 2-3/8" x 0.131" NAIL p 2" 16 GAGE p 8d c	
SINGLE FLOOR (COMBINATION SUBFLOOR-UNDERLAYMENT TO FRAMING	1-1/8" TO 1-1/4" 3/4" AND LESS 7/8" TO 1" 1-1/8" TO 1-1/4"	10d dOR 8d e 2-3/8" x 0.131" NAIL n 8d e 10d dOR 8d e	
32. PANEL SIDING (TO FRAMING)	1/2" AND LESS 5/8"	6d f 8d f	
33. FIBERBOARD SHEATHING:g	1/2" 25/32"	11 GAGE ROOFING NAIL h 6d COMMON NAIL 16 GAGE STAPLE i 11 GAGE ROOFING NAIL h 8d COMMON NAIL 16 GAGE STAPLE i	
34. INTERIOR PANELING	1/4" 3/8"	4d j 6d k	

FOOTNOTES:
(a) COMMON OR BOX NAILS ARE PERMITTED TO BE USED EXCEPT WHERE OTHERWISE STATED.
(b) NAILS SPACED AT 6 INCHES ON CENTER AT EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS EXCEPT 6 INCHES AT SUPPORTS WHERE SPANS ARE 48 INCHES OR MORE. FOR NAILING OF WOOD STRUCTURAL PANEL AND PARTICLEBOARD DIAPHRAGMS AND SHEARWALLS, REFER TO SECTION 2305. NAILS FOR WALL SHEATHING ARE PERMITTED TO BE COMMON, BOX OR CASING.
(c) COMMON OR DEFORMED SHANK.
(d) COMMON.
(e) DEFORMED SHANK.
(f) CORROSION-RESISTANT SIDING OR CASING NAIL.
(g) FASTENERS SPACES 3 INCHES ON CENTER AT EXTERIOR EDGES AND 6 INCHES O.C. AT INTERMEDIATE SUPPORTS.
(h) CORROSION-RESISTANT ROOFING NAILS WITH 7/16-INCH-DIAMETER HEAD AND 1 1/2-INCH LENGTH FOR 1/2-INCH SHEATHING AND 1 3/4-INCH LENGTH FOR 25/32-INCH SHEATHING..
(i) CORROSION-RESITANT STAPLES WITH NOMINAL 7/16-INCH CROWN AND 1 1/8-INCH LENGTH FOR 1/2-INCH SHEATHING AND 1 1/2-INCH LENGTH FOR 23/32-INCH SHEATHING. PANEL SUPPORTS AT 16 INCHES (20 INCHES IF STRENGTH AXIS IN THE LONG DIRECTION OF THE PANEL, UNLESS OTHERWISE MARKED).
(j) CASING OR FINISH NAILS SPACED 6 INCHES ON PANEL EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS.
(k) PANEL SUPPORTS AT 24 INCHES. CASING OR FINISH NAILS SPACED AT 6 INCHES ON PANEL EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS.
(l) FOR ROOF SHEATHING APPLICATIONS, 8d NAILS ARE THE MINIMUM REQUIRED FOR WOOD STRUCTURAL PANELS.
(m) STAPLES SHALL HAVE A MINIMUM CROWN WIDTH OF 7/16 INCH.
(n) FOR ROOF SHEATHING APPLICATIONS, FASTENERS SPACED 4 INCHES ON CENTER AT EDGES, 8 INCHES AT INTERMEDIATE SUPPORTS.
(o) FASTENERS SPACED 4 INCHES ON CENTER AT EDGES, 8 INCHES AT INTERMEDIATE SUPPORTS FOR SUBFLOOR AND WALL SHEATHING AND 3 INCHES ON CENTER AT EDGES, 6 INCHES AT INTERMEDIATE SUPPORTS FOR ROOF SHEATHING.
(p) FASTENERS SPACED 4 INCHES ON CENTER AT EDGES, 8 INCHES AT INTERMEDIATE SUPPORTS.

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CARPENTRY GENERAL NOTES

REVISION:	REV.#	DATE	COMMENTS
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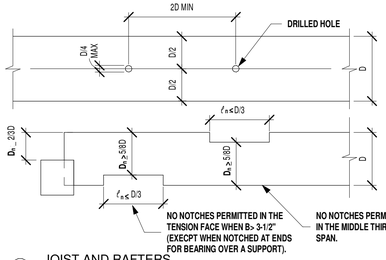
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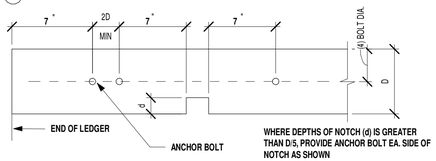
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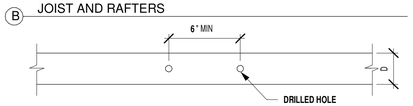
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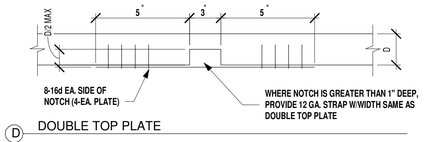
A JOIST AND RAFTERS



B JOIST AND RAFTERS



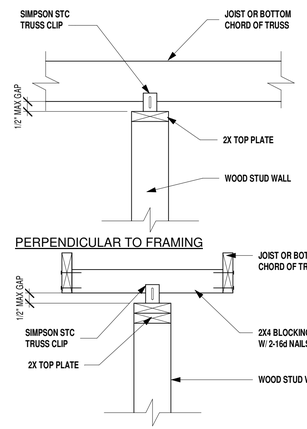
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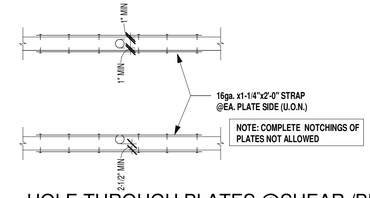
D DOUBLE TOP PLATE

E SILL PLATE

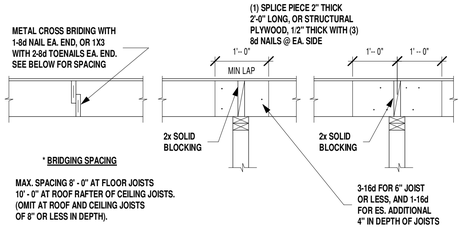
1 S06.B HOLES AND NOTCHES
NTS



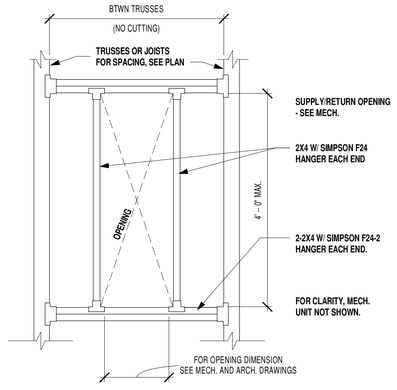
2 S06.B WOOD STUDS @NON-LOADING BEARING WALLS
NTS



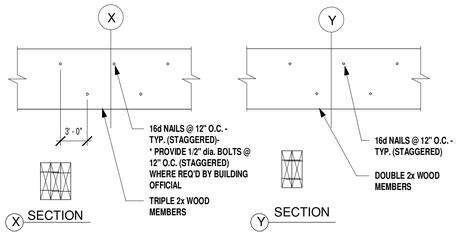
3 S06.B HOLE THROUGH PLATES @SHEAR /BEARING WALL
NTS



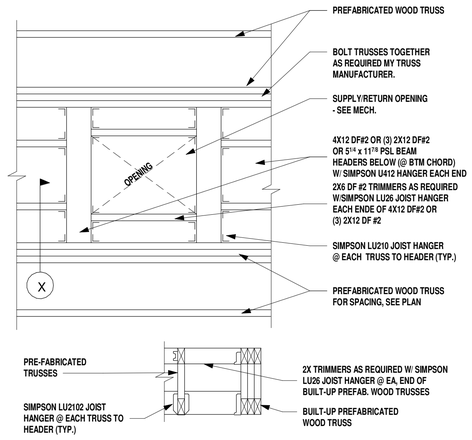
4 S06.B JOIST AND RAFTER LAP @SUPPORTS
NTS



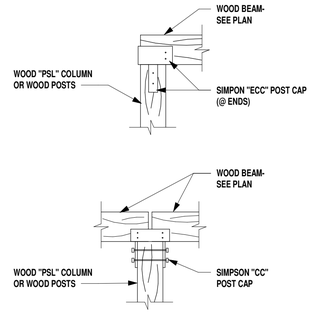
5 S06.B TYP. FRAMING OF SMALL OPENINGS BETWEEN TRUSSES / JOISTS
NTS



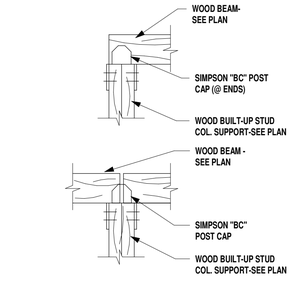
6 S06.B TYP. BUILT-UP WOOD MEMBERS (BUILT-UP STUD COLUMNS OR HEADERS)
NTS



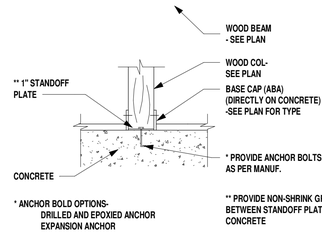
7 S06.B TYP. FRAMING OF LARGE OPENINGS CAUSING CUTTING OF PRE-ENGINEERED TRUSSES (SIM@JOISTS)
NTS



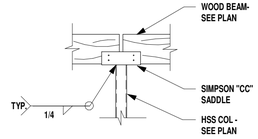
8 S06.B WOOD BEAM TO WOOD COL/POST
NTS



10 S06.B WOOD BEAM TO BUILT UP STUD COL
NTS



9 S06.B BASE AND POST DOWN CONN
NTS



11 S06.B TUBE STEEL COL TOP CONNECTIONS
NTS

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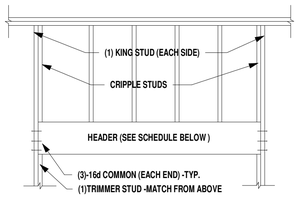


TABLE RC -1 :
LUMBER HEADER SCHEDULE

OPENING SIZE	HEADER SIZE
0'-4"	(2)-2X FLAT
4'-1" - 8'-0"	(2)-2X8
8'-1" - 12'-0"	(2)-2X12 HF#2
(DF#2, HF#2, OR SPF#2 MAY BE USED)	

1 S06.C TYP. NON-LOAD BEARING HEADER
NTS

TABLE RC - 2 :
TYPICAL CEILING JOIST SCHEDULE

JOIST SIZE	MAX. SPAN	BRIDGING SPACING	LEDGER AT MASONRY WALL	LEDGER AT STUD WALL
2 x 4	8'-0"	2'-9" O.C.	N/A	2x4 W/ (2) 16d NAILS EA. STUD
2 x 8	14'-0"	4'-8" O.C.	N/A	2x8 W/ (3) 16d NAILS EA. STUD
2 x 10	18'-0"	6'-0" O.C.	N/A	2x8 W/ (3) 16d NAILS EA. STUD

NOTES:
1. SPACE CEILING JOISTS @ 24" O.C. MAX.
2. 2. HANG CEILING JOISTS FROM LEDGERS W/ SIMPSON LU FACE MOUNTED JOIST HANGER.
3. 3. PROVIDE CONTINUOUS FLAT 2X4 BRIDGING W/ 1-16d NAIL EACH JOIST AT THE TOP OF THE JOISTS.
4. IF JOIST SPANS ARE GREATER THAT THOSE SHOWN ABOVE, NOTIFY THE STRUCTURAL ENGINEER.
5. JOISTS ARE DESIGNED FOR 5 PSF DEAD LOAD AND 10 PSF LIVE LOAD. IF ACTUAL LOADS ARE GREATER, NOTIFY THE STRUCTURAL ENGINEER.
6. ALL MATERIAL TO BE DF#2 OR SPF#2

2 S06.C CEILING JOISTS
NTS

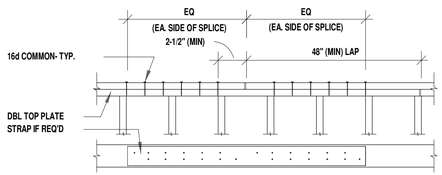


TABLE RC -3 :
LUMBER HEADER SCHEDULE

TYPE	NAILS BETWEEN BUTTS	STRAP TIE	CAPACITY (LBS)
A	(2) ROWS- 10 NAILS/ ROW 20 NAILS TOTAL / SIDE	N/A	7500 LBS

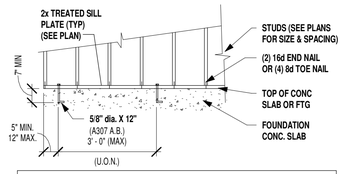
NOTES:
1. REFER TO FRAMING PLAN GENERAL NOTES FOR TYPE.
2. ALL NAILS TO BE 16d (COMMON)

3 S06.C TYP. DOUBLE TOP PLATE SPLICE
NTS

TABLE RC - 4 :
WASHER SCHEDULE

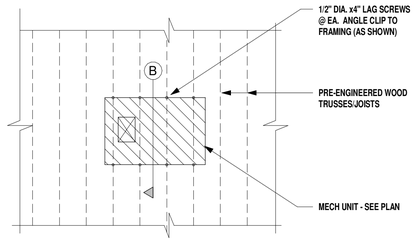
BOLT SIZE	WASHER TYPE		
	MALLEABLE IRON	HEAVY PLATE	STANDARD CUT
5/8"Ø	2-1/2" Ø x 1/4"	3" x 3" x 3/16"	1-3/8" Ø x 3/32"

NOTES:
1. USE STANDARD CUT WASHER FOR ALL BOLTS, U.O.N.
2. HEAVY PLATE WASHERS ARE REQUIRED @ SILL PLATE TO FOUNDATION AT ALL SHEARWALLS.
3. HEAVY PLATE WASHERS ARE REQUIRED @ HOLDOWNS.



NOTE :
1. PROVIDE (2) BOLTS MIN PER SILL PIECE.
2. SEE PLANS FOR SIZE AND SPACING OF ANCHOR BOLTS AT SHEARWALLS.
3. PROVIDE ANCHOR BOLTS AT ALL PERIMETER WALLS AND SHEARWALLS.
4. PROVIDE WASHERS @EA. ANCHOR BOLT. - SEE SCHEDULE THIS SHEET.

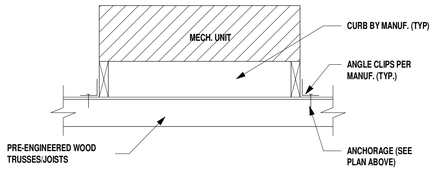
4 S06.C BOTTOM SILL PLATE ANCHORAGE
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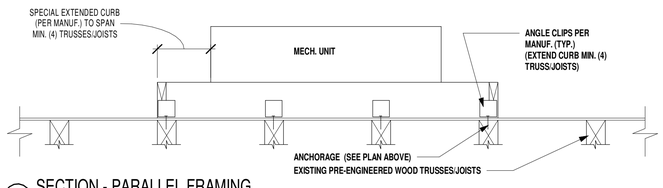
A PLAN - PERP. FRAMING



C PLAN - PARALLEL FRAMING



B SECTION - PERP. FRAMING



D SECTION - PARALLEL FRAMING

5 S06.C MECH EQUIP. SUPPORT /ANCHORAGE
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EARTHWORK NOTES

● CRITERIA:

ALL INFORMATION BELOW IS A SUMMARY PROVIDED BY THE GEOTECHNICAL ENGINEER

SOILS REPORT BY: SEE SHEET S01.A

THE FOLLOWING INFORMATION BELOW BY JJK GROUP, INC. DOES NOT RELIEVE THE CONTRACTOR FROM REVIEWING THE SOILS REPORT AND FOLLOWING ALL REQUIRED SUBGRADE PREPARATIONS.

● GENERAL:

— **THE GEOTECHNICAL ENGINEER SHALL ACT AS THE OWNER'S REPRESENTATIVE AND SHALL MAKE OBSERVATIONS AND TEST AS CONSIDERED NECESSARY FOR QUALITY CONTROL. WHERE FOUNDATIONS OR OTHER CRITICAL ELEMENTS ARE TO BE SUPPORTED ON ENGINEERED FILL, CONTINUOUS OBSERVATIONS AND TESTS OF GRADING OPERATIONS SHALL BE MADE BY THE GEOTECHNICAL ENGINEER. ALL TESTS SHALL BE PERFORMED IN ACCORDANCE WITH PROCEDURES SET FORTH IN THE CURRENT BOOK OF STANDARDS OF THE AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM).**

— **FILL OR BACKFILL, CONSISTING OF SOIL APPROVED BY THE GEOTECHNICAL ENGINEER, SHALL BE PLACED IN CONTROLLED COMPACTED LAYERS WITH APPROVED COMPACTION EQUIPMENT. CONTROLLED COMPACTED LAYERS WITH APPROVED COMPACTION EQUIPMENT. ALL COMPACTION SHALL BE TO A MINIMUM OF 95% (U.O.N. IN SOILS REPORT) OF THE MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH ASTM D-1557 A TEST METHOD. SOIL'S MOISTURE CONTENT DURING COMPACTION SHALL BE AT OPTIMUM MOISTURE CONTENT PLUS OF MINUS 2% (U.O.N. IN SOILS REPORT).**

— **TEST FOR DEGREE OF COMPACTION SHALL BE DETERMINED BY THE ASTM D-1556 OR ASTM D-2922 TEST METHODS. OBSERVATION AND FIELD TESTS SHALL BE CARRIED ON DURING FILL AND BACKFILLPLACEMENT BY THE GEOTECHNICAL ENGINEER TO ASSIST THE CONTRACTOR IN OBTAINING THE REQUIRED DEGREE OF COMPACTION. IF LESS THAN 95 (U.O.N. IN SOILS REPORT) PERCENT IS INDICATED, ADDITIONAL COMPACTION EFFORT SHALL BE MADE WITH ADJUSTMENT OF THE MOISTURE CONTENT AS REQUIRED COMPACTION IS OBTAINED.**

— **WHEREVER, IN THE OPINION OF THE GEOTECHNICAL ENGINEER, AN UNSTABLE CONDITION IS BEING CREATED, EITHER BY CUTTING OR FILLING, THE WORK SHALL NOT PROCEED IN THAT AREA UNTIL AN INVESTIGATION HAS BEEN MADE AND THE GRADING PLAN REVISED.**

● GENERAL DRAINAGE, MAINTENANCE AND PRECAUTIONS:

— **PRECAUTIONS SHALL BE TAKEN DURING AND AFTER CONSTRUCTION TO MINIMIZE SATURATION OF THE FOUNDATION SOILS. POSITIVE DRAINAGE SHALL BE ESTABLISHED AWAY FROM THE EXTERIOR WALLS OF THE STRUCTURE (FOUR PERCENT GRADIENT WITHIN TEN FEET OF THE STRUCTURE). ALL UTILITY TRENCHES LEADING INTO THE BUILDING SHALL BE BACKFILLED WITH COMPACTED FILL. SPECIAL CARE SHALL BE TAKEN DURING INSTALLATION OF WATER LINES TO REDUCE THE POSSIBILITY OF FUTURE SUBSURFACE SATURATION.**

— **DEPRESSIONS AND EXCAVATIONS SHOULD BE BACKFILLED WITH COMPACTED, NON-SWELLING, RELATIVELY-IMPERVIOUS SOILS SUCH AS CLAYEY SANDS.**

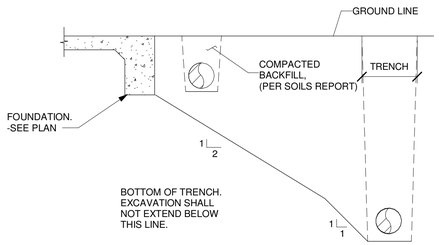
— **GUTTERS AND DOWNSPOUTS SHOULD BE INSTALLED TO CONTROL ROOF DRAINAGE. DOWNSPOUTS SHOULD DISCHARGE A MINIMUM OF TEN FEET AWAY FROM STRUCTURES. AREA DRAINS MAY BE INSTALLED AROUND STRUCTURES TO IMPROVE DRAINAGE. DISCHARGE PIPES SHOULD SLOPE A MINIMUM OF 1/8TH INCH VERTICALS PER FOOT OF HORIZONTAL PIPE. DRAINAGE SEWERS AND DISCHARGE CHANNELS SHOULD BE KEPT FREE OF DEBRIS.**

— **EXPANSION JOINTS WITHIN EXTERIOR CONCRETE FLATWORK SHOULD BE FILLED WITH A FLEXIBLE JOINT SEALER TO MINIMIZE WATER INFILTRATION.**

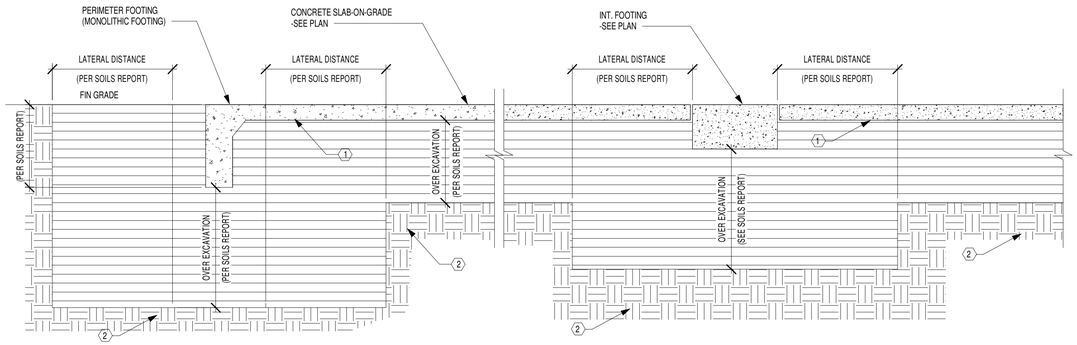
— **SOME MINOR CRACKING OF NEW CONCRETE FOUNDATIONS, CONCRETE FLATWORK, AND INTERIOR DRY WALL IS NORMAL. THIS IS A RESULT OF CONCRETE SHRINKAGE AS IT CURES, "SETTLING IN" OF THE NEW STRUCTURE, DRYING OF TIMBERS USED IN CONSTRUCTION,, ETC. NORMALLY THE MAJORITY OF THIS MOVEMENT SHOULD CEASE WITHIN THE FIRST YEAR FOLLOWING CONSTRUCTION. HOWEVER, DEPENDING ON THE STRUCTURE AND SITE CONDITIONS, MOVEMENT MAY CONTINUE AT A SLOW RATE FOR SEVERAL YEARS.**

— **ROOF GUTTERS AND DOWNSPOUTS SHOULD BE UTILIZED. DOWNSPOUTS SHOULD DISCHARGE DOWN SLOPE AND WELL AWAY FROM STRUCTURES. SPLASH BLOCKS SHOULD BE UTILIZED BELOW DOWNSPOUTS. SURFACE WATER SHOULD RUN OFF RAPIDLY.**

— **LANDSCAPING ADJACENT TO STRUCTURES SHOULD BE DESIGNED AND CONSTRUCTED TO MINIMIZE THE POTENTIAL FOR WETTING OF SOILS SUPPORTING THE PROPOSED FACILITIES. IT IS NOT RECOMMENDED THAT LANDSCAPING REQUIRING IRRIGATION BE INSTALLED CLOSER THAN FIVE FEET OF STRUCTURES. TREES AND SHRUBS SHOULD BE HAND WATERED OR WATERED USING CONTROLLED DRIP IRRIGATION. IF DRIP IRRIGATION IS USED, EMITTERS SHOULD DISCHARGE NO MORE THAN ONE GALLON PER HOUR. WATERING SHOULD BE CAREFULLY CONTROLLED TO PREVENT OVER WATERING. GRASSED AREAS ADJACENT TO STRUCTURES SHOULD BE SLOPED SO THAT EXCESS IRRIGATION WATER WILL RUN OFF PROMPTLY. SPRINKLER LINES AND DRIP IRRIGATION MAINS SHOULD BE LOCATED A MINIMUM OF FIVE FEET AWAY FROM FOUNDATIONS. MOWING STRIPS, PLANTERS AND SIDEWALKS SHOULD NO "DAM" WATER ADJACENT TO STRUCTURES.**



2 S31.A GENERAL TRENCH MONO
NTS



KEYED NOTES

1 REFER TO SOILS REPORT FOR VAPOR BARRIERS/ GRANULAR LAYER REQUIREMENTS FOR FOR MOISTURE SENSITIVE FLOORS.

2 EXISTING SUBGRADE PREPARE PROIR TO PLACEMENT OF FILL PER SOILS REPORT

THE ABOVE EARTHWORK INFORMATION IS BASED ON THE SOILS REPORT PROVIDED. THIS DOES NOT RELIEVE THE CONTRACTOR FROM THE COMPLETE REVIEW OF THE SOILS REPORT AND ALL REQUIREMENTS/RECOMMENDATIONS OF SUCH REPORT MUST BE FOLLOWED.

3 S31.A EARTHWORK REQ MONO
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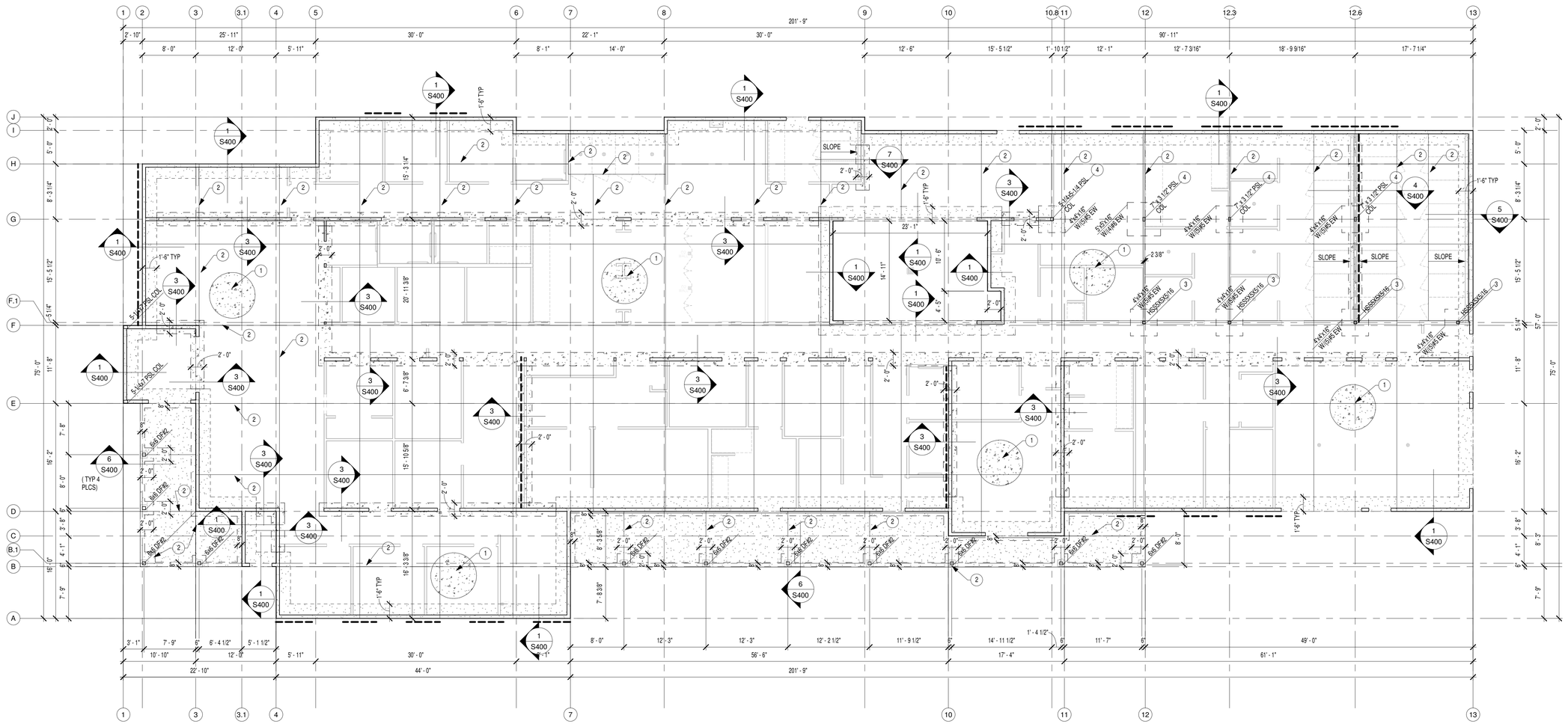
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1 S100 FOUNDATION AND CONTROL JOINT PLAN

1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO GENERAL NOTES SHEETS FOR ALL REQUIREMENTS.
2. REFERENCE DETAILS ON SHEETS S03.A FOR REINFORCING REQUIREMENTS.
3. SEE ARCHITECTURAL FOR ARCHITECTURAL CONCRETE FINISH LOCATIONS AND REQUIREMENTS, TYP.
4. REFER TO ARCHITECTURAL FOR DIMENSION PLAN PRIOR TO LAYOUT (VERIFY)
5. COORDINATE ARCHITECTURAL OPENING LOCATIONS AND REFER TO S03.B FOR DETAILING REQUIREMENTS.

KEYED NOTES:

1. 4" CONCRETE SLAB-ON-GRADE W/#4@18" O.C. E.W. PLACED @2" FROM TOP OVER PREPARED SUBGRADE PER SOILS REPORT.
2. CONTROL JOINT -SEE S03.B
3. SEE 8/S400 FOR STEEL COL BASE CONNECTION.
4. SEE 2/S400 FOR WOOD POST CONNECTION

LEGEND

SHEARWALL LOCATION -SEE SW1.0

CONCRETE SLAB-ON-GRADE

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FOUNDATION AND CONTROL JOINT PLAN

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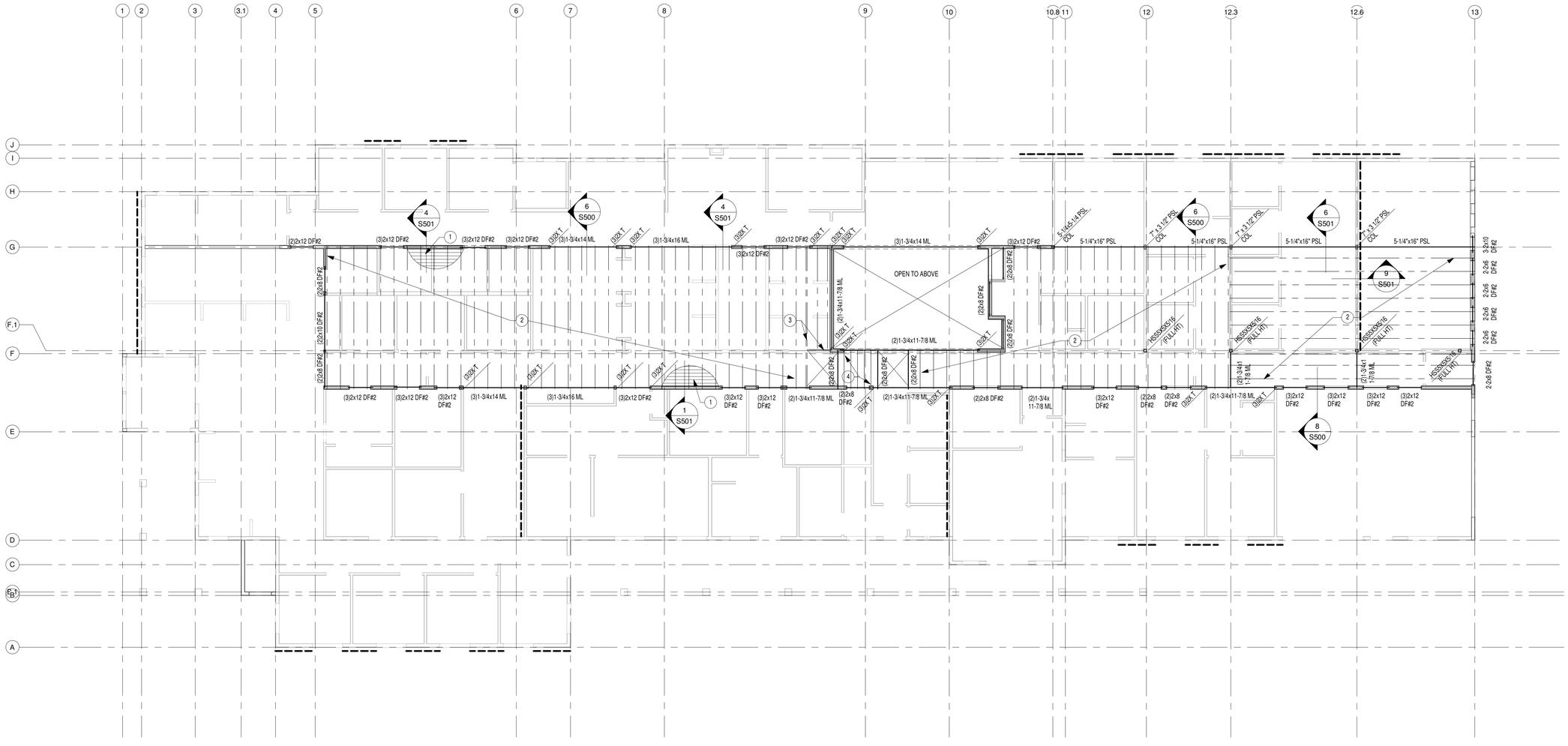
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1 S200 ATTIC FLOOR FRAMING PLAN

1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO GENERAL NOTES SHEETS FOR ALL REQUIREMENTS.
2. REFER TO ARCH. FOR ALL BEARING HEIGHTS AND ELEVATIONS.
3. CONTRACTOR TO PROVIDE APPLICABLE SHOP DRAWINGS AS DETAILED ON SHT. S01.A
4. PROVIDE (2)2x6 DF#2 BUILT-UP STUD TRIMMER (T) COLUMN @EA. END OF HEADER W/(1)FULL HEIGHT KING STUD (1) (U.O.N.).
5 REFER TO MECHANICAL PLANS FOR ROOF MOINTED EQUIPMENT DETAILS.
6. REFER TO S06.C FOR ALL WOOD CONNECTION DETAILS.

KEYED NOTES: (#)

1. 7/8" APA RATED FLOOR SHEATHING NAIL W/10d@ 4"O.C. BOUNDRY/ EDGES 12" O.C. FIELD (U.O.N.)
2. PRE-ENGINEERED FLOOR TRUSSES
3. PRE-ENGINEERED GIRDER TRUSS
4. 2x8 DF#2 FLOOR JOISTS @12"O.C.

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0402 037807
PROFESSIONAL ENGINEER

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Virginia Beach, Virginia 23456
BRIAN WATSON, DVM

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FLOOR FRAMING PLAN

REV.#	DATE	COMMENTS
REVISION: -	-	-
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REVIEWS	
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-	BDA TECH REV.

WATSON

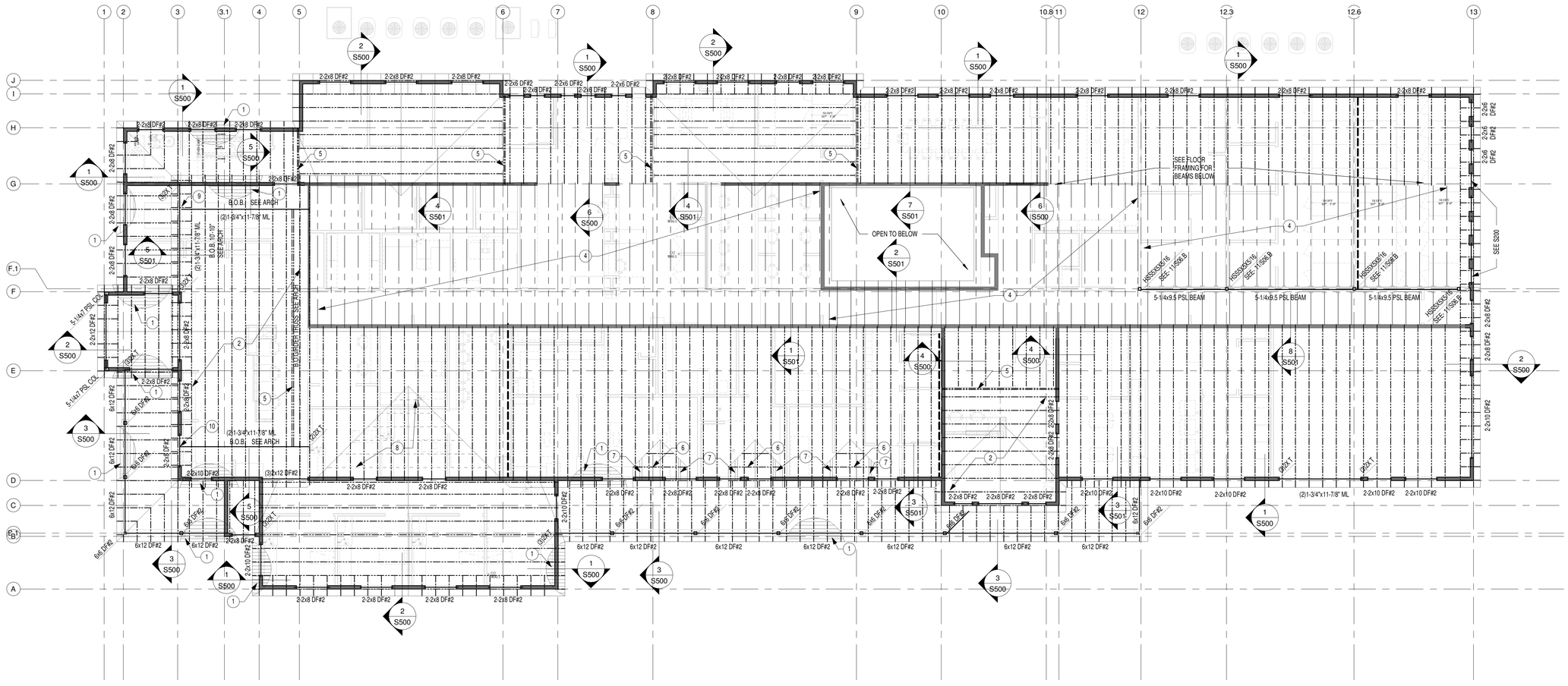
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1 S300 ROOF FRAMING PLAN

1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO GENERAL NOTES SHEETS FOR ALL REQUIREMENTS.
2. REFER TO ARCH. FOR ALL BEARING HEIGHTS AND ELEVATIONS.
3. CONTRACTOR TO PROVIDE APPLICABLE SHOP DRAWINGS AS DETAILED ON SHT. S01.A
4. PROVIDE (2)2x6 DF#2 BUILT-UP STUD TRIMMER (T) COLUMN @EA. END OF HEADER W/(1)FULL HEIGHT KING STUD (1) (U.O.N.).
5. REFER TO MECHANICAL PLANS FOR ROOF MOUNTED EQUIPMENT DETAILS.
6. TRUSS MANUF. TO VERIFY ALL ROOF MOUNTED EQUIPMENT WEIGHTS WITH MECHANICAL.
7. REFER TO S06.B AND S06.C FOR ALL WOOD CONNECTION DETAILS.
8. ALL ROOF FRAMING TO BE PRE-ENGINEERED ROOF TRUSSES @24"O.C. (U.O.N.)

KEYED NOTES: (#)

1. 5/8" APA RATED ROOF SHEATHING NAIL W/ 10d@6"O.C. BOUNDRY/ EDGES 12"O.C. FIELD. (U.O.N.)
2. PRE-ENGINEERED VAULTED TRUSS @24" O.C. (SEE ARCH)
3. WOOD POST CAP -SEE 8/S06.B
4. TJI 14" /360 SERIES @24" O.C. ROOF JOISTS
5. PRE-ENGINEERED GIRDER TRUSS
6. PRE-ENGINEERED TRUSSES FOR DORMERS @24" O.C.
7. 2X BLOCKING UNDER DORMER WALLS BETWEEN TRUSSES
8. PRE-ENGINEERED VALLEY SET TRUSSES @24"O.C.
9. SIMPSON TOP FLANGE HANGER
10. POST DOWN TO HEADER -SEE ARCH FOR BEARING HEIGHT

LEGEND

2x6 DF#2 @16"O.C. EXT. /INT. WOOD BEARING STUDS (U.O.N.)

SHEARWALL LOCATION -SEE SCHEDULE

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ROOF FRAMING PLAN

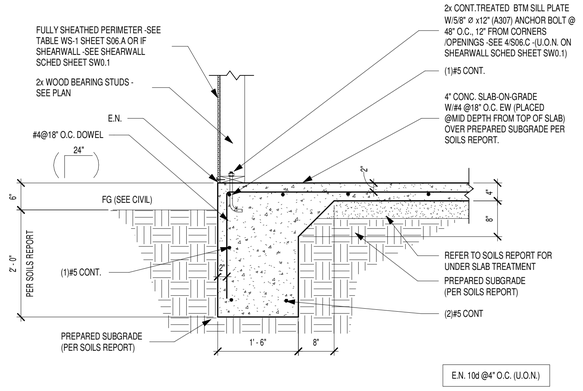
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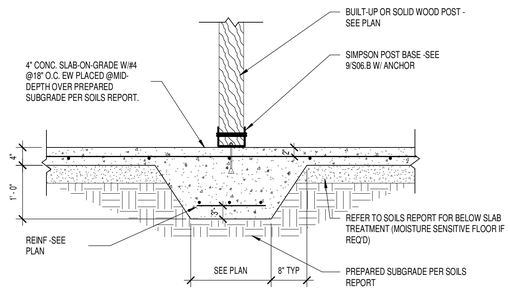
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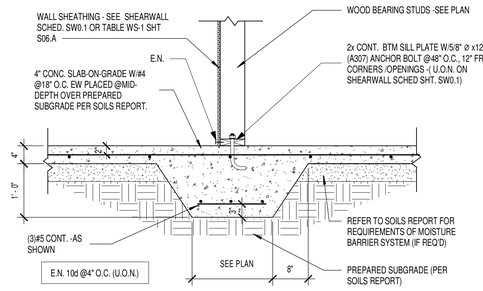
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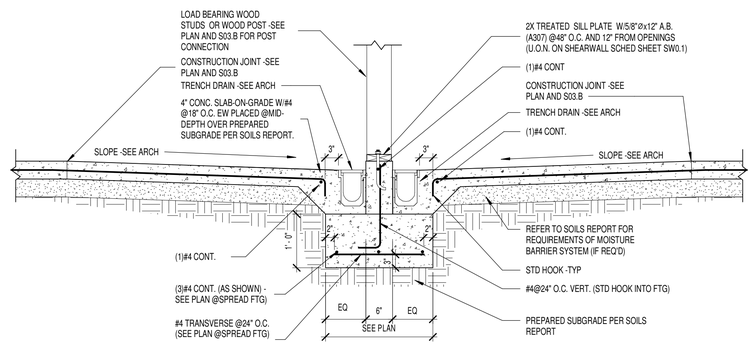
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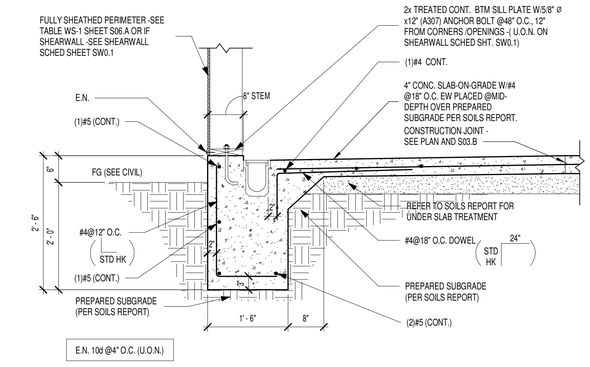
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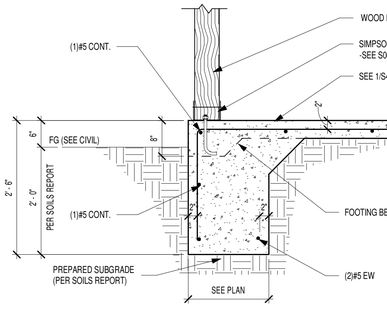
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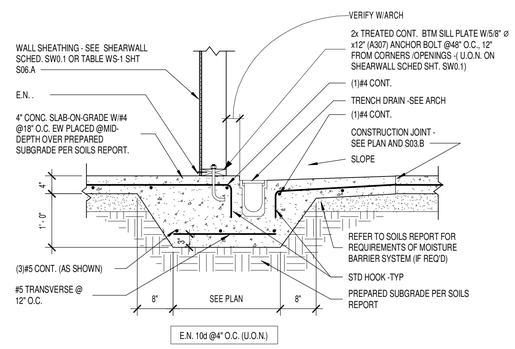
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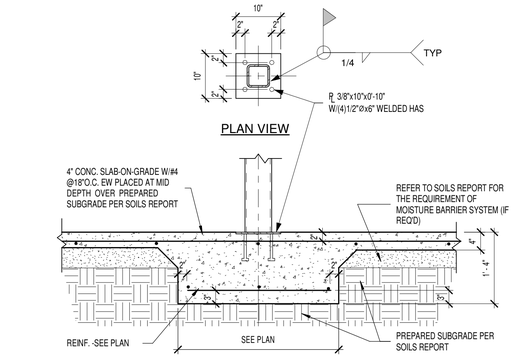
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3/4" = 1'-0"



6 S400 SECTION
3/4" = 1'-0"



7 S400 SECTION
3/4" = 1'-0"



8 S400 SECTION
3/4" = 1'-0"

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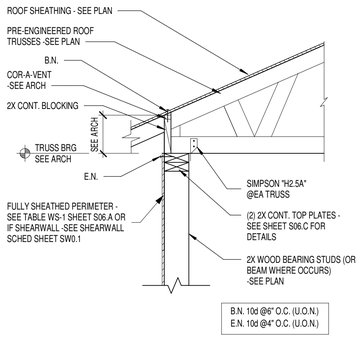
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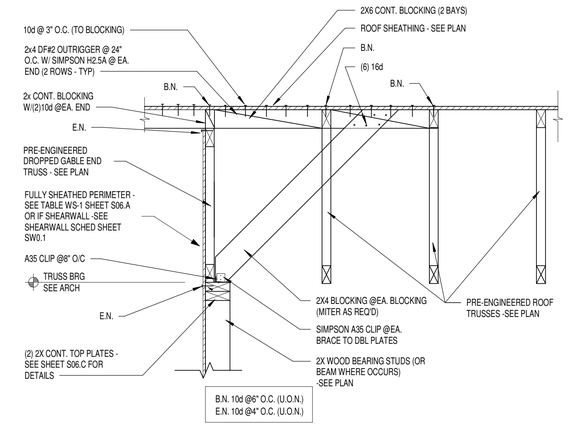
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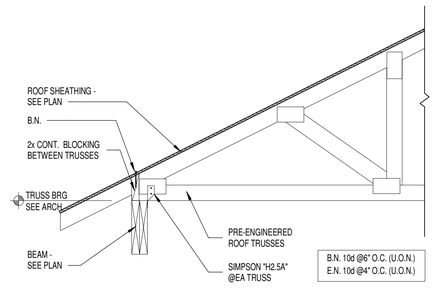
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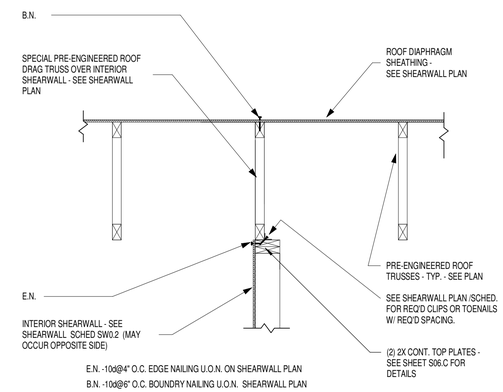
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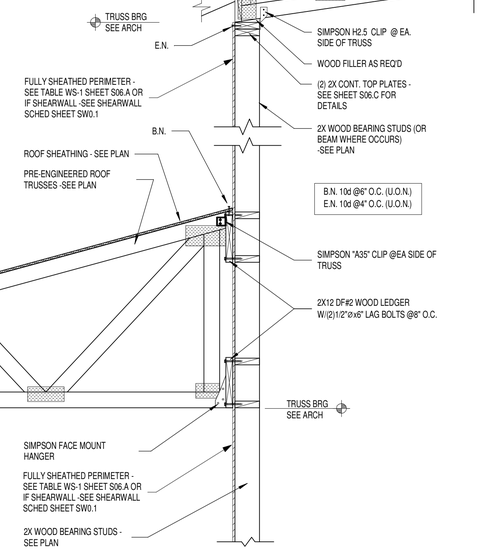
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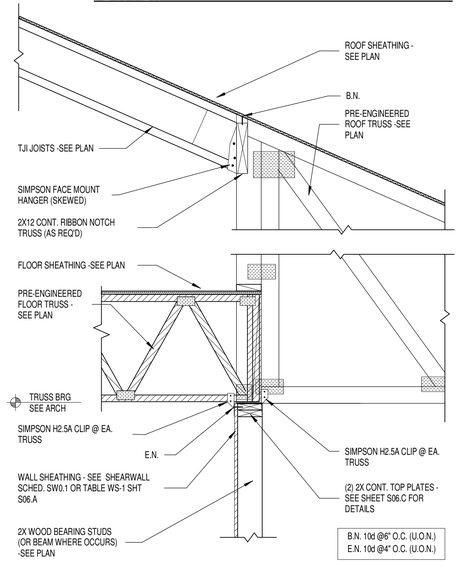
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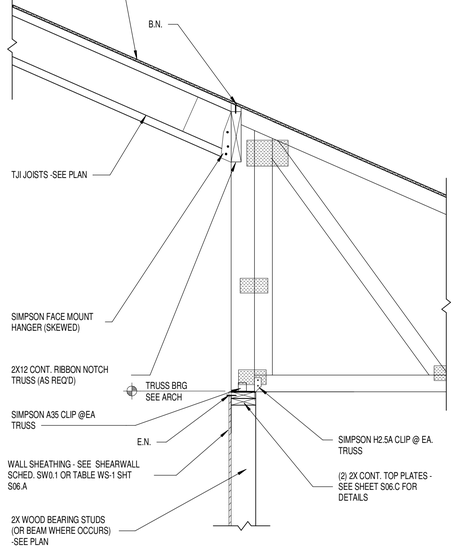
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3/4" = 1'-0"



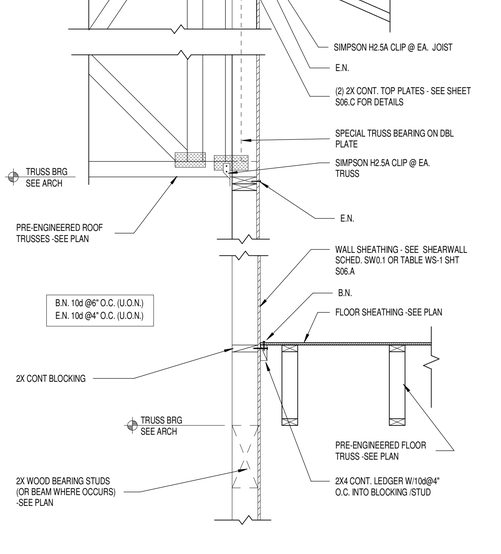
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6 S500 SECTION
3/4" = 1'-0"



7 S500 SECTION
3/4" = 1'-0"



8 S500 SECTION
3/4" = 1'-0"

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ROOF /FLOOR FRAMING SECTIONS

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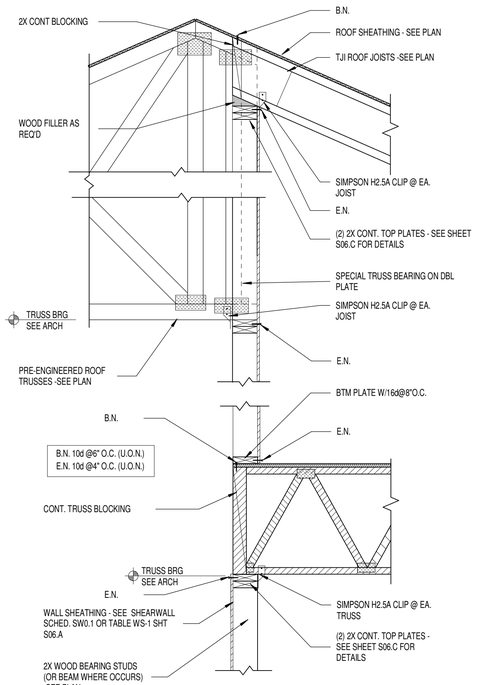
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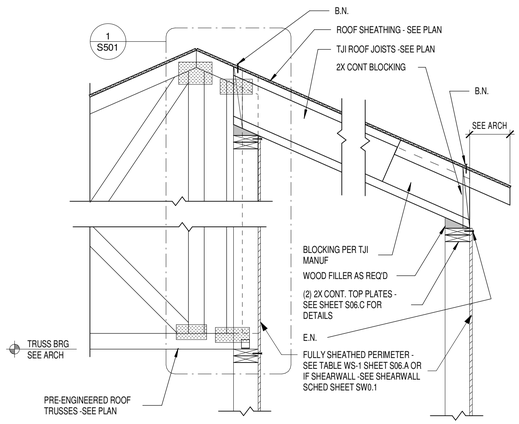
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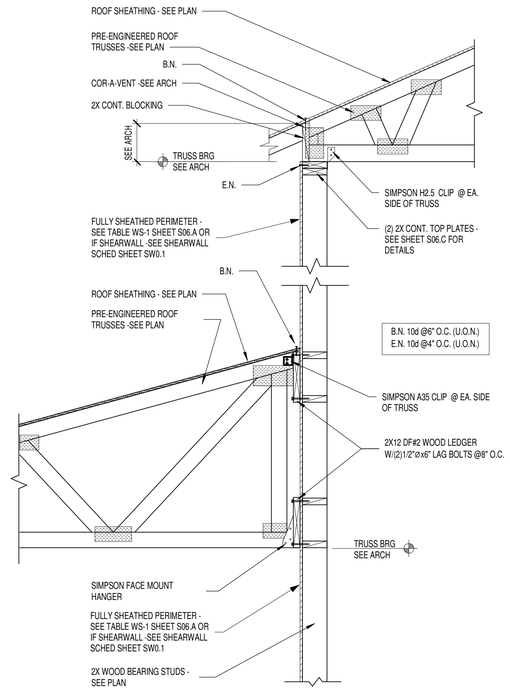
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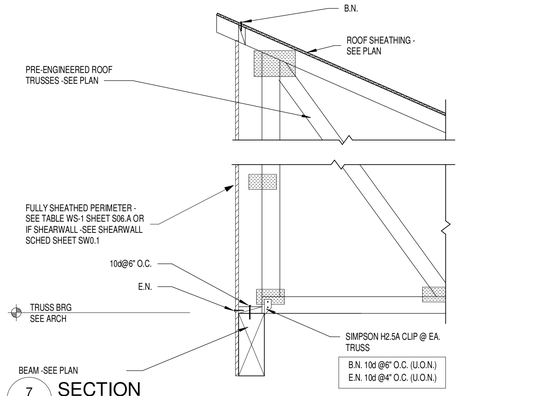
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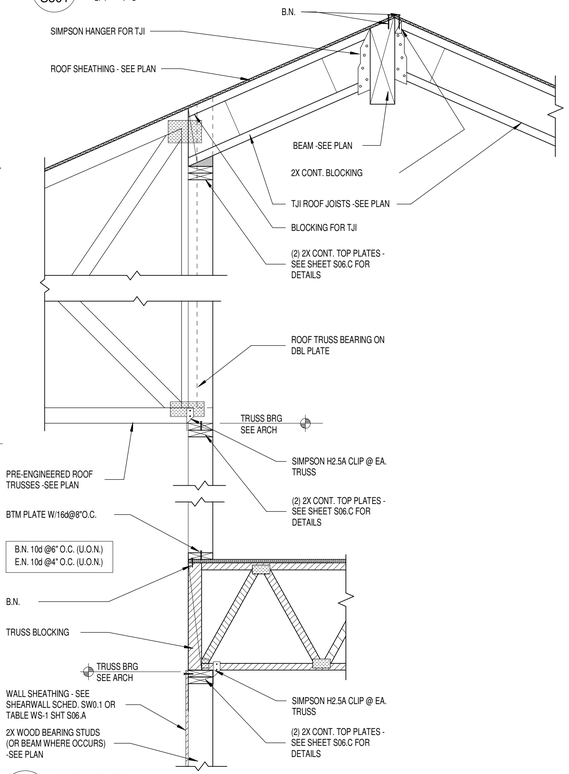
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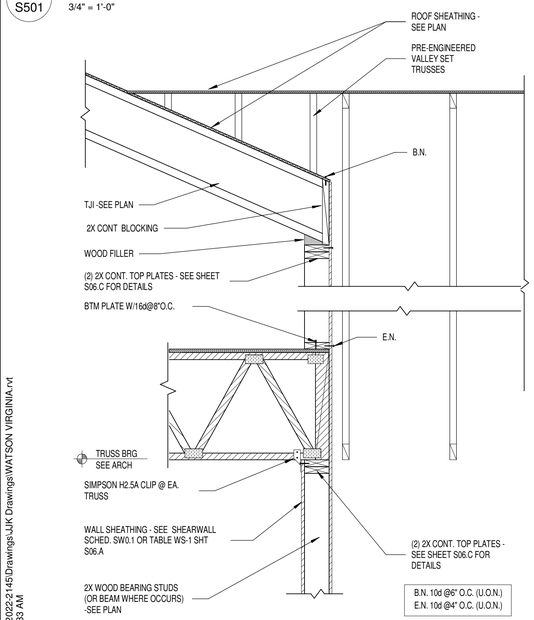
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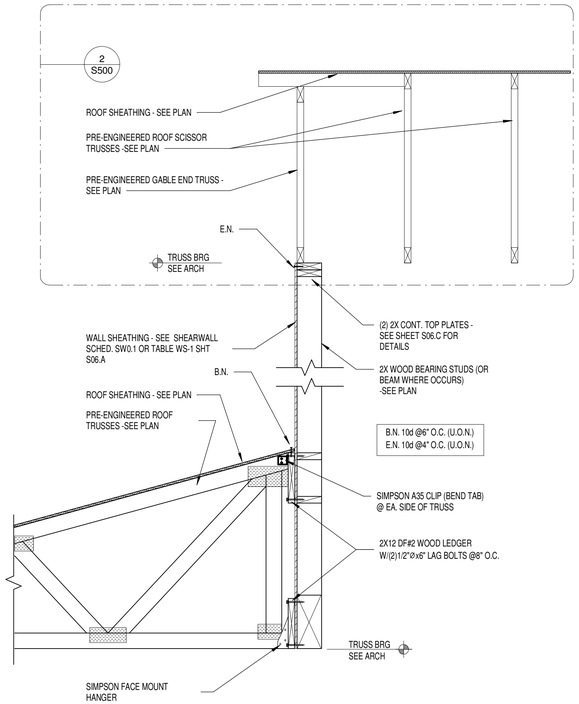
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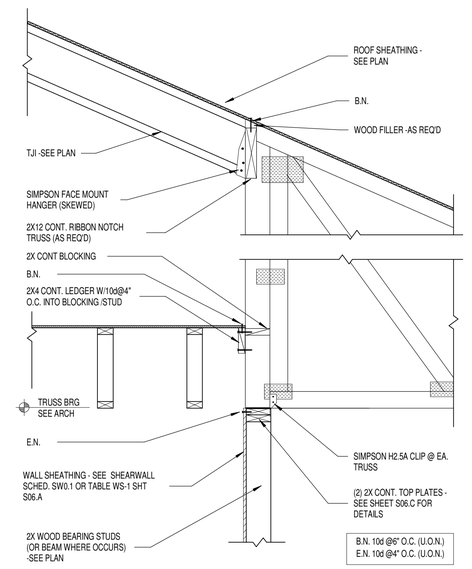
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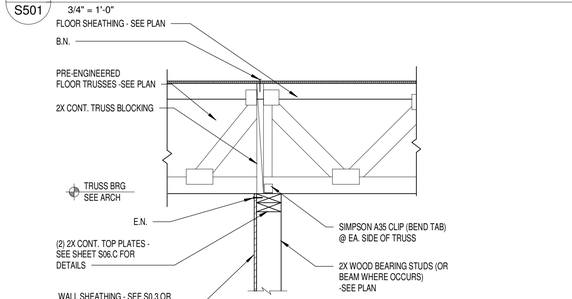
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5 S501 SECTION 3/4" = 1'-0"



6 S501 SECTION 3/4" = 1'-0"



9 S501 SECTION 3/4" = 1'-0"

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ROOF /FLOOR FRAMING SECTIONS (2)

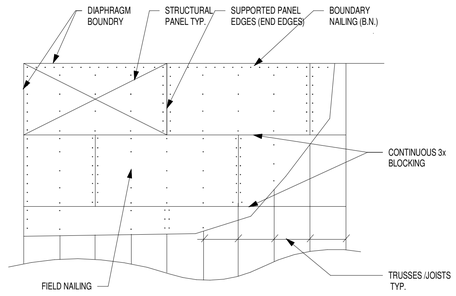
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UNBLOCKED DIAPHRAGM SCHEDULE (APA RATED SHEATHING)		WORST CASE OF WIND/SEISMIC AND LOAD CASES (1,2,3,4,5,6) ALLOWABLES PER TABLE 4.2A (SDPWS-2015)			
ACTUAL SIZE (THK)	NOMINAL SIZE (THK)	DIAPHRAGM TYPE	COMMON NAIL SIZE	CAPACITY (ASD) DF OR SOUTHERN PINE FRAMING MEMBERS (PLF) 6" O.C. BOUNDRY 12" O.C. FIELDS	*CAPACITY (ASD) SPF OR HEM FIR FRAMING MEMBERS (PLF) 6" O.C. BOUNDRY 12" O.C. FIELDS
19/32"	5/8"	UNBLOCKED	10d	215	198
					198
					198

*CAPACITY ADJUSTMENT [1- (.5 x SPECIFIC GRAVITY OF FRAMING MEMBER)]

GENERAL NOTES:

A) PANEL SHALL NOT BE LESS THAN 4'x8' EXECPT AT BOUNDARIES AND CHANGES IN FRAMING WHERE MINIMUM PANEL DIMENSION SHALL BE 24" UNLESS ALL EDGES OT THE UNDERSIZED PANELS ARE SUPPORTED BY AND FASTENED TO FRAMING MEMBERS OR BLOCKING.

B) NAILS SHALL BE LOCATED AT LEAST 3/8" FROM THE EDGES OF PANELS. MAXIMUM NAIL SPACING AT PANEL EDGES SHALL BE 6" ON CENTER. NAILS ALONG INTERMEDIATE FRAMING MEMBERS AND BLOCKING FOR PANELS SHALL BE THE SAME SIZE AS INSTALLED AT THE PANEL EDGES. MAXIMUM NAIL SPACING SHALL BE 6" ON CENTER WHEN SUPPORTED SPACING OF 48" ON THE CENTER IS SPECIFIED AND 12" ON CENTER FOR CLOSER SUPPORT EDGES.

C) WOOD STRUCTURAL PANELS SHALL CONFORM TO THE REQUIREMENTS FOR THEIR TYPE IN DOC PS1 OR PS2

UNBLOCKED DIAPHRAGM SCHEDULE (WOOD)

SHEARWALL SCHEDULE -16" O.C. MAX. SPACING OF STUDS								
SW ◇	SHEARWALL SHEATHING (THICK SIDE)	EDGE NAILING (IN O.C.)	ANCHOR BOLTS @ FND. (IN O.C.)	BOTTOM PLATE (IN O.C.)	RIM/BLK TP DBL TOP PLATES (IN O.C.)	ALLOW (ASD) SHEAR (KLF) DF/SP	ALLOW (ASD) SHEAR (KLF) HF/SPF	NOTES
1	15/32" RS (1)	10d @ 6	5/8" @ 40	16d @ 5	16d @ 3T	0.364	0.335	1
2								
3								
4								
5								
6								
7								

TABLE LEGEND:
T = TOENAIL (3T =3" O.C. TOE NAIL)
KLF = KIPS PER LINEAR FOOT
O.C. = ON -CENTER SPACING

GENERAL NOTES:

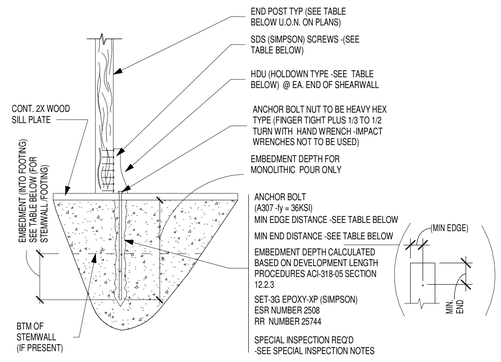
A) SPACE NAILS @12" O.C. ALONG INTERMEDIATE FRAMING MEMBERS (U.O.N.)
B) BLOCK ALL PANEL EDGES WITH MINIUM BLOCKING (UNLESS 3X BLOCKING IS REQ'D)
C) APPLY NAILING TO ALL STUDS, TOP AND BOTTOM PLATES AND BLOCKING
D) FRAMING TO BE A MAXIMUM OF 16" O.C.
E) FASTNERS SHALL BE DRIVEN FLUSH WITH SURFACE OF SHEATHING
F) PANELS MAY BE INSTALLED EITHER HORIZ. OR VERT.
G) ALL NAILS TO BE COMMON TYPE
H) ORIENTED STRAND STRUCTURAL PANELS (OSB) MAY BE SUBSTITUITED FOR PLYWOOD ONLY COMFORMING TO NER-180 PRODUCT STANDARD 2-92
I) 1-5/8" MIN. NAIL PENETRATION TO FRAMED MEMBERS

SPECIAL NOTES FOR SHEARWALLS :

1) APA RATED SHEATHING EXP1/EXP2/EXT OR C-C/C-D/STRUCT 1 PLYWOOD

WOOD STUD SHEARWALL SCHEDULE

(REFER TO SHEARWALL PLANS)



HOLDOWN SCHEDULE
(SIMPSON STRONG-TIE HOLDOWN TO SOLID CONCRETE FOUNDATION)

FOUNDATION LEVEL										
HD △	TYPE	END POST TYPE	FASTNER TO END POST	SET-3G EPOXY ANCHOR EMBEDMENT (IN) (STEMWALL TYPE FND)	MINIMUM EDGE DISTANCE (IN) (STEMWALL TYPE FND)	MINIMUM END DISTANCE (IN) (STEMWALL TYPE FND)	SET-3G EPOXY ANCHOR EMBEDMENT (IN) (MONOLITHIC TYPE FND)	MINIMUM EDGE DISTANCE (IN) (MONOLITHIC TYPE FND)	MINIMUM END DISTANCE (IN) (MONOLITHIC TYPE FND)	**ASD CAP. (LBS)
1	HDU2	(2) 2x	6-SDS 1/4"x2-1/2"	4	12"	4 5/16"	7	2-3/4	4 5/16	3,075
2										
3										
4										
5										
6										

**CAPACITY BASED ON LESSER ALLOWABLE VALUE OF HOLDOWN HARDWARE, A307 ANCHOR BOLT EMBEDMENT DEPTH (BASED ON DEVELOPMENT LENGTH PROCEDURES. ALL VALUES ARE BASED ON ASD (ALLOWABLE STRESS DESIGN) LOAD FACTORS FOR WIND/SEISMIC. TO CONVERT TO LRFD (LOAD RESISTANCE FACTOR DESIGN), MULTIPLY VALUES BY 1.4

GENERAL NOTES:

A) F'C = 4000 PSI (MIN)

B) SPECIAL INSPECTION REQUIRED FOR POST INSTALLED ANCHORS -SEE GENERAL STRUCTURAL NOTES.

C) SUBSTITUTION FOR SIMPSON STRONG-TIE PRODUCTS MUST BE EQUIVALENT AND APPROVED BY ENGINEER.

DRILLED /EPOXY HOLDOWN SCHEDULE (WOOD STUDS)

(4000 PSI -28 DAY CONCRETE COMPRESSIVE STRENGTH)

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SHEARWALL SCHEDULES

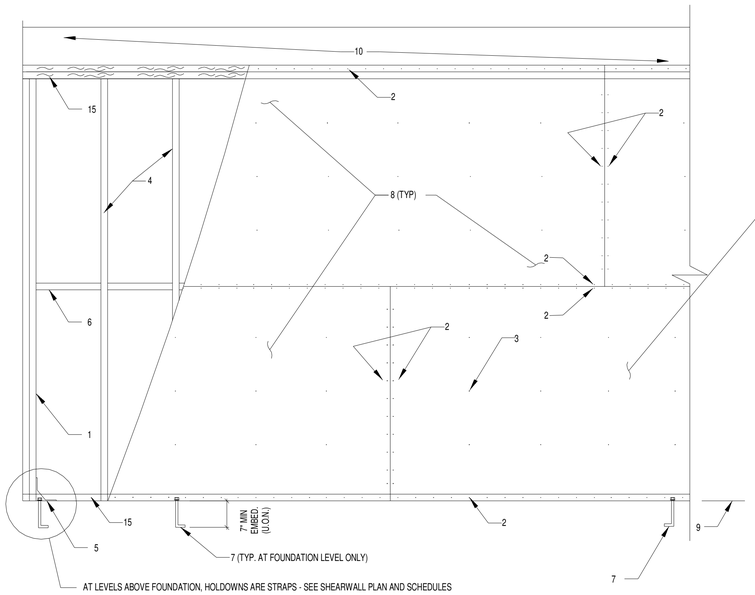
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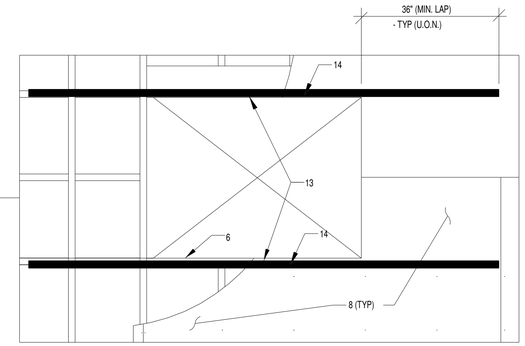
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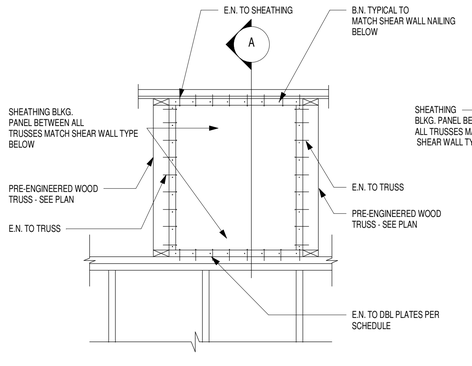
SPECIAL STRAPING @OPENINGS (SEE PLAN FOR LOCATION)

NOTES

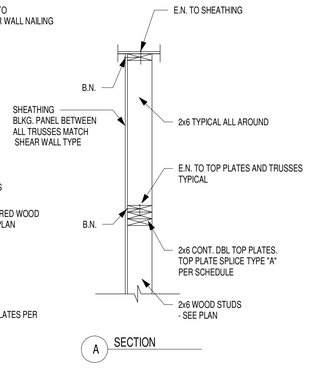
1. DOUBLE STUDS AT EACH END OF PANEL - TYPICAL U.O.N. ON HOLDOWN SCHED.
2. E.N. (EDGE NAILING) - SEE SHEARWALL SCHED.
3. FIELD NAILING @ 12" O.C.
4. WOOD STUDS @ 16" O.C. MAX.
5. HOLDOWN AT EA. END OF SHEARWALL ONLY- SEE HOLDOWN SCHED.
6. 2X or 3X BLOCKING AT UNSUPPORTED SHEATHING PANEL JOINTS -SEE SHEARWALL SCHED.
7. ANCHOR BOLTS OR DRILLED AND EPOXIED - FOR SIZE AND SPACING - SEE SHEARWALL SCHED.
8. SHEATHING MATERIAL - SEE SHEARWALL SCHED.
9. FLOOR LINE.
10. BLOCKING, FLOOR/ROOF JOIST, BEAM OR DRAG TRUSS.
11. NOT USED.
12. 2 - 2X TOP PLATES.
13. SIMPSON METAL STRAP TOP/BTM OF WINDOWS OPENING -SEE SHEARWALL PLAN/SCHED.
14. WINDOW SILL PLATE
15. 2X OR 3X BTM. PLATE - IF 3X BTM PLATE IS REQ'D AT LEVELS ABOVE FOUNDATION, PROVIDE FASTENERS W/ PENETRATION OF 2" INTO CONT. BLOCKING BELOW USING SPACING PER SHEARWALL SCHED.

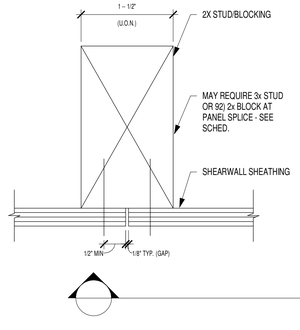
1 SW0.2 TYP WOOD SHEARWALL ELEV. AND NOTINGS

1/8" = 1'-0"

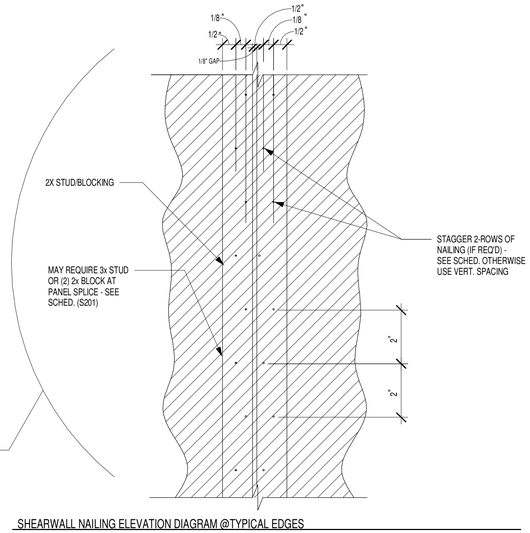


FIELD CONSTRUCTED BLOCKING PANEL (OPTION) BETWEEN TRUSSES





EDGE SPACING



SHEARWALL NAILING ELEVATION DIAGRAM @TYPICAL EDGES

2 SW0.2 MISC WOOD SHEARWALL DETAILS

1/8" = 1'-0"

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SHEARWALL ELEV. AND FRAMING DETAILS

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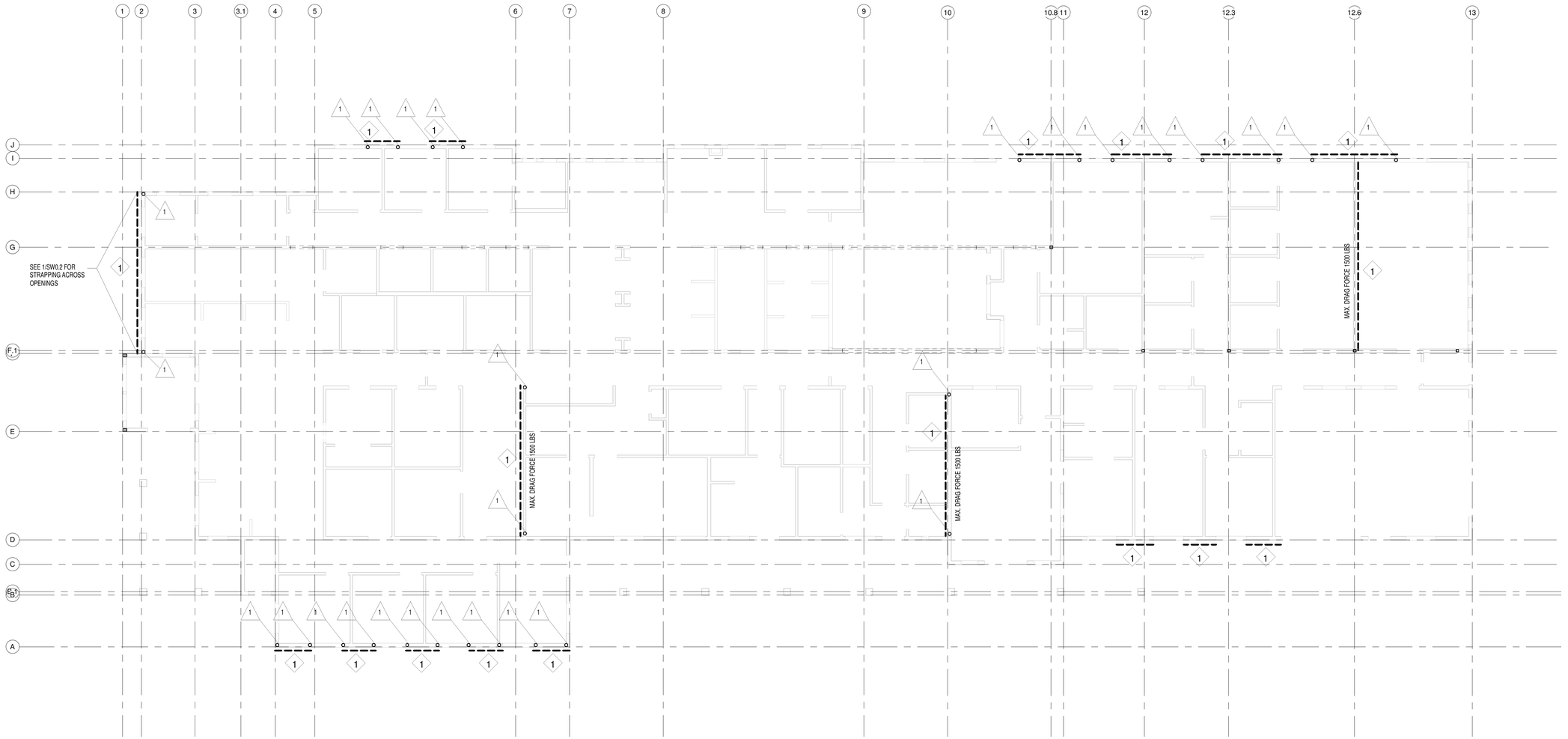
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1 SW1.0 ROOF TO FND SHEARWALL PLAN
1/8" = 1'-0"

SHEARWALL LEGEND

- 1 — SHEARWALL TYPE -SEE SW0.1 FOR SCHED. DETAILS
- 1 — HOLDDOWN TYPE -SEE SW0.1 FOR SCHED. DETAILS
- SHEARWALL LOCATION

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ROOF TO FOUNDATION SHEARWALL PLAN

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